July 3, 2019

The Honorable Richard Shelby
Chairman, Committee on Appropriations
United States Senate
Washington, DC 20510

Dear Mr. Chairman:

The enclosed report is in response to the provisions in House Report 115-237, Departments of Transportation, Housing and Urban Development, and Related Agencies Appropriations Bill, 2018 associated with the Consolidated Appropriations Act, 2018 (Public Law 115-141). The House Report directs the Federal Aviation Administration (FAA) to provide a report on the status and future plans related to the FAA Telecommunications Infrastructure (FTI) Mission Support Network within 120 days of enactment of the act.

The FAA's report on the FTI Mission Support Network Status and Future Plans is intended to address information specifically requested in House Report 115-237.

We have sent an identical letter to Vice Chairman Leahy, Chairwoman Lowey, and Ranking Member Granger.

Sincerely,

Daniel K. Elwell
Acting Administrator

Enclosure

FTI Mission Support Network Status and Future Plans

Report to Congress

Prepared by the:

Federal Aviation Administration
(FAA)

October 2018

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1. INTRODUCTION

1.1   Purpose

The purpose of this report is to address the concerns stated within the House Report 115-237, accompanying the Consolidated Appropriations Act, 2018, Pub. L. 115-141, regarding the Federal Aviation Administration's (FAA) Mission Support Network and to provide the requested information by the House Committee on Appropriations. The specific language within the House Report is restated below:

FAA Telecommunications Infrastructure Mission Support Network –

The Committee is concerned by the FAA's decision to extend by five years its aging Mission Support Network, a decision which carries both technology and cost implications. Within 120 days of enactment of this Act, the FAA will provide to the Committee a report on the status of the FTI Mission Support Network along with future plans, including:

1) *the contract's current scope of service and performance,*

2) *current technology profile, including what services can and cannot be provided, and what, if any, technology services will likely be retired over the course of the extension, and*

3) *the extension's implications to the network's total cost of ownership.*

The report should also contain a discussion of the proposed decision to extend the contract sole-source, and whether the FAA has explored using alternative Government-wide telecommunications contract vehicles and how those alternative vehicles could meet current and future technology needs at a reduced cost.

1.2   Background

The FAA has extensive needs for telecommunications services and networking capabilities to support the operation of the National Airspace System (NAS) as well as agency/administrative functions. The FAA obtains the majority of these services and networking capabilities through the FAA Telecommunications Infrastructure (FTI) contract that was awarded in 2002. While FTI has been in operation for more than a decade, it is a services-based contract and the underlying technologies are continually updated by the service provider.

The NAS has been designated by the Department of Homeland Security (DHS) and the Office of Management and Budget (OMB) as part of our Nation's critical infrastructure. In order to meet the applicable information security requirements, the FAA has separate networks – one for NAS Operations and one for agency/administrative functions. The latter is referred to as the FTI Mission Support Network that is the subject of the congressional request.

The FTI Mission Support Network provides the FAA's internal wide area network ("intranet") between approximately 1000 sites that are the work locations for the FAA's Federal and contractor workforce. The sites range in size from less than ten to thousands of

personnel. The sites include FAA Headquarters in Washington, DC, staffed air traffic control facilities, and administrative offices across the United States and in foreign countries.

1.3   Report Overview

The remainder of this report is structured to directly address the concerns noted in House Report 115-237 and to provide the specific information requested. Section 2.0 of this report describes the status of the FTI contract including the scope of services, the technologies employed, performance, the rationale behind the FAA's decision to extend the contract on a single source basis, and the associated cost implications. Section 3.0 focuses on future plans including the FAA's acquisition planning for the successor(s) to the FTI contract, conclusions from the FAA's market research, and the near-term outlook. Section 4.0 provides a summary that directly addresses the specific concerns expressed in House Report 115-237.

Unless otherwise noted, the remainder of this report focuses on the FTI Mission Support Network that is the subject of the congressional request; i.e., the information provided is specific to the FTI Mission Support Network and is not necessarily applicable to the NAS Operational Network that is also obtained under the FTI contract.

2.   STATUS OF CURRENT CONTRACT

2.1   Scope of Services

The FAA obtains the FTI Mission Support Network as a managed service – meaning that the service provider is responsible for all aspects of the service delivery including design, engineering, provisioning, security management, and operational performance. The FAA orders discrete services, typically one per site, which provide connectivity to the FTI Mission Support Network. All FTI Mission Support services have Ethernet interfaces and use the industry-standard Internet Protocol (IP). There are two distinct performance levels that can be ordered for Mission Support services:

1) "RMA4" with an availability of 99.79452% and a restoration time of 3 hours; and

2) "RMA6" with an availability of 99.04215% and restoration by the next business day.

The RMA4 services are implemented for the highest traffic volume sites (64) and RMA6 services are implemented for the remainder of the sites that have smaller user populations. In addition to individual user access to administrative applications, the FTI Mission Support Network also supports:

- large-scale data replication between FAA data centers;
- wide area network (WAN) transport for Voice over IP (VoIP) traffic within the FAA's Administrative Voice Enterprise;
- access to the commercial data centers hosting the server for FAA e-mail services; and
- access to Cloud computing services obtained through the FAA Cloud Services (FCS) contract.

The FAA obtains a virtual private network (VPN) remote access capability through the FTI contract that enables authorized users to access the FTI Mission Support Network via the Public Internet. There are approximately 27,000 active remote access accounts. The FTI Remote Access Capability (FRAC) supports teleworking by providing secure remote (external) access to the FTI Mission Support Network.

The FAA obtains one of its two Internet Access Points (IAPs) through the FTI contract. The FTI-provided IAP is part of the scope of services obtained to support the FTI Mission Support Network. It qualifies as a Trusted Internet Connection (TIC) per OMB guidelines.

With respect to the operation of the FTI Mission Support Network, the FTI service provider operates a dedicated Network Operations Control Center (NOCC) and a dedicated Security Operations Control Center (SOCC). The NOCC and SOCC facilities are shared with FTI NAS Operational network, but the network management functions are physically separated and operations personnel must comply with "separation of duty" requirements. The NOCC and SOCC provide the FAA with real-time notifications of issues as well as continual tracking of performance trends.

2.2   Current Technology Profile

The FTI Mission Support Network is based on Sprint's Global MultiProtocol Label Switching (GMPLS) network and is supplemented by the FTI Optical Backbone Network. All traffic on the FTI Mission Support is routed using the industry-standard IP, however use of IP does not imply use of the Public Internet. The FTI Mission Support Network is a private network that does not use the Public Internet for the transport of internal data. FTI-provided gateways are implemented to provide boundary protection and a secure interface for access to the Public Internet through OMB-approved TICs. Connectivity between the FTI Mission Support Network and the Public Internet is required to support e-mail traffic and other FAA administrative functions.

The FTI Mission Support Network is currently undergoing a nationwide bandwidth upgrade that will increase the access bandwidth capacity for sites connecting to the network. Many sites only have T1 (1.544 Mbps) connections that provide less access capacity than is typically provisioned for residential use in today's marketplace[1]. The FAA is in the process of upgrading the majority of the sites to a minimum of 10 Mbps capacity. The bandwidth upgrade is necessary to support on-line training, collaboration tools, and other administrative applications. As part of the upgrade, the access circuits to the FTI Mission Support Network will be migrated from Time Division Multiplexing (TDM)-based technology that is being phased out by commercial carriers to Carrier Ethernet access.

Section 2.1 of this report describes the scope of services that can be provided under the FTI Mission Support Network. There are no services currently required within the FAA's Mission Support Network domain that the FTI Mission Support Network is not capable of
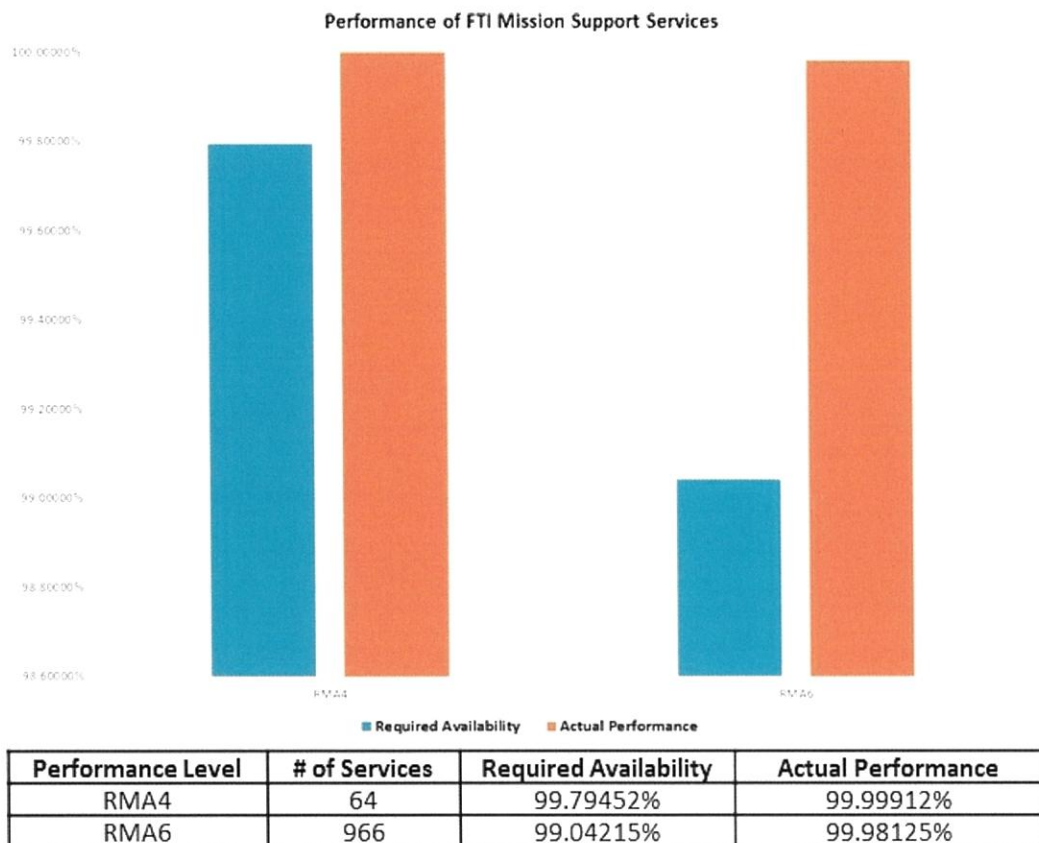
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[1] Survey Says Average U.S. Internet Connection Gets Speedier, Fortune Magazine, June 2, 2017, http://fortune.com/2017/06/02/internet-speed-akamai-survey/

providing. There are also no customer-facing services on the Mission support network that are planned to be retired during the course of the 5-year extension to the FTI contract.

2.3   Current Performance

The current performance of the FTI Mission Support Network far exceeds the FAA's requirements as defined in the FTI services specification. Figure 2-1 provides a comparison of the actual performance to the required performance based on the "rolling" 12-month availability. The FTI Mission Support Network has sustained these performance levels over the FTI contract period of performance.

Performance of FTI Mission Support Services

Performance Level	# of Services	Required Availability	Actual Performance
RMA4	64	99.79452%	99.99912%
RMA6	966	99.04215%	99.98125%

Figure 2-1. Actual Performance Compared to Required Availability

Figure 2-2 depicts to rate of growth in the aggregate bandwidth provided by the FTI Mission Support Network. The plot illustrates how the FTI Mission Support Network has been able to keep pace with the FAA's ever-increasing demands for bandwidth within the Mission Support Network domain.
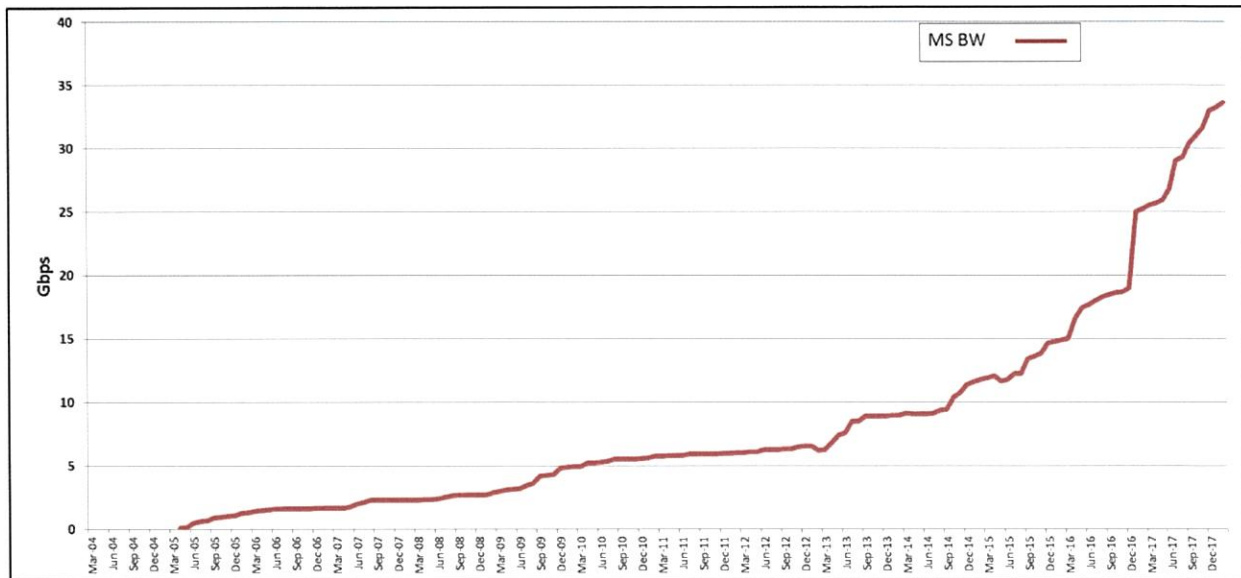
Figure 2-2. Historical Bandwidth Growth on the FTI Mission Support Network

2.4   Single Source Extension

Prior to making the decision to extend the existing FTI contract on a single source basis, the FAA conducted extensive market research in the 2011-2012 timeframe to:

– Obtain an industry forecast of telecommunications technologies and pricing between 2015 and 2025, and

– Assess the potential competitive landscape for the successor to the FTI contract.

Based upon the responses from a broad spectrum of industry stakeholders including major U.S. telecommunications service providers and large-scale integration contractors, the FAA concluded there was sufficient interest in a re-competition of the FTI scope of services, but there were no marketplace or technology drivers that would yield a positive business case or provide benefits beyond what can be obtained through the existing FTI contract. In addition, the market survey results showed that, while bandwidth is becoming more affordable when purchased in larger capacities, there were no clear-cut benefits from a cost or technology standpoint associated with re-competing the FTI contract in the near term.

Through its assessment of the market survey results, the FAA concluded that an additional 5 years under the existing contract would allow time for: (1) FAA systems to modernize their communications interfaces; and (2) commercial service providers to introduce new capabilities that could benefit the FAA. Since the decision was made to extend the existing FTI contract, these targets of opportunity have begun to be realized with ongoing NAS modernization efforts and the introduction of new technologies in the commercial marketplace such as Software-Defined Networking (SDN) and Network Function Virtualization (NFV).

With respect to the implications of the network's total cost of ownership, FTI is a services-based contract so the FAA does not own any of the infrastructure; however, the 5-year single source extension does have implications in terms of the FAA operating costs. The

question is whether deferring the re-competition results in the FAA paying more for the services. Based upon the FAA's market research and the business practices employed within the existing contract, the FAA concluded that the cost implications of the 5-year single source extension are minimal. For example, the FTI service provider operating as an integrator of FAA services obtains competitive quotes on behalf of the FAA from commercial carriers for all of the Mission Support access upgrades described in Section 2.2 of this report. In addition, all new service prices added to the contract undergo a fair and reasonable price assessment relative to the marketplace benchmarks. As such, based upon this integrator model employed by the FAA, the service provider regularly conducts "mini-competitions" for services within the existing contract to ensure the FAA continues to pay market-competitive prices.

3. FAA FUTURE PLANS

3.1 Ongoing Acquisition Planning

The FAA is currently in the acquisition planning phase for the successor program to the existing FTI contract. The successor program is known as the FAA Enterprise Network Services (FENS) program. In terms of the key milestones defined with the FAA's Acquisition Management System (AMS), the FENS program achieved its Investment Analysis Readiness Decision (IARD) milestone in April 2018 and has begun the Investment Analysis phase. During Investment Analysis, the FAA will assess a range of options for meeting its future needs for communications services – including the scope of services currently provided by the FTI Mission Support Network.

The FAA is performing additional market research to support its acquisition planning and investment analysis for the FENS program. The conclusions from that market research are discussed in the next section.

3.2 Conclusions from FAA Market Research

The FAA is conducting a broad range of market research activities to support its planning and conceptualization of FENS, the successor to the existing FTI program. The scope of the market research activities includes:
- Requests for Information (RFIs) issued on FAA Contracting Opportunities (FAACO) website;
- A Joint FAA/Industry working group with the American Council for Technology and Industry Advisory Council (ACT-IAC);
- One-on-one meetings and technology demonstrations with industry stakeholders;
- Meetings with other Government agencies;
- Release of Draft Screening Information Requests[2] to solicit feedback from interested parties on the contractual terms and conditions and the planned source evaluation framework; and

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[2] In the FAA's Acquisition Management System (AMS), a Screening Information Request (SIR) is comparable to a Request for Proposal (RFP).

- Industry Day session to share programmatic information and answer specific questions.

In the context of the FAA's Mission Support Network requirements, key take-away points from this market research have been that:

- A majority of the civilian agencies within the Federal Government meet their needs for communications services through contract vehicles provided by the General Services Administration (GSA);
- The networking requirements of other civilian federal agencies are most analogous to the FAA's Mission Support Network requirements;
- The IP services-based environment of the FAA's Mission Support Network is the norm within the commercial marketplace and is the focus of technological innovations forecast in the foreseeable future; and
- Decoupling the FAA's NAS Operational networking requirements and the FAA's Mission Support networking requirements could have some benefits, but it could also increase the Government's administrative burden and result in some loss of economies of scale.

Among the options for meeting the FAA's requirements is the Enterprise Infrastructure Services (EIS) contract that was awarded by GSA in August 2017. EIS represents the successor to GSA's existing Networx contract. Ten vendors were selected to provide a wide range of services across 929 geographic areas referred to as Core Based Statistical Areas (CBSAs). Each vendor must cover at least 25 of the top 100 CBSAs, but they are not required to cover all of them. As part of the "Fair Opportunities" process to select an EIS vendor for the agency, the FAA obtained a preliminary estimate of $315M over a 14-year period of performance for the basic Mission Support Network services required by the FAA. When adjusting for broader scope of services actually required such as IAPs, security gateways, and secure remote access, the FAA concluded the estimate is comparable to what the FAA pays today under the existing FTI contract. Notwithstanding this assessment, as the FENS Investment Analysis proceeds, the FAA will continue to re-assess the use of alternative Government-wide telecommunications contract vehicles.

3.3   Near-term Outlook

Table 3-1 lists the near-term FAA Acquisition Milestones for the FENS Program associated with the FAA's plan for meeting its future needs for communications services when the existing FTI contract expires. The dates are tentative and subject to change as the FENS program progresses through the Investment Analysis Phase.

Table 3-1. Near-term FAA Acquisition Milestones for the FENS Program

Milestone	Planned Date
Initial Investment Decision	June 2019
Release of Final SIR	September 2019
Final Investment Decision	July 2020

Milestone	Planned Date
FENS Contract Award	September 2020

4. SUMMARY

The following summary points are intended to directly address the specific concerns expressed in the House Report:

- The existing FTI Mission Support Network is based on industry-standard technologies and leverages Sprint's Global MPLS network for administrative data and VoIP traffic.

- The existing FTI Mission Support Network is capable of meeting all known (near-term and longer term) requirements for communications services in the FAA's Mission Support Network domain.

- The FAA's market research indicates that the decision to extend the existing FTI contract for five years on a single source basis will have minimal impact on the FAA's operating costs for the scope of services required within the Mission Support Network domain.

- The FAA has been working closely with GSA to understand the implications of obtaining services under the new EIS contract.

- The FAA plans to issue a solicitation for the combined scope of services within the FAA's Mission Support and NAS Operational domains in less than 12 months from the date of this report. Current plans are for a full-and-open competition, but the services within the FAA's Mission Support network domain could be obtained under the EIS contract depending on the outcome of the FAA's comparative cost analysis.

APPENDIX A: ACRONYMS AND ABBREVIATIONS

ACT-IAC   American Council for Technology and Industry Advisory Council

AMS   Acquisition Management System

BW   Bandwidth

CBSA   Core Based Statistical Area

DHS   Department of Homeland Security

EIS   Enterprise Infrastructure Services

FAA   Federal Aviation Administration

FAACO   FAA Contracting Opportunities (website)

FCS   FAA Cloud Services

FENS   FAA Enterprise Network Services

FRAC   FTI Remote Access Capability

FTI   FAA Telecommunications Infrastructure

GMPLS   Global MultiProtocol Label Switching

IAP   Internet Access Point

IARD   Investment Analysis Readiness Decision

IP   Internet Protocol

ISDN   Integrated Services Digital Network

Mbps   Megabits per second

MPLS   MultiProtocol Label Switching

MS   Mission Support

NAS   National Airspace System

NFV   Network Function Virtualization

NOCC   Network Operations Control Center

OMB	Office of Management and Budget
PBX	Private Branch Exchange
PRI	Primary Rate Interface
PSTN	Public Switched Telephone Network
RFI	Request for Information
RFP	Request for Proposal
RMA	Reliability, Maintainability, and Availability
SDN	Software-Defined Networking
SIP	Session Initiation Protocol
SIR	Screening Information Request
SOCC	Security Operations Control Center
TDM	Time Division Multiplexing
TIC	Trusted Internet Connection
VoIP	Voice over IP
VPN	Virtual Private Network