

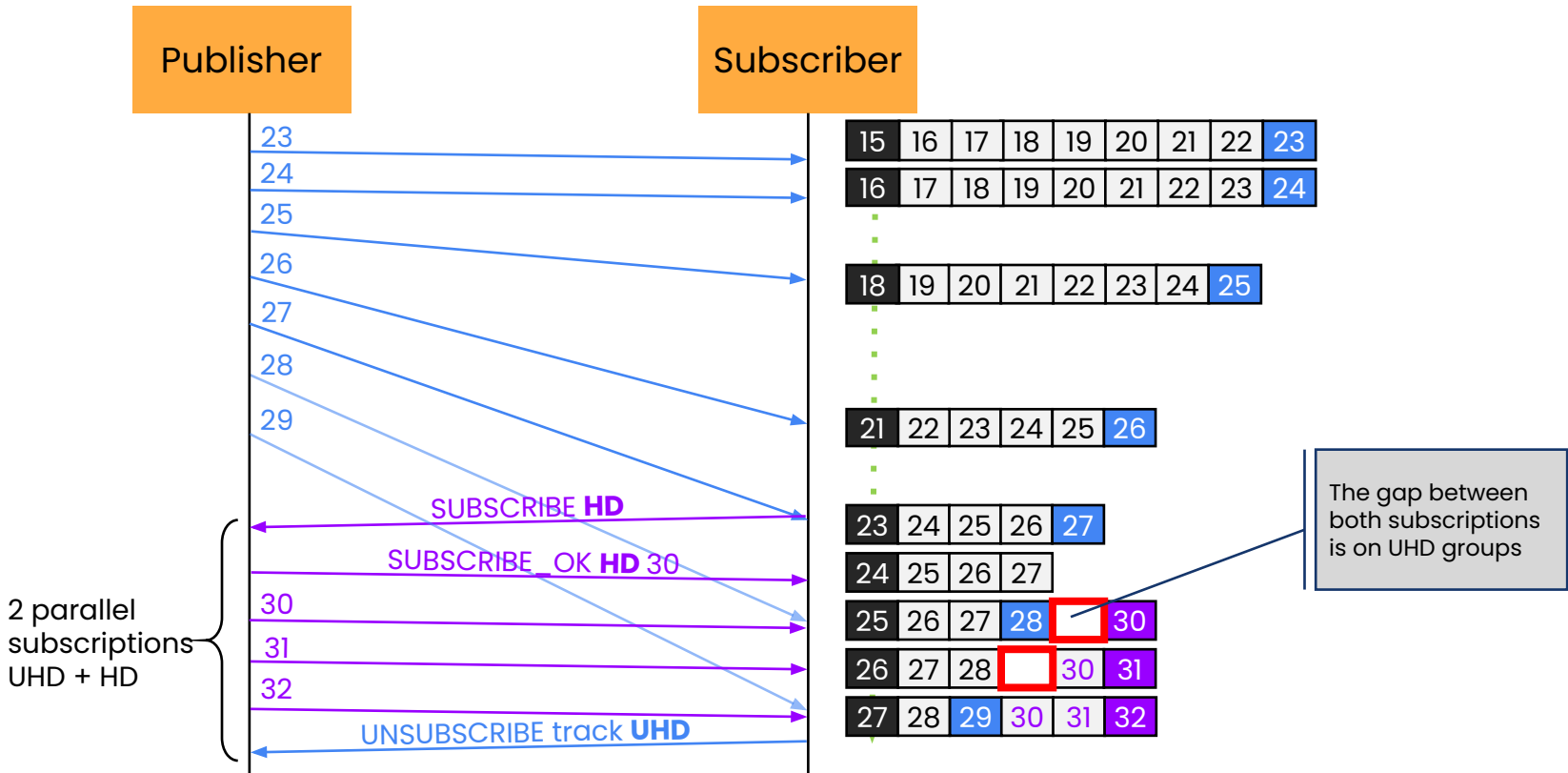
# Switching between streams

Gwendal Simon - Synamedia  
Will Law - Akamai  
Mike English - Norsk

IETF #121 Dublin, Nov 2024



# ABR 1: Keep Subscribe Until Gap is Filled

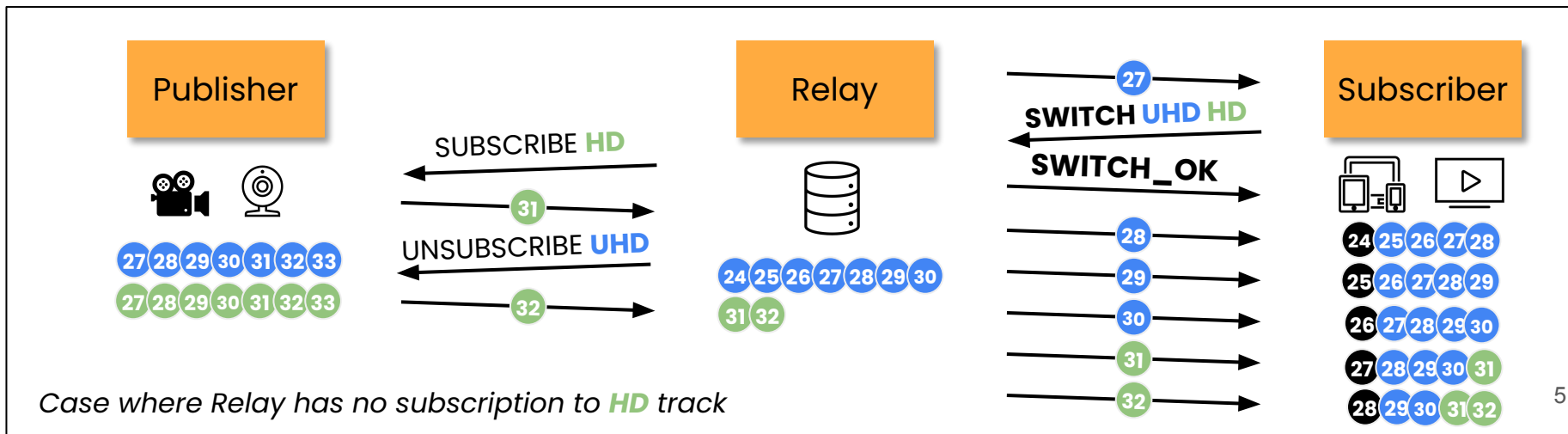
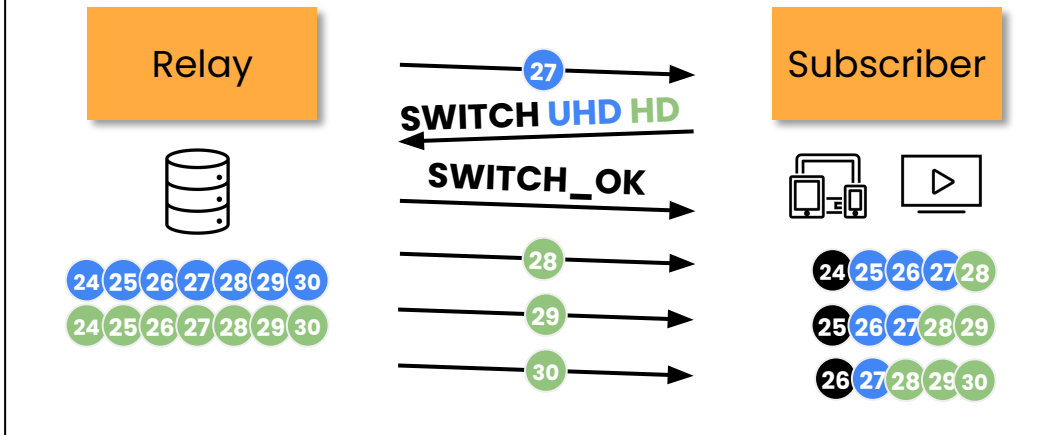




# Introducing SWITCH

The subscriber initiates a SWITCH message to request that the relay changes the track of the subscriber's ongoing subscription (from UHD to HD).

Case where Relay has ongoing subscriptions to HD track



Case where Relay has no subscription to HD track

# SWITCH API proposal

The goal of this API is to avoid race-conditions and duplicate in-flight data when transitioning between tracks carrying identical content at different bitrates.

## **SWITCH** (subscriptionID, newTrackName, authInfo)

**subscriptionID**: the ID of the current SUBSCRIPTION. This ID will be maintained across the switch.

**newTrackName**: the track name you wish to switch to.

**authInfo**: an optional string defining the auth parameter to be used for the new track. If not supplied, then any existing auth parameter for the initial subscription is reapplied.

Upon completion of the switch the relay will send either

**SUBSCRIBE\_OK** (...) or

**SUBSCRIBE\_ERROR** (...)

# SWITCH API assumptions

1. The switch MUST be preceded by a SUBSCRIPTION on the same connection.
2. The switch occurs at Object 0 at the next mutual Group boundary.
3. The GroupIDs are time-synchronized between tracks.
4. The track namespace remains consistent between the two tracks. If this is an unreasonable constraint, then we can add in a track namespace attribute.
5. The Group Order remains consistent
6. The Filter Types remain consistent
7. The initial subscription parameters of Delivery Timeout and Max Cache duration are preserved.

# Server action upon receiving a SWITCH message

## **SWITCH** (subscriptionID, newTrackName, authInfo)

1. Does the relay have an existing subscription to newTrackName?
  - a. Yes - the SWITCH will be effective at the next group. "Transition\_ID" is the first groupID next to the current one. Goto [2]
  - b. No - Issue a SUBSCRIBE for newTrackName, using the same Track Namespace and other parameters as were present in the prior subscription described by subscriptionID. If authInfo is supplied, then use that in place of any prior auth. At the reception of SUBSCRIBE\_OK, "transition\_ID" is the groupID indicated in the response from parent.
2. Wait until Group ID of the new track matches "transition ID", then start forwarding that track to the client. Once Object 0 is available on the new track, send that to the client. In parallel, send a SUBSCRIBE\_OK to the client, in which the startGroup is set to "transition ID" at which the switch was made
3. If the Relay does not have any other ongoing subscription to oldTrackName, then UNSUBSCRIBE oldTrackName.