

HEALTH IT
STANDARDS TESTING INFRASTRUCTURE

NIST Immunization Test Suite Tutorial

Robert Snelick

National Institute of Standards and Technology

March 26, 2024

Contact: rsnelick@nist.gov

NIST

National Institute of Standards and Technology

NIST Immunization Test Suite Tool Overview

Tool Key Capabilities

SOAP Envelope Testing	The SOAP Envelope Testing ensures SOAP envelopes are correctly formed, validating the conformance of the messages to the requirements in the SOAP and Transport specifications. <i>This is not used for ONC certification testing.</i>
SOAP Connectivity Testing	The SOAP Connectivity Testing evaluates valid SOAP connectivity, the ability to send and receive SOAP messages, validating the conformance of the messages to the requirements in the SOAP and Transport specifications. <i>This is not used for ONC certification testing.</i>
Context-Free Testing	Provides a simple and convenient method for testing immunization messages structure and most vocabulary. Validation is performed on messages with or without a SOAP wrapper.
Context-Based Testing ONC Certified	Context-based testing provides, in addition to HL7 Context-free validation, message validation associated with a given test script that includes data for a specific test scenario where the context is known by the validation tool. It also validates messages with a SOAP wrapper.
Isolated Testing	Isolated testing provides a simulated operational environment that allows validation at the functional level in addition to context and context-free testing, where Test Agents simulate the functions of an EHR-S or IIS.

Environment: The NIST IZ Test Suite is currently only accessible as a web application.

Supported Browsers: Firefox, Chrome, Safari, and IE 9+

URL: <http://hl7v2-iz-r1-5-testing.nist.gov>

Tool Access and Navigation

Objectives

- Establish access to the NIST IZ Test Suite tool (web application).
- Locate the Navigation Bar.
- Locate relevant documentation.
- Locate the Test Suite.

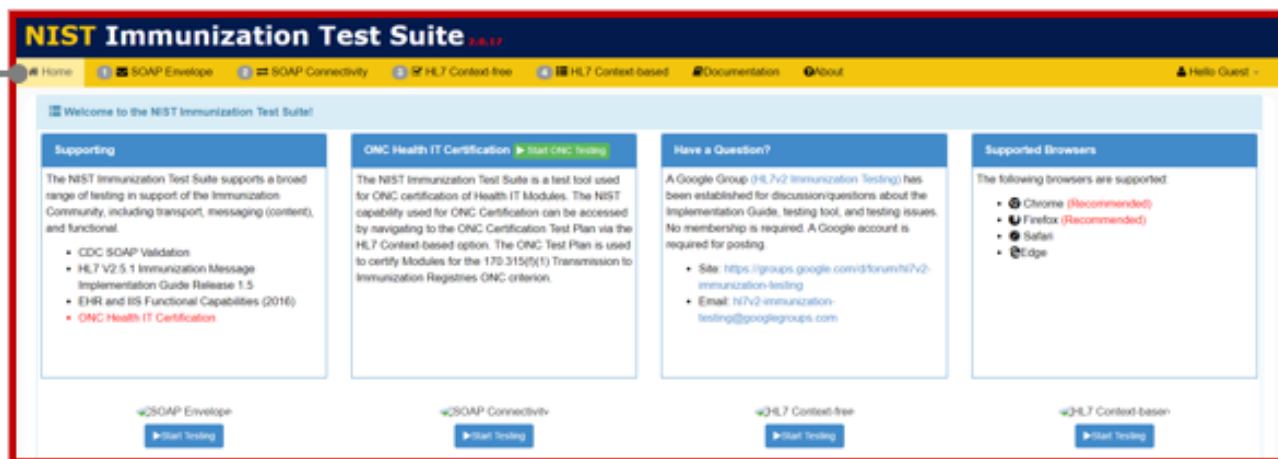
Informative Reference

- The NIST IZ Test Suite is accessible through the following URL: <http://hl7v2-iz-r1-5-testing.nist.gov>.
- This displays the NIST IZ Test Suite's Welcome Screen, which is indicated by the '**Home**' tab.
- The '**Documentation**' tab contains relevant downloadable User, Documentation, Resources/Artifacts, and Notations.

Info

The tool's Navigation Bar is located along the top. The options are 'Home', 'SOAP Envelope', 'SOAP Connectivity', 'HL7 Context-free', 'HL7 Context-based', 'Transport Settings', 'Documentation', 'About', and 'Preferences'.

The Welcome Screen is located under the 'Home' tab.



**HEALTH IT
STANDARDS TESTING INFRASTRUCTURE**

HL7 SOAP Envelope Walk Through Tool Demonstration

SOAP Envelope Testing Work Flow

1) Select SOAP Envelope Test Case

- Open the IZ IIS Test Suite using the following link: <http://hl7v2-iz-r1-5-testing.nist.gov/iztool/#/home>.
- On the Navigation bar, click on the **'SOAP Envelope'** to display the available and testable Test Cases.
- Within the **'Test Cases'** window, select a target Test Case (expand/collapse selection using the arrows)
- Review the **'Test Story'**, **'Message Content'**, and **'Testing Instructions'** for the selected Test Case.
- Click **'Load Test Case'** to confirm Test Case selection and proceed with testing.

2) Upload SOAP Envelope Test Message and Execute Validation

- Assure the **'Validation'** tab is selected.
- Upload test message by inserting message data into the **'SOAP Envelope'** field (either paste or by local file selection).
- If no message data is available, select the **'Load Example'** option to populate generic prepopulated message content.
- Once satisfied with message content, select **'Validate'** to validate the message against the Test Case specifications.
- The **'SOAP Validation Result'** field displays information concerning the test.

3) Review Test Validation Results and Generate Report

- Data elements are populated within the **'Tree Representation'** field.
- For a message data element/segment, clicking the arrows expands/collapses the content
- The message line number is highlighted for each data element/segment.
- The **'SOAP Validation Result'** field displays **'Errors'**, **'Warnings'**, **'Alerts'**
- This field is searchable and provides the precise **'Line'**, **'Path'**, and **'Description'** for each notification.
- Clicking the **'Report'** tab generates a detailed summary of the validation test executed for the Test Case.
- The **'Message Validation Report'** can be saved locally in PDF, MS Word, XML, or HTML by selecting **'Save As'**.

SOAP Envelope Testing Work Flow

1 Select the 'SOAP Envelope' tab.

2 Select a Test Case

3 The 'Test Story' is displayed once a Test Case is selected..

The available Test Cases are listed within the 'Test Cases' selection area. They are grouped by the action/role of the System Under Test by 'Generic', 'Receiver', and 'Sender'.

TestCase: Generic - SOAPENV_1_Min_Test

Download Package Load Test Case

Test Story Message Content Testing Instructions

Description

This test evaluates the capability of a technology to generate a message envelope conforming to the minimal requirements of the SOAP 1.2 standard.

Test Objectives

The generated SOAP message will demonstrate these minimal capabilities:

- element Envelope with child element Body as defined by the SOAP 1.2 standard
- user-chosen (conformant) XML content within Body (including no content) is permitted
- optional SOAP 1.2 elements (e.g. Header) are permissible but not required

Home 1 SOAP Envelope 2 SOAP Connectivity 3 HL7 Context-free 4 HL7 Context-based 5 Transport Settings Documentation About Preferences

Test Selection Test Execution

Test Cases

- Generic
 - SOAPENV_1_Min_Test
- Sender(Initiator)
 - SOAPENV_1_ConnectivityMessage_Req
 - SOAPENV_2_SubmitSingleMessage_Req
- Receiver(Responder)
 - SOAPENV_1_ConnectivityMessage_Respc
 - SOAPENV_2_SubmitSingleMessage_Respc
 - SOAPENV_3_MessageTooLarge_Fault
 - SOAPENV_4_Security_Fault
 - SOAPENV_5_UnsupportedOperation_Fault
 - SOAPENV_6_Unknown_Fault

TestCase: Generic - SOAPENV_1_Min_Test

Test Story Message Content Testing Instructions

SOAP Message

SOAP Part

SOAP Envelope

SOAP Header

Action	http://tempuri.org/IService/MyOperation
ActivityId	43ffa660-a0c6-4249-bb36-648b73a06213

SOAP Body

MyOperation	MyValue
	Some Value

Download Package Load Test Case

4 Selecting 'Message Content' displays the XML 'Content'.

7 Selecting 'Load Test Case' confirms Test Case selected and allows testing to proceed.

5 Selecting 'Testing Instructions' displays the step-by-step testing 'Instructions'.

Home 1 SOAP Envelope 2 SOAP Connectivity 3 HL7 Context-free 4 HL7 Context-based 5 Transport Settings Documentation About Preferences

Test Selection Test Execution

Test Cases

- Generic
 - SOAPENV_1_Min_Test
- Sender(Initiator)
 - SOAPENV_1_ConnectivityMessage_Req
 - SOAPENV_2_SubmitSingleMessage_Req
- Receiver(Responder)
 - SOAPENV_1_ConnectivityMessage_Respc
 - SOAPENV_2_SubmitSingleMessage_Respc
 - SOAPENV_3_MessageTooLarge_Fault
 - SOAPENV_4_Security_Fault
 - SOAPENV_5_UnsupportedOperation_Fault
 - SOAPENV_6_Unknown_Fault

TestCase: Generic - SOAPENV_1_Min_Test

Test Story Message Content Testing Instructions

Download Package Load Test Case

SOAP 1.2

Technical Requirements

System Under Test

Tester

SOAP Message

Validation

Validation Report

Tester

6 Click 'Download Package' to save a .docx copy of the the Test Case components to use for referencing off-line.

The downloaded 'Test Package' document includes information for only the specific Test Case selected.

SOAP Validation

The screenshot displays the NIST SOAP Validation tool interface. The top navigation bar includes links for Home, SOAP Envelope, SOAP Connectivity, HL7 Context-free, HL7 Context-based, Transport Settings, Documentation, and About. The main toolbar shows Test Selection, Test Execution, and the current test case: SOAPENV_1_Min_Test. The interface is divided into three main sections: a SOAP Tree on the left, a SOAP Envelope editor in the center, and a SOAP Validation Result section at the bottom.

Callout 8: Insert a HL7 message with a SOAP wrapper in the 'SOAP Envelope' field. This can be loaded using the folder button or populated with sample data by clicking 'Load Example'.

Callout 9: The 'Tree Representation' is populated by message content segments within the 'SOAP Envelope' field. Up/down arrows expand and collapse sections.

Callout 10: With message inserted, click 'Validate' to perform message validation against the Test Case.

Callout 11: The 'SOAP Validation Result' field displays the outcome of validation testing of the message against the Test Case. The type and quantity of notifications are represented within the respective field. Additional metadata links notifications to specific message lines/segments.

SOAP Tree Structure:

- Envelope
 - Header
 - Action
 - http://tempuri.org/IService/MyOperation
 - ActivityId
 - 43ffa660-a0c6-4249-bb36-648b73a06213
 - Body
 - MyOperation
 - MyValue

SOAP Envelope XML:

```
1 <Envelope xmlns="http://www.w3.org/2003/05/soap-envelope">
2   <Header>
3     <Action xmlns="http://schemas.microsoft.com/ws/2005/05/addressing/none"
4       http://tempuri.org/IService/MyOperation
5     </Action>
6     <ActivityId xmlns="http://schemas.microsoft.com/2004/09/ServiceModel/Diagnostics"
7       43ffa660-a0c6-4249-bb36-648b73a06213</ActivityId>
8   </Header>
9   <Body>
10    <MyOperation xmlns="http://tempuri.org">
11      <MyValue>Some Value</MyValue>
12    </MyOperation>
13  </Body>
14 </Envelope>
```

SOAP Validation Result:

- Errors: 0
- Warnings: 0
- Alerts: 0

SOAP Validation Report

The screenshot shows the SOAP Validation Report application interface. The top navigation bar includes links for Home, SOAP Envelope (1), SOAP Connectivity (2), HL7 Context-free (3), HL7 Context-based (4), Transport Settings (T), Documentation, About, and Preferences. Below this, the 'Test Execution' tab is active, showing the 'Current Test Case: SOAPENV_1_Min_Test'. The main content area displays the 'Generic / SOAPENV_1_Min_Test' path. A callout (12) points to the 'Report' tab, stating: 'To review the executed validation testing results for a Test Case, click the 'Report' tab.' Below the tabs, there are icons for saving the report in PDF, Word, XML, and HTML formats. A callout (13) points to these icons, stating: 'The 'Message Validation Report' can be saved locally for offline viewing by clicking the an icon. The savable formats are PDF, Microsoft Office Word, XML, and HTML.' The 'Message Validation Report' section shows a summary table with the following data:

Summary	
Errors	0
Affirmatives	0
Warnings	0
Ignored	0
Alerts	0

A callout (14) points to the summary table, stating: 'The 'Message Validation Report' provides granularity for auditing and accountability purposes with Date and Time of test execution.' The footer contains the NIST logo, Application Information (Date: 04/01/2016 13:39:51, Application Version: 1.2.0, Resource Bundle Version: 1.2.0), Supported Browsers (Firefox, Chrome, Safari, IE 9 and 10), and External Links (Disclaimer, Privacy/Policy, Website Administrator). The ITL logo is also present.

**HEALTH IT
STANDARDS TESTING INFRASTRUCTURE**

HL7 SOAP Connectivity Walk Through Tool Demonstration

SOAP Connectivity Testing Work Flow

1) Select SOAP Connectivity Test Case

- Open the IZ IIS Test Suite using the following link: <http://hl7v2-iz-r1-5-testing.nist.gov/iztool/#/home>
- Click '**SOAP Connectivity**' to display the available and testable Test Cases.
- Establish which role ('**Sender**' or '**Receiver**') to use for the System Under Test
- Within the '**Test Cases**' window, select a target Test Case (expand/collapse selection using the arrows)
- Review the '**Test Story**', '**Message Content**', and '**Testing Instructions**' for the selected Test Case.
- Click '**Load Test Case**' to confirm Test Case selection and proceed with testing.

2) Execute Test Case and Establish Connectivity

- For Sender Test Cases:
 - Initiate the test by clicking on the '**Receive**' button and view the data displayed in the '**Assigned Sender Information**' fields.
 - Your sending system must use this data to build the SOAP test message that it will transmit to the Tool
 - Click '**Start**' to initiate the test (the Tool will wait to receive a test message from the SUT to validate, and return a response message)
- For Receiver Test Cases:
 - The '**Outgoing SOAP Envelope**' field is populated with test data (elements with value "???" indicate configuration is required by user)
 - Configure by clicking the '**Configure**' button and filling in all the '**Receiver Configuration Panel**' fields. Click '**Save**' when finished
 - Click '**Send**' to initiate the test (the Tool will transmit a test message to the SUT and validate the response message)

3) Validate Message and Review Test Log

- For the Sender Test Cases, once the test has been started the 'Time Elapsed' tracks how long the tool has been waiting for a test message from the SUT (when 30 seconds has expired, the message and connection attempt will time out and must be restarted)
- The '**Console Log**' displays the active live connection and transmission of data between the Sending and Receiving systems.
- Once the message transmission has ended, both '**Incoming SOAP Envelope**' and '**Outgoing SOAP Envelope**' will be populated.
- The '**Validation Results**' fields for both the '**Incoming SOAP Envelope**' and '**Outgoing SOAP Envelope**' displays '**Errors**', '**Warnings**', and '**Alerts**'.
- This field is searchable and provides the precise '**Line**', '**Path**', and '**Description**' for each notification.

HEALTH IT
STANDARDS TESTING INFRASTRUCTURE

SOAP Connectivity Tests

Sender

SOAP Connectivity Tests

Sender (initiator)

Test Case: **SOAPCON_1_BasicMessage_ConnectivityRequest**

- This test evaluates the capability of a sender (initiator) technology to connect to a specified web service - a NIST Test Agent representing an Immunization Information System (IIS) - and transmit a message that conforms to the SOAP 1.2 standard and CDC WSDL 1.0 which is used to verify the accessibility of the IIS.

SOAP Connectivity Tests (Sender)

Test Case: SOAPCON_1_BasicMessage_ConnectivityRequest

NIST Immunization Test Suite 1.3.0

Home | 1 SOAP Envelope | 2 SOAP Connectivity | 3 HLT Context-free | 4 HLT Context-based | 5 Transport Settings | Documentation | About | Preferences

Test Selection | Test Execution

1 Select **Sender Test Case**

Test Cases

- Sender(Initiator)
 - SOAPCON_1_BasicMessage_ConnectivityRequest**
 - SOAPCON_3_SubmitSingleMessage_Message
- Receiver(Responder)
 - SOAPCON_1_BasicMessage_ConnectivityResponse
 - SOAPCON_2_SubmitSingleMessage_Response
 - SOAPCON_3_FaultDetection-Generation_AuthenticationFault
 - SOAPCON_4_FaultDetection-Generation_MessageSizeFault
 - SOAPCON_5_FaultDetection-Generation_UnsupportedOp_Fault

Test Case: SOAPCON_1_BasicMessage_ConnectivityRequest

Download Package | Load Test Case

2 Select **'Load Test Case'**

Test Story | Message Content | Test Data Specification | Testing Instructions

Description

This test evaluates the capability of a sender (initiator) technology to connect to a specified web service - a NIST Test Agent representing an Immunization Information System (IIS) - and transmit a message that conforms to the SOAP 1.2 standard and CDC WSDL 1.0 which is used to verify the accessibility of the IIS.

Test Objectives

The sender (initiator) technology will demonstrate the ability to:

- Connect to a web service endpoint specified by the NIST test tool and transmit a SOAP message with a Body element containing:
 - the element connectivityTest, as defined in the CDC WSDL 1.0
 - user-chosen, non-empty, conformant string value for the child element of connectivityTest: echoBack

NIST National Institute of Standards and Technology U.S. Department of Commerce

Application Information
Date: 05/05/2016 15:14:02, Application Version: 1.3.0 Resource Bundle Version: 1.3.0

Supported Browsers
Firefox, Chrome, Safari, IE 9 and 10

External Links
Disclaimer | Privacy Policy | Website Administrator

ITL INFORMATION TECHNOLOGY LABORATORY

SOAP Connectivity Tests (Sender)

Test Case: SOAPCON_1_BasicMessage_ConnectivityRequest

NIST Immunization Test Suite 1.4.0-SNAPSHOT

[Home](#) [1 SOAP Envelope](#) [2 SOAP Connectivity](#) [3 ☒ HL7 Context-free](#) [4 ☐ HL7 Context-based](#) [Documentation](#) [About](#) Hello Guest

[Test Selection](#) [Test Execution](#) Current Test Case: SOAPCON_1_BasicMessage_ConnectivityRequest

Sender(Initiator) / SOAPCON_1_BasicMessage_ConnectivityRequest


Please collect and validate your incoming/outgoing messages in the [1 SOAP Envelope](#)

4 Connect your system to the NIST Endpoint (below) and transmit a *connectivityTest* message to the Tool
After receiving a response message from the Tool, select 'Soap Envelope' (above) to validate all messages sent & received

3 Optionally select **End Point** to view the tool's SOAP WSDL

Configuration Information


Field	Value	Comments
NIST Endpoint	http://hit-dev.nist.gov:8098/iztool/ws/iisService	This is the destination's endpoint
NIST Endpoint WSDL	http://hit-dev.nist.gov:8098/iztool/ws/iisService.wsdl	This is the destination's wsdl



National Institute of Standards and Technology
U.S. Department of Commerce

Application Information

Date: 08/08/2016 16:23:40, Application Version: 1.4.0-SNAPSHOT Resource Bundle Version:1.4.0-SNAPSHOT



INFORMATION TECHNOLOGY LABORATORY

Supported Browsers

Firefox, Chrome, Safari, IE 9+

External Links

[Disclaimer](#) | [Privacy/Policy](#) | [Website Administrator](#)

SOAP Connectivity Tests (Sender)

Test Case: SOAPCON_1_BasicMessage_ConnectivityRequest

The screenshot displays the 'SOAP Envelope' editor within the 'SOAP Connectivity' section. The interface includes a navigation bar at the top with links to Home, SOAP Envelope, SOAP Connectivity, HL7 Context-free, HL7 Context-based, Documentation, and About. The current test case is 'SOAPENV_1_ConnectivityMessage_Request'. The 'Sender(Initiator)' is 'SOAPENV_1_ConnectivityMessage_Request'. The 'Validation' tab is active, and the 'Report' tab is also visible. The 'SOAP Tree' on the left shows the structure of the SOAP message: Envelope, Header, Body, connectivityTest, and echoBack. The 'SOAP Envelope' editor on the right shows the XML code for the message. A callout box labeled '5' points to the 'echoBack' element in the tree, with the text 'Paste the message sent/received that you wish to validate'. Another callout box labeled '6' points to the 'Validate' button in the editor, with the text 'Validate Sent Message'. The 'SOAP Validation Result' section at the bottom shows '0 Errors', '0 Warnings', and '0 Alerts'.

Home | 1 SOAP Envelope | 2 SOAP Connectivity | 3 HL7 Context-free | 4 HL7 Context-based | Documentation | About | Hello Guest

Test Selection | Test Execution | Current Test Case: SOAPENV_1_ConnectivityMessage_Request

Sender(Initiator) / SOAPENV_1_ConnectivityMessage_Request

Validation | Report

SOAP Tree

- Envelope
 - Header
 - Body
 - connectivityTest
 - echoBack

SOAP Envelope

```
1 <Envelope xmlns="http://www.w3.org/2003/05/soap-envelope">
2   <Header />
3   <Body>
4     <connectivityTest xmlns="urn:cdc:iisb:2011">
5       <echoBack>Hello world!</echoBack>
6     </connectivityTest>
7   </Body>
8 </Envelope>
```

5 Paste the message sent/received that you wish to validate

6 'Validate' Sent Message

SOAP Validation Result

0 Errors | 0 Warnings | 0 Alerts

SOAP Connectivity Tests

Sender (Initiator)

Test Case: **SOAPCON_3_SubmitSingleMessage_Message**

- This test evaluates the capability of a sender (initiator) technology to connect to an immunization information system (IIS) and to generate and transmit a message conforming to the SOAP 1.2 standard and CDC WSDL 1.0 that may be used for transporting an HL7 message to an immunization information system (IIS).

SOAP Connectivity Tests (Sender)

Test Case: SOAPCON_3_SubmitSingleMessage_Message

The screenshot displays the NIST Immunization Test Suite interface, version 1.4.0-SNAPSHOT. The top navigation bar includes links for Home, SOAP Envelope, SOAP Connectivity, HL7 Context-free, HL7 Context-based, Documentation, and About. The current test case is SOAPCON_1_BasicMessage_ConnectivityRequest. The left sidebar shows a tree view of test cases under the Sender(Initiator) category, with SOAPCON_3_SubmitSingleMessage_Message selected. A callout box labeled '1' points to this selection with the text 'Select **Sender Test Case**'. The main content area shows the details for the selected test case, including a description and test objectives. A callout box labeled '2' points to the 'Load Test Case' button with the text 'Load Test Case'.

NIST Immunization Test Suite 1.4.0-SNAPSHOT

Home 1 SOAP Envelope 2 SOAP Connectivity 3 HL7 Context-free 4 HL7 Context-based Documentation About Hello Guest

Test Selection Test Execution Current Test Case: SOAPCON_1_BasicMessage_ConnectivityRequest

Test Cases

- Sender(Initiator)
 - SOAPCON_1_BasicMessage_ConnectivityRequest
 - SOAPCON_3_SubmitSingleMessage_Message**
 - Receiver(Responder)

1 Select **Sender Test Case**

Test Case: SOAPCON_3_SubmitSingleMessage_Message

Download Package Load Test Case

2 'Load Test Case'

Test Story Message Content Test Data Specification Testing Instructions

Description

This test evaluates the capability of a sender (initiator) technology to connect to an immunization information system (IIS) and to generate and transmit a message conforming to the SOAP 1.2 standard and CDC WSDL 1.0 that may be used for transporting an HL7 message to an immunization information system (IIS).

Test Objectives

The body of the SOAP message must contain:

- the element submitSingleMessage, as defined in the CDC WSDL 1.0
- the hl7Message element set to a single HL7 v2 message (properly formatted for inclusion within XML, e.g. CDATA)
- the tool-assigned string values for the username, password and facilityID elements

SOAP Connectivity Tests (Sender)

Test Case: SOAPCON_3_SubmitSingleMessage_Message

NIST Immunization Test Suite 1.3.0

Home 1 SOAP Envelope 2 SOAP Connectivity 3 HL7 Context-free 4 HL7 Context-based T Transport Settings Documentation About Preferences

Test Selection Test Execution Current Test Case: SOAPCON_3_SubmitSingleMessage_Message

Sender(Initiator) / SOAPCON_3_SubmitSingleMessage_Message

← Incoming SOAP Envelope Validate Download Receive

1

3 Select 'Receive'

✓ Validation Result

Errors Warnings Alerts Affirmatives

Path	Description	Line
------	-------------	------

→ Outgoing SOAP Envelope Validate Download

1

✓ Validation Result

Errors Warnings Alerts Affirmatives

Path	Description	Line
------	-------------	------



Application Information

Date: 05/05/2016 15:14:02, Application Version: 1.3.0 Resource Bundle Version: 1.3.0

Supported Browsers

Firefox, Chrome, Safari, IE 9 and 10

External Links

[Disclaimer](#) | [Privacy/Policy](#) | [Website Administrator](#)



SOAP Connectivity Tests (Sender)

Test Case: SOAPCON_3_SubmitSingleMessage_Message

Receiver Configuration Panel

NOTE: Once the tool displays the elapsed time waiting for the message, your system (the SUT) may transmit the submitSingleMessage Request message

Details of the incoming test message from the SUT, and the outgoing response message from the Tool will be displayed in the Log panel (below)

NIST Immunization Test Suite 1.3.0

Receiver Configuration Panel [Close]

Start Stop
Time Elapsed (seconds)

5 Select 'Start'

Assigned Sender Information

Username
vendor_4371_44
This is the username assigned to you to use in your message

Password
vendor_4371_44
This is the password assigned to you to use in your message

FacilityID
vendor_4371_44
This is the facilityID assigned to you to use in your message

Endpoint
http://hl7v2-iz-r1.5-testing.nist.gov/iztool/ws/ilsService

WSDL
http://hl7v2-iz-r1.5-testing.nist.gov/iztool/ws/ilsService.wsdl

Log

4 The **Assigned Sender Information** (Username/Password/FacilityID) must be used by your system (the SUT) to construct the SOAP message that it transmits to the Tool's Endpoint (shown below)

SOAP Connectivity Tests (Sender)

Test Case: SOAPCON_3_SubmitSingleMessage_Message

NIST Immunization Test Suite 1.1.1

Home 1 SOAP Envelope 2 SOAP Connectivity 3 HL7 Context-free 4 HL7 Context-based 5 Transport Settings 6 Documentation 7 About Preferences

Test Selection Test Execution Current Test Case: SOAPCON_3_SubmitSingleMessage_Message

Sender(Initiator) / SOAPCON_3_SubmitSingleMessage_Message

Incoming SOAP Envelope

Validate Download Receive

```
1 <env:Envelope xmlns:env="http://www.w3.org/2003/05/soap-envelope"
2   xmlns="http://www.w3.org/2003/05/soap-envelope">
3   <env:Header/>
4   <env:Body>
5     <submitSingleMessage xmlns="urn:cdc:iisb:2011">
6       <username>vendor_16_992</username>
7       <password>vendor_16_992</password>
8       <facilityID>vendor_16_992</facilityID>
9     </submitSingleMessage>
10    <hl7Message>
11      MSH|^~\&|Test EHR Application|X68|NIST Test Iz Reg|201207010822||VXU^V04^VXU_V04|NIST-IZ-00
12      PID 1|MR-99922^NIST MPI^MR|Montgomery^Lewis^^^^^L|20010821|M
13      ORC RE|IZ-783276^NDA
14      RKA 0|1|20110215||118^HPV^CVX|999|||01^Historical information - source unspecified^NIP001
15    </hl7Message>
16  </env:Body>
17 </env:Envelope>
```

Validation Result

0 Errors 0 Warnings 0 Alerts 0 Affirmatives

Path	Description	Line
------	-------------	------

Outgoing SOAP Envelope

Validate Download

```
1 <env:Envelope xmlns:env="http://www.w3.org/2003/05/soap-envelope">
2   <env:Header/>
3   <env:Body>
4     <ns2:submitSingleMessageResponse xmlns:ns2="urn:cdc:iisb:2011">
5       <ns2:return>MSH|^~\&|NIST_SENDER_APP|NIST_SENDER_FAC|GENERIC|20120701082240-0500||ACK^V04^A
6       MSA|AA|NIST-101004144709009|</ns2:return>
7     </ns2:submitSingleMessageResponse>
8   </env:Body>
9 </env:Envelope>
```

Validation Result

0 Errors 0 Warnings 0 Alerts 0 Affirmatives

Path	Description	Line
------	-------------	------

NIST National Institute of Standards and Technology U.S. Department of Commerce

Application Information Date: 03/11/2016 17:11:28, Application Version: 1.1.1 Resource Bundle Version: 1.1.1

Supported Browsers Firefox, Chrome, Safari, IE 9 and 10

External Links Disclaimer | Privacy/Policy | Website Administrator

ITL INFORMATION TECHNOLOGY LABORATORY

6

View the **Validation Result** panes for the displayed **Incoming SOAP Envelope** (i.e. the message transmitted from the SUT) and the displayed **Outgoing SOAP Envelope** (the response message from the Tool)

HEALTH IT
STANDARDS TESTING INFRASTRUCTURE

SOAP Connectivity Tests

Receiver

SOAP Connectivity Tests

Receiver (responder)

Test Case: **SOAPCON_1_BasicMessage_ConnectivityResponse**

- This test evaluates the capability of a receiver (responder) technology conforming to the SOAP 1.2 standard and CDC WSDL 1.0 to receive a request message from a sender (initiator) technology, and to generate and transmit an appropriate response message, in order to verify the accessibility of an Immunization Information System (IIS).

SOAP Connectivity Tests (Receiver)

Test Case: SOAPCON_1_BasicMessage_ConnectivityResponse

The screenshot displays the NIST Immunization Test Suite 1.4.0-SNAPSHOT interface. The top navigation bar includes links for Home, SOAP Envelope, SOAP Connectivity, HL7 Context-free, HL7 Context-based, Documentation, and About. The current test case is SOAPCON_3_SubmitSingleMessage_Message. On the left, a sidebar lists test cases under Sender (Initiator) and Receiver (Responder) categories. The Receiver (Responder) category is expanded, and the test case SOAPCON_1_BasicMessage_ConnectivityResponse is highlighted. A callout box labeled '1' points to this selection with the text 'Select Receiver Test Case'. The main content area shows the details for the selected test case, SOAPCON_1_BasicMessage_ConnectivityResponse. It includes tabs for Test Story, Message Content, Test Data Specification, and Testing Instructions. The Test Story tab is active, showing a description and test objectives. A callout box labeled '2' points to the 'Load Test Case' button in the top right corner of the main content area with the text 'Load Test Case'.

NIST Immunization Test Suite 1.4.0-SNAPSHOT

Home 1 SOAP Envelope 2 SOAP Connectivity 3 ☒ HL7 Context-free 4 ☐ HL7 Context-based Documentation About Hello Guest

Test Selection Test Execution Current Test Case: SOAPCON_3_SubmitSingleMessage_Message

Test Cases

- ▼ Sender (Initiator)
 - SOAPCON_1_BasicMessage_ConnectivityRequest
 - SOAPCON_3_SubmitSingleMessage_Message
- ▼ Receiver (Responder)
 - SOAPCON_1_BasicMessage_ConnectivityResponse**
 - SOAPCON_2_SubmitSingleMessage_Response
 - SOAPCON_3_FaultDetection-Generation_Authenticati

1 Select **Receiver Test Case**

Test Case: SOAPCON_1_BasicMessage_ConnectivityResponse

Download Package Load Test Case

2 'Load Test Case'

Test Story Message Content Test Data Specification Testing Instructions

Description

This test evaluates the capability of a receiver (responder) technology conforming to the SOAP 1.2 standard and CDC WSDL 1.0 to receive a request message from a sender (initiator) technology, and to generate and transmit an appropriate response message, in order to verify the accessibility of an Immunization Information System (IIS).

Test Objectives

The receiver (responder) technology will demonstrate the ability to:

- Receive a SOAP message with the Body element containing the element connectivityTest and corresponding child element echoBack, as defined in the CDC WSDL 1.0
- Transmit a SOAP response message to the sender (initiator) which contains
 - the element connectivityTestResponse as defined in the CDC WSDL 1.0
 - the child element return as defined in the CDC WSDL 1.0, with a string value containing the string received in the echoBack element in the request message

SOAP Connectivity Tests (Receiver)

Test Case: SOAPCON_1_BasicMessage_ConnectivityResponse

The screenshot displays the SOAP Connectivity tool interface. The top navigation bar includes links for Home, SOAP Envelope, SOAP Connectivity, HL7 Context-free, HL7 Context-based, Documentation, and About. The current test case is SOAPCON_1_BasicMessage_ConnectivityResponse. The main area shows the Receiver(Responder) configuration for the test case. A callout box labeled '3' points to the 'Configure' button, stating: 'Select Configure to enter the Receiver Configuration Panel and input the SOAP Endpoint information for your system (SUT)'. The 'Receiver Configuration Panel' is shown on the right, with the 'Endpoint' field set to 'SUT Endpoint'. A callout box labeled '4' points to the 'Save' button, stating: 'Click 'Save' when finished.' Below the configuration panel, a callout box labeled '5' points to the 'Send' button, stating: 'Select 'Send' to transmit a test message from the Tool to your receiving system (SUT)'. The bottom section shows the 'Validation Result' with 0 Errors, 0 Warnings, 0 Alerts, and 0 Affirmatives. The outgoing SOAP envelope is displayed on the left, showing the XML structure for the test case.

Home 1 SOAP Envelope 2 SOAP Connectivity 3 HL7 Context-free 4 HL7 Context-based Documentation About Hello Guest

Test Selection Test Execution Current Test Case: SOAPCON_1_BasicMessage_ConnectivityResponse

Receiver(Responder) / SOAPCON_1_BasicMessage_ConnectivityResponse

Outgoing SOAP Envelope Validate Download Configure Send

```
1 <Envelope xmlns="http://www.w3.org/2003/05/soap-envelope">
2   <Header />
3   <Body>
4     <connectivityTest xmlns="http://hl7.org/hl7v2/soap:connectivityTest" id="iisb:2011">
5       <echoBack>Hello world!
6     </connectivityTest>
7   </Body>
8 </Envelope>
```

3 Select Configure to enter the Receiver Configuration Panel and input the SOAP Endpoint information for your system (SUT).

5 Select 'Send' to transmit a test message from the Tool to your receiving system (SUT)

Receiver Configuration Panel

Endpoint

SUT Endpoint

Save Cancel

4 Click 'Save' when finished.

Validation Result

0 Errors 0 Warnings 0 Alerts 0 Affirmatives

Path	Description	Line #
------	-------------	--------

Validation Result

Errors Warnings Alerts Affirmatives

Path	Description	Line #
------	-------------	--------

SOAP Connectivity Tests (Receiver)

Test Case: SOAPCON_1_BasicMessage_ConnectivityResponse

The screenshot displays the NIST Immunization Test Suite interface for the test case **SOAPCON_1_BasicMessage_ConnectivityResponse**. The interface is divided into two main sections: **Outgoing SOAP Envelope** and **Incoming SOAP Envelope**, each with a **Validation Result** section below it.

Outgoing SOAP Envelope:

```
1 <?xml version="1.0" encoding="UTF-8"?><Envelope xmlns="http://www.w3.org/2003/05/soap-envelope">
2   <Header/>
3   <Body>
4     <connectivityTest xmlns="urn:cdc:iisb:2011">
5       <echoBack>518+690=1208</echoBack>
6     </connectivityTest>
7   </Body>
8 </Envelope>
```

Incoming SOAP Envelope:

```
1 <S:Envelope xmlns:S="http://www.w3.org/2003/05/soap-envelope">
2   <S:Body>
3     <connectivityTestResponse xmlns="urn:cdc:iisb:2011">
4       <return>Hello World!
5       You are connected to the webservice.
6       You submitted: 518+690=1208</return>
7     </connectivityTestResponse>
8   </S:Body>
9 </S:Envelope>
```

Validation Result (Outgoing):

✓ Validation Result

0 Errors 0 Warnings 0 Alerts 0 Affirmatives

Path	Description	Line
------	-------------	------

Validation Result (Incoming):

✓ Validation Result

0 Errors 0 Warnings 0 Alerts 0 Affirmatives

Path	Description	Line
------	-------------	------

The footer of the interface includes the NIST logo, application information (Date: 03/11/2016 17:11:28, Application Version: 1.1.1, Resource Bundle Version: 1.1.1), supported browsers (Firefox, Chrome, Safari, IE 9 and 10), external links (Disclaimer, Privacy/Policy, Website Administrator), and the ITL logo (Information Technology Laboratory).

6

Once the Tool sends the test message to the SUT and a response is received, Validation occurs automatically. The results are displayed for both Outgoing and Incoming SOAP messages

SOAP Connectivity Tests

Receiver (responder)

Test Case: **SOAPCON_2_SubmitSingleMessage_Response**

- This test evaluates the capability of a receiver (responder) technology conforming to the SOAP 1.2 standard and CDC WSDL 1.0 to receive a SOAP request message (containing an HL7 message), and respond appropriately.

SOAP Connectivity Tests (Receiver)

Test Case: SOAPCON_2_SubmitSingleMessage_Response

NIST Immunization Test Suite 1.3.0

[Home](#) [1 SOAP Envelope](#) [2 SOAP Connectivity](#) [3 HL7 Context-free](#) [4 HL7 Context-based](#) [Transport Settings](#) [Documentation](#) [About](#) [Preferences](#)

[Test Selection](#) [Test Execution](#) [Current Test Case: SOAPCON_3_SubmitSingleMessage_Message](#)

Test Cases

Sender(Initiator)

SOAPCON_1_BasicMessage_ConnectivityRequest

SOAPCON_3_SubmitSingleMessage_Message

Receiver(Responder)

SOAPCON_1_BasicMessage_ConnectivityResponse

SOAPCON_2_SubmitSingleMessage_Response

SOAPCON_3_FaultDetection-Generation_AuthenticationFault

SOAPCON_4_FaultDetection-Generation_MessageSizeFault

SOAPCON_5_FaultDetection-Generation_UnsupportedMsg_Fault

1

Select **Receiver** Test Case

Test Case: SOAPCON_2_SubmitSingleMessage_Response

[Download Package](#) [Load Test Case](#)

Test Story

Message Content

Test Data Specification

Testing Instructions

Description

This test evaluates the capability of a receiver (responder) technology conforming to the SOAP 1.2 standard and CDC WSDL 1.0 to receive and respond appropriately.

Test Objectives

The receiver (responder) technology will demonstrate the ability to:

- Receive a SOAP message with the Body element containing submitSingleMessage, as defined in the CDC WSDL 1.0, and arbitrary conforming values for all child elements: username, password, facilityID, and hl7Message
- Transmit a SOAP response message to the sender (initiator) that contains the element submitSingleMessageResponse, as defined in the CDC WSDL 1.0 with the return child element containing a valid HL7 message

2

'Load Test Case'



Application Information

Date: 05/05/2016 15:14:02, Application Version: 1.3.0 Resource Bundle Version:1.3.0

Supported Browsers

Firefox, Chrome, Safari, IE 9 and 10

External Links

[Disclaimer](#) | [Privacy/Policy](#) | [Website Administrator](#)



SOAP Connectivity Tests (Receiver)

Test Case: SOAPCON_2_SubmitSingleMessage_Response

NIST Immunization Test Suite 1.3.0

[Home](#) [1 SOAP Envelope](#) [2 SOAP Connectivity](#) [3 HL7 Context-free](#) [4 HL7 Context-based](#) [5 Transport Settings](#) [Documentation](#) [About](#) [Preferences](#)

[Test Selection](#) [Test Execution](#) [Current Test Case: SOAPCON_2_SubmitSingleMessage_Response](#)

[Receiver\(Responder\)](#) / [SOAPCON_2_SubmitSingleMessage_Response](#)

→Outgoing SOAP Envelope

[Validate](#) [Download](#) [Configure](#) [Send](#)

```
1 <?xml version='1.0' encoding='UTF-8'?>
2 <Envelope xmlns='http://www.w3.org/2003/05/soap-envelope'>
3   <Header />
4   <Body>
5     <submitSingleMessage xmlns='urn:cdc:iisb:
6       <username>???'</username>
7       <password>???'</password>
8       <facilityID>???'</facilityID>
9       <hl7Message>MSH|^~\&amp;|Test EHR Application|X68||NIST Test Iz Reg|201207010822||VXu^V04^
10    </submitSingleMessage>
11  </Body>
12 </Envelope>
13
```

3

Select 'Configure'

✓ Validation Result

0 Errors

0 Warnings

0 Alerts

0 Affirmatives

Path	Description	Line
------	-------------	------

←Incoming SOAP Envelope

[Validate](#) [Download](#)

```
1
```

✓ Validation Result

Errors

Warnings

Alerts

Affirmatives

Path	Description	Line
------	-------------	------

NIST

National Institute of Standards and Technology

U.S. Department of Commerce

Application Information


Date: 05/05/2016 15:14:02, Application Version: 1.3.0 Resource Bundle Version:1.3.0

Supported Browsers

Firefox, Chrome, Safari, IE 9 and 10

External Links

[Disclaimer](#) | [Privacy/Policy](#) | [Website Administrator](#)

 INFORMATION TECHNOLOGY LABORATORY

SOAP Connectivity Tests (Receiver)

Test Case: SOAPCON_2_SubmitSingleMessage_Response

The screenshot displays the NIST SOAP Connectivity Test interface. A modal window titled "Receiver Configuration Panel" is centered on the screen. It contains five input fields: "Username", "Password", "FacilityID", "Endpoint", and "SUT Endpoint". A blue circle with the number "4" is positioned over the "Password" field, with lines pointing to it from the surrounding text. Below the input fields are "Save" and "Cancel" buttons. To the right of the modal, a yellow callout box contains the following text:

Receiver Configuration Panel
Enter your system (SUT) SOAP **Endpoint** and the credentials (**Username/Password/FacilityID**) required for systems to transmit to your site. (The NIST Tool will use this information in order to build a *submitSingleMessage* message and transmit it to your system (SUT))

Press **Save** when finished.

In the background, the "Outgoing SOAP Envelope" section shows an XML snippet:

```
1 <?xml version='1.0' encoding='UTF-8'?>
2 <Envelope xmlns="http://www.w3.org/2003/05/soap-envelope" />
3 <Header />
4 <Body>
5   <submitSingleMessage xmlns="urn:cdc:iisb:2011">
6     <username>???

At the bottom, the "Validation Result" section shows a table with columns "Path", "Description", and "Line #". The table is currently empty.


```

SOAP Connectivity Tests (Receiver)

Test Case: SOAPCON_2_SubmitSingleMessage_Response

NIST Immunization Test Suite 1.3.0

Home 1 SOAP Envelope 2 SOAP Connectivity 3 HL7 Context-free 4 HL7 Context-based 5 Transport Settings Documentation About Preferences

Test Selection Test Execution Current Test Case: SOAPCON_2_SubmitSingleMessage_Response

Receiver(Responder) / SOAPCON_2_SubmitSingleMessage_Response

→ Outgoing SOAP Envelope

Validate Download Configure Send

```
1 <?xml version="1.0" encoding="UTF-8"?><Envelope xmlns="http://www.w3.org/2003/05/soap-envelope">
2   <Header/>
3   <Body>
4     <submitSingleMessage xmlns="urn:cdc:iisb:2011">
5       <username>good</username>
6       <password>good</password>
7       <facilityID>1234</facilityID>
8       <hl7Message>MSH|^~\&|Test EHR Application|X68||NIST Test Iz Reg|201207010822||VXU^V04^
9     </submitSingleMessage>
10  </Body>
11 </Envelope>
```

✓ Validation Result

0 Errors 0 Warnings 0 Alerts 0 Affirmatives

Path	Description	Line
------	-------------	------

← Incoming SOAP Envelope

Validate Download

```
1 <Envelope xmlns="http://www.w3.org/2003/05/soap-envelope">
2   <Header/>
3   <Body>
4     <submitSingleMessageResponse xmlns="urn:cdc:iisb:2011">
5       <return>MSH|^~\&||NIST Test Iz Reg|Test EHR Application|X68|20160816132256.056-0400||AC
6       MSA|AA|NIST-IZ-007.00
7     </return>
8   </submitSingleMessageResponse>
9   </Body>
10 </Envelope>
```

✓ Validation Result



0 Errors 0 Warnings 0 Alerts 0 Affirmatives

Path	Description	Line
------	-------------	------

Application Information
Date: 05/05/2016 15:14:02, Application Version: 1.3.0 Resource Bundle Version:1.3.0

Supported Browsers
Firefox, Chrome, Safari, IE 9 and 10

External Links
Disclaimer | Privacy/Policy | Website Administrator

5

Once the Tool sends the test message to the SUT and a response is received, Validation occurs automatically. The results are displayed for both Outgoing and Incoming SOAP messages