

HEALTH IT  
STANDARDS TESTING INFRASTRUCTURE

# NIST Immunization Test Suite Tutorial

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**NIST**

National Institute of Standards and Technology

# NIST Immunization Test Suite Tool Overview

## Tool Key Capabilities

<b>SOAP Envelope Testing</b>	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>
<b>SOAP Connectivity Testing</b>	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>
<b>Context-Free Testing</b>	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.
<b>Context-Based Testing</b> <b>ONC Certified</b>	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.
<b>Isolated Testing</b>	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.

- 1 The tool's Navigation Bar is located along the top. The options are **'Home'**, **'SOAP Envelope'**, **'SOAP Connectivity'**, **'HL7 Context-free'**, **'HL7 Context-based'**, **'Isolated Testing'**, **'Documentation'**, **'About'**, and **'Contact Us'**.

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

- 2 Scrolling down the Welcome Screen gives other useful information, such as the NIST IZ Test Suite:
- Components;
  - Focus of Each Testing Stage;
  - Testing Stage Benefits; and
  - Testing Types.

**NIST Immunization Test Suite 1.1.1**

Home SOAP Envelope SOAP Connectivity HL7 Context-free HL7 Context-based Transport Settings Documentation About Preferences

Welcome to the NIST Immunization Test Suite!

**Supporting**

The NIST Immunization Test Suite supports a broad range of testing in support of the Immunization Community, including transport, messaging (content), and functional.

- CDC SOAP Validation
- HL7 V2.5.1 Immunization Message Implementation Guide Release 1.5
- EHR and IIS Functional Capabilities (2016)
- 2015 ONC Health IT Certification

**2015 ONC Health IT Certification**

Start Testing

The NIST Immunization Test Suite is the test tool used for certifying ONC 2015 Edition Health IT Modules. The capability used for ONC Certification can be accessed by navigating to the ONC 2015 Test Plan found on the HL7 Context-based tab. The ONC 2015 Test Plan is used to certify Modules for the §170.315(f)(1) Transmission to Immunization Registries ONC criterion.

**Have a Question?**

A Google Group (HL7v2 Immunization Testing) has been established for discussion/questions about the Implementation Guide, testing tool, and testing issues. No membership is required. A Google account is required for posting. **Note:** The same Google Group is being used for submitting questions/comments related to the 2014 and 2015 Editions of the NIST Certification Test Tool and general Immunization related topics. **When**

**Supported Browsers**

The following browsers are supported:

- Chrome (Recommended)
- Firefox (Recommended)
- Safari
- IE 9 and 10

**SOAP Envelope** Start Testing

**SOAP Connectivity** Start Testing

**HL7 Context-free** Start Testing

**HL7 Context-based** Start Testing



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# **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

The screenshot displays the NIST Health IT Standards Testing Infrastructure web application. The top navigation bar includes links for Home, SOAP Envelope (selected), SOAP Connectivity, HL7 Context-free, HL7 Context-based, Transport Settings, Documentation, About, and Preferences. Below the navigation bar, the 'Test Selection' tab is active, showing a list of test cases under the 'Generic' category. The 'SOAPENV\_1\_Min\_Test' is highlighted. A callout box labeled '1' points to the 'SOAP Envelope' tab in the navigation bar, stating 'Select the 'SOAP Envelope' tab.' A callout box labeled '2' points to the 'SOAPENV\_1\_Min\_Test' in the list, stating 'Select a Test Case'. A callout box labeled '3' points to the 'Test Story' tab in the right-hand pane, stating 'The 'Test Story' is displayed once a Test Case is selected..'. The right-hand pane shows the details for 'TestCase: Generic - SOAPENV\_1\_Min\_Test', including a 'Description' and 'Test Objectives'. A callout box at the bottom left states: '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'.'

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'.

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\_Requ
  - SOAPENV\_2\_SubmitSingleMessage\_Requ
- 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\_Requ
  - SOAPENV\_2\_SubmitSingleMessage\_Requ
- 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

```

graph TD
    SUT[System Under Test] -- 1 --> SM[SOAP Message]
    T1[Tester] -- 2 (Copy & Paste) --> SM
    SM -- 3 --> TT[Test Tool]
    TR[Technical Requirements: SOAP 1.2] --> TT
    TT -- 4 --> VR[Validation Report]
    VR -- 5 --> T2[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.

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# **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.



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# 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

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# 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	<a href="http://hit-dev.nist.gov:8098/iztool/ws/iisService">http://hit-dev.nist.gov:8098/iztool/ws/iisService</a>	This is the destination's endpoint
NIST Endpoint WSDL	<a href="http://hit-dev.nist.gov:8098/iztool/ws/iisService.wsdl">http://hit-dev.nist.gov:8098/iztool/ws/iisService.wsdl</a>	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

#### Supported Browsers

Firefox, Chrome, Safari, IE 9+

#### External Links

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NIST 15

# SOAP Connectivity Tests (Sender)

## Test Case: SOAPCON\_1\_BasicMessage\_ConnectivityRequest

The screenshot displays the NIST SOAP Connectivity Tests (Sender) 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 SOAPENV\_1\_ConnectivityMessage\_Request. The interface is divided into two main sections: Validation and Report. The SOAP Tree on the left shows the structure of the SOAP message, including Envelope, Header, Body, and connectivityTest. The SOAP Envelope editor on the right shows the XML code for the message. A callout box labeled '5' points to the text area of the SOAP Envelope editor, indicating where to paste the message sent/received. Another callout box labeled '6' points to the 'Validate' button, indicating where to click to validate the message. The bottom section shows the SOAP Validation Result, including a status bar with 0 Errors, 0 Warnings, and 0 Alerts.

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 Sender(Initiator) and Receiver(Responder). The main content area shows the details for the selected test case, SOAPCON\_3\_SubmitSingleMessage\_Message, including a description and test objectives. Two callouts are present: Callout 1 points to the 'SOAPCON\_3\_SubmitSingleMessage\_Message' test case in the left sidebar, labeled 'Select Sender Test Case'. Callout 2 points to the 'Load Test Case' button in the top right of the main content area, labeled '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 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/iiService

**WSDL**  
http://hl7v2-iz-r1.5-testing.nist.gov/iztool/ws/iiService.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 SOAP Envelope SOAP Connectivity HL7 Context-free HL7 Context-based 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 <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

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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

**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

Test Story Message Content Test Data Specification Testing Instructions

2 'Load Test Case'

**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 shows the 'SOAPCON\_1\_BasicMessage\_ConnectivityResponse' test case in the 'SOAP Connectivity' tab. The interface includes a top navigation bar, a toolbar with 'Validate', 'Download', 'Configure', and 'Send' buttons, and a main area for the outgoing SOAP envelope XML. A 'Receiver Configuration Panel' is open on the right, showing the 'Endpoint' field with 'SUT Endpoint' entered. Callout 3 points to the 'Configure' button, callout 4 points to the 'Save' button in the configuration panel, and callout 5 points to the 'Send' button. The bottom section displays a 'Validation Result' table with columns for Path, Description, and Line #.

Receiver(Responder) / SOAPCON\_1\_BasicMessage\_ConnectivityResponse

Outgoing SOAP Envelope

```
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).

4 Click 'Save' when finished.

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

Receiver Configuration Panel

Endpoint

SUT Endpoint

Save Cancel

Validation Result

0 Errors 0 Warnings 0 Alerts 0 Affirmatives

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

# SOAP Connectivity Tests (Receiver)

## Test Case: SOAPCON\_1\_BasicMessage\_ConnectivityResponse

The screenshot displays the NIST Immunization Test Suite interface, version 1.1.1. The current test case is '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>
```

**Validation Result (Outgoing):**

0 Errors, 0 Warnings, 0 Alerts, 0 Affirmatives

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

**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 (Incoming):**

0 Errors, 0 Warnings, 0 Alerts, 0 Affirmatives

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

The footer contains 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

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# SOAP Connectivity Tests (Receiver)

## Test Case: SOAPCON\_2\_SubmitSingleMessage\_Response

### NIST Immunization Test Suite 1.3.0

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[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>???
```

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  
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# 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. 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.

At the bottom of the modal are "Save" and "Cancel" buttons. 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>???

Below the XML, there are "Validation Result" sections with tabs for "Errors", "Warnings", "Alerts", and "Affirmatives". The "Errors" tab is selected, showing 0 errors, 0 warnings, 0 alerts, and 0 affirmatives. The "Alerts" tab is also visible, showing 0 alerts.


```

# SOAP Connectivity Tests (Receiver)

## Test Case: SOAPCON\_2\_SubmitSingleMessage\_Response

### NIST Immunization Test Suite 1.3.0

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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

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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