Traffic Flow Management System-to-National Airspace Data Interchange Network Internet Protocol (TFMS-to-NADIN IP) Interface Control Document (ICD) for the Traffic Flow Management-Modernization (TFM-M) Program

Final, Release 9

CACR, Phase 2

Contract Number: DTFAWA-04-C-00045
CDRL: E05

February 11, 2013

Prepared for:
U.S. Federal Aviation Administration

Prepared by:
CSC
North American Public Sector – Civil Group
15245 Shady Grove Road
Rockville, MD 30850

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CSC/TFMM-10/1077
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February 11, 2013

INTERFACE CONTROL DOCUMENT
APPROVAL SIGNATURE PAGE
TFMS/NADIN IP

APPROVAL SIGNATURES

PARTICIPANT	NAME	DATE

Document History Record

Release	Date	Comment
Draft, Release 5	May 24, 2010	Contractual delivery. Addresses Release 5 Interface Design. This version reflects significant restructuring of the Release 3 Final Revision to improve the flow of information and also to enhance easy maintenance. Added Appendix B in which Advisories and General Mesages file is embedded as a document link.
Final, Release 5	March 1, 2011	Contractual delivery. Addresses the following CR: • TFMMP00032566 • TFMMP00032688
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1 Scope

This section identifies the scope, purpose, and organization of this Interface Control Document (ICD) and identifies the subsystem responsibility list.

1.1 Scope and Purpose

This ICD provides the design characteristics of the interface between the Traffic Flow Management System (TFMS) and the National Airspace Data Interchange Network's (NADIN) Basic Service Offering to send and receive messages over TCP/IP sockets. This ICD was prepared under guidance from FAA-STD-025e, dated August 9, 2002.

The TFMS-to-NADIN interface is used to link up a number of agencies and clients to transfer Traffic Management Initiatives (TMIs), Advisories, and Reroutes. The NADIN message switched network (MSN) is the FAA interface to the Airways Fixed Telecommunications Network (AFTN), used for interchange of aircraft movement flight plans, weather, and Notices to Airmen (NOTAM) messages between the US and other nations (including international NOTAMs). The NADIN MSN is an essential part of the AFTN and provides communications not only between the US and its connected foreign partners, but also between foreign countries as a pass-through data service, in accordance with the International Civil Aviation Organization (ICAO) agreements.

The purpose of this ICD is to specify:

- Interface connectivity between TFMS and NADIN
- Format of data transmitted between NADIN and TFMS

1.2 Subsystem Responsibility List

The following list provides the TFMS external system interface and identifies the responsible Federal Aviation Administration (FAA) organizations:

- TFMS – FAA ATO-R
- NADIN - AJW-536
- FTI – AJW-53

1.3 Document Organization

This ICD is organized in six sections and one appendix:

Section 1, **Scope**, describes the purpose and scope of this ICD.

Section 2, **Applicable Documents**, provides a listing of referenced government and non-government documents, and document sources researched and used by this ICD.

Section 3, **Interface Characteristics**, identifies and describes the general characteristics, functional design, and physical design characteristics for this ICD.

Section 4, **Verification Provisions**, contains verification provisions for this ICD.

Section 5, **Preparation for Delivery**, contains any specific preparations required by this ICD.

Section 6, **Notes**, provides a list of definitions, abbreviations, and acronyms used in this ICD.

Appendix A, **Application-Level Data Message Format,** provides the standard format of an application level data message.

Appendix B, **Advisories and General Messages**, provides a list of various advisories that are Free Formatted and advisories associated with Delay Programs and Re-Routes that are sent via the CDM participant client interface.

2 Applicable Documents

The following documents form part of this ICD to the extent specified herein.

2.1 Government Documents

FAA Standards:

FAA-STD-025e	Preparation of Interface Documentation, August 9, 2002
FAA-STD-039b	Open Systems Architecture and Protocols, May 1, 1996
FAA-STD-043b	Open System Interconnect Priority, 1996
FAA-STD-045	OSI Security Architecture, Protocol and Mechanisms, 1994

FAA Orders:

FAA Order 1830.2	Telecommunication Standards, Selection and Implementation Policy, August 1987
FAA Order 1370.82A	Information Systems Security Program, September 11, 2006

National Airspace System (NAS) Documents

NAS-IR-24032410	Enhanced Traffic Management System (ETMS) Interface Requirements Document (IRD) for Traffic Flow Management Infrastructure (TFMI), Revision A, September 16, 2005
NAS-IR-241400001	Traffic Flow Management System (TFMS) Interface Requirements Document (IRD) for Traffic Flow Management Modernization (TFM-M) Version 1.0, August 14, 2006
NAS-IR-43010002	Interface Requirements Document, National Airspace Data Interchange Network (NADIN) Message Switch Network to TCP/IP based User Subsystems, May 11, 2009
NAS-IC-43010002-01	Interface Control Document, National Airspace Data Interchange Network (NADIN) Message Switch Network (MSN) to TCP/IP User Subsystems, June 23, 2009

NAS-SR1000	National Airspace System, System requirements Specifications, June 19, 2007

Other Government Documents:

209232 Rev. B	ARINC, Air/Ground Terminal Voice Message Format Specification, February 18, 2004
CSC/TFMM-04/0025	Subsystem Specification (SSS) for the Traffic Flow Management–Modernization (TFM-M) Program, Release 8, RAPT, Revision 9.0, September 14, 2010
CSC/TFMM-11/1431	Final Systems Security Plan (SSP) - Fiscal Year (FY) 2012 for Traffic Flow Management–Modernization (TFM-M), January 25, 2012
CSC/TFMM-05/0121	Interface Requirements Specification (IRS) for the Traffic Flow Management – Modernization (TFM-M) Program, Release 8, Revision 6.0, RAPT, December 7, 2012
TFMM-ENGR-05 (E05)	Traffic Flow Management Modernization (TFMM), Data Item Description (DID), undated
VNTSCD-TFM-ICD-OMP-001	Offshore Message Processor: Interface Control Document, Version 1.0, June 29, 2005
ETMS Memorandum	Message Types Using ARINC and NADIN, ver. 1, June 19, 2005
Metron Aviation Memorandum	FSM 1.8.8 / FSM 7.9 Advisory Changes (ETMS 7.9 Release for Fall 2004), June 15, 2004

2.2 Non-Government Documents

International Organization for Standardization (ISO):

ISO/IEC 7498-1	Information Processing Systems – Open Systems Interconnect – Basic Reference Model, 1993

Institute of Electrical and Electronics Engineers (IEEE)

IEEE 802.3	IEEE Standard for Information Technology — Telecommunications and Information Exchange Between Systems, 2000

American National Standards Institute (ANSI)

ANSI X3.4	American National Standard Code for Information Interchange (ASCII), Rev. 1992

International Civil Aviation Organization (ICAO) Document:

ICAO Aeronautical Telecommunications Manual, Annex 10, Volume II (Amendment 71 or later).

Request For Comments (RFC) Documents

RFC 791	Internet Protocol, September 1981
RFC 793	Transmission Control Protocol, September 1983

2.3 Document Sources

This subsection provides sources for FAA and International Organization for Standardization (ISO) documents.

2.3.1 Source of FAA Documents

Copies of FAA specifications, standards, and publications may be obtained from the Contracting Officer, Federal Aviation Administration, 800 Independence Avenue S.W., Washington, DC, 20591. Requests should clearly identify the desired material by number and date and state the intended use of the material.

2.3.2 ISO, IEEE, ANSI, ICAO and RFC Documents

Copies of ISO, IEEE, and ANSI standards may be obtained from the American National Standards Institute, 11 West 42nd Street, New York, NY, 10036.

ICAO documents may be obtained from the International Civil Aviation Orgabization, Document Sales Unit, 999 University Street, Montreal, Quebec, Canada H3C 5H7

RFC documents are available from the reference area electronically at the following Web address:

http://www.faqs.org/rfcs/

3 Interface Characteristics

This section provides the general, functional, and physical interface characteristics for the TFMS interface with NADIN.

3.1 General Characteristics

The Federal Aviation Administration (FAA) National Airspace System (NAS) Operational IP (Ops-IP) network is the primary service provider for Wide-Area Network (WAN) services for the NADIN and its TCP/IP-compliant user subsystems. The NADIN is a subsystem within the NAS. The NAS Ops-IP network is considered an FAA trusted wide area network. Non-NAS user subsystems can access the NADIN via the NAS Enterprise Security Gateway (NESG) which provides a communications path for closed 'un-trusted' and 'partially trusted' systems. Figure 3-1 illustrates the NADIN MSN Interface with the Ops-IP Network.

TFMS uses NADIN as a media and carrier for the following data exchange:

- Transmission of Ground Delay Program (GDP), flow control advisories and general messages from the Air Traffic Control System Command Center (ATCSCC) to air traffic facilities
- Reception of various messages from international agencies (e.g., Oceanic position reports, Canadian originated GDP data, etc.)

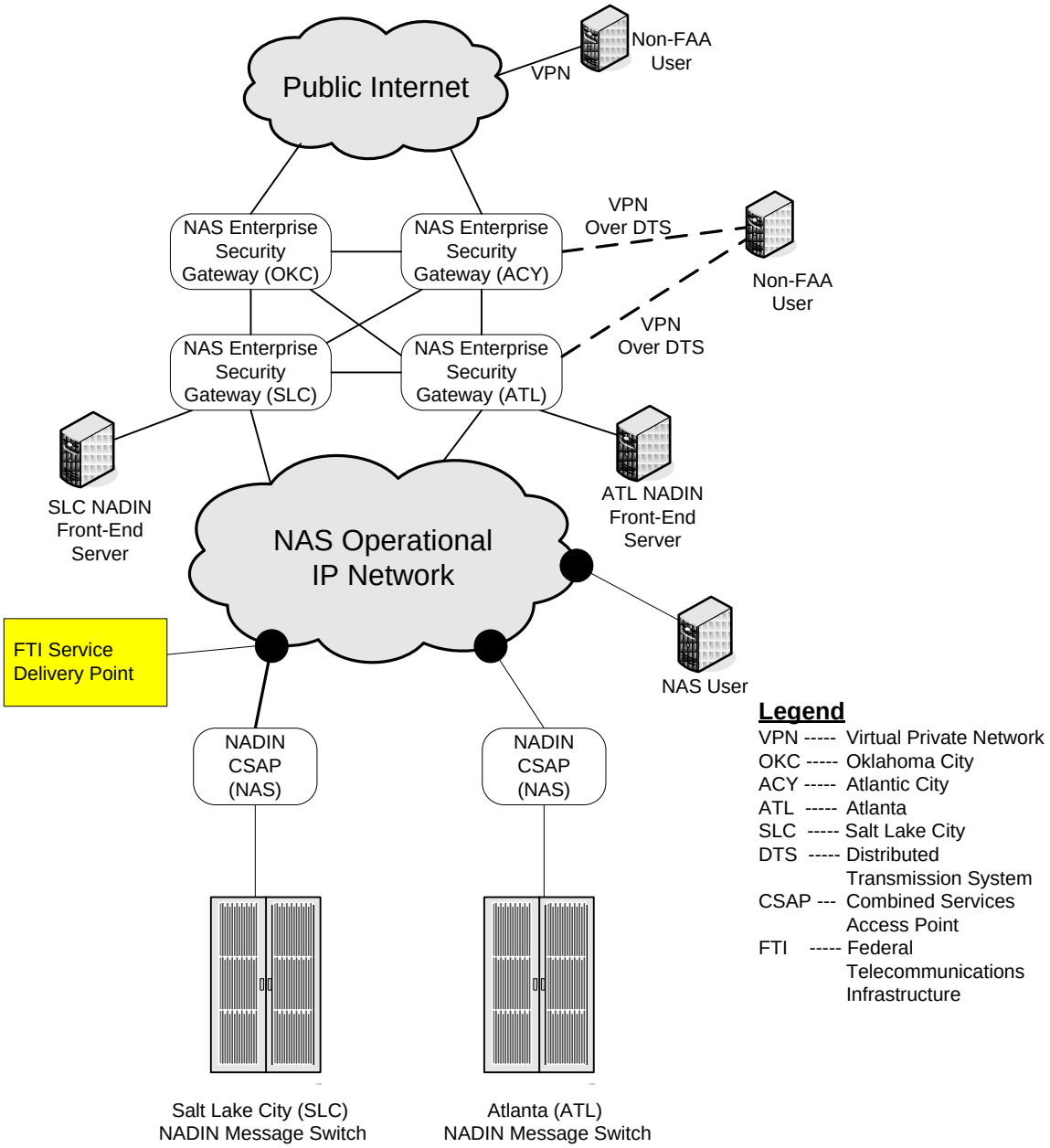

Figure 3-1. NADIN MSN Interface Connections with Ops-IP

Figure 3-2, TFMS-to-NADIN IP Interface Block Diagram, illustrates the TFMS to NADIN IP interface and the demarcation point. The end systems are the TPC on the TFMS side and the NADIN users connecting to the NADIN Message Switched Network (MSN) on the NADIN side.

The demarcation point is illustrated in Figure 3-2 as a black dot.

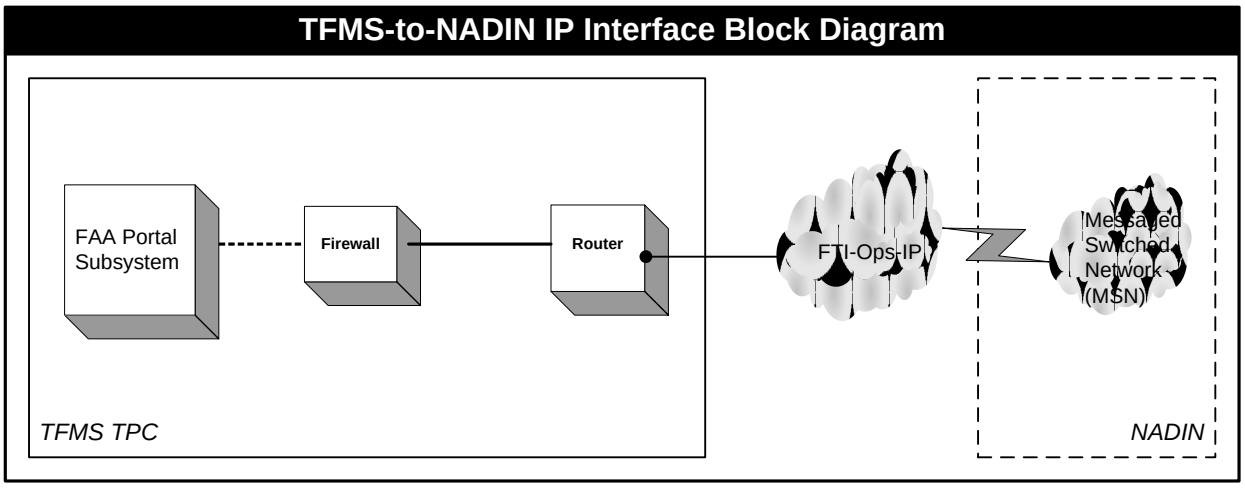

Figure 3-2.TFMS-to-NADIN IP Interface Block Diagram

3.2 Functional Design Characteristics

User subsystems will be given two NADIN IP addresses/port numbers. User subsystems will use these addresses to contact either of the two operational NADIN MSN servers. It is preferable for users to initiate and maintain the TCP socket connections; however, if required, the NADIN MSN can initiate the TCP socket connection.

Regardless of which side initiates the TCP socket connection, if that socket is terminated, then the initiating side uses a different local port number when re-establishing a new socket. Otherwise (in the case where the user subsystem is the initiator), there is a 4-minute timeout before the NADIN MSN server's listening port re-enables an incoming TCP socket request from the same remote IP address/port number to be accepted. This is due to the use of the underlying TCP Message Segment Lifetime (MSL) timer that is used when closing sockets, documented in RFC 793, Transmission Control Protocol.

When a TCP socket has been successfully established, the NADIN MSN and the user subsystem can exchange AFTN messages, formatted in accordance with the ICAO Aeronautical Telecommunications Manual, Annex 10, Volume II (Amendment 71 or later).

3.2.1 Application Processes (APs)

This subsection identifies each application process and the applicable services, including performance characteristics (information units, quality of service, error handling, and responses).

3.2.1.1 Identification of Application Processes

The TFMS uses an AP called FAA PORTAL MIS AP to receive and send data in the form of NADIN Messages to and from NADIN. The corresponding NADIN AP is the NADIN MSN AP.

3.2.1.2 Category of Services Required by the AP

The TFMS-to-NADIN interface transfers the following data:

- Oceanic Reports
- General and Advisory messages (including international)
- Ground Delay Program (GDP/AFP/GS/COMP/BLKT) initiatives
- Formatted Reroute Advisories
- Formatted CTOP Advisories

Loss of the TFMS-to-NADIN interface will impair full system operation, but will not degrade TFMS operations to the point of inoperability. The TFMS-to-NADIN interface is classified as 'essential' In Accordance With (IAW) the NAS category of service specified in NAS-SR-1000.

3.2.1.2.1 TCP/IP Services

TFMS TCP/IP functionality and responsibility is as follows:

- Controlling the NADIN MSN connection and communication
  - Connection initiated only if there is data to be sent
  - Connection accepted from other side (no matter who is connecting)
  - Connections are terminated only by the initiator
  - Initiated connections are terminated after a hard-coded period of inactivity (10 seconds)
  - Terminated socket can be re-enabled from the same IP Address/port number after a hard coded period of 4 minutes
  - Bi-directional data flow (no matter who initiated the connection)
  - Full duplex (i.e., data can be sent in both directions simultaneously)
  - Addressing and message formatting as specified by NADIN
  - Adding/removing TCP/IP formatting
- Supporting data exchange with NADIN
  - Guaranteeing message delivery to NADIN (undeliverable messages are queued until established timeout or message overflow occurs)
  - Sending acknowledgement for each received NADIN message
  - Accepting acknowledgement for each message sent to NADIN
- Operational notification in special cases

- Monitoring for no NADIN messages for parameter time

The TCP/IP protocol is involved in the TFMS-to-NADIN connection. However, there are a variety of TFMS applications that process data received from NADIN or sent to NADIN. These functionalities and responsibilities include:

- Supporting data exchange with other TFMS applications
  - Guaranteeing message delivery to authorized TFMS applications (undeliverable messages are queued.)
  - Maintaining routing table allowing one NADIN message to be distributed to many TFMS applications and allowing one TFMS application to receive many types of NADIN messages (based on destination address)
  - Accepting acknowledgement for each message sent to authorized TFMS applications
  - Supporting (but not guaranteeing) message delivery to registered TFMS applications
- Logging the following information
  - TCP/IP events and statistics
  - Configuration changes – The Configuration file is an input file containing source and destination TCP/IP addresses, a mapping table to translate NADIN to TFMS addresses, a list of TFMS authorized recipients of TFMS messages, and a list of TFMS applications to receive operational notification.
  - Each message from/to NADIN
  - Interruptions in data flow
- Operational notification in special cases
  - Message destined to NADIN had to be discarded (e.g. timeout or queue overflow)
  - Message destined to authorized TFMS application had to be discarded

3.2.1.2.2 Application Services

The following Application level data is transmitted over the TFMS-to-NADIN interface:

- Oceanic Position reports from the Canadian International Flight Service Station (IFSS) and the Controller Pilot Data Link Communications (CPDLC) to TFMS
- The following types of data from TFMS to NADIN Addressees
  - Formatted GDP advisories
  - Formatted reroute advisories
  - Formatted CTOP advisories
  - Free-form advisories and general messages.
  - Ground Delay Program (GDP/AFP/GS/COMP/BLKT) initiatives

- ATCSCC advisories and international advisories received via NADIN to the ATCSCC for electronic logging.

3.2.1.3 Information Units

This subsection describes the formats of the data files transferred between NADIN and TFMS. The application-level information units that cross this interface consist only of AFTN messages that are formatted in accordance with the ICAO Aeronautical Telecommunications Manual, Annex 10, Volume 2 (Amendment 71 or later). Figure A-1 in Appendix A illustrates the NADIN MSN Application Data Message Format.

3.2.1.3.1 Information Code

All TFMS-to-NADIN interface messages are encoded in American Standard Code for Information Interchange (ASCII) alphanumeric data format in accordance with ANSI X3.4, American National Standard Code for Information Interchange (ASCII), as described in Section 3.2.1.3.2, and the appropriate subsections.

3.2.1.3.2 Information Structure

Messages exchanged between NADIN and TFMS all follow a consistent format as illustrated in Table 3-I, Common NADIN Message Format.

The following syntax rules are used for field specifiers in the tables that follow:

- L – represents one upper-case letter in ASCII
- d – represents one numeric digits in ASCII
- n – represents one integer
- a – represents one alphanumeric (either number or upper-case letter) in ASCII
- [ ] – means the characters enclosed are optional. Any characters not within brackets are required. For example, Ldd [aa] would indicate an upper-case letter, followed by two digits, and then zero, one, or two optional alphanumeric characters.
- **BOLD** indicates a static entry.
- *Italics* indicate that the entry is optional

Table 3-I. Common NADIN Message Format

Field	Function	Unit/Format	Description	Bytes
Address Line of Message				
Start	Start of Message Header	**0x01**	Start of Header mandatory character (ASCII 0x01)	1
Priority	Message Priority	LL	Three characters; two alpha characters followed by a space character from the following: • SS – Level 1 • DD – Level 2 • FF – Level 3 • GG – Level 4 • JJ – Level 4 • KK – Level 4 • LL – Level 4	3
Address	Destination Address List	aaaaaaaa [aaaaaaaa]…[aaaaaaaa]	Eight characters mandatory ICAO destination address. Minimum of one address needs to be included. Additional addresses will be preceded by a space character. Maximum of seven addresses per line with a maximum of three lines of destination addresses Each line will end with Carriage Return (CR ASCII 0x0d) and a Line Feed (LF ASCII 0x0a)	8-188
End of Address	End of Address Header Fields	**(CR)(LF)(FS)**	Markers ending Address fields: • Carriage Return (CR, ASCII 0x0d) • Line Feed (LF, ASCII 0x0a) • End of Address (FS, ASCII 0x1a)	3

Field	Function	Unit/Format	Description	Bytes
Origin Line of Message				
Timestamp	Timestamp of message	dddddd	Mandatory six numerical characters field representing message creation time in UTC, followed by a space using the format *ddhhmm*: • dd – day • hh – hour • mm - minutes	7
Source	Source Address	aaaaaaaa	Eight characters mandatory ICAO address of message originator. Each line will end with Carriage Return (CR ASCII 0x0d) and a Line Feed (LF ASCII 0x0a)	8
Message Text of Information Unit Message				
Start	Start of Text	**(S_{tx})**	Start of text character S_{tx} (ASCII 0x02)	1
Message	Transmitted message	----	See Sections below for details on the particular messages transmitted Each line will end with Carriage Return (CR ASCII 0x0d) and a Line Feed (LF ASCII 0x0a); Maximum of 80 characters per line; Maximum text length of 1800 characters	</=1800
Ending of Message				
End of Text	End of Text	**(V_t)(E_{tx})**	End of Text characters V_t (ASCII 0x0b) and E_{tx} (ASCII 0x03). This will follow the CR, LF of the last line of text.	2

An information unit message is captured in the text field of a NADIN MSN Message. Table 3-II, TFMS-to-NADIN Interface Information Unit Messages, presents the TFMS-to-NADIN Interface Information Unit Messages transmitted in the text field of NADIN Messages, including the subsection reference and mnemonic.

The maximum text length for the Information Unit Message within a NADIN MSN Message is 1,800 characters. Information Unit Messages larger than this maximum will be sent as separate NADIN MSN Messages. The TFMS-to-NADIN interface is transparent to this segmentation as indicated in Section 3.2.1.3.3.

Table 3-II. TFMS-to-NADIN Interface Information Unit Messages

Product Name	Product Mnemonic	ICD Subsection
Fixed Field Position Report	POS	3.2.1.3.2.1a
Oceanic Clearance Request Report	RCL	3.2.1.3.2.1b
Non-POS/Non-RCL Report		3.2.1.3.2.1c
ATCSCC Advisories		3.2.1.3.2.2
International Advisories		3.2.1.3.2.2
General Message		3.2.1.3.2.2
Formatted Delay Program Advisories – Section 3.2.1.3.2.3 and Appendix B, Section 1.2		
Ground Delay Program Advisory – Proposed	GDP	3.2.1.3.2.3 and Appendix B Section 1.2 a
Ground Delay Program Advisory – Actual	GDP	3.2.1.3.2.3 and Appendix B Section 1.2b
Airspace Flow Program Advisory – Proposed	AFP	3.2.1.3.2.3 and Appendix B Section 1.2c
Airspace Flow Program Advisory – Actual	AFP	3.2.1.3.2.3 and Appendix B Section 1.2d
Ground Delay Program Cancel – Proposed	GDP CANCEL	3.2.1.3.2.3 and Appendix B Section 1.2e
Ground Delay Program Cancel – Actual	GDP CANCEL	3.2.1.3.2.3 and Appendix B Section 1.2f
Airspace Flow Program Cancel – Proposed	AFP CANCEL	3.2.1.3.2.3 and Appendix B Section 1.2g
Airspace Flow Program Cancel – Actual	AFP CANCEL	3.2.1.3.2.3 and Appendix B Section 1.2h
Ground Stop Advisory – Proposed	GS	3.2.1.3.2.3 and Appendix B Section 1.2i
Ground Stop Advisory – Actual	GS	3.2.1.3.2.3 and Appendix B Section 1.2j

Product Name	Product Mnemonic	ICD Subsection
Ground Stop Cancel – Proposed	GS CANCEL	3.2.1.3.2.3 and Appendix B Section 1.2k
Ground Stop Cancel – Actual	GS CANCEL	3.2.1.3.2.3 and Appendix B Section 1.2l
Ground Delay Program/Airspace Flow Program Compression – Proposed	GDP/AFP COMPRESSION	3.2.1.3.2.3 and Appendix B Section 1.2m
Ground Delay Program/Airspace Flow Program Compression – Actual	GDP/AFP COMPRESSION	3.2.1.3.2.3 and Appendix B Section 1.2n
Ground Delay Program Blanket Advisory – Proposed	GDP BLANKET	3.2.1.3.2.3 and Appendix B Section 1.2o
Ground Delay Program Blanket Advisory – Actual	GDP BLANKET	3.2.1.3.2.3 and Appendix B Section 1.2p
Formatted Reroute Advisory – Section 3.2.1.3.2.4		
Formatted Reroute Advisory		3.2.1.3.2.4 and Appendix B Section 1.3
Formatted CTOP Advisories – Section 3.2.1.3.2.5		
CTOP Advisory– Proposed	N/A	3.2.1.3.2.5 and Appendix B Section 1.4 - a
CTOP Advisory– Actual	N/A	3.2.1.3.2.5 and Appendix B Section 1.4 - b
CTOP Cancel– Actual	N/A	3.2.1.3.2.5 and Appendix B Section 1.4 - c
Unsolicted Messages – Section 3.2.1.3.2.6		
Slot List	N/A	3.2.1.3.2.6.1
GDP Termination	N/A	3.2.1.3.2.6.2
Substitution Message	N/A	3.2.1.3.2.6.3

3.2.1.3.2.1 Oceanic Position Report

There are three types of Oceanic Position Reports described in this section, identified by the 3-character standard message ID (SMI) field in the case of the first two message types, or by a designated token in the third instance:

- Fixed Field Position Report (POS)
- Oceanic Clearance Request Report (RCL)
- Non-POS and Non-RCL Report (Token-indicated)

a. Fixed Field Position Report (POS)

The "POS" character sequence indicates a fixed field position report. This type of position report begins and ends in round brackets – ( ) – and is indicated by the keyword "POS". It is terminated with a carriage return (CR). There are three possible formats in which the POS message will be represented:

1. Position – Altitude – Position
2. Altitude – Position – Position
3. Position – Position - Altitude

The syntax of a fixed field position report is as follows:

Sample Fixed Field Position (POS) Report

```
Format 1:
(POS-<acid>-<pos1>/<eta1> [Letter]<alt> <pos2>/<eta2> NEXT <pos3>/<eta3>-CR
[other data]CR)
Format 2:
(POS-<acid>-[Letter]<alt> <pos1>/<eta1> <pos2>/<eta2> NEXT <pos3>/<eta3>-CR
[other data]CR)
Format 3:
(POS-<acid>-<pos1>/<eta1> <pos2>/<eta2> [Letter]<alt> NEXT <pos3>/<eta3>-CR
[other data]CR)(POS-DAL125-47N50W/1500 F350 RONPO/1506 NEXT COLOR-{CR}
FUEL 58.7{CR}
CYQXR 13205{CR}
1269/AT/82/15000{CR}
```

In the example of the Format 1 above, the following fields are detailed:

- (POS – Indicates this message is a POS report
- -DAL125 - <acid> The aircraft identifier
- -47N50W – Aircraft position, in this instance, a lat/long pair
- /1500 – Time over this position
- [space]
- F350 – Altitude at this position. Preceded by an "F" (which is not used by TFMS)
- [space]
- RONPO – Position fix name
- /1506 – Time of this position fix
- NEXT – Indicates there is a third position fix. This fix is optional.
- [space]

- COLOR - Position fix name
- - - Indicates no fix time entered.

The format of the POS report is described in Table 3-III.

Table 3-III. Fixed Field Position (POS) Report

Field	Function	Unit/Format	Description	Bytes
POS	Message Type Identifier	**POS**	Three letters, fixed field – "POS" (Static entry)	3
acid	Aircraft Identifier	La[a][a][a][a][a]	2 to 7 characters in length with first character being an uppercase letter.	2 - 7
pos1	Initial Position Fix	ddddL/dddddL *or* LLLLL	Fix represented as latitudes/longitudes pairs or fix names.	5 - 12
eta1	Initial Position Estimated Time of Arrival	dddd	Estimated time of arrival (ETA) for the Initial Position Fix. The ETA is a 4-digit number representing hours and minutes (hhmm). The first two digits represent the hour and must be between 00 to 23. The last two digits represent the minute and must be between 00 to 59. An invalid time is ignored.	4
[space]	Spacer		Provides a break between entries	1
alt1	Initial Position Altitude	Lddd[d][d][d][d][d]	The Initial Position Altitude is a numeric value between 3 and 8 digits. This entry is preceded by a single letter (A, C, D, F, or L), which is not used in processing to the TO message.	4-9
[space]	Spacer		Provides a break between entries	1
pos2	*Second Position Fix*	*ddddL/dddddL or LLLLL*	*Fix represented as latitudes/longitudes pairs or fix names.*	*5 - 12*
eta2	*Second Position Estimated Time of Arrival*	*dddd*	*Estimated time of arrival (ETA) for Second Position Fix. This follows the same rules as above.*	*4*
[space]	*Spacer*		*Provides a break between entries*	*1*

Field	Function	Unit/Format	Description	Bytes
NEXT	*Indicator - Third Position Fix*	***NEXT***	*Static Entry:* ***NEXT***	*4*
[space]	*Spacer*		*Provides a break between entries*	*1*
pos3	*Third Position Fix*	*ddddL/dddddL or LLLLL*	*Fix represented as latitudes/longitudes pairs or fix names.*	*5 - 12*
eta3	*Third Position Estimated Time of Arrival*	*dddd*	*Estimated time of arrival (ETA) for Third Position Fix. This follows the same rules as above.*	*4*
CR	Carriage Return	--		--
Other Data	Data not used by TFMS		Variable amount of data used by other systems, but not utilized by TFMS.	
CR	Carriage Return	--		--

b. Oceanic Clearance Request (RCL)

This character sequence indicates an Oceanic Clearance Request. This is processed the same way as a "POS" message, except for a possible altitude entry defined at the end ("_alt"). If this occurs, this altitude value will replace the previous one. The syntax of an RCL report is as follows:

Sample Oceanic Clearance (RCL) Request

```
(RCL-<acid>-<pos1>/<eta1> F<alt> <pos2>/<eta2> NEXT <pos3>/<eta3> [letter]<_alt>-CR…)CR

(RCL-DAL125-47N50W/1500 F350 RONPO/1506 NEXT COLOR/1513 F390{CR}
FUEL 58.7{CR}
CYQXR 13205{CR}
1269/AT/82/15000{CR}
```

In the example above, the following fields are detailed:

- (RCL – Indicates this message is a RCL report
- -DAL125 - <acid> The aircraft identifier
- -47N50W – Aircraft position, in this instance, a lat/long pair
- /1500 – Time over this position
- [space]
- F350 – Altitude at this position. Preceded by an "F" (which is not used by TFMS)

- [space]
- RONPO – Position fix name
- /1506 – Time of this position fix
- NEXT – Indicates there is a third position fix. This fix is optional.
- [space]
- COLOR - Position fix name
- /1513 - Time of this position fix
- F390 – Indicates new altitude defined at this position fix

The format of the RCL report is described in Table 3-IV.

Table 3-IV. Oceanic Clearance Request Report (RCL)

Field	Function	Unit/Format	Description	Bytes
RCL	Message Type Identifier	**RCL**	Three letters, fixed field – "RCL" (Static entry)	3
acid	Aircraft Identifier	La[a][a][a][a][a]	2 to 7 characters in length with first character being an uppercase letter.	2 - 7
pos1	Initial Position Fix	ddddL/dddddL *or* LLLLL	Fix represented as latitudes/longitudes pairs or fix names.	5 - 12
eta1	Initial Position Estimated Time of Arrival	dddd	Estimated time of arrival (ETA) for the Initial Position Fix. It is a 4-digit number representing hours and minutes (hhmm). The hour must be between 00 and 23. The minute must be between 00 and 59. An invalid time is ignored.	4
[space]	Spacer		Provides a break between entries	1
alt1	Initial Position Altitude	Lddd[d][d][d][d]	The Initial Position Altitude is a numeric value between 3 and 8 digits. This entry is preceded by a single letter (A, C, D, F, or L), which is not used in processing to the TO message.	4-9
[space]	Spacer		Provides a break between entries	1
pos2	Second Position Fix	ddddL/dddddL *or* LLLLL	Fix represented as latitudes/longitudes pairs or fix names.	5 - 12

Field	Function	Unit/Format	Description	Bytes
eta2	*Second Position Estimated Time of Arrival*	*dddd*	*Estimated time of arrival (ETA) for Second Position Fix. This follows the same rules as above.*	*4*
[space]	*Spacer*		*Provides a break between entries*	*1*
NEXT	*Indicator - Third Position Fix*	***NEXT***	*Static Entry:* ***NEXT***	*4*
[space]	*Spacer*		*Provides a break between entries*	*1*
pos3	*Third Position Fix*	*ddddL/dddddL or LLLLL*	*Fix represented as latitudes/longitudes pairs or fix names.*	*5 - 12*
eta3	*Third Position Estimated Time of Arrival*	*dddd*	*Estimated time of arrival (ETA) for Third Position Fix. This follows the same rules as above.*	*4*
CR	*Carriage Return*	--		--
alt3	*Third Position Altitude*	*Lddd[d][d][d][d]*	*The Third Position Altitude is a numeric value between 3 and 8 digits. This entry is preceded by a single letter (A, C, D, F, or L), which is not used in processing to the TO message.*	*4-9*
Other Data	Data not used by TFMS		Variable amount of data used by other systems, but not utilized by TFMS.	
CR	Carriage Return	--		--

c. Non-POS and Non-RCL Type Messages

The oceanic message received may not be either a POS or RCL report. Non-POS/Non-RCL messages do not follow a set format, as the previous Oceanic Position reports did. Instead, they are comprised of various Keyword tokens. These Keyword tokens are examined and used as a processing guide. When processing the Non-POS/Non-RCL message, the system follows the following procedure:

- The first Keyword token in the message is examined by an internal process called the Offshore Message Processor (OMP)[1] and parsed if it meets the following defined conditions:
    - The first Keyword token in not an “FI” (see below)

1 The Offshore Message Processor is fully described in the Volpe document VNTSCD-TFM-ICD-OMP-001 Offshore Message Processor: Interface Control Document.

- The first Keyword token matches one of the token listed in the 'dots_smi" file (see below)

- If the first Keyword token does not match either of these, then the message is ignored.
- Once the initial conditions for the message are met, the message is processed further by examining Keyword tokens, until one of the following occurs:
  - An error is encountered (garble, invalid data, etc.)
  - There are no more Keyword tokens
  - There is sufficient data to construct the TO message
  - The Keyword token "DT" is encountered, indicating the end of the message.

The following shows the typical syntax of non-POS and non-RCL position report messages and a sample (sample broken down by entry in Table 3-V):

Sample Non-POS and Non-RCL Report

```
<SMI_keyword>CR
FI <acid>/[tok1] <pos1> <eta1> <alt1>/[tok2] <pos2> <eta2> <alt2>/[tok3] <pos3> <eta3> <alt3>CR
/[tok] <data>/{tok] <data> (etc)CR
DT <other data>CR
CR

POS(Cr)
FI AJX1052/OV 33N 170E 1459 F380/EO 30N 180W 1604/NP TALON(Cr)
TA MS58/WV 310045/FB 528/TB CODE O1C(Cr)
DT SFO SC B 151500 12 (Cr)
(Cr)
```

In the example above, the following fields are detailed (Note – the entries in italics are not processed by TFMS, and are simply ignored by the system):

- POS – Indicates this message is a position report (differentiated from the standard POS message by the fields following)
- Carriage Return
- AJX1052 – <acid> The aircraft identifier
- /OV 33N 170E 1459 F380 – <tok1> <pos1> <eta1> <alt1> – Aircraft current position (in this instance, a lat/long pair), Time, and Flight Level in thousands of feet
- /EO 30N 180W 1604 – <tok2> <pos2> <eta2> Estimated To Be Over a Position , (in this instance, a lat/long pair), at a Designated Time, and Flight Level in thousands of feet
- /NP TALON – <tok> <data> - Next Position (In this case, a Fix Name)

- Carriage Return
- *TA MS58 – <tok> <data> Static Air Temperature (in degrees Celsius)*
- */WV 310045 – <tok> <data> Wind direction and speed at flight level*
- */FB 528 – <tok> <data> Fuel on Board (in pounds)*
- */TB CODE 01C – <tok> <data> Turbulence (in coded figure)*
- Carriage Return
- DT SFO SC B 151500 12 – <DT <other data> Position Report terminator. All data beyond the letters "DT" is ignored by TFMS.
- Carriage Return
- Carriage Return

The format of the Non-POS, Non-RCL message is described in Table 3-V.

Table 3-V. Non-POS, Non-RCL Message

Field	Function	Unit/Format	Description	Bytes
SMI	SMI Keyword	LLL	Keyword indicating the type of message following. See Table 3-V for full breakout.	3
/FI	Aircraft Identifier	**/FI** Ld[d][d][d][d][d]	The FI field defines the aircraft ID (ACID). It must be two to seven characters in length. The first character must be an uppercase letter, with all other characters uppercase letters or numbers. The ACID is stored in the "acid" field of the flight record. Any errors in this entry will result in the flight record being invalid.	6-11
/OV	Present Location	**/OV** ddL[]dddL dddd [**FL][A][**ddd] (For lat long entries) or **/OV** LLLLL dddd [**FL][A][**ddd] (for name string entries)	The OV field defines information for the first fix (present location). The position is processed, either as a single name string or a lat/long pair. If given as a lat/long pair, it can be values separated by a space or no space. The position is stored into the "pos1" field of the flight record. The ETA is given as a 4-digit time and defined as *hhmm* where "hh" are hours from 0 to 23 and "mm" are minutes from	14-23

Field	Function	Unit/Format	Description	Bytes
			00 to 59. The ETA is stored in the "eta1" field of the flight record. The altitude is optional and is parsed by removing the "A" or "F" preceding the entry. It is stored in the "alt1" field of the flight record.	
/EO	Estimated To Be Over a Position at a Time	**/EO** ddL[]dddL dddd (For lat long entries) or **/EO** LLLLL dddd (for name string entries)	The EO field defines information for the second fix, (second position). The position is processed, either as a single name string or a lat/long pair. If given as a lat/long pair, it can be values separated by a space or no space. The position is stored into the "pos2" field of the flight record. The ETA is given as a 4-digit time and defined as *hhmm* where "hh" are hours from 0 to 23 and "mm" are minutes from 00 to 59. The ETA is stored in the "eta2" field of the flight record.	15-17
/NP		**/NP** ddL[]dddL (For lat long entries) or **/NP** LLLLL (for name string entries)	The NP field defines information for the third fix, (last position). The position is processed, either as a single name string or a lat/long pair. If given as a lat/long pair, it can be values separated by a space or no space. The position is stored into the "pos3" field of the flight record.	9-12
/DA	Departure Aerodrome	**/DA** aaa[a]	The DS field defines the departure airport. The name must be either 3 or 4 characters in length. This is stored in the "dept" field of the flight record. Any errors in this entry will result in the flight record being invalid.	7-8
/DS	Destination Aerodrome	**/DS** aaa[a] [dddd]	The DS field defines the destination aerodrome. The name must be either 3 or 4	7-13

Field	Function	Unit/Format	Description	Bytes
			characters in length. This is stored in the "dest" field of the flight record. An estimated time of arrival (ETA) is optional in this case. The ETA is defined as (hhmm) where "hh" are hours from 0 to 23 and "mm" are minutes from 00 to 59. This ETA value is stored in the "dest_eta" field of the flight record. Any errors in this entry will result in the flight record being invalid.	
/OF	Time Off	**/OF** dddd	The OF field defines the departure field time. A valid time must be 4 digits in the form (*hhmm*) where "hh" are hours from 00 to 23 and "mm" are minutes from "00" to "59". The time value is stored in the "dept_Time" field of the flight record. An invalid time is ignored.	8
/DT	Position Report Terminator	**/DT** *	The DT field signifies the end of the message. Everything after this is ignored by OMP, which proceeds with the creation of the TO message based on all of the data gathered.	Vrbl
Note – There are five additional tokens which may appear, but are not processed by the system: • /TA - Static Air Temperature • /WV - Wind Information • /WX - Weather • /FB - Fuel On Board • /TB – Turbulence Refer to VNTSCD-TFM-ICD-OMP-001 for details on these entries.				

Table 3-VI shows the "dots_smi" file that defines the valid SMIs. Any other entry in the SMI Keyword position will be rejected.

Table 3-VI. "dots_smi" Keywords File

SMI	*SMI Number*	REPORT TYPE
AEP	01	Position With Weather
AGM	07	Miscellaneous Air/Ground Message
AID	36	Airborne Instrumentation Data System
ALR	05	Alerting Message
ARI	40	Fuel/Close-Out Report
ARR	04	Arrival
AVR	19	Air Crew Originated Voice Request
CHO	15	Changeover Or In-Range Report
CLK	20	Airborne GMT Clock Reset
CLR	08	Flight Clearance
CMD	26	ACARS Avionics Memory Load Or Diagnostic Function
CNL	13	Cancellation Of Flight
CPL	10	Current Flight Plan
DEP	03	Departure
DFD	35	ACARS Digital Flight Data Acquisition Unit
DIV	41	Aircraft Diversion Message
DLA	12	Flight Delay
ENG	38	Aircraft Engine Data
ETA	17	Estimated Time Of Arrival
ETR	32	Aircrew Initiated Revision To Previously Advised Estimated Time Of Arrival
FAM	14	Flight Movement Advisory Message
FML	33	ACARS Flight Management Computer - Left
FMR	34	ACARS Flight Management Computer - Right
FPL	09	Filed Flight Plan
FPR	24	Aircraft Originated Request For Flight Plan Update Via ACARS
FPU	23	Ground Originated Flight Plan Update To Aircraft Via ACARS
GVR	18	Ground Originated Voice Request
HJK	39	Aircraft Hijacked
LIF	22	Ground Originated Aircraft Load Information
MVT	16	Flight Movement
OAT	21	Airborne Optional Auxiliary Data Terminal/Device
PDM	42	Possible Duplicate Message
POS	02	Position Without Weather

SMI	*SMI Number*	REPORT TYPE
PSN	10	Aircrew Initiated Position Report With/Without Weather Information
RDO	25	ACARS Avionics Memory Readout
RTN	29	ACARS Equipped Aircraft Return To Gate
SPL	11	Supplemental Flight Plan
SVC	37	ACARS Communications Service Message
THR	31	Air Crew Initiated Or Auto Sensed Take Off Thrust
TIS	06	Airport Terminal Information Service
WXO	28	Weather Observation Report
WXR	27	Weather Observation Request
*Note – SMI Number is not used by the system.		

3.2.1.3.2.2 Free-Formatted Advisories and General Messages

A free-formatted advisory is an advisory message that is disseminated electronically by the ATCSCC, International systems, or other originators. An advisory contains information pertaining to the National Airspace System, and are normally used for the following reasons:

- Route and enroute information
- Planning Telcon (PT) advisories
- Facility outages
- Special Traffic Management Programs (STMP)

This list is not all-inclusive. Any time there is information that may be beneficial to a large number of customers, an advisory may be sent. There may be times when an advisory is not sent due to workload or the short duration of the activity.

ATCSCC uses free form advisories to pass important information on a variety of items. While these messages are free text, they do follow a designated header and signature information pattern. The detailed descritiption of ATCSCC free from advisory is presented in Appendix B.

3.2.1.3.2.3 Formatted GDP Advisory

Formatted GDP advisories are used to notify users that a Ground Delay Program is being considered or has been implemented. There are 16 advisories described in this section:

- Ground Delay Program (GDP) Advisory – Proposed
- Ground Delay Program (GDP) Advisory – Actual
- Airspace Flow Program (AFP) Advisory – Proposed
- Airspace Flow Program (AFP) Advisory – Actual
- Ground Delay Program (GDP) Cancel – Proposed

- Ground Delay Program (GDP) Cancel – Actual
- Airspace Flow Program (AFP) Cancel – Proposed
- Airspace Flow Program (AFP) Cancel – Actual
- Ground Stop (GS) Advisory – Proposed
- Ground Stop (GS) Advisory – Actual
- Ground Stop (GS) Cancel – Proposed
- Ground Stop (GS) Cancel – Actual
- Ground Delay Program/Airspace Flow Program (GDP/AFP) Compression – Proposed
- Ground Delay Program/Airspace Flow Program (GDP/AFP) Compression – Actual
- Ground Delay Program (GDP) Blanket Advisory – Proposed
- Ground Delay Program (GDP) Blanket Advisory – Actual

Since advisories are in some cases transmitted as IATA Type B messages, the following restrictions of this message type apply to the formatted GDP advisories:

- A maximum of 68 upper case alphanumeric characters per line
- Only the "/", "-", and "." Punctuations
- Text must be positioned using spaces, no tabs are permitted.

The above types of formatted GDP advisories are discussed in detail in Appendix B.

3.2.1.3.2.4 Formatted Reroute Advisory

Description of the Reroute Advisory message contained in this section is extracted from the FAA Order 7210.3U, Facility Operations and Administration, Section 17, February 16, 2006. Note – Any spaces contained in a line are included in the byte counts. Appendix Bprovides details of this message.

3.2.1.3.2.5 Formatted CTOP Advisories

Formatted CTOP advisories are used to notify users that a Collaborative Trajectory Options Program is being considered or has been implemented. There are 3 advisories described in this section:

- Collaborative Trajectory Options Program (CTOP) Advisory – Proposed
- Collaborative Trajectory Options Program (CTOP) Advisory – Actual
- Collaborative Trajectory Options Program (CTOP) Cancel – Actual

All advisories contain an additional line with the date, time, desk location, and phone number of the workstation that transmitted the advisory. This line, added during the advisory transmission process, is not depicted in the samples provided in this document because it is a transmission addendum and is not related to the primary purpose of the advisory.

Since advisories are in some cases transmitted as IATA Type B messages, the following restrictions of this message type apply to the formatted CTOP advisories:

- A maximum of 68 upper case alphanumeric characters per line are permitted

- Only the "/", "-", and ":" Punctuations are permitted
- Text must be positioned using spaces, no tabs are permitted.

The above types of formatted CTOP advisories are discussed in detail in Appendix B.

~~3.2.1.3.2.5~~3.2.1.3.2.6 Unsolicted Messages

During a Ground Delay Program (GDP), Airspace Flow Program (AFP) or Ground Stop (GS), TFMS sends messages to the FAA facilities (ARTCCs) when changes are made in the TFMS database, affecting the center's flights. These messages are:

a. Slot List
b. GDP Termination (via EDCT PURGE)
c. SUBSTITUTION Message

Table 3-VII presents details of data fields shared by the various Unsolicited Messages.

Table 3-VII. Unsolicited Messages Data Fields

Field	Designation	Unit/Format	Description	Bytes
SLOT LIST				
Slot List Headers	Slot List Headers	**ACID ASLOT DEP ARR CTD CTA TYPE EX CX SH ERTA (or) EENTRY IGTD**	Header for the following data fields: • ACID – Aircraft identifier • ASLOT – Arrival Slot • DEP – Departure Airport • ARR – Arrival Airport • CTD – Controlled Time of Departure • CTA –Controlled Time of Arrival • TYPE – Type of Entry • EX – Exempt Flag (Yes or No) • CX – Control Flag (Yes or No) • SH – Slot Hold flag (Yes or No) • ERTA - Earliest Runway Time of Arrival for Airport *or* EENTRY – Earliest Entry Time for an AFP • IGTD - Initial Gate Time of	62

Field	Designation	Unit/Format	Description	Bytes
			Departure	
SLOT LIST DATA FIELDS*				
ACID	Flight Identification	Laa[a][a][a][a]	Flight call sign as it appears in the OAG and/or subsequently will be filed on the NAS flight plan. Padded with spaces to equal 8 bytes.	8
ASLOT	Arrival Slot	LLL[Laa].ddddddL	The time slot reserved at the airport or FCA for this flight to arrive as follows: • Name – airport or FCA name. An airport name can be three or four characters and can include letters and numbers. An FCA name must be the entry FCA followed by three alphanumeric characters. The name is separated from the Date/Time by a period for readability • Date/Time – Slot date and time. The format is DDhhmm (padded as necessary) • Suffix Letter - The suffix letter is used to ensure that slot name is unique. Note - An FCA name must be six characters starting with the literal letters “FCA”. The remaining characters can be either digits, upper-case letters, dash (“-“), or underscore (“_”). An FCA name cannot end with an underscore. Padded with spaces to equal 15 bytes.	15
DEP	Departure Airport	LLL[L]	Departure airport code in standard 3 or 4 letter identifier, padded with spaces to equal 5 bytes	5

Field	Designation	Unit/Format	Description	Bytes
ARR	Arrival Airport	LLL[L]	Arrival airport code in standard 3 or 4 letter identifier, padded with spaces to equal 5 bytes. Note - For a GDP, the arrival airport will be the same for every flight; for an AFP, they may differ. It is padded with spaces to equal 5 bytes	5
CTD	Controlled Time of Departure	dddddd	The time the flight should take off. In the format *DDhhmm*, padded with spaces to equal 7 bytes	7
CTA	Controlled Time of Arrival	dddddd	The time the flight should arrive at the controlled airport or FCA (e.g., 260400). In the format *DDhhmm*, padded with spaces to equal 7 bytes	7
TYPE	Control Type	LLL[L]	The source of the current control times for this flight (e.g. GDP). The control types that can appear in a slot list are: • ABRG – the flight was utilized to create a bridge in order to adaptive compress a slot. • ADPT – control time assigned when the flight was adaptively compressed by the TFMS adaptive compression process (AFP and GDP) • AFP – Control times were computed as part of an initial AFP, a revision to an AFP, or an extension to an AFP. • BLKT – Control times were computed by a blanket program. • COMP – Control times were computed by compression. • DAS – Control time which resulted from the assignment of the average delay to a pop-up flight which did not receive an unassigned slot in an AFP or	5

Field	Designation	Unit/Format	Description	Bytes
			GDP. For DAS based programs this is used for the initial delay assignments to all pop-up flights. For GAAP and UDP based programs, this control type is used only if no unassigned slot is available for the pop-up. This control type is not used for re-controlled flights. (AFP and GDP) • ECR – Control times were assigned by an FAA ECR request. • GAAP – control times are the result of a GAAP or UDP based AFP or GDP if a pop-up or a re-control flight is allocated to an unassigned slot. This occurs for all pop-up flights in a GAAP or UDP based program when an unassigned slot is available for the flight. However, only some classes of re-controlled flights in a GAAP or UDP are assigned to unassigned slots. (e.g., those that occur after dropping out of an AFP). (AFP and GDP) • GDP – Control times were computed as part of an initial GDP, a revision to a GDP, or an extension to a GDP. • GS – Control times were computed by a ground stop. • RCTL – control time which resulted from the assignment of the average delay to a flight that was at some point controlled by a GDP or AFP, which was then purged or the flight dropped out and was re-controlled in another AFP.	

Field	Designation	Unit/Format	Description	Bytes
			For DAS programs this is used for the initial delay assignments to all re-controlled flights. For GAAP and UDP, this control type is used only if no unassigned slot is available for the re-controlled flight or the class of re-controlled flight is never assigned to unassigned slots. As opposed to other pop-ups, RCTL flights retain full substitution rights (AFP) • SBRG – Control times were assigned when creating a bridge for an SCS or ECR request. • SCS – Control times were assigned by a user slot credit substitution message. • SUB – Control times were assigned by a conventional user substitution message. • UBRG – Control times assigned when creating a bridge for pop-up flight assignments during UDP. Performed automatically by the TFMS-Core (AFP and GDP) • UPD – Control times are from an FAA "EDCT UPDATE" command. This entry is padded with spaces to equal 5 bytes.	
EX	Exempt Flag	**Y** *or* **–**	Flag indicating flight was exempt from delays when the GDP or AFP was computed. (one of two entries): • Y if true • - if False This entry is padded with spaces to equal 3 bytes	3
CX	Cancel Flag	**Y**	Flag indicating whether the flight is currently cancelled.	3

Field	Designation	Unit/Format	Description	Bytes
		or –	(one of two entries): • Y if true • - if False This entry is padded with spaces to equal 3 bytes	
SH	Slot Hold Flag	**Y** *or* –	Flag indicating whether the flight is currently on Slot Hold. (one of two entries): • Y if true • - if False This entry is padded with spaces to equal 3 bytes	3
ERTA for a GDP or EENTRY for an AFP	Earliest Runway Time of Arrival Earliest Entry Time	dddddd	The earliest time flight can arrive at the controlled element in the case that the delays are reduced (e.g., 260200). In the format *DDhhmm*, padded with spaces to equal 7 bytes EENTRY is used to ensure that a flight will not be assigned a slot for an AFP that it cannot use. Since the CDM Participants do not send earliest entry times for an FCA, TFMS computes this by: first determining the earliest ETA (EETA), then applying any delta to the ENTRY time. • If flight has ERTD, EENTRY = ENTRY + (ERTD-ETD) • Else if flight has LRTD, EENTRY = ENTRY + (LRTD-ETD) • Else if flight has LGTD, EENTRY = ENTRY + ((LGTD+10)-ETD) • Else if flight has IGTD, EENTRY = ENTRY + ((IGTD+10)-ETD) Else, EENTRY = ENTRY	6
IGTD	Initial Gate Time of Departure	dddddd	The original scheduled gate push back time for the flight in the format *DDhhmm*. Used to uniquely identify the flight.	6

Field	Designation	Unit/Format	Description	Bytes
*Note – There may be multiple rows of data under the header.				

3.2.1.3.2.5.1 Slot List

When a GDP, GS or AFP is initially issued or revised or when controlled flight departure times change as a result of adaptive compression, substitution, or Traffic Manager EDCT overrides, slot lists are organized by departure center and distributed to the affected Departure Centers. The slot lists provide a list of the controlled flights involved in the GDP, GS, or AFP for that departure center, including flights that have been cancelled. When the program is issued or revised, the slot list contains a complete list of all controlled flights departing from the center. Otherwise, the slot list contains the list of flights that are affected by the event which caused the message to be sent. A sample Slot List message for an ARTCC has the following format:

Sample Slot List for a GDP

```
      DEP CNTR  ZDC
ACID    ASLOT       DEP  ARR  CTD    CTA    TYPE EX CX SH ERTA   IGTD
ABC1234 LGA.260400A DCA  LGA  260300 260400 GDP  -  -  -  260400 260245
ABC5678 LGA.260500A IAD  LGA  260400 260500 GDP  -  -  -  260300 260145
ABC3601 LGA.260323A BOS  LGA  260206 260323 GDP  Y  -  -  260319 260150
ABC3522 LGA.260311A DCA  LGA  260215 260311 GDP  -  -  -  260311 260145
ABC3994 LGA.260353A ROC  LGA  260246 260353 GDP  -  Y  -  260355 260235
```

Table 3-VII presents a breakout of the Slot List Headers and Data Fields shown above

3.2.1.3.2.5.2 GDP Termination (via EDCT Purge)

The FAA terminates a GDP by using an EDCT PURGE command to clear the controls out of the TFMS database. Each departure center gets a copy of the EDCT PURGE command along with a Slot List of the affected flights (i.e., the flights no longer controlled by the terminated delay program) departing from it. A sample EDCT PURGE message follows:

Sample EDCT Purge Message (for an FCA)

```
   EDCT PURGE FCAA02
ACID    ASLOT          DEP  ARR  CTD    CTA    TYPE EX CX SH  EENTRY   IGTD
ABC1234 FCAA02.260400A DCA  LGA  260300 260400 AFP  -  -  -   260400   260245
ABC5678 FCAA02.260500A DCA  BOS  260400 260500 AFP  -  -  -   260300   260145
ABC360  FCAA02.260323A DCA  LGA  260206 260323 AFP  Y  -  -   260319   260150
ABC3522 FCAA02.260311A DCA  BOS  260215 260311 AFP  -  -  -   260311   260145
ABC39   FCAA02.260353A DCA  LGA  260246 260353 AFP  -  Y  -   260355    260235
```

Table 3-VIII below presents a breakout of the EDCT Purge Message.

Table 3-VIII. EDCT Purge Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	EDCT Purge Identifier	**EDCT PURGE FCA**aaa *or* **EDCT PURGE** aaa	Identifies airport or FCA that the EDCT Purge is for.	14-17
2	Slot List Data Headers	**ACID ASLOT DEP ARR CTD CTA TYPE EX CX SH ERTA (or) EENTRY IGTD**	Header for the following data fields: • ACID – Aircraft identifier • ASLOT – Arrival Slot • DEP – Departure Airport • ARR – Arrival Airport • CTD – Controlled Time of Departure • CTA –Controlled Time of Arrival • TYPE – Control Type • EX – Exempt Flag (Yes or No) • CX – Control Flag (Yes or No) • SH – Slot Hold Flag (Yes or No) • ERTA – Earliest Runway Time of Arrival *or* • EENTRY – Earliest Entry Time • IGTD - Initial Gate Time of Departure	65
3 - *n*	Slot List Data Fields		Refer to Table 3-VII for detailed breakout.	

3.2.1.3.2.5.3 Substitution Message

When a user successfully substitutes flights, ~~TFMS sends a response confirming the new control times for those flights. The person who generated request, and/or the application from which the request was sent, therefore know that these flights have been updated. However, other people from that user's organization and other applications the user may run do not necessarily know that these flights have changed. In order to allow a person or application to have a single source of all control time changes,~~ TFMS sends an unsolicited message to each departure center

affected by a successful substitution request. The message includes a list of the affected flights departing from the center.

A sample SUBSTITUTION message for a user has the following format:

Sample SUBSTITUTION Message (for a GDP)

```
SUBSTITUTION FOR LGA

ACID    ASLOT       DEP  ARR  CTD    CTA    TYPE EX CX SH ERTA   IGTD
ABC1234 LGA.260500A DCA  LGA  260400 260500 SUB  -  Y  -  -      260145
ABC5678 LGA.260400A DCA  LGA  260300 260400 SUB  -  -  -  260400 260245
```

Table 3-IX below presents a breakout of the Substitution message.

Table 3-IX. SUBSTITUTION Message

Field/Line	Designation	Unit/Format	Description	Bytes
1	Substitution Identifier	**SUBSTITUTION FOR FCA**aaa *or* **SUBSTITUTION FOR** aaa	Identifies airport or FCA that the Re control is for.	20-23
2	Blank Line Separator		Blank line separating data	1
3	Slot List Data Headers	**ACID ASLOT DEP ARR CTD CTA TYPE EX CX SH ERTA (or) EENTRY IGTD**	Header for the following data fields: • ACID – Aircraft identifier • ASLOT – Arrival Slot • DEP – Departure Airport • ARR – Arrival Airport • CTD – Controlled Time of Departure • CTA –Controlled Time of Arrival • TYPE – Control Type • EX – Exempt Flag (Yes or No) • CX – Control Flag (Yes or No) • SH – Slot Hold Flag (Yes or No) • ERTA - Earliest Runway Time of Arrival *or* • EENTRY – Earliest Entry	65

Field/Line	Designation	Unit/Format	Description	Bytes
			Time for FCA • IGTD - Initial Gate Time of Departure	
4-*n*	Slot List Data Fields		Refer to Table 3-VII above for descriptions of Line 4-n entries.	

3.2.1.3.3 Information Unit Segmentation

The maximum message length that NADIN can transmit or receive is 3700 bytes. NADIN will segment AFTN messages for transmission to NADIN users that support small message sizes.

3.2.1.3.4 Direction of Information Flow

The information flow between NADIN and TFMS is bi-directional, based on a full duplex communication link. Information can flow from NADIN to TFMS as well as from TFMS to NADIN at the same time on the same connection.

3.2.1.3.5 Frequency of Transmission

All messages transferred by the TFMS-NADIN interface are of an "as required" basis. There are no regularly scheduled transmissions within this interface.

3.2.1.3.6 Responses

The TCP/IP service assures guaranteed delivery of all messages received by TFMS from NADIN, or by NADIN from TFMS by sending back an acknowledgement. Any message for which a TCP acknowledgement is received is considered successfully delivered by either side.

3.2.1.4 Quality of Service

Not applicable.

3.2.1.5 AP Error Handling

When NADIN is ready to receive application-level messages, it will listen on its TCP/IP ports awaiting incoming socket connections. NADIN will verify that the user's IP address is valid for the NADIN IP Address and Port number for the incoming connection. If NADIN determines that there is an issue, then the socket will be immediately closed by NADIN. If NADIN is unable to recover from the error condition, it will close the socket.

TFMS performs the following functions to handle specific errors:

1. TCP acknowledgement is performed by the TCP protocol, as detailed in Subsection 3.2.1.3.6, to verify receipt of messages

2. TFMS preserves messages in case of temporary failure of communication with NADIN.

No other specific error handling functions are required or performed by the TFMS-NADIN IP interface.

3.2.1.6 Interface Summary Table

An interface summary table (see Table 3-X below) shows the association between the messages that flow across the interface and the APs of the interfacing subsystems. The left side of the interface summary table column lists the TFMS APs. The center column contains the names of the messages transferred. The right hand column lists the NADIN APs.

Table 3-X. TFMS-to-NADIN Interface Summary Table

Subsystem A TFMS AP	Message	Direction of Flow	Reference	Subsystem B NADIN AP
FAA Portal MIS AP	Fixed Field Position Report	A←B	Section 3.2.1.3.2.1a and VNTSCD-TFM-ICD-OMP-001 Section 3.2.4.1.2.1	NADIN MSN AP (1)
FAA Portal MIS AP	Oceanic Clearance Request Report	A←B	Section 3.2.1.3.2.1b and VNTSCD-TFM-ICD-OMP-001 Section 3.2.4.1.2.2	NADIN MSN AP (1)
FAA Portal MIS AP	Non-POS/Non-RCL Report	A←B	Section 3.2.1.3.2.1c and VNTSCD-TFM-ICD-OMP-001 Section 3.2.4.1.2.3	NADIN MSN AP (1)
FAA Portal MIS AP	ATCSCC Advisories	A →B	Appendix B and FAA Order 7210.3U.	NADIN MSN AP (2)
FAA Portal MIS AP	International Advisories	A →B	Appendix B and FAA Order 7210.3U.	NADIN MSN AP (2)
FAA Portal MIS AP	General Message	A →B	Appendix B and FAA Order 7210.3U.	NADIN MSN AP (2)
FAA Portal MIS AP	Ground Delay Program Advisory – Proposed	A →B	Appendix B.	NADIN MSN AP (3)
FAA Portal MIS AP	Ground Delay Program Advisory – Actual	A →B	Appendix B.	NADIN MSN AP (3)
FAA Portal MIS AP	Airspace Flow Program Advisory – Proposed	A →B	Appendix B.	NADIN MSN AP (3)
FAA Portal MIS AP	Airspace Flow Program Advisory – Actual	A →B	Appendix B.	NADIN MSN AP (3)

Subsystem A TFMS AP	Message	Direction of Flow	Reference	Subsystem B NADIN AP
FAA Portal MIS AP	Ground Delay Program Cancel – Proposed	A →B	Appendix B.	NADIN MSN AP (3)
FAA Portal MIS AP	Ground Delay Program Cancel – Actual	A →B	Appendix B.	NADIN MSN AP (3)
FAA Portal MIS AP	Airspace Flow Program Cancel – Proposed	A →B	Appendix B.	NADIN MSN AP (3)
FAA Portal MIS AP	Airspace Flow Program Cancel – Actual	A →B	Appendix B.	NADIN MSN AP (3)
FAA Portal MIS AP	Ground Stop Advisory – Proposed	A →B	Appendix B.	NADIN MSN AP (3)
FAA Portal MIS AP	Ground Stop Advisory – Actual	A →B	Appendix B.	NADIN MSN AP (3)
FAA Portal MIS AP	Ground Stop Cancel – Proposed	A →B	Appendix B.	NADIN MSN AP (3)
FAA Portal MIS AP	Ground Stop Cancel – Actual	A →B	Appendix B.	NADIN MSN AP (3)
FAA Portal MIS AP	Ground Delay Program/Airspace Flow Program Compression – Proposed	A →B	Appendix B.	NADIN MSN AP (3)
FAA Portal MIS AP	Ground Delay Program/Airspace Flow Program Compression – Actual	A →B	Appendix B.	NADIN MSN AP (3)
FAA Portal MIS AP	Ground Delay Program Blanket Advisory – Proposed	A →B	Appendix B.	NADIN MSN AP (3)
FAA Portal MIS AP	Ground Delay Program Blanket Advisory – Actual	A →B	Appendix B.	NADIN MSN AP (3)
FAA Portal MIS AP	Formatted Reroute Advisory	A →B	Appendix B FAA Order 7210.3U.	NADIN MSN AP (4)
FAA Portal MIS AP	CTOP Advisory – Proposed	A →B	Appendix B.	NADIN MSN AP (3)
FAA Portal MIS AP	CTOP Advisory – Actual	A →B	Appendix B.	NADIN MSN AP (3)
FAA Portal MIS AP	CTOP Cancel – Actual	A →B	Appendix B.	NADIN MSN AP (3)
FAA Portal MIS AP	Slot List	A →B	N/A	NADIN MSN AP (5)
FAA Portal MIS AP	GDP Termination (Via EDCT Purge)	A →B	N/A	NADIN MSN AP (5)

Subsystem A TFMS AP	Message	Direction of Flow	Reference	Subsystem B NADIN AP
FAA Portal MIS AP	Substitution Message	A →B	N/A	NADIN MSN AP (5)

Note – To save space, the following entries are entered in the Subsystem B columns:
(1) – From Canadian IFSS
(2) – To ATCSCC for electronic logging
(3) – From ATCSCC and Canadian Command Centre to all configured addressees
(4) – To all configured addressees
(5) – To configured ARTCC addresses

3.2.2 Protocol Implementation

The TFMS-to-NADIN IP interface communications functions are implemented according to OSI reference model as defined in FAA-STD-039b, Open Systems Architecture and Protocols, and FAA-STD-043b, Open System Interconnect Priority. Subsection 3.2.2 documents the OSI protocols implemented for each layer of the interface. For the layers not used, this following text will be used "This layer is not implemented within the TFMS-to-NADIN interface".

a. Application Layer (Layer 7) - This layer is not implemented within the TFMS-to-NADIN IP interface.

b. Presentation Layer (Layer 6) – This layer is not implemented within the TFMS-to-NADIN IP interface.

c. Session Layer (Layer 5) - This layer is not implemented within the TFMS-to-NADIN IP interface.

d. Transport Layer (Layer 4) - The TFMS-to-NADIN IP interface uses the TCP, in accordance with RFC793, Transmission Control Protocol as its Transport layer protocol.

e. Network (Packet) Layer (Layer 3) - TFMS-to-NADIN IP interface uses the standard IP RFC791, Internet Protocol as its Network layer protocol.

f. Data-Link (Frame) Layer (Layer 2) – The TFMS-to-NADIN IP uses the 100-baseT Ethernet standard in accordance with IEEE 802.3, *IEEE Standard for Information Technology — Telecommunications and Information Exchange Between Systems*, 2000 as the Data Link Layer.

g. Physical Layer (Layer 1) - The Physical layer of the TFMS-to-NADIN IP interface consists of standard Category 5 (Cat-5) Ethernet cable as its Physical layer protocol.

Figure 3-3, OSI Layer Functional Interface Connectivity Diagram for TFMS-to-NADIN IP, gives a visual representation of the OSI layers and their structure.

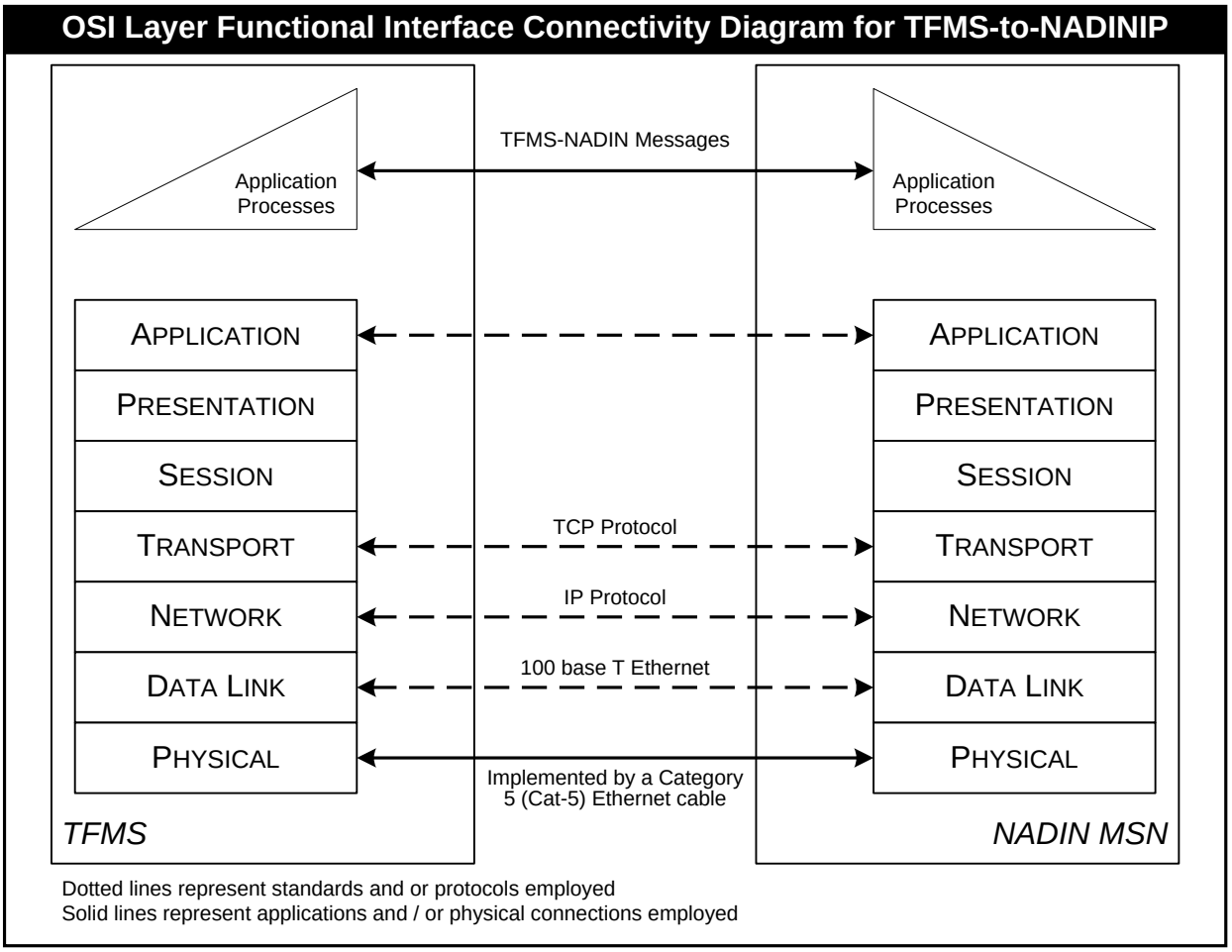

Figure 3-3. OSI Layer Functional Interface Connectivity Diagram for TFMS-to-NADIN IP

3.2.2.1 Application Services

The sequence of steps for exchanging NADIN data between the two interfacing systems is as follows:

1. TFMS or NADIN (whichever has data to send) opens a socket connection to the other interfacing system using a specified port number and pre-determined IP address that has been previously exchanged via out-of-band communication.
2. The transmitting system validates that receiver is authorized to receive data.
3. The transmitting system begins transmitting data to the receiving system. (Note – both systems may act as receivers and transmitters during the connection. Data may pass in either direction after the connection is established)
4. The transmitting system terminates the data stream by closing the socket connection to the reciever when the data transfer is complete.

3.2.2.2 Network Services

The TFMS-to-NADIN IP interface uses the established standards of Transmission Control Protocol (TCP) in accordance with RFC 793, Transmission Control Protocol, and Internet Protocol (IP) in accordance with RFC 791, Internet Protocol, Sep. 1981.

3.2.2.3 Naming and Addressing

NADIN differentiates messages for TFMS (and other applications) by the use of a supplied specified message header address. This header is described in Subsection 3.2.1.3.2).

3.2.3 Security

TFMS implements FAA information security guidelines in accordance with the Systems Security Plan (SSP) for Traffic Flow Management–Modernization (TFMM), the FAA Information Systems Security Program, FAA Order 1370.82A, and FAA-STD-045, OSI Security Architecture, Protocols and Mechanisms. It will enact security strategies and measures on all incoming information into TFMS.

3.2.4 Interface Design Characteristics Table

Subsection 3.2.4 summarizes the interface functional design characteristics in an interface design characteristics table or matrix in addition to the text. The Interface Design Characteristics of the TFMS-to-NADIN IP Interface Table (see Table 3-XI) serves as a "quick-look" reference.

Table 3-XI. Interface Design Characteristics of the TFMS-to-NADIN IP Interface Table

Message Name	Format	Min/Max Size (Bytes)	Time Constraints	Frequency
Fixed Field Position Report	ASCII	22/75*		As required
Oceanic Clearance Request	ASCII	22/85*		As required
Non-POS/Non-RCL Report	ASCII	50/95*		As required
ATCSCC Advisories	ASCII	Variable††		As required
International Advisories	ASCII	Variable††		As required
General Message	ASCII	Variable††		As required
Ground Delay Program Advisory – Proposed	ASCII	Variable††		As required
Ground Delay Program Advisory – Actual	ASCII	Variable††		As required
Airspace Flow Program Advisory – Proposed	ASCII	Variable††		As required
Airspace Flow Program Advisory – Actual	ASCII	Variable††		As required
Ground Delay Program Cancel –	ASCII	Variable††		As required

Message Name	Format	Min/Max Size (Bytes)	Time Constraints	Frequency
Proposed				
Ground Delay Program Cancel – Actual	ASCII	Variable††		As required
Airspace Flow Program Cancel – Proposed	ASCII	Variable††		As required
Airspace Flow Program Cancel – Actual	ASCII	Variable††		As required
Ground Stop Advisory – Proposed	ASCII	Variable††		As required
Ground Stop Advisory – Actual	ASCII	Variable††		As required
Ground Stop Cancel – Proposed	ASCII	Variable††		As required
Ground Stop Cancel – Actual	ASCII	Variable††		As required
Ground Delay Program/Airspace Flow Program Compression – Proposed	ASCII	Variable††		As required
Ground Delay Program/Airspace Flow Program Compression – Actual	ASCII	Variable††		As required
Ground Delay Program Blanket Advisory – Proposed	ASCII	Variable††		As required
Ground Delay Program Blanket Advisory – Actual	ASCII	Variable††		As required
Formatted Reroute Advisory (W/o Flight List)	ASCII	Variable††		As required
Formatted Reroute Advisory (With Flight List)	ASCII	Variable††		As required
CTOP Advisory – Proposed	ASCII	Variable††		As required
CTOP Advisory – Actual	ASCII	Variable††		As required
CTOP Cancel – Actual	ASCII	Variable††		As required
Slot List	ASCII	153/156*		As required
GDP Termination (via EDCT Purge)	ASCII	146/149*		As required
Substitution Message	ASCII	153/156*		As required

*Note – Some entries in these messages may have more than one line of entry, due to optional entries and limits on line length (68 characters). The given maximum is valid if any entries do not exceed one line for each entry. See the individual sections referenced for full details on line and data layout.

**Note – These messages are variable free form and as such does not have a truly definable maximum. The minimum given covers only the required header and footer entries.

††Note – Advisories contain variable length fields. Min/Max Byte count is not predictable.

3.3 Physical Design Characteristics

The TFMS-to-NADIN Clients connect via the FAA FTI BD-1 Gateway. TFMS receives and sends data to NADIN clients via the operational FTI WAN through the FAA Router, a Cisco 3845 router (designated FAARTR). This router provides a

gateway from "trusted" networks into the TPC. The FAA Router passes data and receives outgoing data from the Firewall, which in turn passes and receives from the FAA Portal External Interface Server, an HP ProLiant DL380 (designated PRSR_3).

Note – the dashed line indicates limit of the TFMS system. The circled dots indicate the Demarcation points.

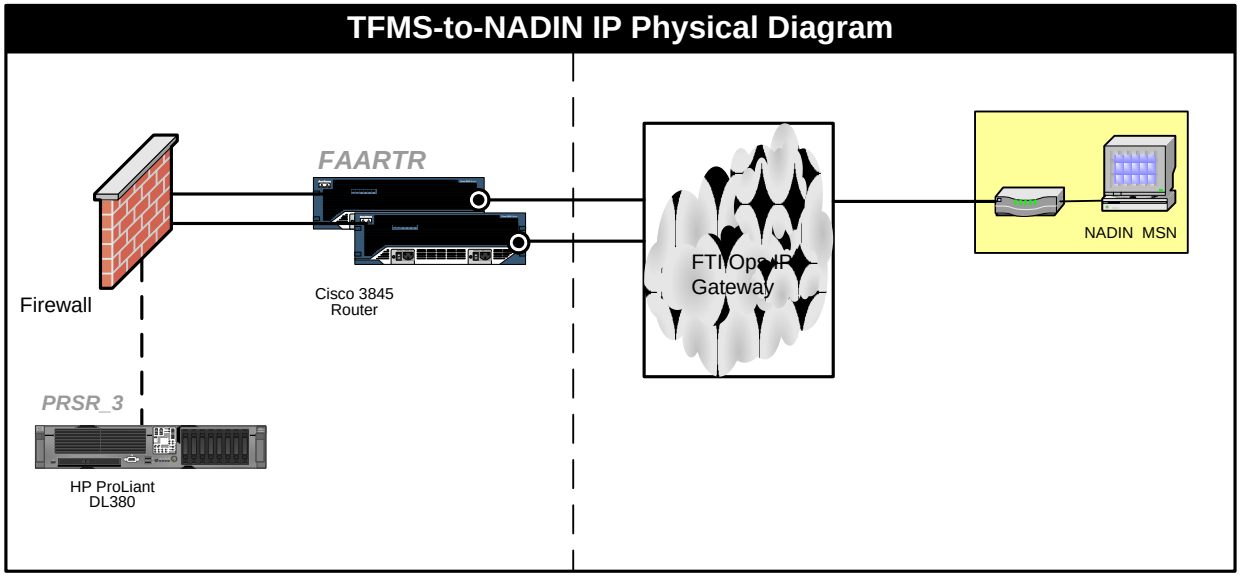

Figure 3-4. TFMS-to-NADIN IP Interface Physical Diagram

3.3.1 Electrical Power and Electronic Characteristics

Not applicable. No subsystems supply electrical, mechanical, or environmental support to another subsystem. Systems supply their own discrete power and do not support each other in this manner.

3.3.1.1 Connectors

The TFMS-to-NADIN interface uses a standard RJ-45 Ethernet cable connector.

3.3.1.2 Wire/Cable

The TFMS-to-NADIN interface uses the standard Cat5 Ethernet cabling with RJ-45 for the FTI BD-1 interface connections.Electrical Power/Grounding
Not applicable.

3.3.1.3 Fasteners

Not applicable.

3.3.1.4 Electromagnetic Compatibility

Not applicable.

4 Verification Provisions

4.1 Responsibility for Verification

Following are verification provisions for the TFMS-to-NADIN IP interface:

1. Pre-OT&E (Operational Testing and Evaluation)

2. OT&E

3. KSAT (Key Site Acceptance Test)

4.1.1 Pre-OT&E

Pre-Operational Test and Evaluation (OT&E) testing is performed to verify the operational viability of the TFMS-NADIN IP interface and data stream prior to formal testing. NADIN message exchange is available within this test phase but testing may be performed using simulated data. Pre-OT&E testing verifies that the end systems comply with and utilize the messages and formats as specified in this ICD. This test is conducted by both end systems as part of their informal system tests using their own test plans and test procedures. It is conducted at their respective test facilities. The William J Hughes Technical Center (WJHTC) TFMS Test Facility (TF) is designated as the test facility for the TFMS system. Pre-OT&E testing of TFMS is performed in accordance with FAA-approved test plans and procedures. TFMS test results are provided to the FAA. A TPC Auxiliary Platform (TAP) at the WJHTC is configured with the appropriate TFMS release software to support NADIN IP testing (refer to Section 4.2 Test Environments).

4.1.2 OT&E

The OT&E tests are live tests conducted formally by the FAA with CSC support at the TPC. They include the Air Traffic Control System Command Center (ATCSCC) “early look” tests with the participation of FAA field personnel. Among other things, these tests verify end to end connectivity between TFMS and the NADIN IP.

4.1.3 KSAT

The Key Site Acceptance Test (KSAT) focuses on TFMS functionality and connectivity tests. It is conducted under operational conditions, performed with live data between the TPC, the ATCSCC and an FAA-selected Air Route Traffic Control Center (ARTCC) site.

4.2 Test Environments

The TFMS-NADIN IP test environment consists of a TPC Auxiliary Platform (TAP) that is configured with the NADIN IP software for CDM user community pre-production testing. Each TAP is a separate test environment, loaded with either the current operational TFMS release or the next version to be released. Each TAP is isolated from the operational system and is configured to receive one way flow of live flight data from a message forwarding component of the TFMS operational

system. Non-operational data on a TAP is not enabled to flow into the operational system.

Access to the test environments for CDM customers requires that a separate connection be created to access the TAPs. Current operational NADIN IP connections (Ops) are not permitted to access the test environments. A separate non-operational service delivery point or gateway (referred to as the FAA National Test Bed or FNTB) provides isolation from the operational system and access to the TFMS test environments.

4.3 Special Verification Requirements

No special verification requirements exist for this ICD.

4.4 Verification Requirements Traceability Matrix (VRTM)

No VRTM is required for this ICD.

5 Preparation for Delivery

Not applicable.

6 Notes

6.1 Definitions

None

6.2 Abbreviations and Acronyms

This section provides a definition of acronyms contained within this ICD.

ACARS	Aircraft Communications Addressing and Reporting System
ACID	Aircraft Identifier
ADL	Aggregate Demand List
AFP	Airspace Flow Program
AFTN	Airways Fixed Telecommunications Network
ALT	Altitude
ANSI	American National Standards Institute
AP	Application Process
ARINC	Aeronautical Radio Incorporated
ARR	Arrival
ARTCC	Air Route Traffic Control Center
ASCII	American Standard Code for Information Interchange
ASLOT	Arrival Slot
ATCSCC	Air Traffic Control System Command Center
BLKT	Blanket Program
CDM	Collaborative Decision Making
COMP	Compression
COTS	Commercial Off-the-Shelf
CPDLC	Controller-Pilot Data Link Communications
CR	Carriage Return
CTA	Controlled Time of Arrival
CTD	Controlled Time of Departure
CTOP	Collaborative Trajectory Options Program
CX	Cancel Flag
DAS	Delay Assignment
DEP	Departure Airport
DEST	Destination Airport
DID	Data Item Description
EDCT	Estimated Departure Clearance Time
EENTRY	Earliest Entry Time (for an AFP)
ERTA	Earliest Runway Time of Arrival (for an Airport)

ERTD	Earliest Runway Time of Departure (for an Airport)ETA Estimated Time of Arrival
ETD	Estimated Time of Departure
ETMS	Enhanced Traffic Management System
EX	Exempt Flag
FAA	Federal Aviation Administration
FCA	Flow Constrained Area
FEA	Flow Evaluation Area
FS	End of Address
FSM	Flight Schedule Monitor
FTI	Federal Telecommunications Infrastructure
GAAP	General Aviation Airport Programs
GDP	Ground Delay Program
GS	Ground Stop
IAW	In Accordance With
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
ICD	Interface Control Document
ID	Identification
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
IFSS	International Flight Service Station
IGTD	Initial Gate Time of Departure
IP	Internet Protocol
IR	Interface Requirement
IRD	Interface Requirement Document
IRS	Interface Requirement Specification
ISO	International Organization for Standardization
ISSP	Information Systems Security Plan
KB	Kilobyte
KSAT	Key Site Acceptance Test
LF	Line Feed
LGTD	Latest Gate Time of Departure
LRTD	Latest Runway Time of Departure
MSL	Message Segment Lifetime
MSN	Message Switched Network
NADIN	National Airspace Data Interchange Network
NAS	National Airspace System

NESG	NAS Entgerprise Security Gateway
NOTAM	Notices To Airmen
OAG	Offical Airline Guide
OMP	Offshore Message Processor
ORIG	Origin Airport
OSI	Open Systems Interconnect
OT&E	Operational Test and Evaluation
POS	Fixed Field Position Report
PSN	Packet Switched Network
PT	Planning Telcon
RCL	Oceanic Clearance RequestRFC Requext For Comments
RFS	Request-For-Service
SH	Slot Hold Flag
SMI	Standard Message Identifier
SSS	System/Subsystem Specification
STD	Standard
STMP	Special Traffic Management Programs
TAP	TFMS Production Center (TPC) Auxiliary Platform
TCP	Transmission Control Protocol
TFM	Traffic Flow Management
TFMI	Traffic Flow Management Infrastructure
TFM-M	Traffic Flow Management - Modernization
TFMS	Traffic Flow Management System
TMI	Traffic Management Initiative
TPC	TFMS Production Center
US	United States
UTC	Universal Time Coordinate
VNTSC	Volpe National Transportation Systems Center
VRTM	Verification Requirements Traceability Matrix
WAN	Wide Area Network
WJHTC	William J Hughes Technical Center

Appendix A Application-Level Data Message Format

All NADIN MSN application-level data messages that cross this interface in either direction conform to the format defined in Figure A-1, NADIN MSN Application Data Message Basic Format, below.

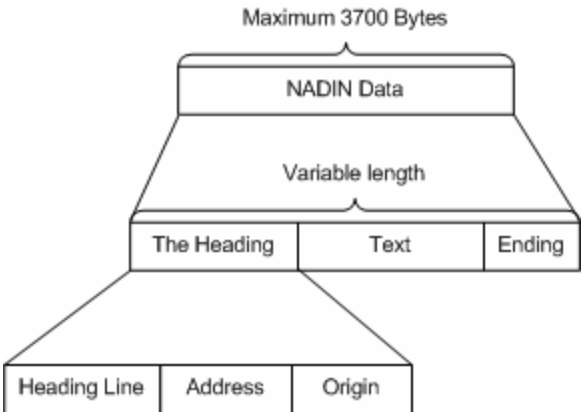

Figure A-1. NADIN MSN Application Data Message Basic Format

The NADIN MSN data field contains a single AFTN message, formatted in accordance with the ICAO message format (International Alphabet No. 5 (IA-5)), as specified in the Aeronautical Telecommunications Manual, Annex 10, Volume 2 (Amendment 71 or later).

The AFTN message consists of three parts, the Heading, Text, and Ending, with the Heading itself further broken down to three components, the Heading Line, Address, and Origin. All of these fields are well-defined in Figure 4-4 of the Aeronautical Telecommunications Manual.

The NADIN MSN also supports the following options to support existing legacy systems:

- The Alignment function can also be <CR><CR><LF>
- A 1-character field can be used as an "End of Address" delineator. (The delineator, the <FS> character, may be inserted after the last Alignment function(s) in the Address line and before the Filing Time in the Origin line.)
- The Heading line may also contain a Date-Time group, which the NADIN MSN uses to specify the time it transmits an AFTN message to a user.

Note: The NADIN MSN supports all of the options defined by the ICAO format (as well as the above NADIN MSN options) by means of configurable parameters specified on a per-user basis. This configuration is defined and agreed upon during the NADIN Request-ForService (RFS) process.

Appendix B Advisories and General Messages

The Advisories and General Messages list Free Format ATCSCC advisories, formatted GDP advisories, formatted Re-Route Advisories and CTOP Advisories. These Advisories are detailed in the Advisories and General Messages document that is shown on the CDM webpage: http://cdm.fly.faa.gov/ad/CDM-GDP_specs.htm. The latest document is version 1.3, dated November 2012.