

Codec Operation Point

draft-westerlund-avtext-codec-operation-point-00

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IPR Disclosure

› <http://datatracker.ietf.org/ipr/1701/>

Presentation Goal

- › WG consensus that it is a desired feature
- › WG consensus on suitability of proposed solution

Problem and Motivation

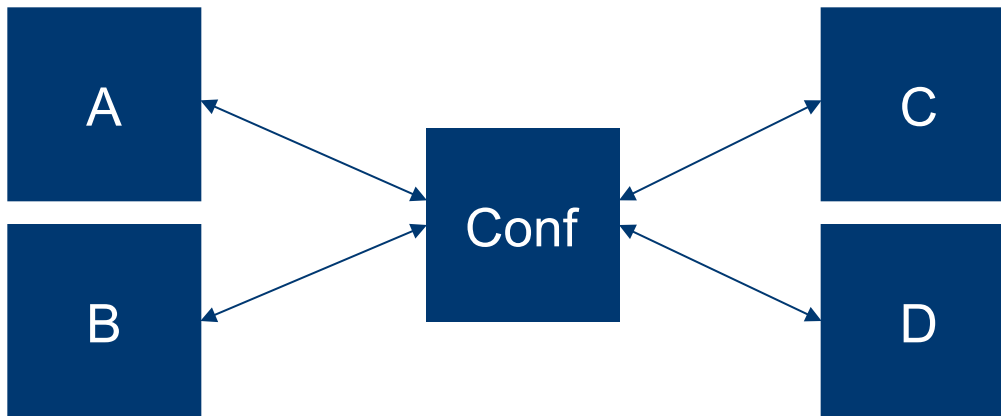
- › Large diversity of end-points in multimedia sessions
 - Large diversity in end-point capabilities; different types of end-points
 - End-points connecting with various access
- › Optimum use of media changes dynamically within session
 - User Interface changes – direct user interaction
 - CPU power re-allocation
 - Dynamically changing network characteristics
 - › Available bandwidth
 - › Effective MTU and packet rate restrictions
 - › Loss rate and loss characteristics
- › Codecs are often dynamically configurable
 - Local configuration on sender side
 - Many and inter-related configuration parameters
- › Dynamic media codec configuration not feasible with any existing mechanism
 - SDP is typically not sufficiently dynamic, detailed and efficient for this
 - RTCP reports focus on network characteristics and do not map directly back to the codec configuration, risking ambiguity

Wanted Functionality

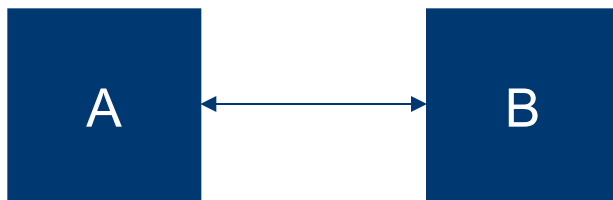
- › Allow a media receiver to dynamically request certain values for a set of encoding parameters used at a media sender in an established session
- › The set of available encoding parameters should be defined
 - Sample encoding parameters are:
 - › Video resolution
 - › Video framerate
 - › Audio sampling rate
 - › Number of media channels
 - › ...
- › The result of SDP offer / answer describes session “outer limits” for encoding parameters, not to be exceeded
 - We only propose to allow dynamic changes within those limits

Main Topologies

› Centralized (Star) Conference



› Point-to-point



Multimedia conferencing is main targeted application

Point-to-Point Sample Use Case

Control Video Resolution

Point-to-Point Use Case Control Video Resolution

Establishing session,
before making use of
proposed functionality

1. I can *receive*
level 1.3 (for
example max
352x288 at 30 Hz)

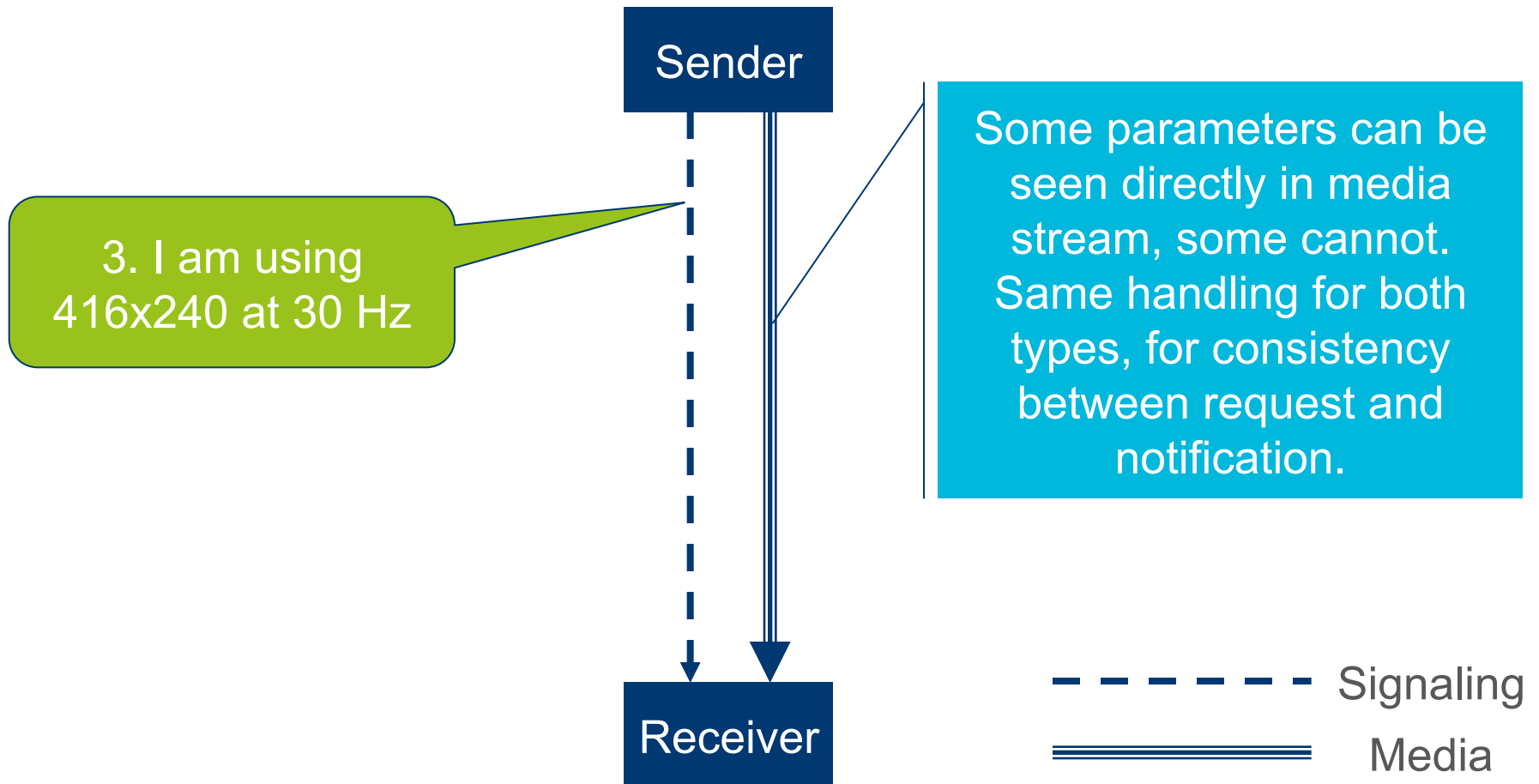
Sender

2. OK

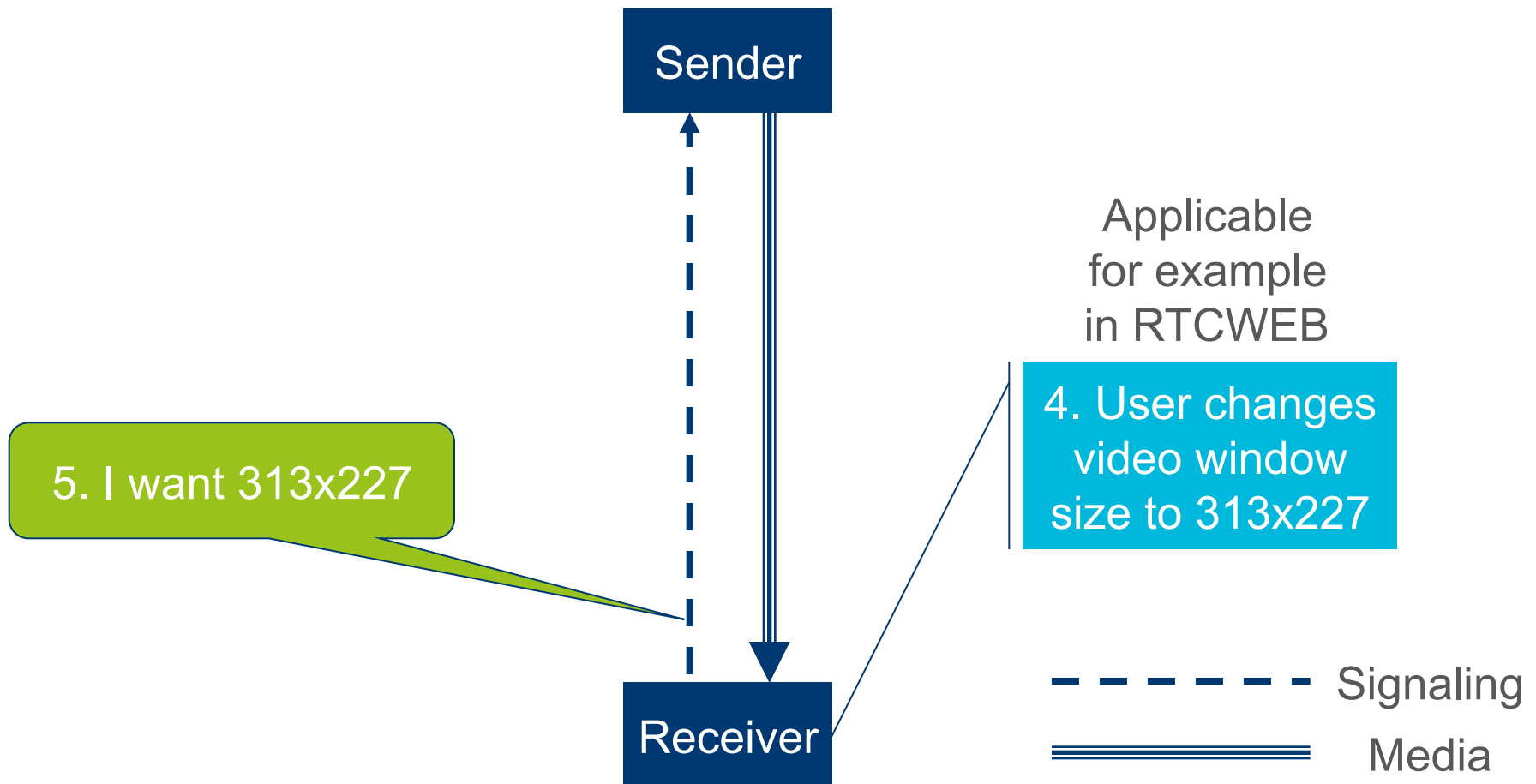
Receiver

— . — . — SIP / SDP

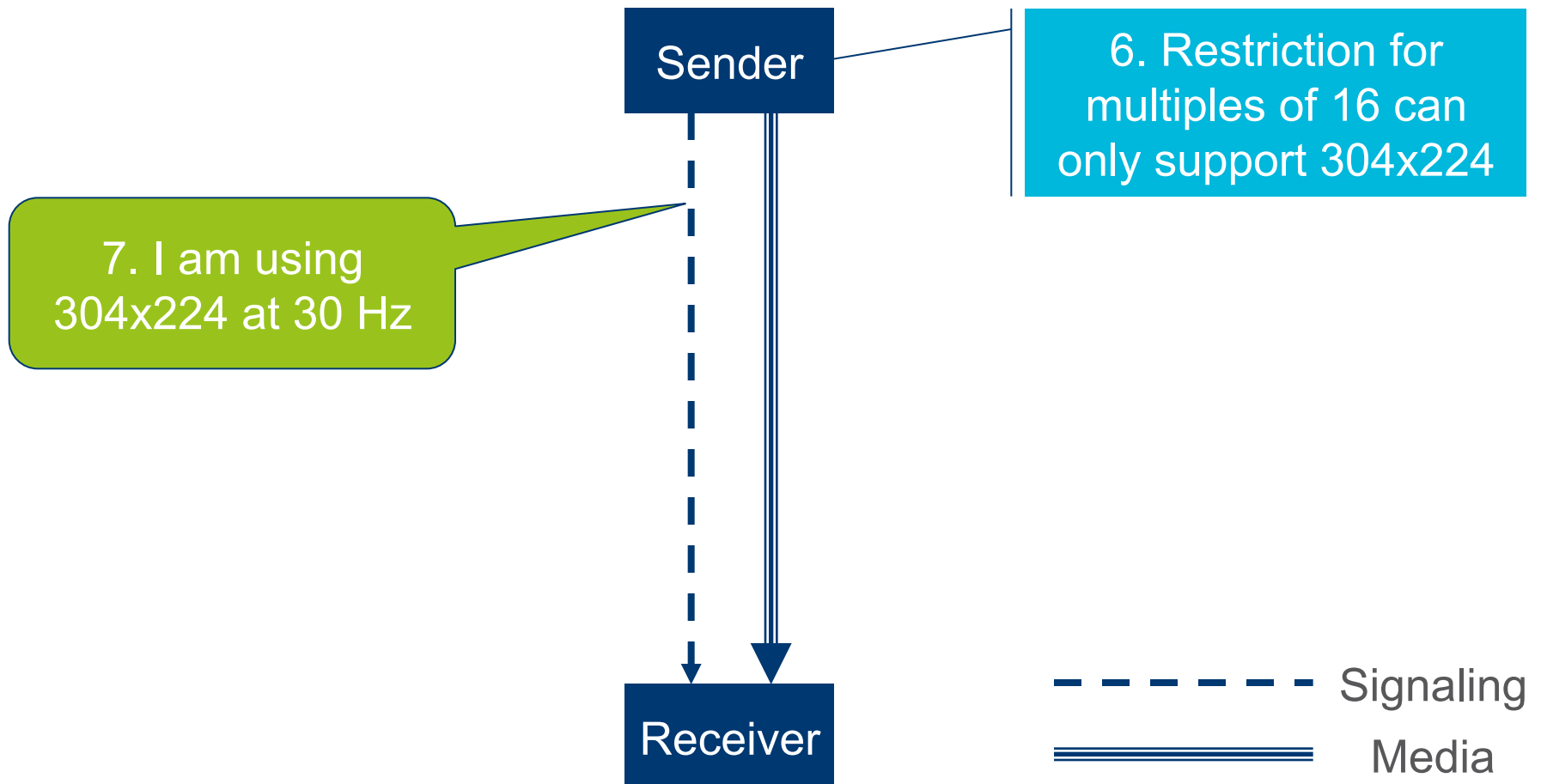
Point-to-Point Use Case Control Video Resolution



Point-to-Point Use Case Control Video Resolution



Point-to-Point Use Case Control Video Resolution



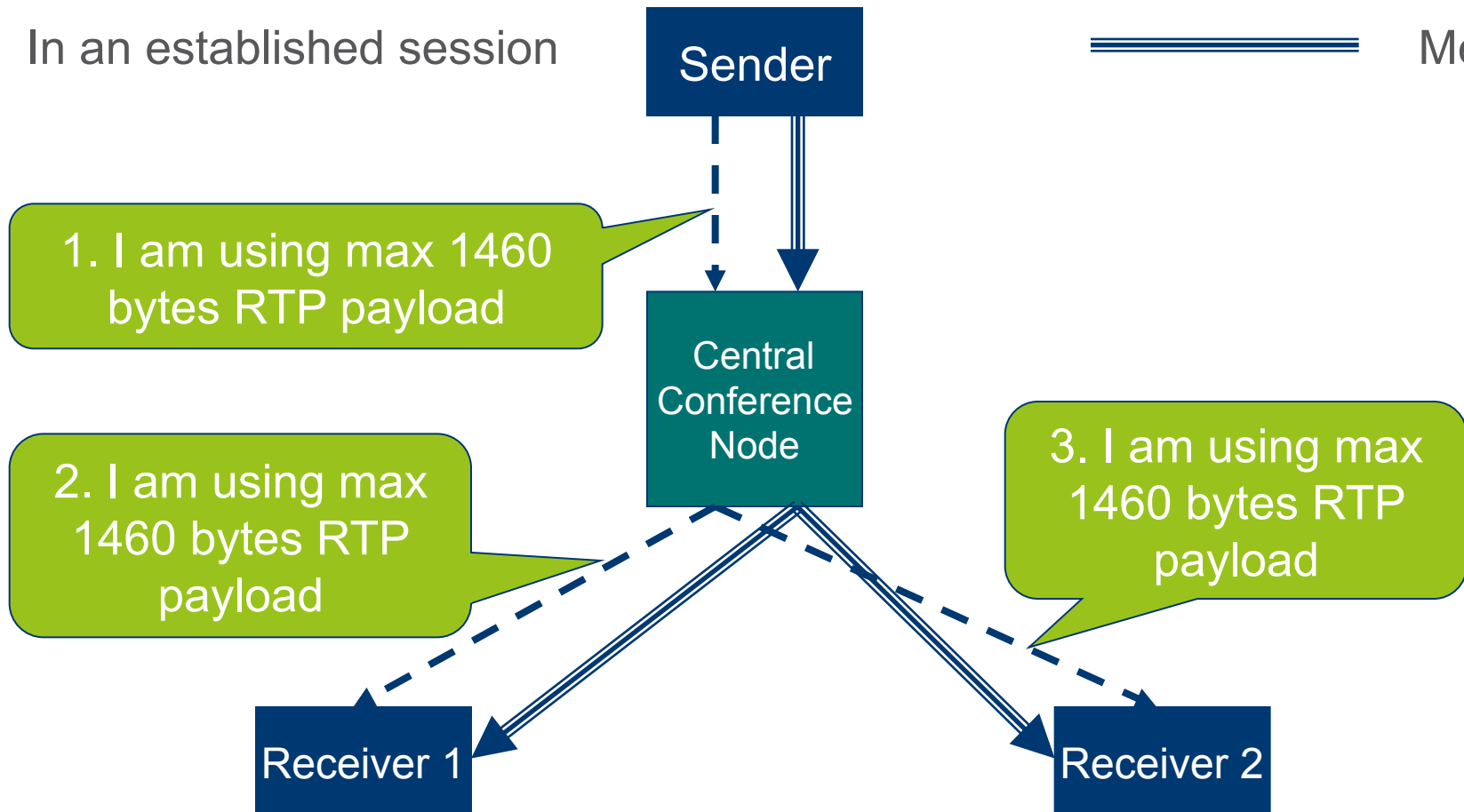
Conference Sample Use Case

Change RTP Packet Size

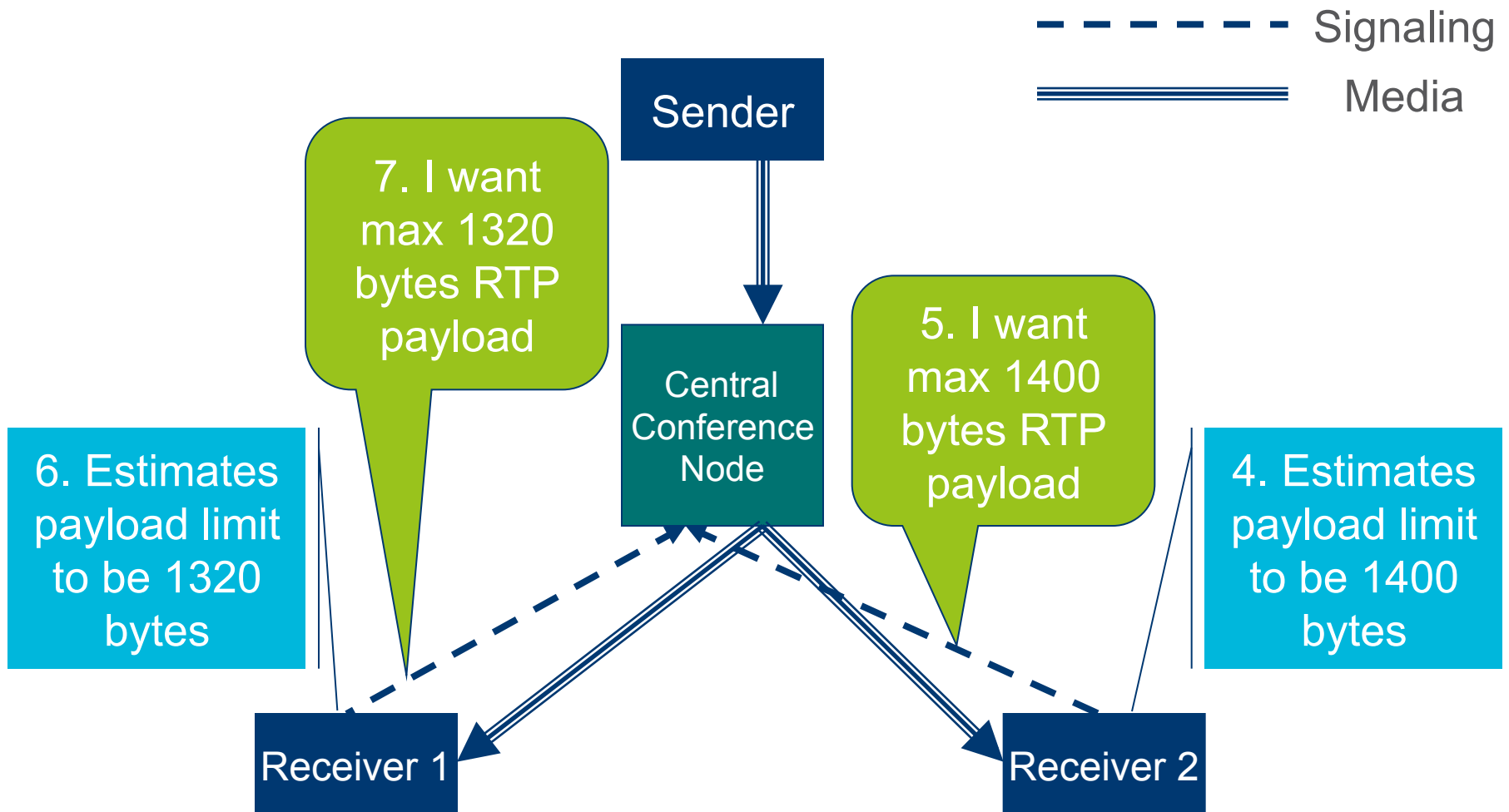
Conference Use Case Change RTP Packet Size

In an established session

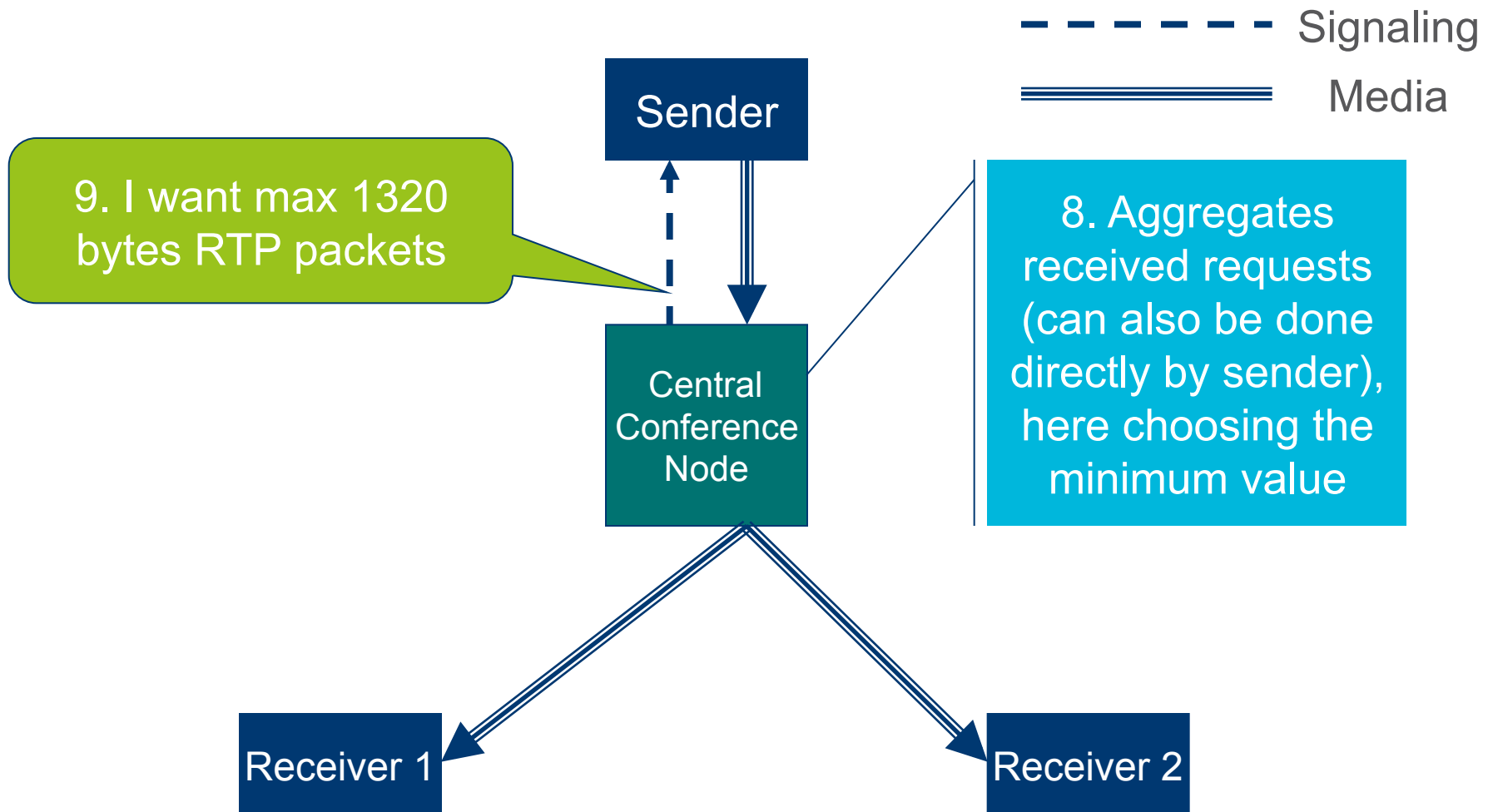
----- Signaling
==== Media



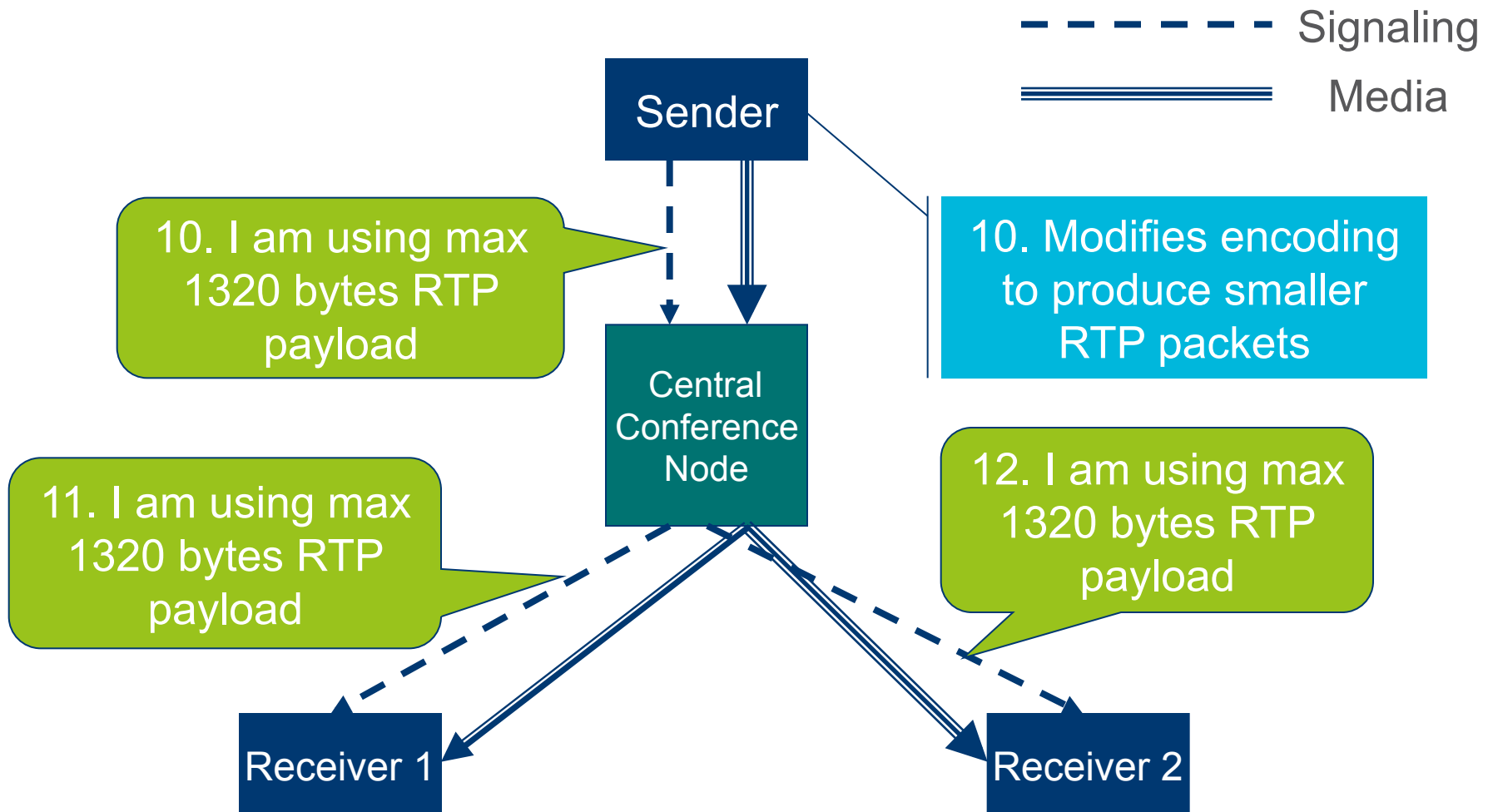
Conference Use Case Change RTP Packet Size



Conference Use Case Change RTP Packet Size



Conference Use Case Change RTP Packet Size

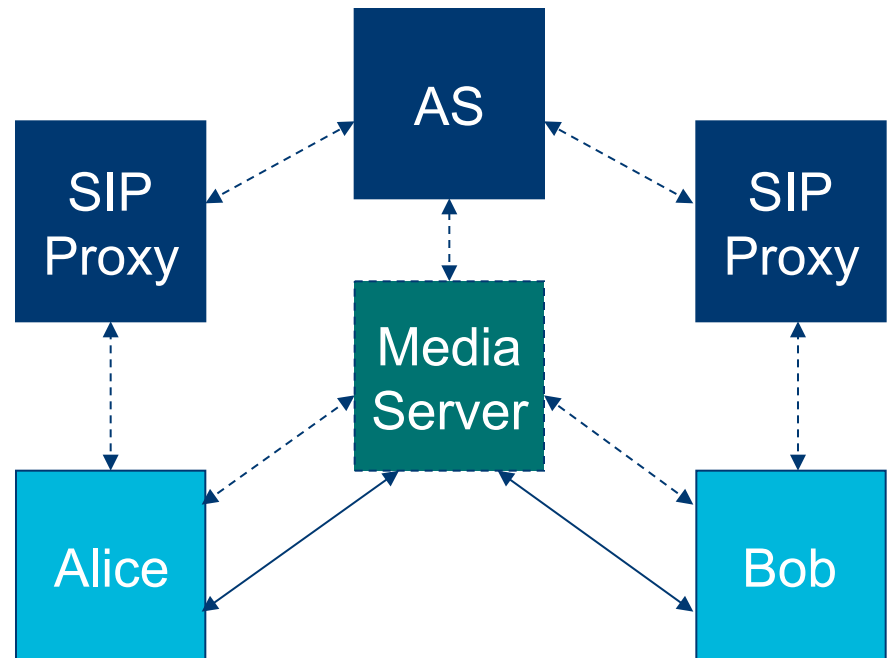


WG Interest

- › Are the described functionalities a wanted feature?

Assumed Signaling System

- › Different Topology than the media plane
- › Application Server (AS) handles application session signaling, especially for multi-party
- › Any solution must work with service established by SIP/SDP signaling



Chosen Signaling Technology

- › Media plane signaling chosen; extend CCM (RFC 5104)
 - Responsive
 - Bandwidth efficient
 - Signaling has direct impact on media streams
 - Localized to codec and media stream; small session impact
- › Parameter outer limits are defined by SDP O/A, as before
- › Capability for solution is signaled in SDP

Solution Overview

- › Three messages
 - Notification of used parameter values
 - Request new parameter values
 - Status (return code) of request
- › A set of pre-defined but extensible parameter types
- › Media sender decides what values to actually use
- › draft-westerlund-avtext-codec-operation-point-00

Solution Overview

All messages have SSRC of sender and targeted stream, from RFC 5104



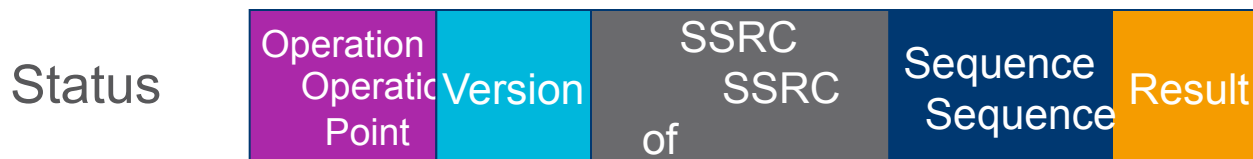
Heads-up that any parameter changed

One SSRC can use multiple Payload Types



Request is delta from Notification

Allows multiple & repeated requests; RTCP is lossy



Allows Requester to know if media sender has taken Request into account, since media sender need not follow request exactly

WG Opinion

- › Does the WG believe this solution to be reasonable?