

Distribution of IWXXM when the primary AMHS link fails

1 Purpose

This document provides educational material about a capability-based approach to thinking about *ICAO Meteorological Information Exchange Model* (IWXXM) message distribution for Asia Pacific (APAC) Com Centre (COMM) operators in the event of a primary link failure.

2 Assumptions

Link and connection enablement and establishment are pre-requisites to this educational material.

IWXXM message is assumed to be fully correct and compliant.

IWXXM message structure and content details are not required knowledge.

IWXXM/TAC Translation services are out of scope, due to data loss resulting from message conversion.

Originator capabilities for IWXXM handling are assumed to be fully compliant.

Recipient capabilities for IWXXM handling are assumed to be fully compliant.

COMMs are expected to ensure and provide assurance that data loss and data corruption do not occur when transiting their own COMM and network.

Full end-to-end delivery enablement for IWXXM is the objective, but not within scope of this document.

3 IWXXM Message Transfer Considerations

3.1 Message Addressing and Routing

APAC States are using **address-based routing** for IWXXM messages.

APAC States are not using content-based routing nor pathname-based routing for IWXXM messages.

Address-based routing provides some flexibility to the COMM operator to optionally divert IWXXM messages down a specific alternate link, while all other AMHS traffic can be diverted via a separate alternate link.

Address-based routing simplifies COMM operator assessments of alternate connections, since this shifts more decision-making to a coarser link-level decision instead of fine-grained content-based or pathname-based decisions.

3.2 Link Capabilities

AFTN links for IWXXM should not be used, because:

- IWXXM message sizes can far exceed AFTN message sizes
- IWXXM character sets are generally incompatible with AFTN connection character sets
- Down-converting IWXXM messages for transmission via AFTN has high risk of **data loss** and/or **data corruption**

Care should also be taken to consider any internal COMM links that may prevent unmodified IWXXM message traversal.

AMHS links should meet the following minimum requirements:

- Message size supported up to a maximum 4MB
- FTBP supported
- IHE supported
- Link speeds higher than 64kbps are recommended, required bandwidth is dependent upon connection use

Information about AMHS connection capabilities is stored at the AMC.

The AMC can store information about AMHS connection capability (linked via “Network Inventory”, then in the “AMHS Capabilities” tab), allowing for future retrieval.

However, there may be limitations with AMC data accuracy and freshness.

Outside of the AMC, connection capabilities prior to commissioning by the COMM should already be known, recorded, and kept fresh.

3.3 Message Structure and Content

When compared to TAC products, IWXXM messages have complex message structures and complex content requirements.

However, so long as the AMHS connection capabilities are satisfied, IWXXM message transfer can occur.

MTS supporting IWXXM transfer do not need to be able to parse IWXXM message contents.

4 Actions

In the event of a primary link failure, the COMM operator will now have sufficient background knowledge to be able to assess whether an alternate link is acceptable for transferring IWXXM messages.

In all circumstances,

- AFTN links are excluded from consideration
- Alternate links should have similar or better connection capabilities to the failed primary link

The following four major actions can be used:

- Link-based diversion
- Address-based diversion
- Content-based diversion / pathname-based diversion
- Traffic hold

4.1 Link-based Diversion

This is simply diverting all traffic via an alternate same-type link.

This is a common diversion tactic currently accomplished via the RQP mechanism.

4.2 Address-based Diversion

APAC IWXXM messages currently utilise address-based routing, for which specific address-based diversions can be activated.

Recipient addresses within APAC are listed in the Online Register of APAC IWXXM Exchange Status (Link: <https://docs.google.com/spreadsheets/d/1WEcGfMRZq2dgHsfdpFhiefJEcA8OeMhfbCJHTqA7NX0/edit#gid=0>).

This means that IWXXM messages can be routed via a suitable alternate AMHS link, whilst all other traffic is routed via a different alternate AMHS link.

This may be useful to load-balance traffic between different alternate AMHS links.

4.3 Content-based Diversion / Pathname-based Diversion

Content-based and pathname-based diversions follow similarly to address-based diversions, but may require additional functionality.

4.4 Traffic Hold

Given the importance of meteorological information, data loss should be avoided as much as reasonably possible.

Where no alternate exists, then a traffic hold may be considered.