



Designated MSRP Node handling on 802.11 Network

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Abstract

- 802.11 already has BW reservations...
But what if 802.11 is one of several hops?
- 802.1Qat defines end-to-end LAN reservation protocol but must be mapped to existing 802.11 reservation scheme.
- This presentation describes this mapping and the interworking between 802.1Qat and 802.11e
- The approach presented here **tries to minimize the network dependent part** to optimize the deployment of 802.1Qat on heterogeneous networks

Some Background on 802.1Qat

- What is 802.1Qat ?

A protocol that provides end points with the ability to reserve network resource that will guarantee the transmission and reception of data streams across a network with the requested quality of service.

- MSRP = Multiple Stream Reservation Protocol

reservation of resources for unicast and multicast streams with a single source across a Bridged Network.

- MSRPDU = MSRP Protocol Data Unit

- Talker = A device that produces a data stream

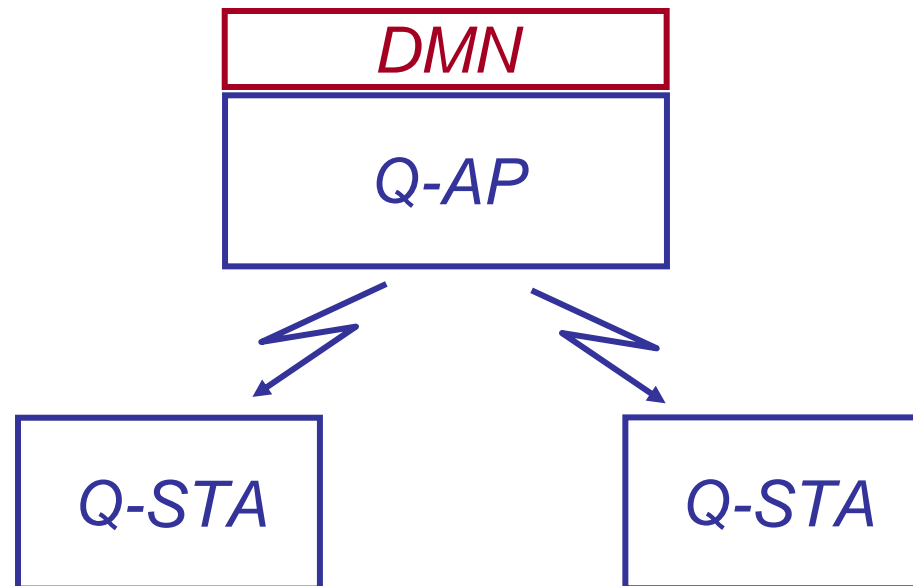
- Listener = A device that consumes a data stream

Qat Declarations

Declaration	Meaning
TalkerAdvertise	“I have a stream if you want it”
TalkerFailed	“I have a stream, but you can’t get it”
ListenerReady	“I (we) want the stream and have network resource available to receive it”
ListenerReadyFailed	“We want the stream and some can receive it and some can NOT”
ListenerAskingFailed	“I (we) want the stream, but do NOT have network resources to receive it”

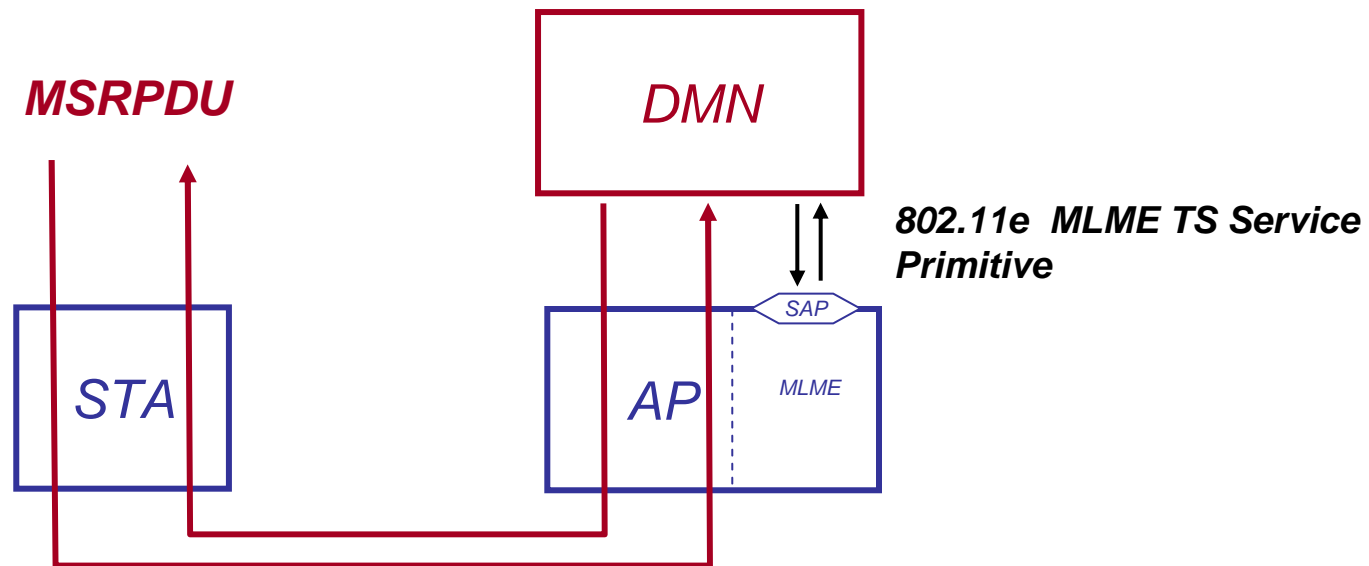
Designated MSRP Node

- On a 802.11 Network, the QoS Access Point (QAP) acts as the Designated MSRP Node (DMN).
- DMN = A MSRP “proxy” for the shared media network
 - Qat uses the DMN to map shared media QoS protocols to/from MSRP

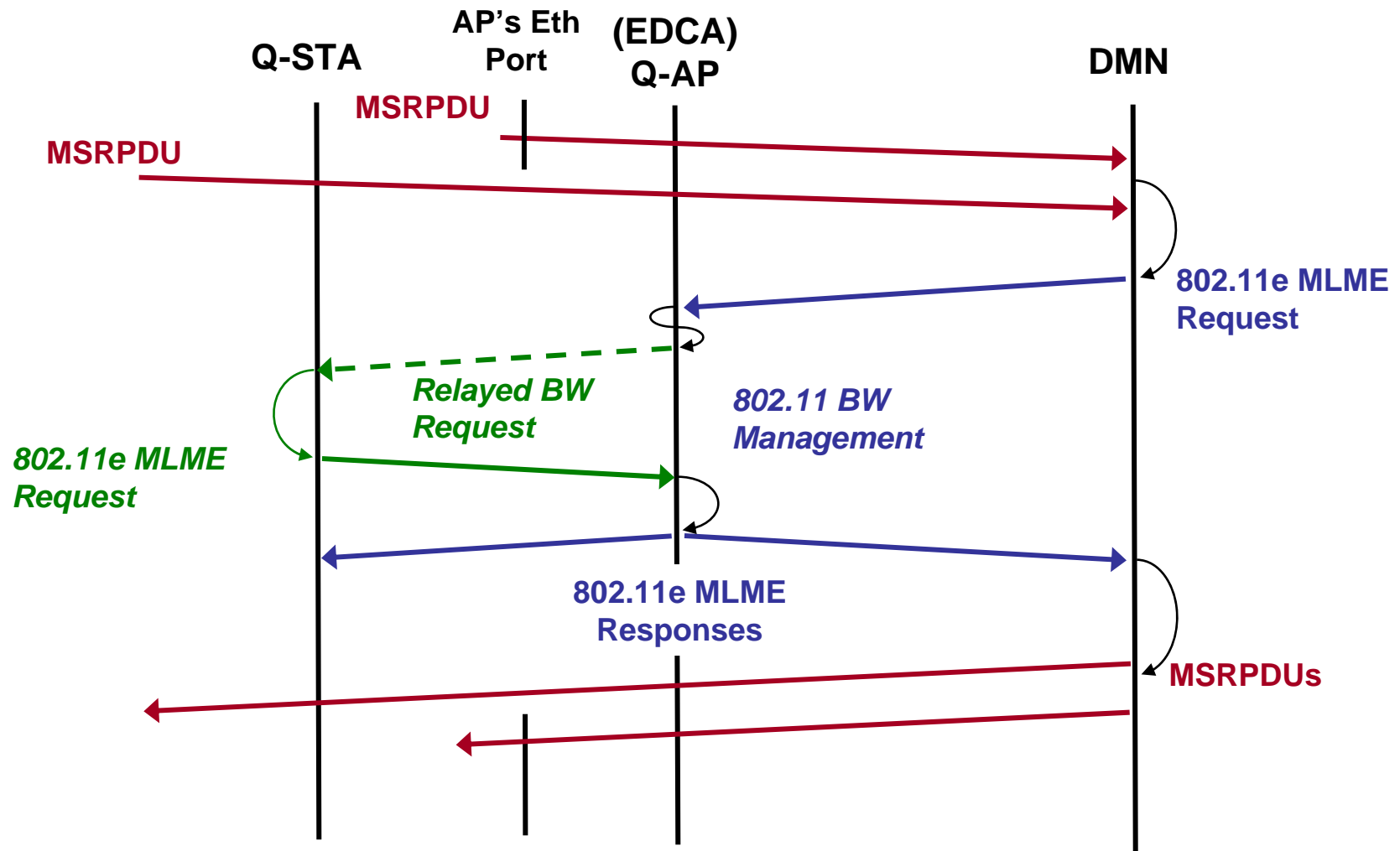


MSRPDU Handling

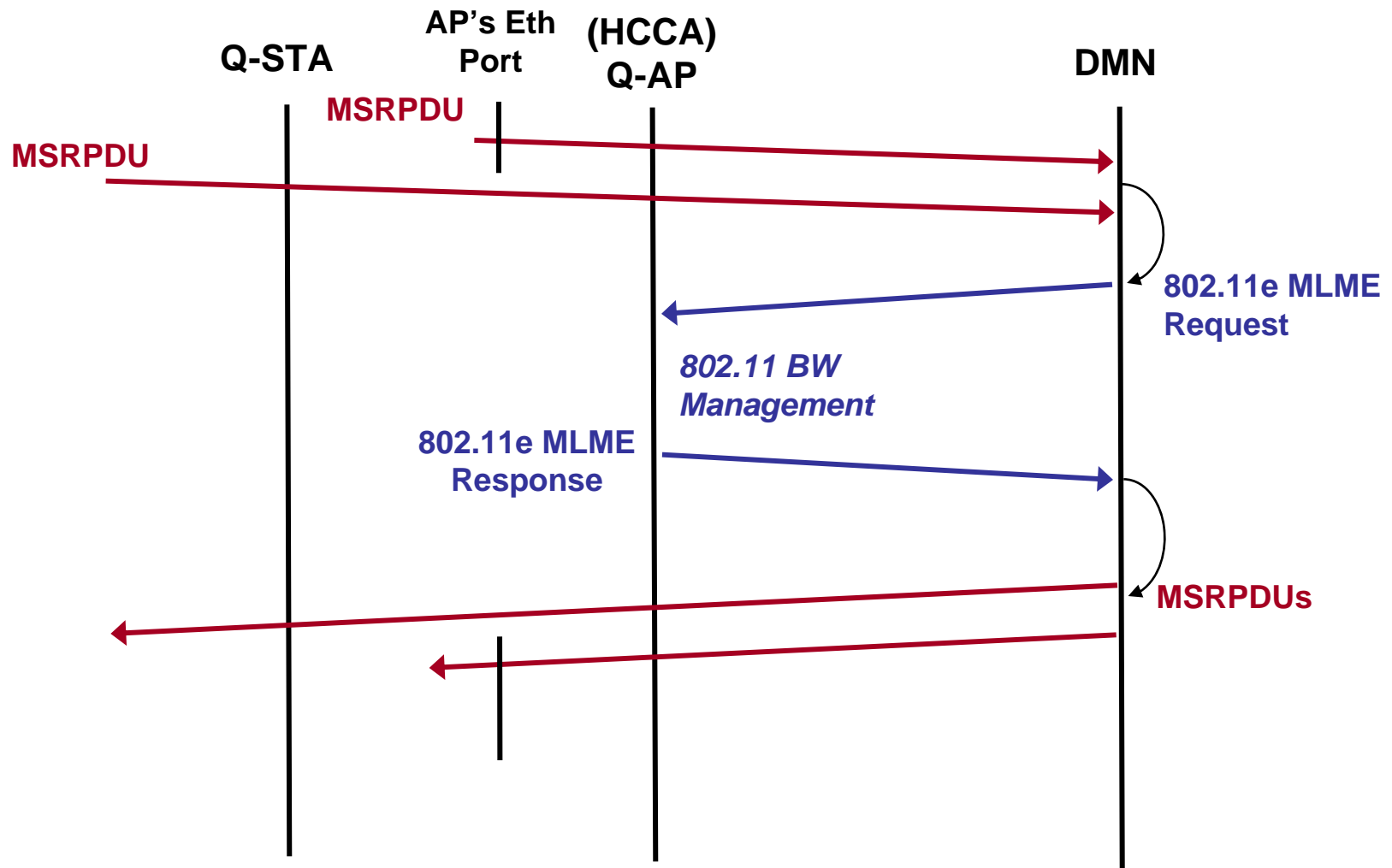
- MSRPDU are transparently transported by STA to AP in 802.11 data frames and delivered to the DMN
- DMN interacts with the AP through the AP's MLME SAP



MSRP / 802.11e Flow for EDCA Q-AP

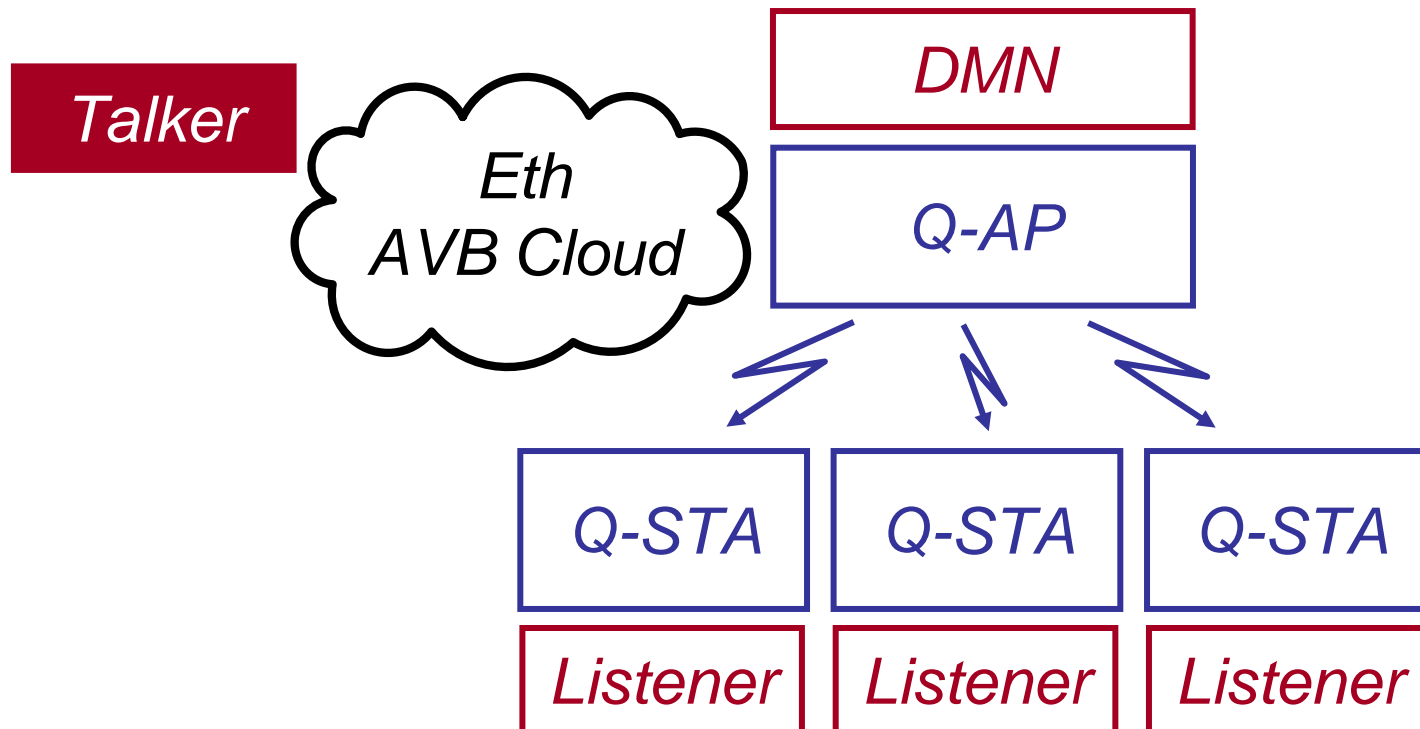


MSRP / 802.11e Flow for HCCA Q-AP



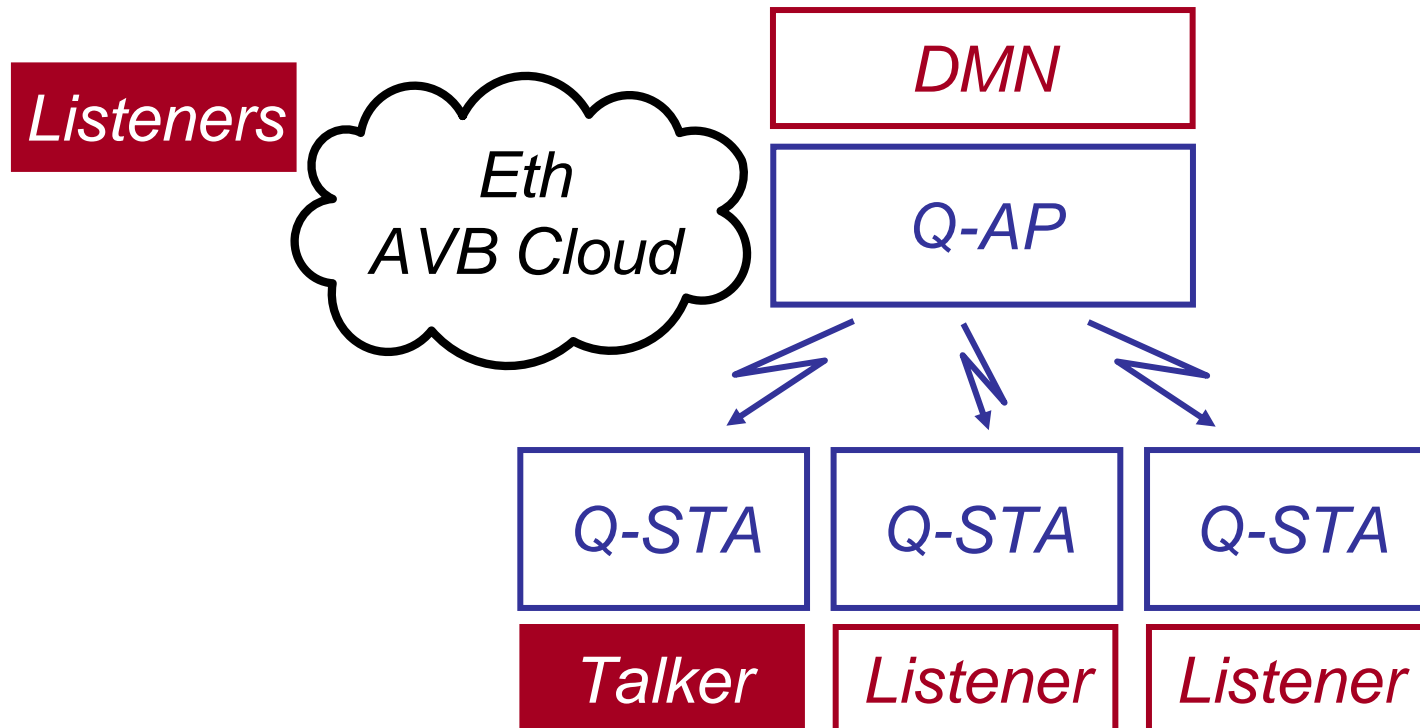
Scenario 1

- Talker is bridged by 802.11 AP
- Listeners are 802.11 Stations



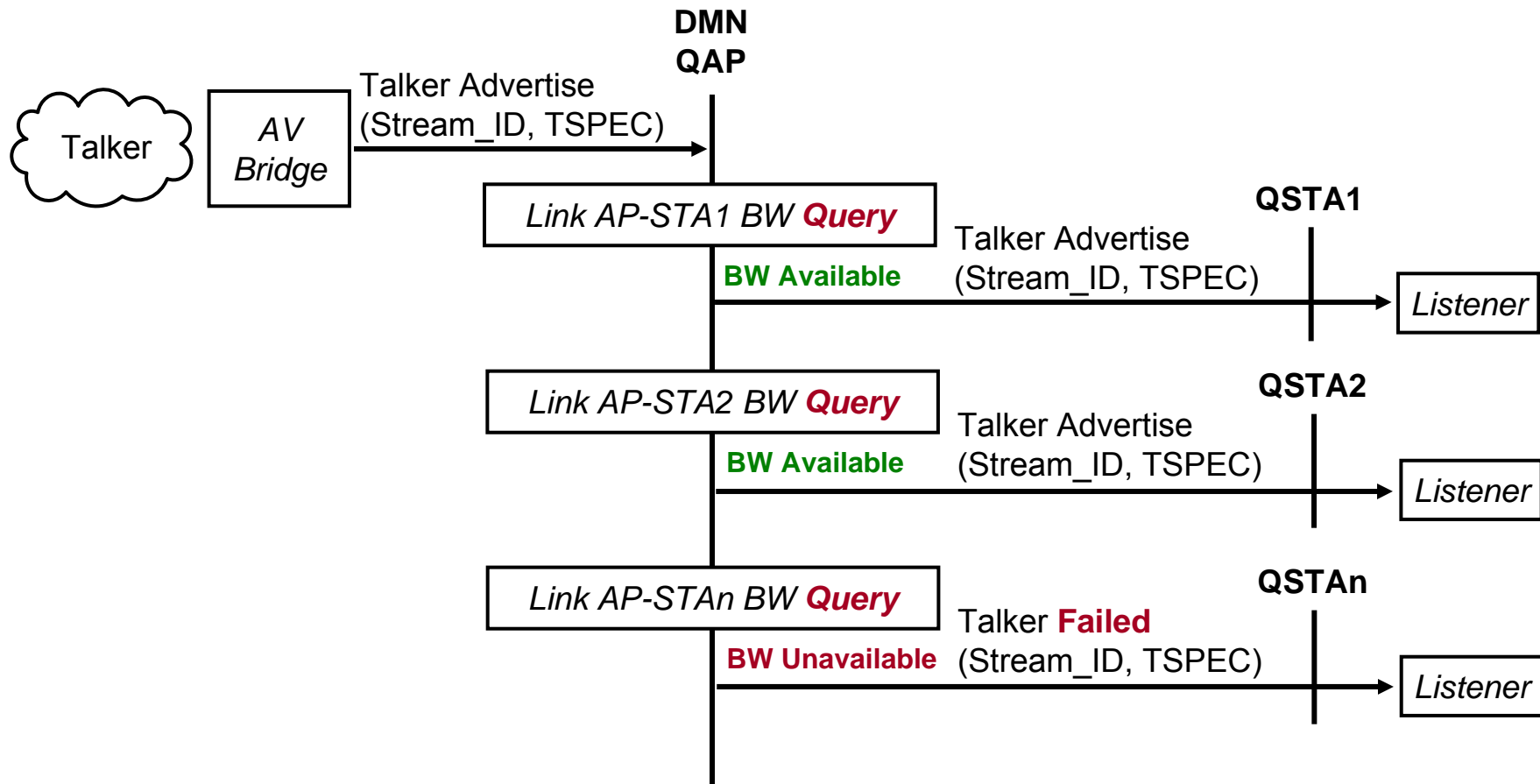
Scenario 2

- Talker is 802.11 Station
- Listeners are bridged by 802.1 AP and 802.11 Stations



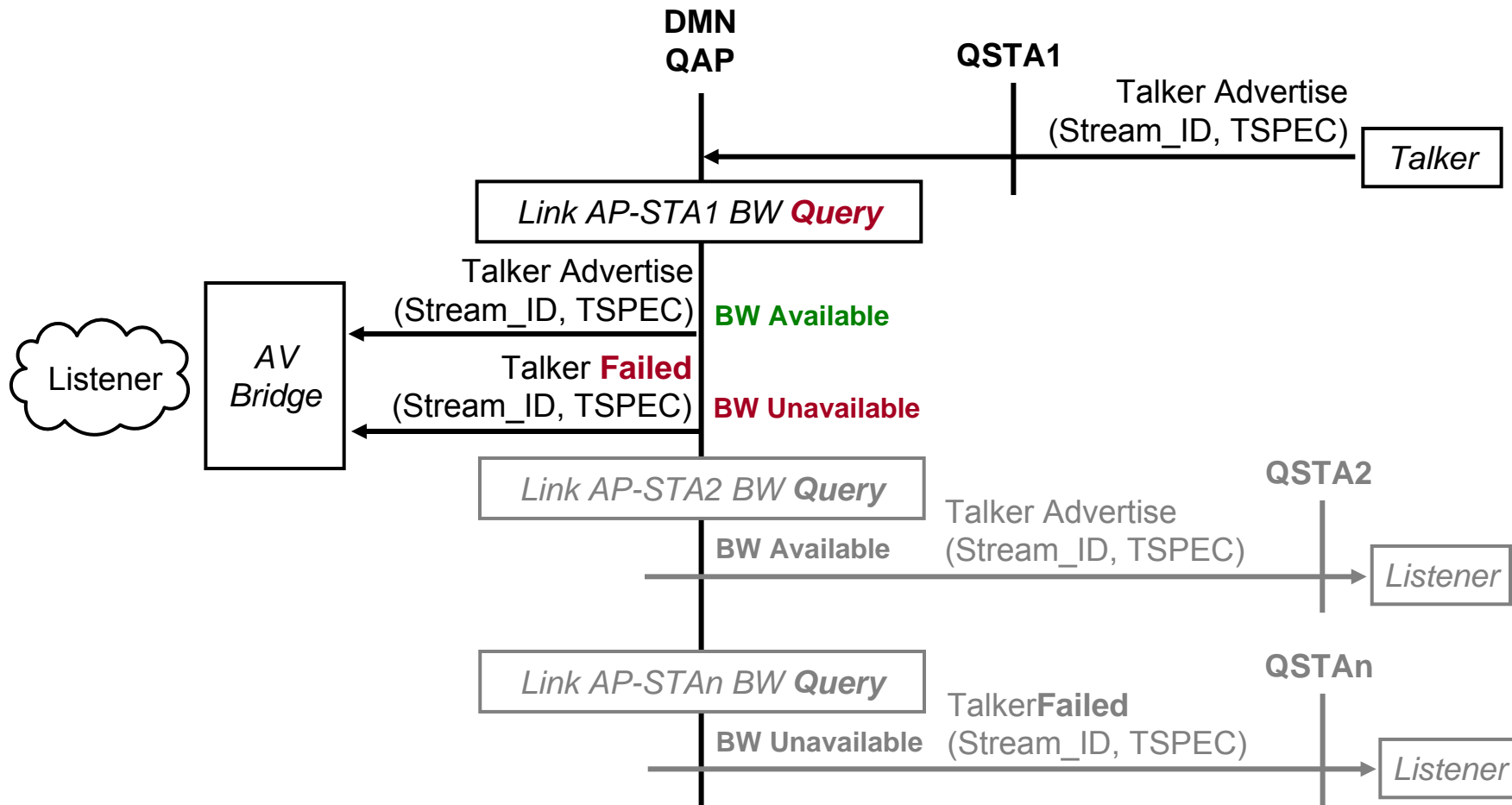
Talker Advertise

1. Talker Advertise message bridged by the AP



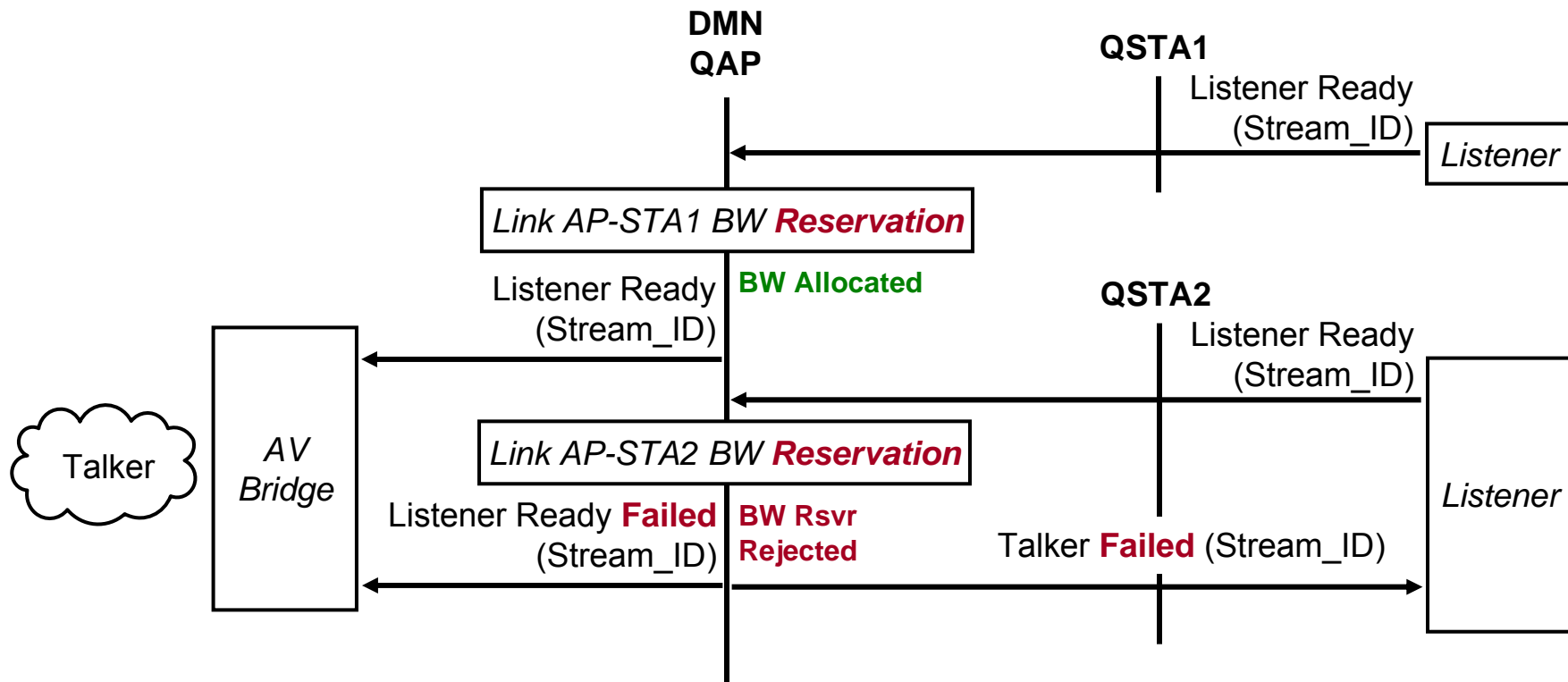
Talker Advertise

2. Talker Advertise message originated from STA



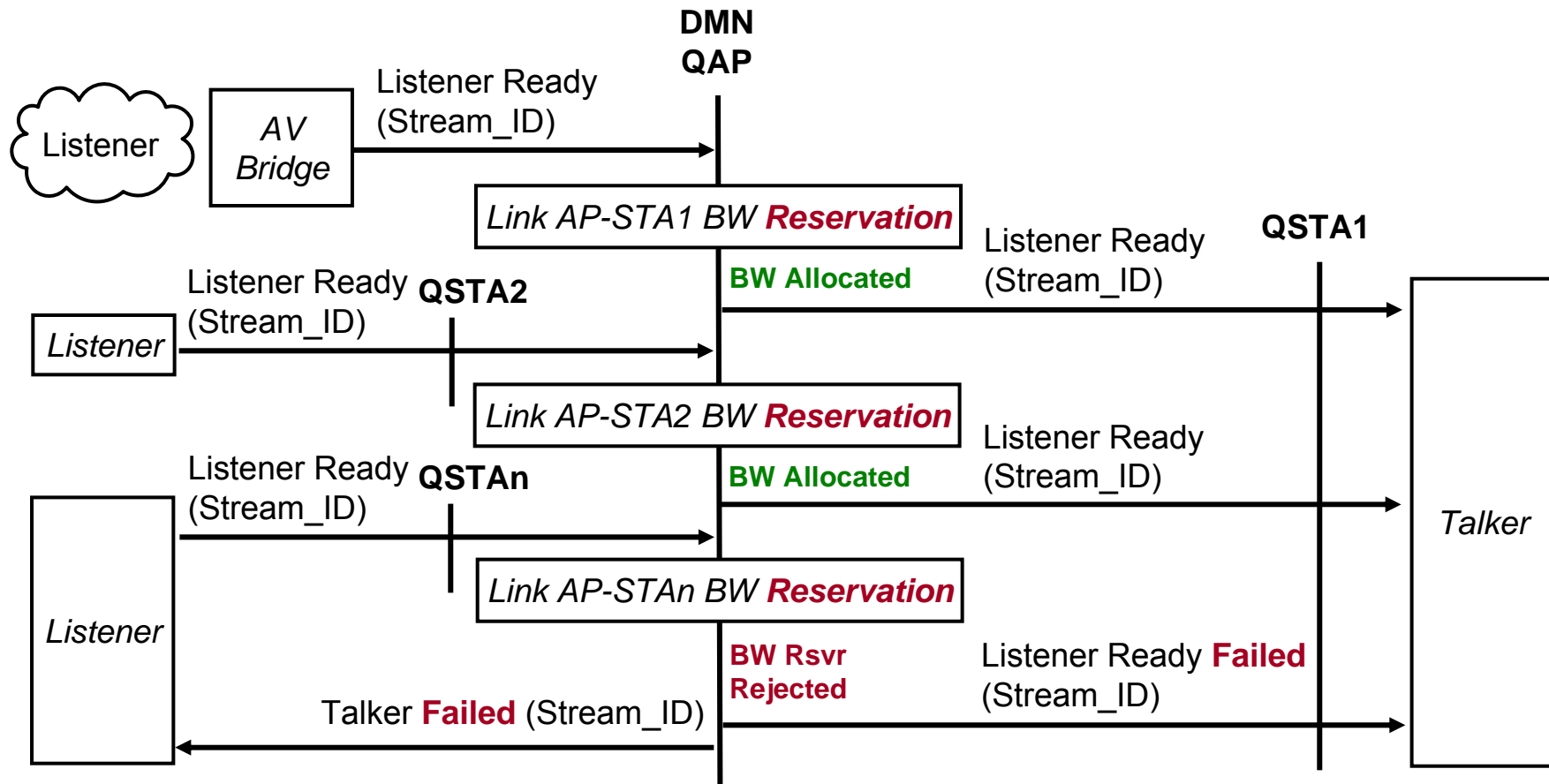
Listener Ready

1. Listener Ready message to a bridged Talker



Listener Ready

2. Listener Ready message to a **STA Talker**



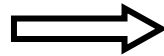
MLME Service Primitive for AVB Bandwidth Management

1. MLME Primitives

- BW Reservation: MLME-ADDTS
- BW Relinquish: MLME-DELTS
- BW Query: missing primitive
- AP to STA BW Request?: *missing protocol ? (not required for HCCA)*

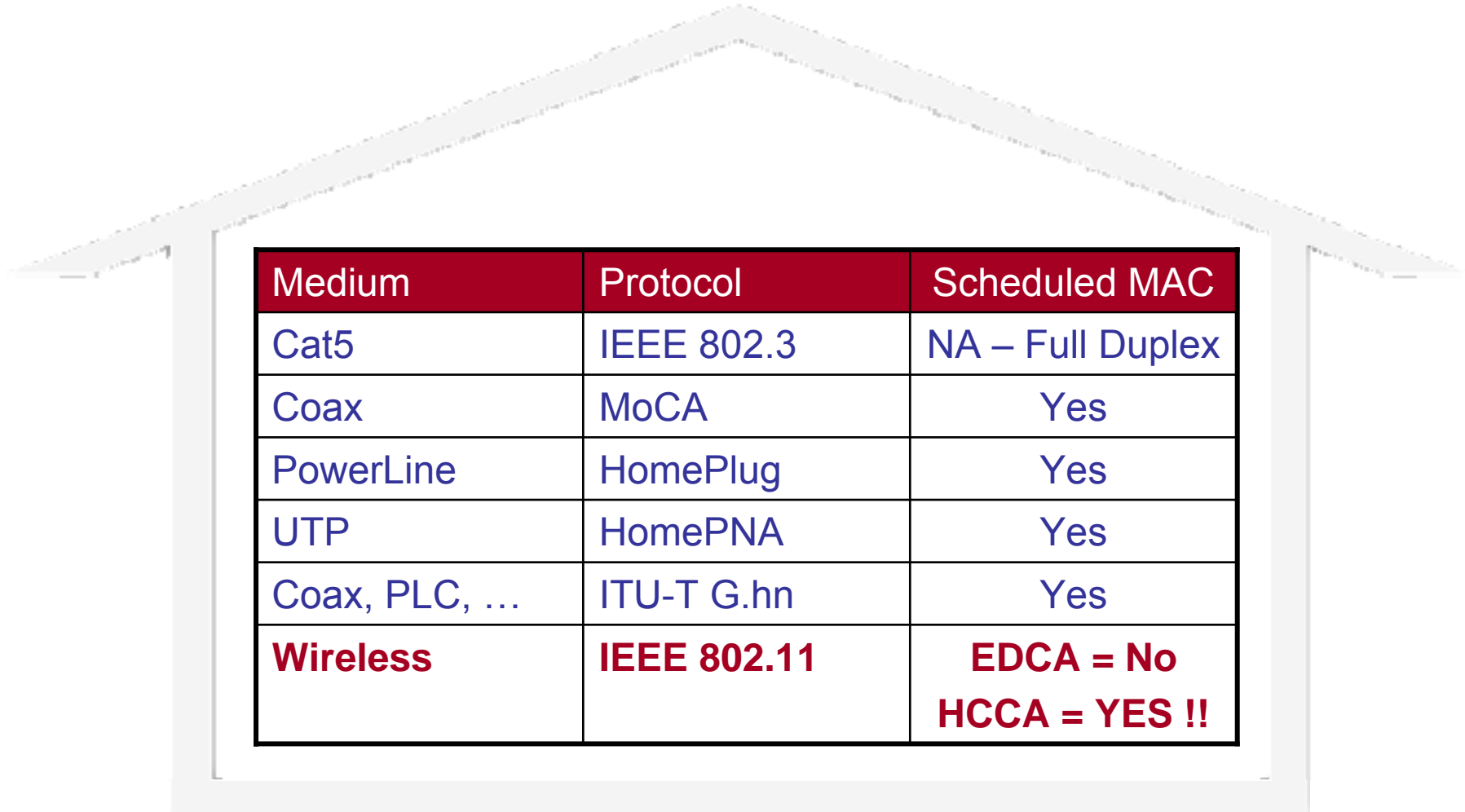
2. Additional task: 802.1AVB TSPEC to 802.11 TSPEC mapping...

802.1 AVB TSPEC
Maximum Frame Size
Maximum Frame Rate
Accumulated Maximum Latency



802.11 TSPEC	
Nominal MSDU Size	Mean Data Rate
Maximum MSDU Size	Peak Data Rate
Minimum Service Interval	Burst Size
Maximum Service Interval	Delay Bound
Inactivity Interval	Minimum PHY Rate
Suspension Interval	Surplus BW Allowance
Service Start Time	Medium Time
Minimum Data Rate	

Heterogeneous Home Network QoS



Medium	Protocol	Scheduled MAC
Cat5	IEEE 802.3	NA – Full Duplex
Coax	MoCA	Yes
PowerLine	HomePlug	Yes
UTP	HomePNA	Yes
Coax, PLC, ...	ITU-T G.hn	Yes
Wireless	IEEE 802.11	EDCA = No HCCA = YES !!



Questions ?

Thank you