CRV/SWIM WORKSHOP DISCUSSION TOPICS

17-19 September, 2024

Guam, USA

DISCUSSION TOPICS

1. SWIM Operational Service Schedule:
   a) Expected dataflows and end points? – Assume the use of the AsiaPac Telecommunication Infrastructure Routing Plan as the starting point
   b) How will FF-ICE operations be associated with existing AMHS distribution? TBC
   c) Will AMHS be replaced? Yes eventually but could be awhile.
   d) What are other XML messages (AMHS distributes IWXXM currently)?
2. Validation of SWIM service using CRV: confirmation of the terminology.
   a) SWIM Service Provider – how do we approve a vendor onto CRV and as a provider of an EMS. For example the Star Alliance decides to purchase a service from someone or create their own. Who sponsors them onto CRV, validates the service/system. Rules for connect to that service outside of the CRV.
   b) ANSP Provider/Subscriber
   c) Subscriber

DISCUSSION TOPICS (Cont'd)

3. SWIM Service Connection to CRV and Bandwidth Management: this is based on the use of a specific queue for SWIM.
   a) SWIM Service Provider
   b) ANSP Provider/subscriber
   c) Subscriber
4. AMHS/SWIM Gateway Operation:
   a) Architecture – to be confirmed as the architecture from the demo needs some work. Possibly focus on BBIS states as Gateway EMS states and BIS as Edge EMS. There is further discussion in SWIM TF, Jan 2025. All states with an EMS could be GRE tunnel connected to each other.
   b) Connecting to CRV – SWIM would connect in the same way as AMHS.
   c) Dual operations AMHS and SWIM - TBC

DISCUSSION TOPICS (Cont'd)

5. SWIM Performance Requirement:
   a) Latency – discussed, see the slides below
   b) Service Availability – discussed, see the slides below
   c) Failure Coordination – CRV processes described. It is a layered approach, the user contacts the appropriate EMS providers call centre, network is investigated as appropriate via that organisations network teams. The network team will escalate, raise a ticket with PCCWG if CRV related. PCCW also raise tickets proactively. Account

SWIM IMPLEMENTATION PIONEER GROUP LESSONS LEARNT AND EXPECTATIONS FOR NEW CRV

It is however assumed that the pseudo-CRV has the same performance characteristics as the operational CRV - Correct

Surveillance sharing at the update rate of 1 sec per update, the bandwidth of 2Mbps is insufficient.

For all other types of services this bandwidth limit sufficient.

Ideally the following VPN partitions should be provisioned for:

SWIM Ops, Test, R&D – SWIM for all stakeholders

ANSP SWIM Ops, Test, R&D – SWIM for ANSPs Only

AMHS Ops, Test – Legacy

Management Ops, Test – CRV managed devices, ANSPs read-only

The testing element has been discussed at CRV OG and Ad Hoc meetings, the expectation is that this meeting will provide some details on how we can progressing testing and implementation of new services. The discussion also highlighted the need for SWIM TF to determine what level of a QoS is required and options were provided as well as the IANA DSCP documentation.

SWIM IMPLEMENTATION PIONEER GROUP LESSONS LEARNT AND EXPECTATIONS FOR NEW CRV

It is expected that the new CRV will be able to support mesh type connections between all participants. This means that any participant within the new CRV will be able to reach any other participant in the new CRV without the need to activate the vendor to perform that connection. The current architecture is a compromise due to the limitations on CRV via the GRE tunnels and a desire to have flexibility from a users point of view. The expectation is that when something is published the user can choose to subscribe to it without any changes required to be made on the network by anyone. This unfortunately involves exposing all traffic, systems and applications to an unprotected network meaning compliance with Annex 17 is unachieveable. The idea is that a subscriber only contacts the information provider. The bandwidth availability and requirements needs to be considered by the subscriber. The process on requesting access to the information needs to be resolved as it also includes the CRV OG/POC/Service Provider.

It is expected that the new CRV contract should be flexible enough to support bandwidths ranging from 2Mbps to 1Gbps is possible now, cost is an issue. Can we scale up?

It was found that for surveillance sharing, latency between the publication of the track message on the outgoing message queue to the time it is received in the incoming message queue can range from 2.00 secs to 0.024 sec It is not expected that the surveillance information shared via SWIM will be used for separation of aircraft. Therefore, latency can remain around the 2.00 secs mark. Achievable as this is available now. The discussion also highlighted that the architecture is introducing delay and there is a document 9869 that describes the RCP requirements.

The AMQP protocol that has been adopted for implementation in the Asia-Pacific SWIM is comparable to or potentially simpler than the X.400 protocol used by AMHS. Therefore, it is recommended that the jitter requirement of 250ms specified for data application on AMHS in the current CRV network should also be applied to SWIM in the new CRV network. The new CRV provider should also provide the option for subscriber to lower the jitter requirement to 100ms if needed. TBC with PCCWG

SWIM IMPLEMENTATION PIONEER GROUP LESSONS LEARNT AND EXPECTATIONS FOR NEW CRV

Subscribers should have the ability to independently verify, using various software tools, the latency value and bandwidth of their subscribed CRV connection. The new CRV providers should allow for this ability. Needs further discussion, may not be required if users have an NMS.

It is also expected that the new CRV should provide for some sort of network monitoring service for subscribers to monitor the status of their connection, usage metrics for latency, bandwidth and throughput (average, minimum, maximum and peak) Available today.

Even though there was no exploration work done to look into communications outside of the CRV, the new CRV should have provisions to allow for connection to other regions outside of the Asia-Pacific region, e.g. Eurocontrol's NewPENS and others. Conversations are underway and ongoing. It is proving difficult to progress.

ICAO

THANK YOU