

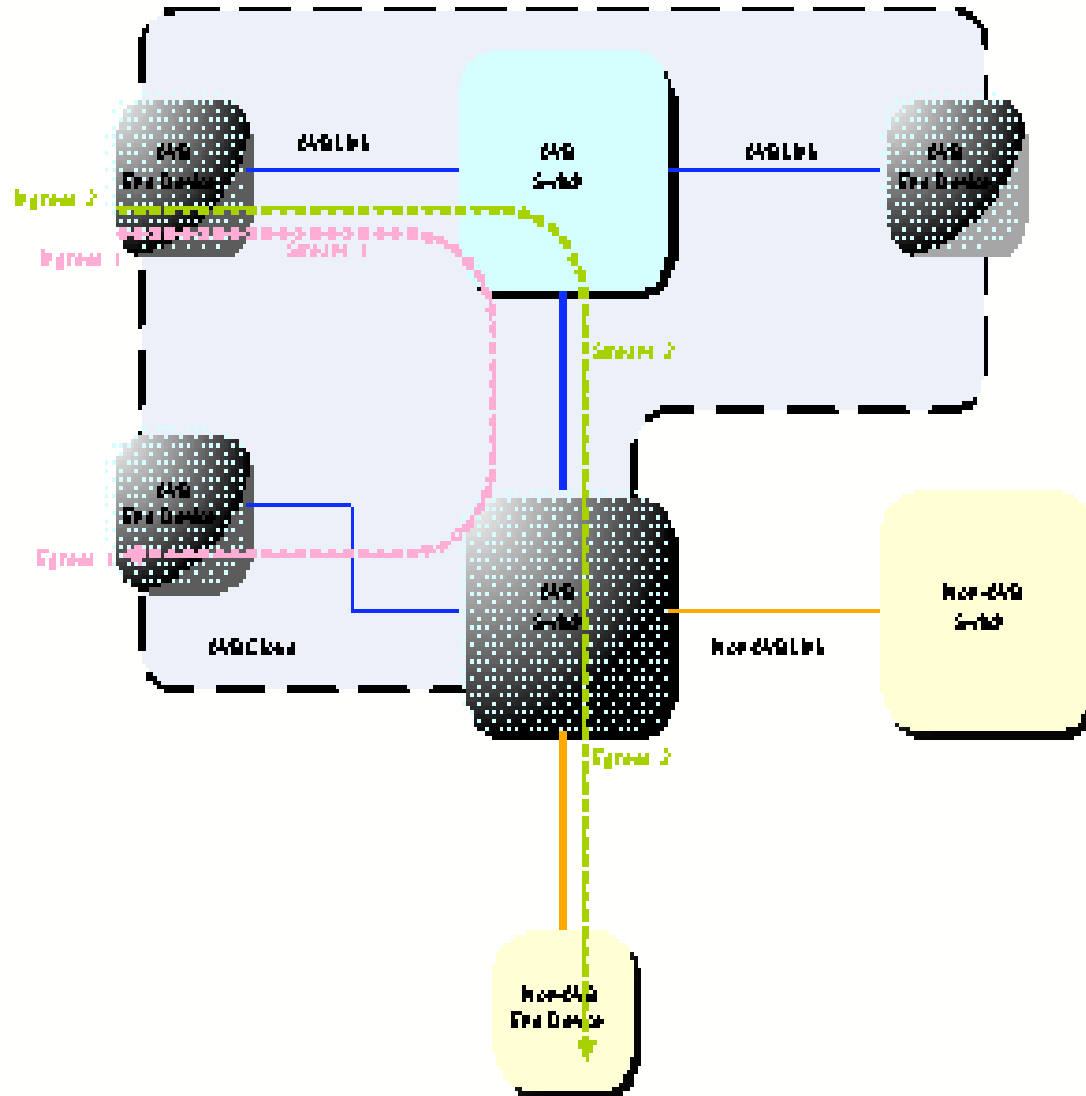
Leading the Next

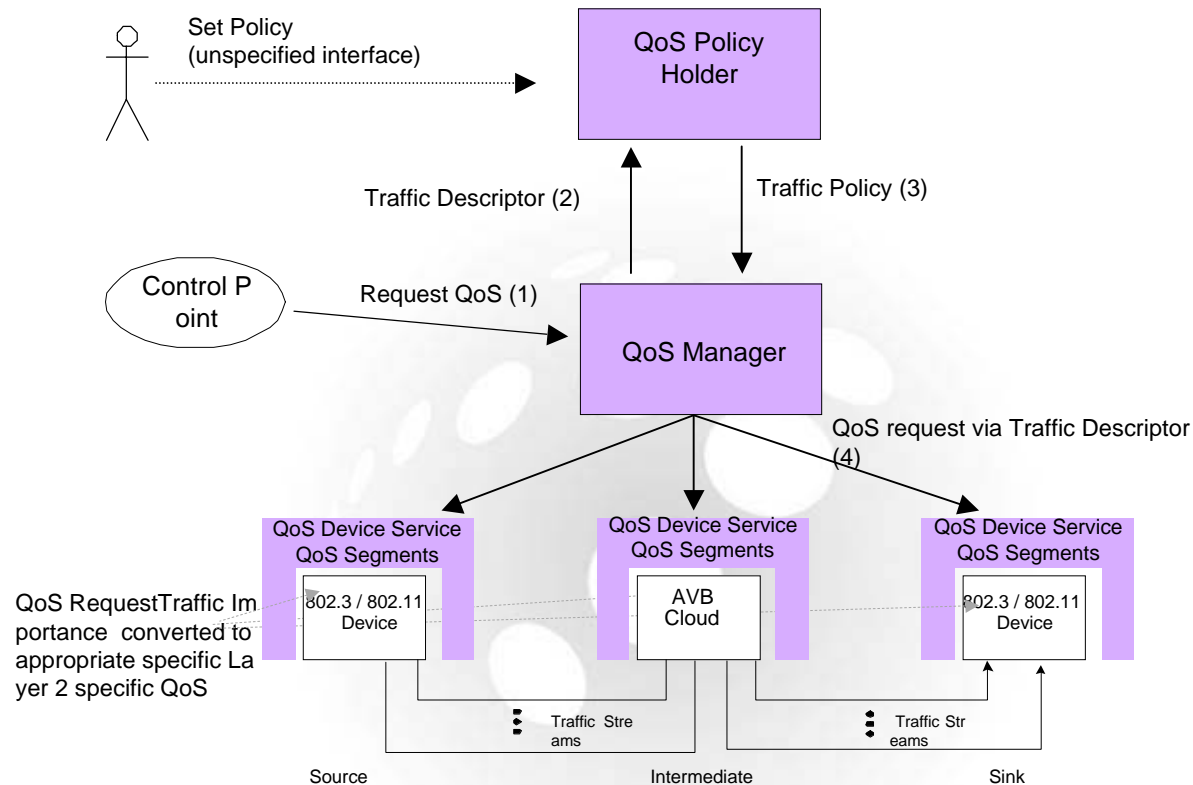
# Implementing UPnP-QoS on AVB

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## UPnP QoS side

### Horizontal (in-line) integration

- AVB cloud acts as a QoS segment which is specified by UPnP QoS 3.0. UPnP QoS 3.0 specification explicitly defines the operation

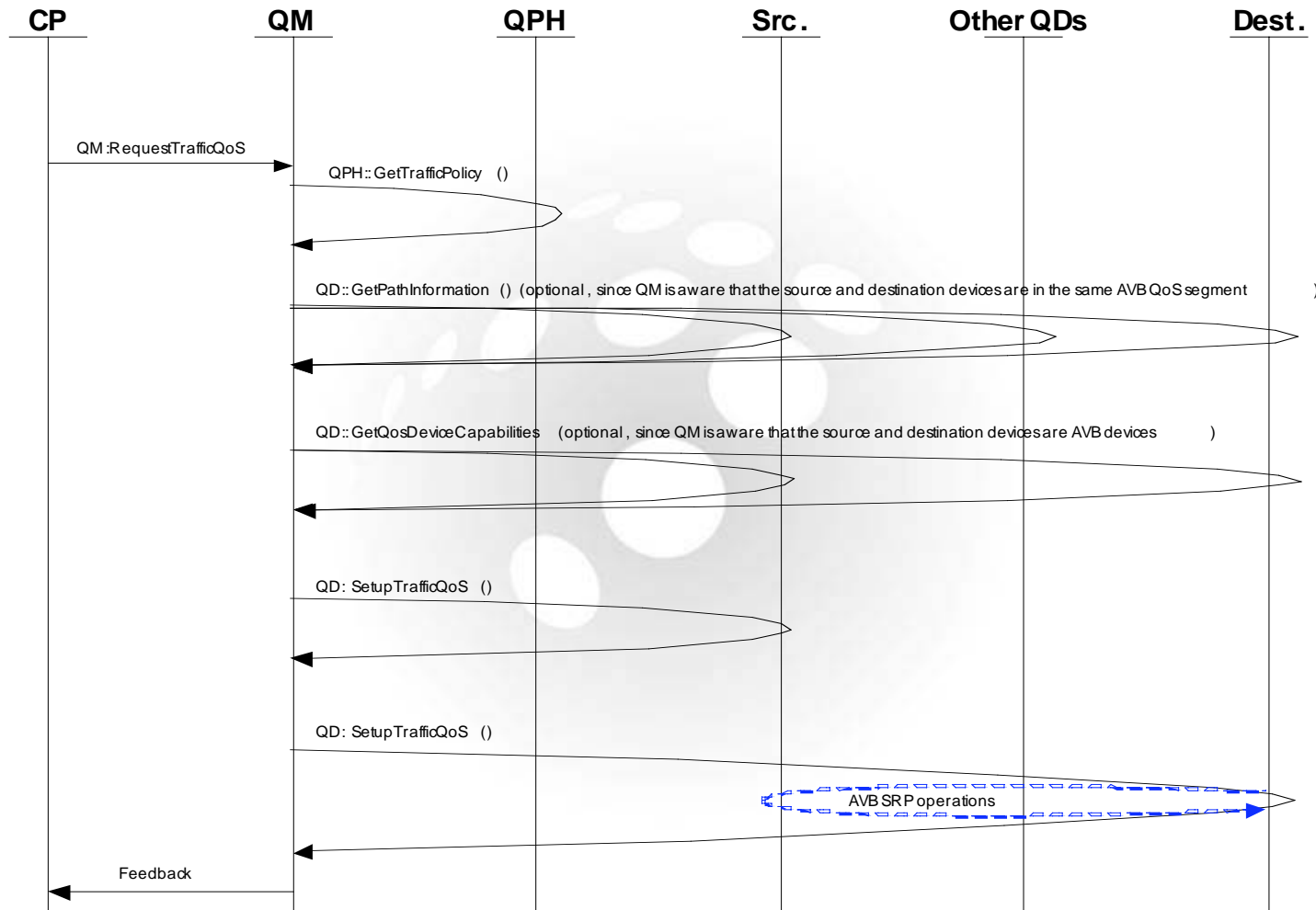
## □ Assumption

- Source and destination devices exist in the same AVB cloud (identical segment ID)
- Source and destination devices are AVB devices
- Source and destination devices are UPnP-QoS capable

## □ System Operation

- QM gets information from CP
  - Source IP, Destination IP, etc.
- Determination of policy (or just use default policy)
- No need for determination of QoSDevice services that should be configured
  - Simply the source and destination devices
- Configuration of QoSDevice services
  - Configure the ingress device for QoS setup preparation
    - Feedback (from QD to QM) of necessary QoS path information: Stream Identifier, etc..
  - Configure the egress device for admission control
    - Feedback (from QD to QM) of QoS setup results
  - The above two-phase procedure is similar to PrepareForConnection actions in UPnP-AV
- Feedback of the results of the QoS setup to the Control Point

# System operation flow



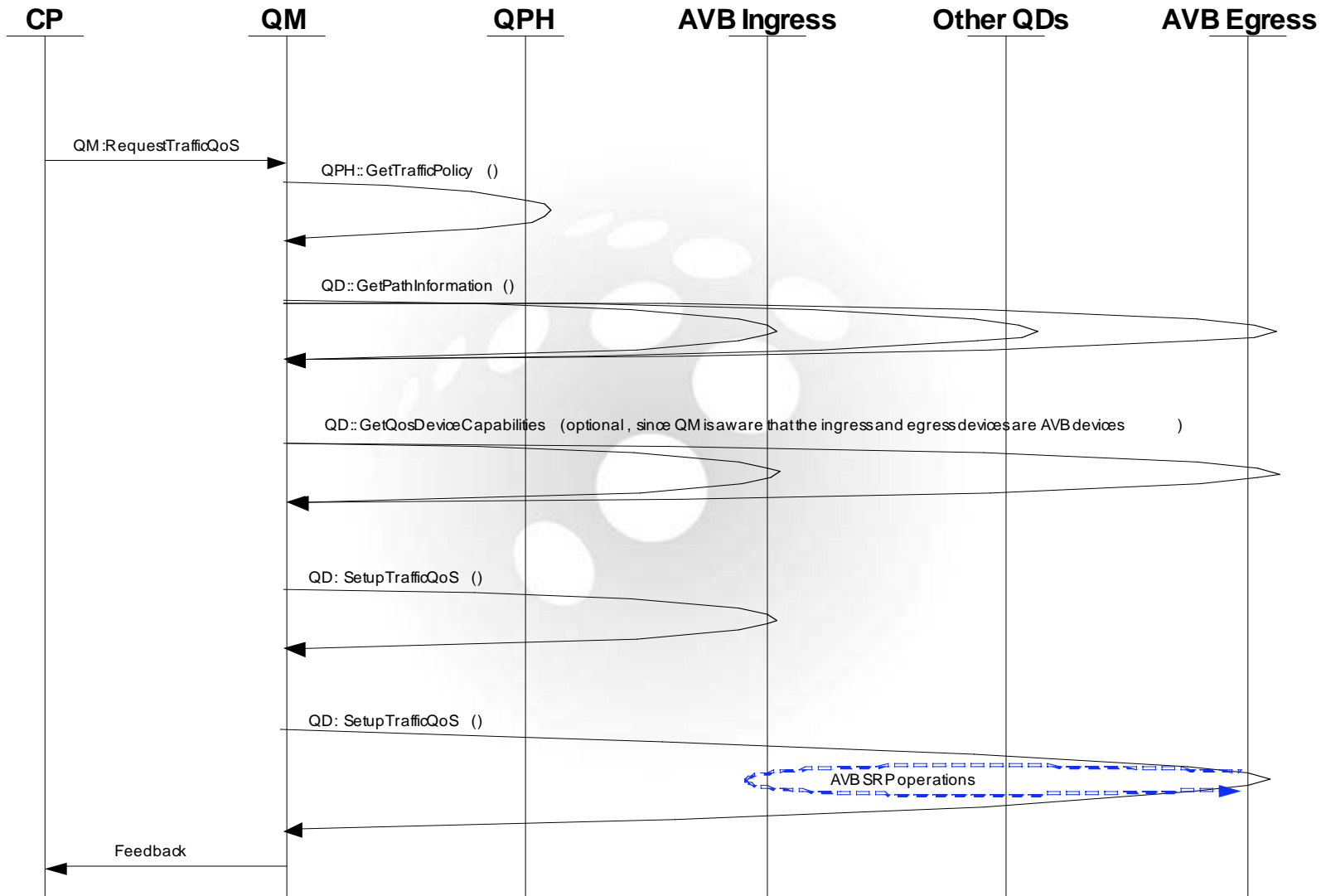
## □ Assumption

- The QoS path may traverse several segments, including AVB or other L2 networks
- Relevant AVB cloud(s) ingress and egress edge devices are UPnP-QoS capable
- Relevant AVB cloud(s) ingress and egress edge devices support GetPathInformation, and are able to determine that they are the ingress and egress edge devices

## □ System Operation

- Get information from CP
  - Source IP, Destination IP, etc.
- Determination of policy (or just use default policy)
- Determination of QoSDevice Services that should be configured
  - Use GetPathInformation and GetQoSDeviceCapabilities to determine the ingress device and egress devices for AVB cloud(s)
    - Ingress device: Source device is reachable via a non-AVB interface and destination device is reachable via an AVB interface
    - Egress device: Source device is reachable via an AVB interface and destination device is reachable via a non-AVB interface
- Configuration of QoSDevice services
  - Configure the ingress device for QoS setup preparation
    - Feedback (from QD to QM) of necessary QoS path information: Stream Identifier, etc..
  - Configure the egress device for admission control
    - Feedback (from QD to QM) of QoS setup results
  - The above two-phase procedure is similar to PrepareForConnection actions in UPnP-AV
  - Configure relevant QD services in other segments
- Feedback of the results of the QoS setup to the Control Point

# System operation flow



(Just exemplary for one AVB segment; Relevant QD services in other segments are not shown here)

## □ Including:

- AVB cloud(s) ingress and egress edge devices are not UPnP-QoS capable
- AVB cloud(s) ingress/egress edge devices are UPnP-QoS capable but can not correctly determine whether they are ingress/egress edge devices:
  - not support GetPathInformation, or
  - source/destination MAC addresses are not recognized/stored

## □ UPnP QoS can detect these situations, and then falls back to Policy/Priority based QoS for the corresponding AVB segments

- This fall-back is merely from an UPnP QoS point of view
- AVB admission control function still exist but not available via UPnP QoS
- AVB timing synchronization or other functions still exist without any impact