GCCG working group report – September 22, 2020

Original Activity Proposal -- Objectives

1) Determine if a common set of requirements for Ground-to-Cloud-to-Cloud-to-Ground media essence communications exists.

- Yes, common requirements exist

2) If common requirements exist, establish a common technical approach (perhaps to be documented in a VSF Technical Recommendation) for communication of media essences from G-C-C-G.

- Common Requirements Exist

- Common technical approach seems feasible
- More than one operating point

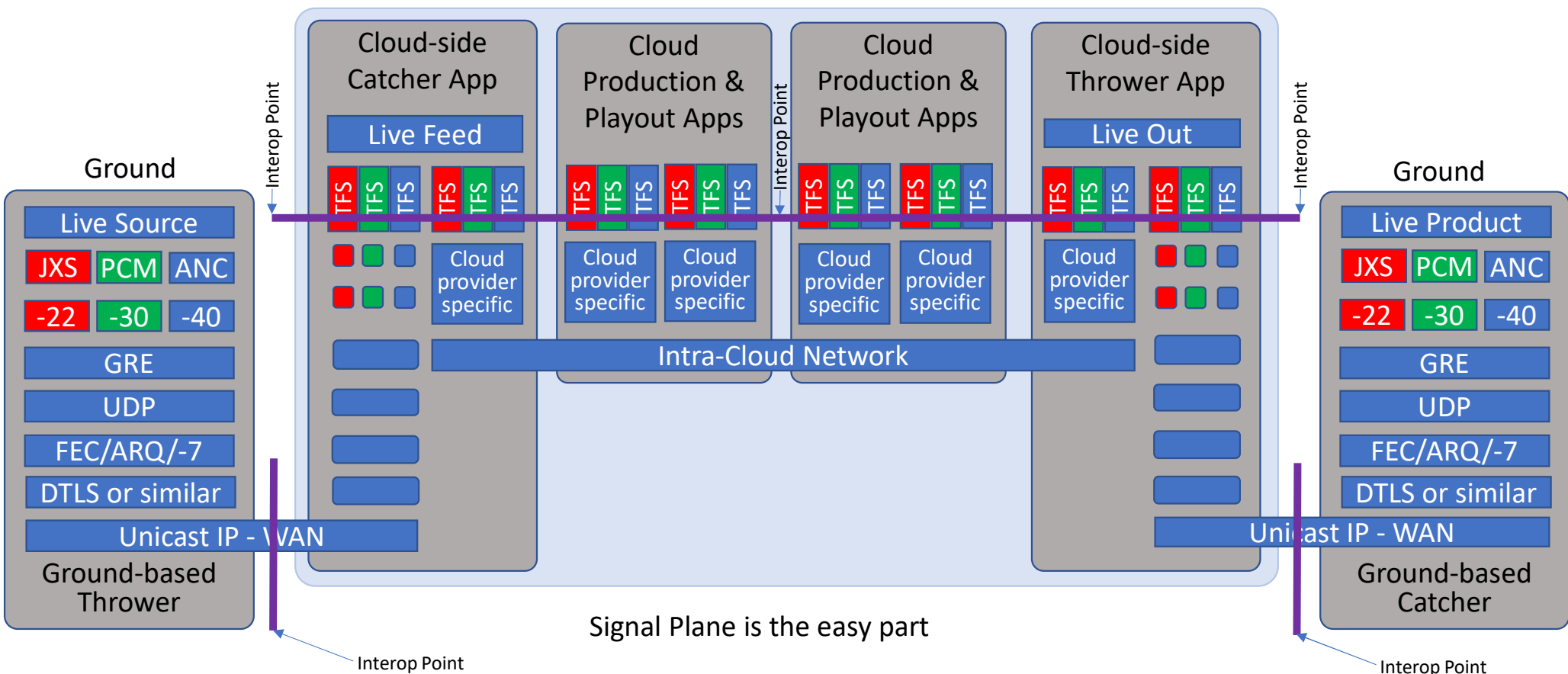VSF September Meeting (Virtual)

Original Activity Proposal -- Tasks

- seek appropriate members to participate in the activity

- gather requirements through informal communication with other end-customers and cloud providers

- gather technical stakeholders and draft a technical approach if common requirements exist

- form the approach in to a VSF Technical Recommendation as appropriate

- DONE

- DONE

- WIP

- NEXT

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What are the "operating points" we see (GC,CG) (for TV)

- Uncompressed (2022-6 or 2110-20) (already defined)
- **"Broadcaster Nirvana" – super low latency, super high quality**
  - **JXS for HD @ (200m?)**
  - **Dual-path reliability model for super-good reliability @ minimum latency**

- J2K-ULL (stripes) @200
- J2K (full-frame) @120
- AVCI @ 100

- **H.264 medium-gop managed latency ~20Mbit(HD) (ULL restricted VBV buffer) $$**
  - **ARQ/RIST or dual-path model or FEC? (Typical 4:2:2/10 profile)**

- **H.264 very-long-gop (longer latency @ lower rate) (HD@3-10 Mbits, more delay)**
  - **ARQ/RIST or dual-path model or FEC? (Typical 4:2:0/8 profile)**

- Zoom / GoToMeeting / Webex – whatever gets a picture on the screen
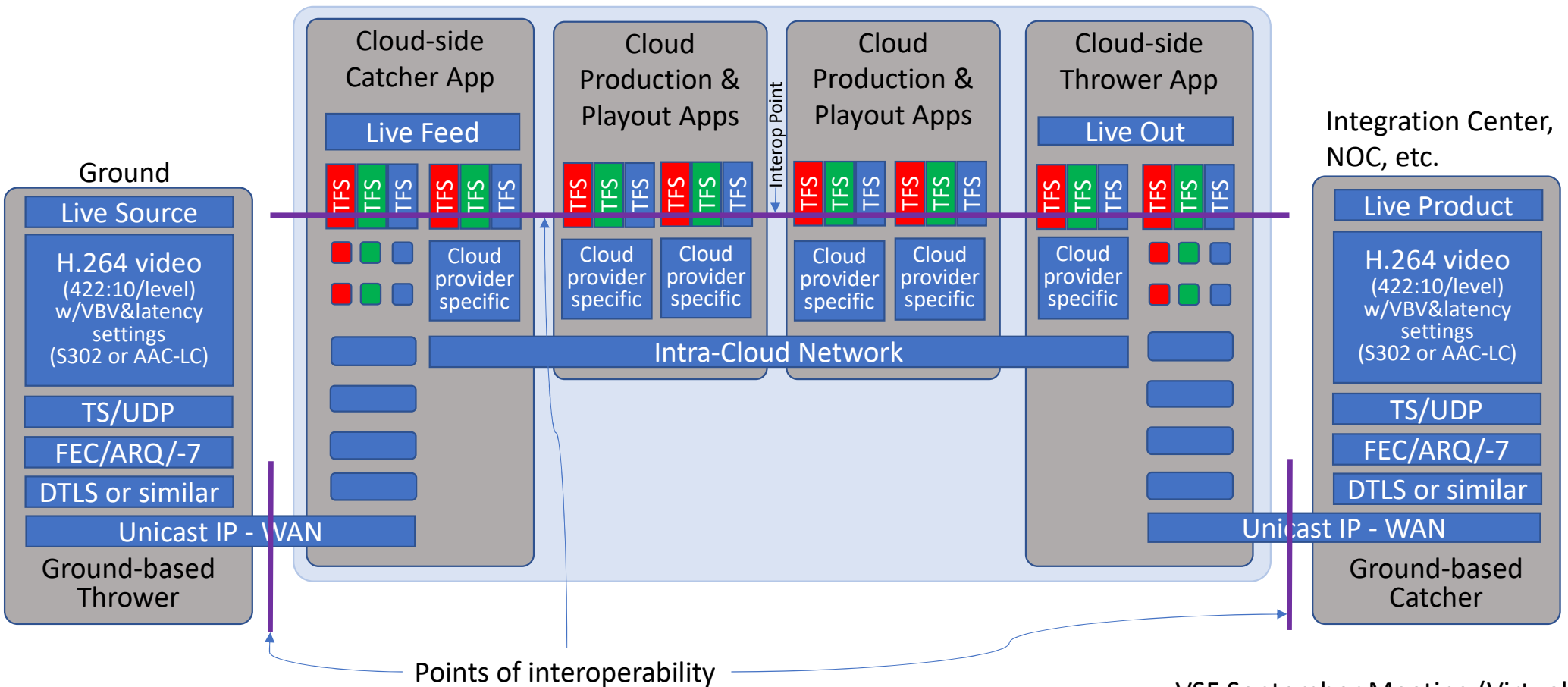 - Internet best-effort reliability work

Focus on these

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This (JXS/-22) covers the ultra-low-latency, ultra-high-quality user stories

Signal Plane is the easy part

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This (H.264ULL) covers the reasonable-latency, reasonable-bandwidth user stories

Ground

Cloud-side Catcher App

Cloud Production & Playout Apps

Cloud Production & Playout Apps

Cloud-side Thrower App

Integration Center, NOC, etc.

Live Feed

Interop Point

Live Out

Live Source

TFS TFS TFS | TFS TFS TFS

TFS TFS TFS | TFS TFS TFS

TFS TFS TFS | TFS TFS TFS

TFS TFS TFS | TFS TFS TFS

Live Product

H.264 video
(422:10/level)
w/VBV&latency
settings
(S302 or AAC-LC)

Cloud provider specific

Cloud provider specific | Cloud provider specific

Cloud provider specific | Cloud provider specific

Cloud provider specific

H.264 video
(422:10/level)
w/VBV&latency
settings
(S302 or AAC-LC)

Intra-Cloud Network

TS/UDP

FEC/ARQ/-7

DTLS or similar

Unicast IP - WAN

Ground-based Thrower

TS/UDP

FEC/ARQ/-7

DTLS or similar

Unicast IP - WAN

Ground-based Catcher

Points of interoperability

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Next Meeting of GCCG:
Thursday September 24th