Enterprise Messaging Infrastructure

Veteran Interoperability and Integrations

Station 200

Service Integration Design Document



Department of Veterans Affairs

**April 2016**

Version 1.0

Revision History

Note: The revision history cycle begins once changes or enhancements are requested after the Service Integration Design Document has been baselined.

| Date | Version | Description | Author |
| --- | --- | --- | --- |
| 12/18/2015 | 0.1 | Initial |  |
| 01/04/2015 | 1.0 | Tech Writer Format and Review |  |
| 03/01/2016 | 1.0 | Updated contents and diagrams |  |
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# Introduction

The Enterprise Messaging Infrastructure (eMI) integration with Station 200 will enable the Veteran Affairs (VA’s) Station 200 system to maintain the VistA Web and Computerized Patient Record System (CPRS) Department of Defense (DoD) data display capabilities as the VA and DoD transition their data sharing architectures. eMI will provide this interoperability by allowing the VA’s Station 200 system to obtain DoD data from the Defense Medical Information Exchange (DMIX) Data Exchange Service (DES) system.

## Purpose

Describe and outline the specifications for the integration of eMI and Station 200 with the DMIX DES web service. Detailed integration requirements including eMI message flows, transport protocols, SOA Service endpoints, required service registry artifacts, and governance policies will be delineated in this document.

Note that the eMI onboarding of the DMIX DES web service is covered in the Bi-directional Health Information Exchange (BHIE) SIDD. To prevent duplicating information and conflicts between document update cycles, several of the upcoming sections will reference that document directly.

## Scope

The scope of this Service Integration Design Document (SIDD) is to address interoperability between Station 200 and the DoD DMIX/DES service provider, by means of eMI proxies for the DMIX/DES v4 REST API.

The scope items include, but are not limited to:

1. Message Types
2. Validation
3. Ports and Protocol
4. Transformation
5. Error Handling
6. Routing
7. Security

The details of the above are described in the following sections. The common architectural specifications, such as security, logging, exception handling, and etc. are defined in the eMI Software Design Document; however, the definitions of the DMIS DES REST API, and details of eMI architecture, physical addresses, and system specification are not in the scope of this document.

## Audience

This document provides implementation details for project owners and serves as a blueprint for managers, architects, developers, and testers building the system. It is assumed that the readers have a moderate knowledge of IBM Integration Broker (IIB).

## References

eMI Software Design Document is accessible on the VA eMI SharePoint site.

# Interface Requirements

Table 1 lists the software interfaces that are implemented.

Table 1 - Logical High-Level Message Transmission Flows

| Application | Interface |
| --- | --- |
| Station 200 🡪 eMI | Utilizes REST web service messaging endpoint to transmit a DMIX/DES GET request over HTTPS transport protocol to an eMI REST web service messaging endpoint. |
| eMI 🡪 DMIX/DES | Utilizes REST web service messaging endpoint to relay a the inbound DMIX/DES GET request over HTTPS transport protocol to a DMIX/DES service messaging endpoint. |
| DMIX/DES 🡪 eMI | DMIX/DES responds to the request from eMI over HTTPS transport protocol with a JSON message containing the DMIX/DES response payload. |
| eMI 🡪 Station 200 | eMI relays the outbound DMIX/DES response payload over HTTPS transport protocol back to the VA Service Consumer. |

## Business Unit

Data moves from the Station 200 to the DMIS DES. Table 2 and Table 3 list the point of contact (POC) information for those systems.

Table 2 - Station 200 Business Unit

| Station 200 Business Unit | |
| --- | --- |
| Agency | Department of Veterans Affairs |
| Sending Application | Station 200 |
| POC Name |  |
| Title | Station 200 BHIE Manager |
| Contact Info |  |

Table 3 - DMIX DES Business Unit

| VETS Business Unit | |
| --- | --- |
| Agency | DoD |
| Receiving Application | DMIX DES |
| POC Name |  |
| Title | DMIX Program Manager |
| Contact Info |  |

## Service Level Agreement Metrics

Refer to BHIE SIDD section 2.2

## Message Type Metrics

Refer to BHIE SIDD section 2.3

## Logical System Overview

The figure below shows the end-to-end message flow of the Station 200 and DMIX DES integration. As the service consumer, the Station 200 system will send a SSL secured web service request compliant with the DMIX DES ICD to eMI. eMI will then perform authentication, logging, error handling and endpoint resolution before forwarding the request, secured by SSL, to the DMIX DES system. eMI would then send the reply received from DMIX DES back to the Station 200 system. As a pure proxy of the DMIX DES service eMI will not maintain state nor perform data validation/mediation.

Figure 1-Station 200 - eMI Logical System Overview



1. The Station 200 system initiates a REST Web Service call to CA API Gateway hosted on eMI instance at AITC
2. CA API Gateway forwards request to eMI BHIE message flow on IIB.
3. The eMI BHIE message flow mediates input data if necessary to conform to DMIX DES REST API v4.0.
4. The eMI BHIE message flow invokes routing rules if necessary to route to DMIX DES system.
5. The eMI BHIE message flow queries WebSphere Service Registry and Repository (WSRR) for DMIX DES REST API endpoint which includes server name and port.
6. The eMI BHIE message flow forward a REST Web Service call to DMIX DES service.

## Logical Deployment Overview

The DMIX DES proxy will be highly available at the eMI enterprise sites, Austin Information Technology Center (AITC) and Philadelphia Information Technology Center (PITC). The Station 200 system, which resides within the VA, will initialize communications by making ICD compliant web service requests to eMI. Figure 2 shows the boundaries, gateway, and locations of sending and receiving systems.

Figure 2 - Station 200 - eMI Deployment View



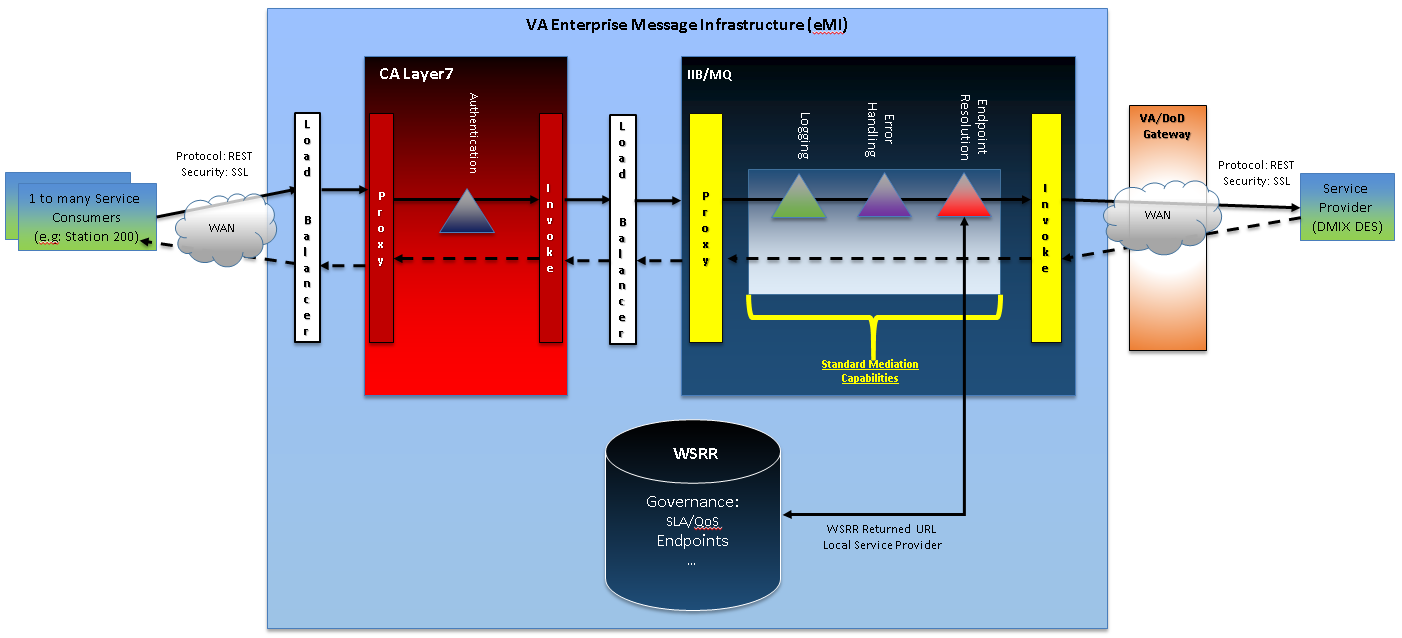
Further deployment information is available in the BHIE SIDD.

## Station 200 - eMI Interface Requirements

Refer to eMI BHIE SIDD Section 2.6

# Nominal Station 200 Message Flow

Figure 3- Nominal Station 200 Message Flow



1. Station 200 system triggers a REST request for DMIX/DES data to the eMI BHIE message flow, via the CA Layer 7 gateway.
2. The VA service consumer issues a REST request for DMIX/DES data to the eMI proxy, via the CA Layer 7 gateway.
3. CA Layer 7 assigns an internal eMI identifier to the request and forwards to IIB for message routing.
4. IIB obtains the DMIX/DES service provider REST endpoint from WSRR. WSRR REST service endpoint values may be cached in the IIB runtime to ensure performance requirements are met.
5. IIB relays the request to the DMIX/DES service provider REST endpoint. IIB does not modify the request payload.
6. IIB relays the DMIX/DES service provider response to the station 200 system, via the CA Layer 7 gateway. IIB does not modify the response payload.

Errors originating within the DMIX/DES service provider system are relayed unchanged to station 200. Errors originating within the eMI system are sent to the station 200 system, either appended to or in place of the response payload, as appropriate

# Station 200 Message Flow Design

Station 200 uses eMI BHIE Message Flow to interface with DMIX DES; hence, Station 200 does not need to have its own message flow. For details of the eMI BHIE message flow, refer to the eMI BHIE SIDD section 4.0.

## Architecture Deviations

Refer to eMI BHIE SIDD Section 4.1

## Pattern

Refer to eMI BHIE SIDD Section 4.2

## Protocol

The Station 200 use BHIE message flow to exchange data between station 200 and DMIX DES. Table 4 and Table 5 identify protocols used to interface with the sending and receiving systems.

Table 4 - Station 200 to eMI Interface

| Station 200 to eMI | |
| --- | --- |
| Protocol | HTTPS |
| Message Type | Messages are in JSON format and conform to the DMIX/DES v4 REST API. |
| VA Consumer Hostname | Multiple |
| eMI Hostname | Austin Information Technology Center (AITC) Load balancer. |

Table 5- eMI Interface to DMIX DES

| eMI To DMIX/DES | |
| --- | --- |
| Protocol | HTTPS |
| Message Type | Messages are in JSON format and conform to the DMIX/DES v4 REST API. |
| eMI Hostname | AITC Message brokers. |
| DMIX/DES Hostname | Determined dynamically by means of WSRR REST Service endpoint lookup. |

## Message Routing

Refer to BHIE SIDD section 4.4.

## Transformation

Refer to BHIE SIDD section 4.5.

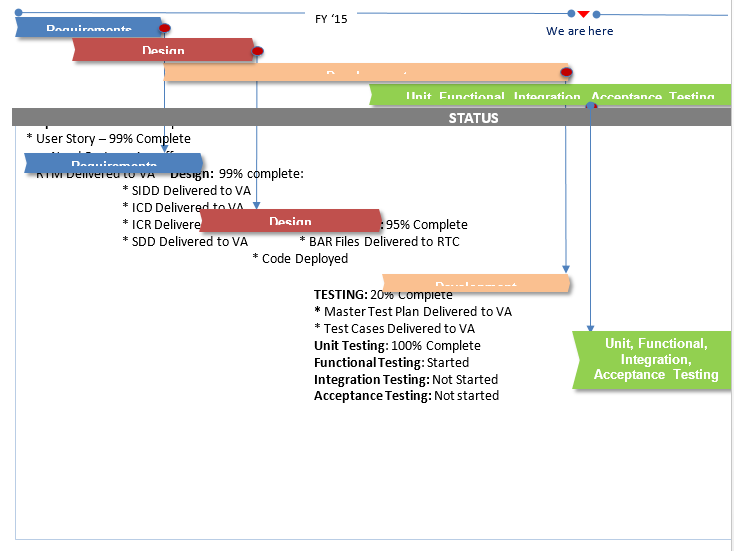
# Implementation Details

Refer to eMI BHIE SIDD section 5.0.

# Timeline

Figure 4 shows the timeline for the eMI and station 200 integration.

Figure 4 - Implementation Timeline



# Acronyms

Table 6 - Acronyms

| Abbreviation/Term | Definition |
| --- | --- |
| AITC | Austin Information Technology Center |
| DES | Data Exchange Service |
| DMIX | Defense Medical Information Exchange |
| DoD | Department of Defense |
| eMI | Enterprise Messaging Infrastructure |
| ESS | Enterprise Shared Service |
| IIB | IBM Integration Bus |
| LOINC | Logical Observation Identifiers Names and Codes |
| QoS | Quality of Service |
| SDD | System Design Document |
| SIDD | Service Integration Design Document |
| SLA | Service Level Agreement |
| SOA | Service Oriented Architecture |
| SSL | Secure Sockets Layer |
| VA | Veterans Affairs |
| VII | Veterans Interoperability and Integration |
| WSRR | WebSphere Service Registry Repository |

1. Architecture Design Decisions

Refer to eMI BHIE SIDD Appendix A.

1. Message Flow Documentation

Refer to eMI BHIE SIDD Appendix B.

1. Message Mapping

Refer to eMI BHIE SIDD Appendix C.

1. Outstanding Issues

Refer to eMI BHIE SIDD Appendix D.

1. Approval Signature

REVIEW DATE:

Signed: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Integrated Project Team (IPT) Chair Date

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IT Program Manager Date

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Project Manager Date