ATD-2 TTP Flight Delay Messages

Flight Delay messages are published as two flows: steady state and resync.

Steady State messages are sent as flights depart and delay information can be calculated. (See Flight Delay FIXM Information for details).

Resyncs consist of **Flight Delay** messages being sent for every current departure that has delay information in TFDM. They are preceded and succeeded by **Periodic Start** and **Periodic End** messages to distinguish themselves from the steady state messages. The resync is intended to be used by systems during startup or error recovery. **Heartbeat** messages are sent every 4.5 minutes and contain only header information.

A **System Start** message is sent out during the TTP system startup that will immediately be followed by a resync message. Resyncs will continue to be sent out every 15 minutes.

Message	System Start	Steady State	Resync
Flight Delay	✔	✔	✔
System Start	✔		
Periodic Start	✔		✔
Periodic End	✔		✔
Heartbeat		✔	

TTP Message Headers

Flight Delay Messages published by TTP are JMS Text Messages, containing a standard JMS header augmented with TTP specific information.

System start and resync start/end messages will consist of only a header. They can be distinguished by the SYNC and DATA_GROUP values in the header.

Flight Delay messages also include a message body consisting of a FIXM formatted NasMessage containing flight delay data (See Flight Delay FIXM Information for details). They can be distinguished by the DATA_GROUP and Message Type values in the header.

Message	Data_Group	Body	Message Type
Flight Delay	FlightDelay	NasMessage	FlightDelay
System Start	FlightDelay		SystemStart
Periodic Start	FlightDelay		PeriodicStart
Periodic End	FlightDelay		PeriodicEnd
Heartbeat	FlightData		Heartbeat

Message Specific Header Properties

Property Name	Description
PRIVACY_LEVEL	PRIVACY_LEVEL indicates what is included in the message content from a sensitive data and privacy standpoint to help ensure the message is directed to the appropriate consumer. 1) SFD - Sensitive Flight Data - Message contains SFD, that is, information about a sensitive flight. 2) CDM - Collaborative Decision Making - Message pertains to a non-sensitive flight. And, it contains CDM data, that is, it contains data elements that are considered CDM data elements. 3) CDM-omit - Message pertains to a non-sensitive flight. And, the CDM data has been omitted from this version of the message, that is, this is a copy of a message that was originally created with CDM data elements and non-CDM data elements. (If there were no data elements in the original message that were considered "non-CDM" and then all the CDM elements were removed, there would be no reason to publish the message.) 4) NoSFD_NoCDM - Message pertains to a non-sensitive flight. And, it contains no CDM data elements. The current ATD-2 implementation will only be sending CDM privacy level messages.

	This property is only included with flight delay messages.
AERODROME	ID of the aerodrome the system applies to (e.g., KCLT)
AIRLINE	ID of the airline associated with the flight. Format: LLL (e.g., SWA, DAL) If the airline information is not available or applicable for the flight, the value is XXX. This property is only included with flight delay messages.
SYNC	Indicates whether the message is a synchronization or flight data message. System start/sync message: SYS Resync message: PER Steady state message: null
DATA_GROUP	DATA_GROUP can be combined with the SYNC value to determine the message type being received. Combinations of these two fields: System Start: SYNC=sys; DATA_GROUP=system_start Resync Start: SYNC=per; DATA_GROUP=periodic_start Resync Flight Data: SYNC=per; DATA_GROUP=FlightDelay Resync End: SYNC=per; DATA_GROUP=periodic_end Steady State Flight Data: SYNC=null; DATA_GROUP= FlightDelay
MESSAGE_TYPE	Used along with the SYNC header to determine the message type and content. Various combinations of MESSAGE_TYPE and SYNC: - SYNC= "sys"; MESSAGE_TYPE= "SystemStart" - Restart of the TTP service. - SYNC= "per"; MESSAGE_TYPE= "PeriodicStart" - Beginning of a sync event. - SYNC= "per"; MESSAGE_TYPE= "FlightDelay" - Flight data sent during a periodic sync event. - SYNC= "per;" MESSAGE_TYPE= "PeriodicEnd" - End of a sync event.

	- SYNC= "rtm"; MESSAGE_TYPE= "FlightDelay" - Real time message about a departed flight's delay. - SYNC= "rtm"; MESSAGE_TYPE= "Heartbeat" - Heartbeat message to confirm to consumers that the service is still active.
TFDM_RELEASE	TFDM Release version providing this message (e.g. 12_1_B8_2P2). This property is currently not implemented for ATD-2. Value will be null.
SCHEMA_VERSION	FIXM US Extension Schema Version (e.g. 4.1.1).
TIME_STAMP	Date and time of the message in Zulu time (e.g. "yyyy-mm-ddThh:mm:ssZ")
UUID	Universally unique identifier for the message. This should not be used by the consumer and is only intended for TFDM debug purposes.

Flight Delay FIXM Information

This table includes which FIXM fields may be included in flight delay messages.

The **Ext** column indicates whether this field is in core, denoted by a 'C' in the cell, or US extension, denoted by 'US' in the cell.

The **FM Data** column below indicates that the field is included for the purposes of flight matching.

Data Element	Xpath In FIXM	Ext	FM Data	Details
MessageType	NasMessage/metadata/@messageType	US		DELAY
AircraftIdentification	NasMessage/flight/flightIdentification/ @aircraftIdentification	C	✔	
DeparturePoint	NasMessage/flight/departure/@departurePointText	C	✔	Can be an airport, nas lat/long, fix, or a fix radial distance. Examples: Airport: KDFW

				Nas Lat/Long: 3500N/04000W Fix: ATOKA Fix Radial Distance:SHP090015
DestinationPoint	NasMessage/flight/destination/@destinationPointText	C	✔	Can be an airport, nas lat/long, fix, or a fix radial distance. Examples: Airport: KDFW Nas Lat/Long: 3500N/04000W Fix: ATOKA Fix Radial Distance:SHP090015.
InitialGateTimeOfDeparture	NasMessage/flight/departure/offBlockTime/@initial	US	✔	
EramGufi	NasMessage/flight/flightPlan/@identifier	US	✔	
ComputerId	NasMessage/flight/flightIdentification/@computerId	US	✔	
CidCreatorUnit	NasMessage/flight/flightIdentification/IdCreatorUnit	US	✔	
TfdmId	NasMessage/flight/additionalFlightInformation	US	✔	Name="TFDMID" Value=Internal TFDM ID or ATD-2 GUFI for the flight.
TfdmIdCreatorAirport	NasMessage/flight/additionalFlightInformation	US	✔	Name="TFDMIDCreator" Value=Airport where the TFDM ID was created. Example: KCLT

FlightClass	NasMessage/flight/additionalFlightInformation	US		Name="FLIGHTCLASS" Value=AIRCARRIER or AIRTAXI or GA or MILTARY
AircraftDepartureDelayStartTime	NasMessage/flight/departure/departureDelay/delayStartTime	US		
AircraftDepartureDelayEndTime	NasMessage/flight/departure/departureDelay/delayEndTime	US		
ActualAircraftDepartureDelay	NasMessage/flight/additionalFlightInformation	US		Name="ActualAircraftDepartureDelay" Value=The duration of the departure delay associated with the given flight in minutes. Example: 0-999
Airline	NasMessage/flight/additionalFlightInformation	US		Name="AIRLINE" Value=The identification of the airline associated with the flight. If the flight is not associated with an airline, the value is XXX. Examples: SWA, DAL

WSRD to ATD2

The table below includes the flight delay elements as described in the TTP Web Service Requirements Document (WSRD). It also gives an indication of which TFDM build the element will be included in and if it is intended to be implemented by ATD-2.

WSRD	Definition	TFDM Build 1	TFDM Build 2	ATD-2

AircraftIdentification	Name used by ATS units to identify and communicate with an aircraft.	✔	✔	✔
DepartureAerodrome	The ICAO designator or the FAA Location Identifier for the aerodrome from which the flight departs	✔	✔	✔
ArrivalAerodrome	The ICAO designator or the FAA Location Identifier for the aerodrome at which the flight is scheduled, expected to arrive or has arrived at.	✔	✔	✔
InitialGateTimeOfDeparture	The date and time at which a flight was originally planning to depart the stand.	✔	✔	✔
Gufi	Globally Unique Flight Identifier that uniquely identifies a specific flight and is independent of any particular system.	✔	✔	✔
AircraftType	The type of aircraft	✔	✔	✔
AircraftDepartureDelayStartTime	The delay start time	✔	✔	✔
AircraftDepartureDelayEndTime	The delay end time	✔	✔	✔
ImpactingCondition	The reason for the delay			
TMI	The identified TMI cause, if applicable			
ChargeTo	The facility the delay is attributed to			

Remarks	Additional information to explain the conditions or causes associated with the delay			
ActualAircraftDepartureDelay	The departure delay associated with a given flight in 15 minute time increments	✔	✔	✔

Example Flight Delay Message

```
HEADERS:
"AERODROME":"KCLT"
"AIRLINE":"JBU"
"DATA_GROUP":"FlightDelay"
"MESSAGE_TYPE":"FlightDelay"
"PRIVACY_LEVEL":"NoSFD"
"SCHEMA_VERSION":"4.1.1"
"SYNC":"rtm"
"TFDM_RELEASE":"null"
"TIME_STAMP":"2018-07-06T15:34:19Z"
"UUID":"46a2a968-9bf2-4239-a402-c91a9941b26f"

<nas:NasMessage xmlns:nas="http://www.faa.aero/nas/4.1"
xmlns="http://www.fixm.aero/messaging/4.0"
xmlns:base="http://www.fixm.aero/base/4.0"
xmlns:fx="http://www.fixm.aero/flight/4.0">
   <nas:flight xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:type="nas:TfdmFlightType">
     <fx:departure xsi:type="nas:TfdmDepartureType" departurePointText="KCLT">
        <nas:departureDelay />
        <nas:offBlockTime>
           <nas:initial>2018-07-06T15:06:00.000Z</nas:initial>
        </nas:offBlockTime>
     </fx:departure>
     <fx:destination xsi:type="nas:NasDestinationType"
destinationPointText="KBOS" />
     <fx:flightIdentification xsi:type="nas:NasFlightIdentificationType"
computerId="379" aircraftIdentification="JBU1246">
        <nas:idCreatorUnit xsi:type="base:IcaoUnitReferenceType"
locationIndicator="JBU" />
     </fx:flightIdentification>
     <nas:additionalFlightInformation>
```

```xml
          <nas:nameValue name="TFDMID"
value="JBU1246.CLT.BOS.180705.2320.0082.TFM" />
          <nas:nameValue name="TFDMIDCreator" value="CLT" />
          <nas:nameValue name="FLIGHTCLASS" value="TBD" />
          <nas:nameValue name="AIRLINE" value="JBU" />
      </nas:additionalFlightInformation>
      <nas:flightPlan identifier="KT51151600" />
      <nas:interimAltitude xsi:nil="true" />
    </nas:flight>
    <nas:metadata messageType="FlightDelay" />
</nas:NasMessage>
```