



Nationwide Health Information Network (NHIN)

Administrative Distribution

Production
Web Service Interface Specification

V 2.0

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1 Preface

1.1 Introduction

The Nationwide Health Information Network (NHIN) Web Service Interface specifications define services that may be implemented by each node on the NHIN network in order exchange interoperable health information over the Internet. Health Information Organizations (HIOs) which act as nodes on the NHIN are termed NHIOs. These functional services provide discovery and information exchange capabilities and rest upon a foundational set of messaging, security, and privacy services.

This document presents the NHIN Administrative Distribution Emergence Pilot Web Service Interface Specification. The purpose of this specification is to provide the ability to submit non-patient specific data including document based reports or discrete data from one NHIO to another NHIO using a “Push” mechanism.

1.2 Intended Audience

The primary audiences for NHIN Specifications are the individuals responsible for implementing software solutions that realize these interfaces at Health Information Organizations (HIOs). This specification document is intended to provide an understanding of the context in which the web service interface is meant to be used, the behavior of the interface, the Web Services Description Language (WSDLs) used to define the service, and any Extensible Markup Language (XML) schemas used to define the content.

1.3 Business Needs Supported by this Specification

The NHIN Administrative Distribution Web Service is intended to provide a mechanism for NHIOs to exchange non-patient specific data using a “push” mechanism.

1.4 Referenced Documents and Standards

The following documents and standards were referenced during the development of this specification. Specific deviations from or constraints upon these standards are identified below.

1) **Org/SDO name:** HITSP

Reference # / Spec Name: T63 / Emergency Message Distribution Element Transaction

Version #: v.1.1

NHIN Deviations or Constraints:

Underlying Specs: Emergency Data Exchange Language (EDXL) Distribution Element (DE)

Link:

<http://wiki.hitsp.org/docs/T63/T63-1.html>

2) **Org/SDO name:** OASIS

Reference # / Spec Name: Emergency Data Exchange Language (EDXL) Distribution Element (DE)

Version #: v.1.0

NHIN Deviations or Constraints:



- EDXL-DE – Transport constrained to SOAP1.2 over HTTP – Section 3.2
- EDXL-DE – EDXLDistribution.senderID deviates to identify home community id – Section 3.4.2

Underlying Specs:

Link:

http://docs.oasis-open.org/emergency/edxl-de/v1.0/EDXL-DE_Spec_v1.0.pdf

3) **Org/SDO name:** W3C

Reference # / Spec Name: MTOM SOAP Message Transmission Optimization Mechanism.

Version #: v1.0

NHIN Deviations or Constraints:

Underlying Specs:

Link: <http://www.w3.org/TR/soap12-mtom/>

1.5 Relationship to other NHIN Specifications

This specification is related to other NHIN specifications as described below:

- **Messaging Platform** – specifies a base set of messaging standards and web service protocols which must be implemented by each NHIN node and applies to all transactions. All NHIN inter-nodal messages are SOAP messages over HTTP using web services, must be encrypted and digitally signed.
- **Authorization Framework** – defines the exchange of metadata used to characterize each NHIN request. The purpose of that exchange is to provide the responder with the information needed to make an authorization decision for the requested function. Each initiating message must convey information regarding end user attributes and authentication using SAML 2.0 assertions.

Together, the Messaging Platform and the Authorization Framework define the foundational messaging, security and privacy mechanisms for the NHIN.

2 Interface Description

2.1 Definition

A push transaction which allows one NHIN node to send data that does not pertain to an individual patient (e.g., non-patient centric data) to another NHIN node.

An Administrative Distribution is initiated from one NHIO (initiating) to another (receiving), “pushing” one or more available documents or sets of discrete data. In this Interface definition, a “document” refers to the form of data as it is transferred between NHIOs, not as it is stored in an NHIO.

2.2 Design Principles and Assumptions

The following assumptions or design principles underlie this specification:



- The primary expected use of this web service in the context of the NHIN is that the data are in a binary document (PDF), or discrete data represented in XML, but nothing precludes this interface from being used to submit other kinds of documents.
- An NHIN Gateway directs a transaction to other individual NHIOs. This specification does not define a central or federated service that performs transactions across multiple NHIOs.
- How an NHIO determines which other NHIOs to direct transactions is not specified. This is a local NHIO decision.
- Any NHIO may store data in whatever format or repository it chooses. Specifically, a “document” transferred between NHIOs need not meet the criteria for persistence, stewardship, etc. as identified by the HL7 Structured Documents committee.



2.3 Triggers

A health information technology (health IT) system or application submits a non-patient centric set of data or document for an event or series of events to its NHIO Gateway (the format of that submission is outside the scope of this profile). The NHIO Gateway submits the non-patient centric set of data in the specified format to another NHIO Gateway based on its partnership and agreements with that NHIO.

An Administrative Distribution request includes metadata elements such as distribution id, sender id, explicit address, incident description and either an embedded document or xml content. It is recommended that the initiating NHIO persist the data that it submits successfully for a period of time (as per its policy) to maintain historical records.

Although patient consent is not necessarily applicable, given that the document or data may not pertain to an individual patient, other policies (specific to the content of the submission) are expected to be applied as appropriate.

2.4 Transaction Standard

This interface identifies the HITSP T63: Emergency Message Distribution Element Transaction as the standard for Administration Distribution.

2.5 Technical Pre-conditions

The following technical pre-conditions exist for this interface specification:

- The network location of the receiving NHIO has been obtained by the initiating NHIO from the Service Registry or other reliable mechanisms.
- The identity of the target provider (organization or individual) at the receiving NHIO has been determined by the initiating NHIO.
- The NHIOs have a pre-established trust relationship that enables them to share the content being distributed.
- The initiating NHIO should have the appropriate authorization to release such documents or data to the receiving NHIO.

2.6 Technical Post-conditions

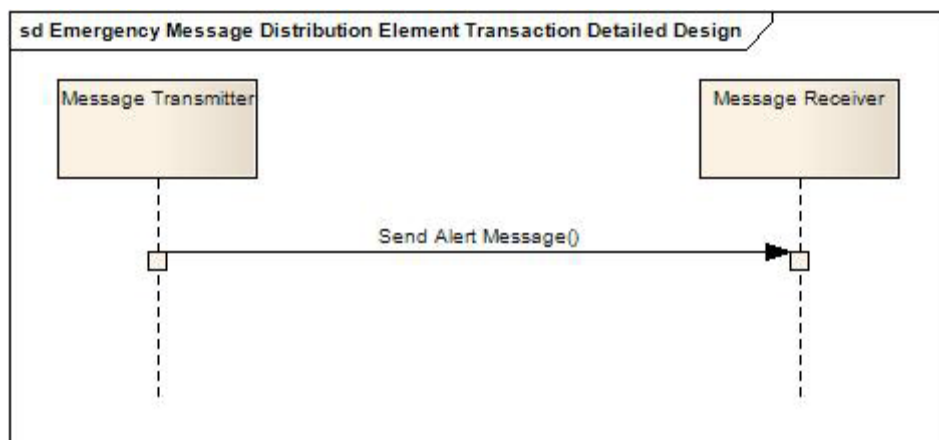
The following technical post-conditions will result after the execution of this interface specification:

- Errors encountered will be handled, as specified in Section 4 "Error Handling".

3 Interface Definition

3.1 Emergency Message Distribution Element Transaction (T63):

Described in HITSP T63 Emergency Message Distribution Element Transaction, section 2.1.3, the figure below illustrates the actors and transactions involved in the transaction. Note that the diagram represents the Initiating NHIO as Message Transmitter and Receiving NHIO as Message Receiver.



The protocol for this transaction is based on SOAP 1.2.

3.2 Send Alert Message Transaction

This transaction is described in detailed in HITSP Emergency Message Distribution Element transaction, and OASIS Emergency Data Exchange Language Distribution Element (EDXL-DE). This interface is here by constrained to the SOAP12/HTTP transport.

3.3 Multiple Documents Distribution

This interface supports the ability to include multiple documents in a single distribution.

3.4 Request

The Send Alert Message Request is a collection of metadata and documents or structured XML data transferred between a Message Sender and a Message Receiver.

This request contains:

- One EDXLDistribution metadata element
- Zero or more contentObjects
- Zero or more nonXMLContent or XMLContent objects (a child of contentObjects)

3.5 Response

OASIS EDXL-DE does not define a response, therefore this specification defers to the underlying HTTP specification. A successful response will be an HTTP 200.

3.6 Metadata Elements

The Metadata elements for the Send Alert Message transaction are defined by OASIS. The metadata elements are defined in the Emergency Data Exchange Language Distribution Element, v 1.0.

This section describes the metadata elements.

3.6.1 EDXLDistribution.distributionID

The distributionID defines a unique identifier for this distribution message, for the particular sender. This element is not constrained by this specification.



3.6.2 EDXLDistribution.senderID

The sender ID represents the initiating NHIO.

The recommended format departs from the underlying standard for senderID. In the case of Administrative Distribution, the domain name will be replaced by the sending NHIO's home community Id.

The `homeCommunityId` is a globally unique identifier for a community used to assist in subsequent requests for locating the data held by that community. `homeCommunityId` is structured as an OID limited to 64 characters and specified in URI syntax, for example the `homeCommunityId` of 2.16.840.1.113883.3.166 would be formatted as `urn:oid:2.16.840.1.113883.3.166`.

For example: `actor@urn:oid:2.16.840.1.113883.3.166`

3.6.3 EDXLDistribution.dateTimeSent

The `dateTimeSent` is the date and time the distribution message was sent, This element is not constrained by this specification.

3.6.4 EDXLDistribution.distributionStatus

The distribution status defines the actionability of the message. This element is not constrained by this specification. However, future profiles are expected to constrain this element.

3.6.5 EDXLDistribution.distributionType

The distribution status defines the function of the message. This element is not constrained by this specification. However, future profiles are expected to constrain this element.

3.6.6 EDXLDistribution.combinedConfidentiality

Combined confidentiality indicates the confidentiality of the content of the distribution. This element is not constrained by this specification. However, future profiles are expected to constrain this element.

3.6.7 EDXLDistribution.explicitAddress

EDXL defines an XML structure to communicate the recipient in a given submission. This XML structure includes two elements, an `explicitAddressScheme` and an `explicitAddressValue`. For the purposes of this specification, at least one `explicitAddress` is required and those values are constrained as follows:

3.6.8 explicitAddressScheme – modified_IHEIntendedRecipient

The `explicitAddressScheme` and `explicitAddressValue` elements define a mechanism to communicate the target of a message. Future profiles are expected to constrain this element.

4 Error Handling

Given that no web services response is defined by this specification, error codes are deferred to the underlying HTTP specification.

404 - Client unable to contact the server.

500 – Error occurred while processing.

5 Auditing

The NHIN Administrative Distribution Web Service Interface Specification requires the use of audit logging, as per applicable law, regulations, and best practices, using the IHE ATNA Profile Record Audit Event transaction. Rather than reproduce the IHE material here, the reader is strongly encouraged to



review the IHE framework in final text status at:

http://www.ihe.net/Technical_Framework/upload/IHE_ITI_TF_6-0_Vol2a_FT_2009-08-10-2.pdf section "3.20 Record Audit Event" and especially table 3.20.6-1.

A NHIO should create an "Export" audit event when sending an Administrative Distribution message to another NHIO. NHIO should create an "Import" audit event when receiving an Administrative Distribution message from another NHIO.

The reader is also referred to the NIST's document (SP800-92) focusing on logging requirements, including those implied by HIPAA. Discussed are policy issues (which should be established for each organization), procedures, goals, requirements, and a list of resources. It may be found at: <http://csrc.nist.gov/publications/nistpubs/800-92/SP800-92.pdf>

The IHE has provided an implementer's FAQ related to logging with a focus on specific uses of ATNA logging and design tradeoffs. It may be found at: http://wiki.ihe.net/index.php?title=ATNA_Profile_FAQ

6 MTOM

Schema elements of type "base64Binary" (nonXMLContent/contentData and XMLContent/contentData) may forgo base 64 encoding and be attached to Administrative Distribution messages in accordance with the MTOM specification.

MTOM is considered optional from the perspective of an initiating gateway, however responding gateways are required to accept MTOM and non MTOM messages.



Appendix A: Sample Messages

Sample XML content for an administrative distribution transaction is provided below.

```
<t63Request xmlns="urn:oasis:names:tc:emergency:EDXL:DE:1.0">
  <EDXLDistribution>
    <distributionID>633990682441061250</distributionID>
    <senderID>actor@2.16.840.1.113883.3.166</senderID>
    <dateTimeSent>2010-01-14T12:18:13.512375-08:00</dateTimeSent>
    <distributionStatus>Actual</distributionStatus>
    <distributionType>Update</distributionType>
    <combinedConfidentiality>Public</combinedConfidentiality>
    <explicitAddressScheme>modified_IHEIntendedRecipient</explicitAddressScheme>
    <explicitAddressValue>^^^^^^^^^2.16.840.1.113883.3.166|0000000001</explicitAddressValue>

    <contentObject>
      <contentDescription>PH Alert Message</contentDescription>
      <incidentID>TEST</incidentID>
      <incidentDescription>This is a test message</incidentDescription>
      <confidentiality>Public</confidentiality>
      <xmlContent>
        <embeddedXMLContent>
          < // XML content />
        </embeddedXMLContent>
      </xmlContent>
    </contentObject>
  </EDXLDistribution>
</t63Request>
```

Binary document sample

```
<t63Request xmlns="urn:oasis:names:tc:emergency:EDXL:DE:1.0">
  <EDXLDistribution>
    <distributionID>633990682441061250</distributionID>
    <senderID>actor@2.16.840.1.113883.3.166</senderID>
    <dateTimeSent>2010-01-14T12:18:13.512375-08:00</dateTimeSent>
    <distributionStatus>Actual</distributionStatus>
    <distributionType>Update</distributionType>
    <combinedConfidentiality>Public</combinedConfidentiality>
    <explicitAddressScheme>modified_IHEIntendedRecipient</explicitAddressScheme>
    <explicitAddressValue>^^^^^^^^^2.16.840.1.113883.3.166|0000000001
  </explicitAddressValue>

  <contentObject>
    <contentDescription>PH Alert Message</contentDescription>
```



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```
<incidentID>TEST</incidentID>
<incidentDescription>This is a test message</incidentDescription>
<confidentiality>Public</confidentiality>
<nonXMLContent>
  <embeddedXMLContent>
    <mimeType>application/pdf</mimeType>
    <size>19</size>
    <digest></digest>
    <uri></uri>

    <contentData>LDLIHAPIISDALKDF902383K1182K4J49DFNF3KR0482HJ1029F393</contentData>

  </embeddedXMLContent>
</nonXMLContent>
</contentObject>
</EDXLDistribution>
</t63Request>
```



Appendix B: WSDL

```
<?xml version="1.0" encoding="utf-8"?>
<!-- This wsdl file is for an XDS.b Document Registry Actor -->
<definitions xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
xmlns:edxlde="urn:oasis:names:tc:emergency:EDXL:DE:1.0"
xmlns="http://schemas.xmlsoap.org/wsdl/" xmlns:xsd="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:oasis:names:tc:emergency:EDXL:DE:1.0"
xmlns:tns="urn:oasis:names:tc:emergency:EDXL:DE:1.0"
xmlns:soap12="http://schemas.xmlsoap.org/wsdl/soap12/"
xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl" name="AdministrativeDistribution">
<documentation>NHIN Administrative Distribution wsdl</documentation>
<types>
<xsd:schema>
<xsd:import namespace="urn:oasis:names:tc:emergency:EDXL:DE:1.0"
schemaLocation="edxl-de.xsd" />
</xsd:schema>
</types>
<message name="SendAlertMessage_Message">
<documentation>Send Alert Message</documentation>
<part name="body" element="edxlde:EDXLDistribution" />
</message>
<portType name="AdministrativeDistribution_PortType">
<operation name="AdministrativeDistribution_SendAlertMessage">
<input message="tns:SendAlertMessage_Message"

wsaw:Action="urn:oasis:names:tc:emergency:EDXL:DE:1.0:SendAlertMessage" />
</operation>
</portType>
<binding name="AdministrativeDistribution_Binding_Soap12"
type="tns:AdministrativeDistribution_PortType">
<soap12:binding style="document" transport="http://schemas.xmlsoap.org/soap/http" />
<operation name="AdministrativeDistribution_SendAlertMessage">
<soap12:operation
soapAction="urn:oasis:names:tc:emergency:EDXL:DE:1.0:SendAlertMessage" />
<input>
<soap12:body use="literal" />
</input>
</operation>
</binding>
<service name="AdministrativeDistribution_Service">
<port name="AdministrativeDistribution_PortType"
binding="tns:AdministrativeDistribution_Binding_Soap12">
<soap12:address
location="http://localhost/AdministrativeDistribution_Service/AdministrativeDistribution_PortType" />
</port>
</service>
</definitions>
```