HEALTH IT STANDARDS TESTING INFRASTRUCTURE

# NIST Immunization Test Suite Tutorial

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#### **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.  This is not used for ONC certification testing.
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**

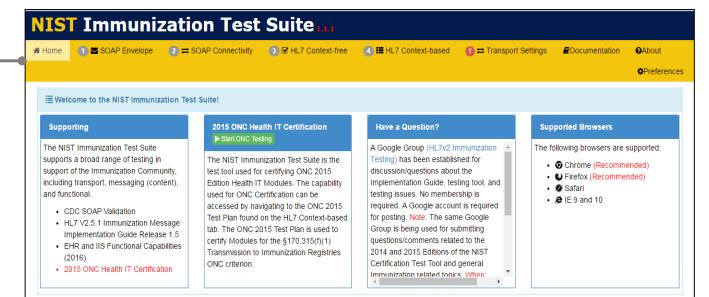
#### **Objectives**

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

- 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.

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.



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.









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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.

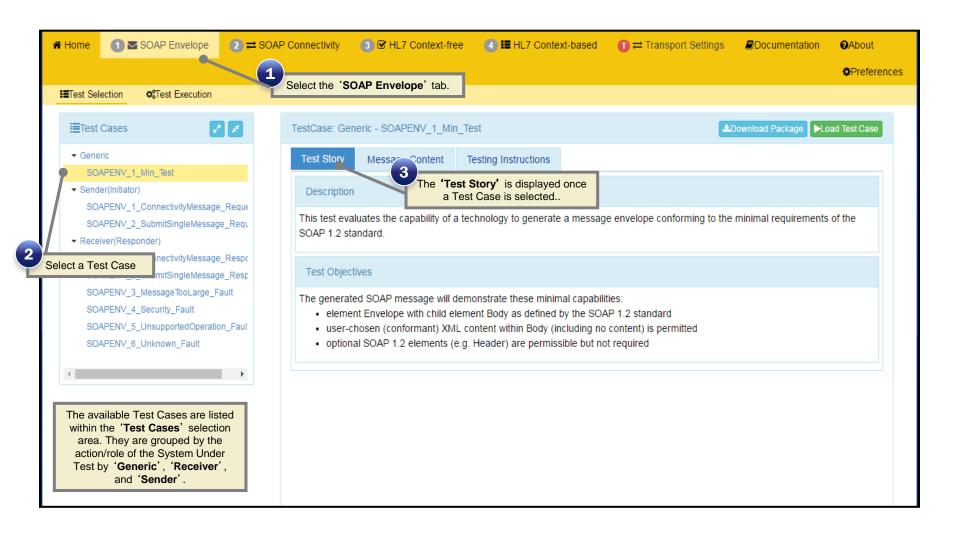
#### 2) Upload SOAP Envelope Test Message and Execute Validation

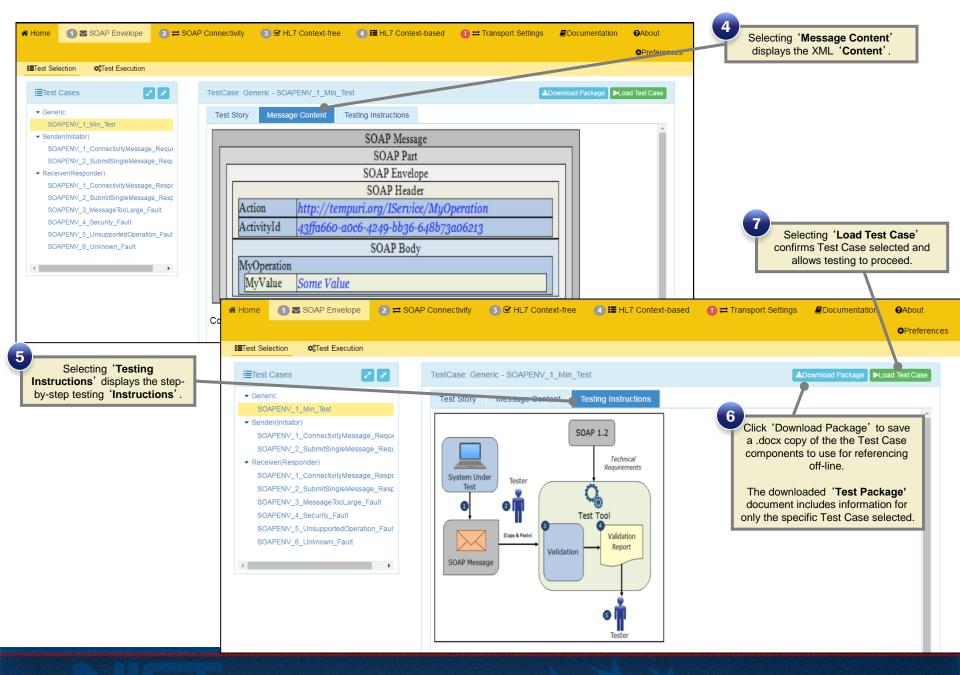
- · Assure the 'Validation' tab is selected.
- Upload test message by inserting message data into the 'SOAP Envelope' field (either paste or by local file selection).
- If no message data is available, select the 'Load Example' option to populate generic prepopulated message content.
- Once satisfied 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

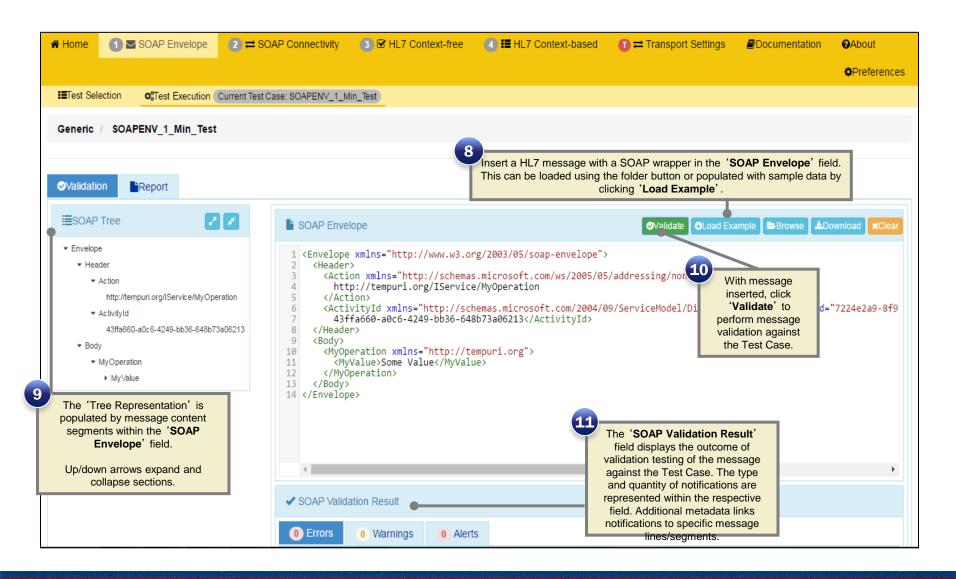
- Data elements are populated within the 'Tree Representation' field.
- For a message data element/segment, clicking the arrows expands/collapses the content
- The message line number is highlighted for each data element/segment.
- The 'SOAP Validation Result' field displays 'Errors', 'Warnings', 'Alerts'
- 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**

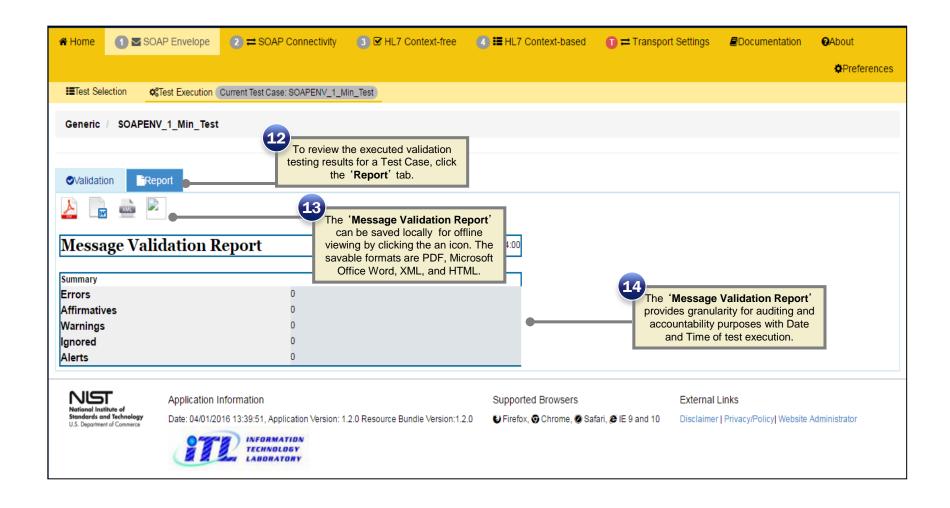




#### **SOAP Validation**



### **SOAP Validation Report**



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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.



# **SOAP Connectivity Tests**

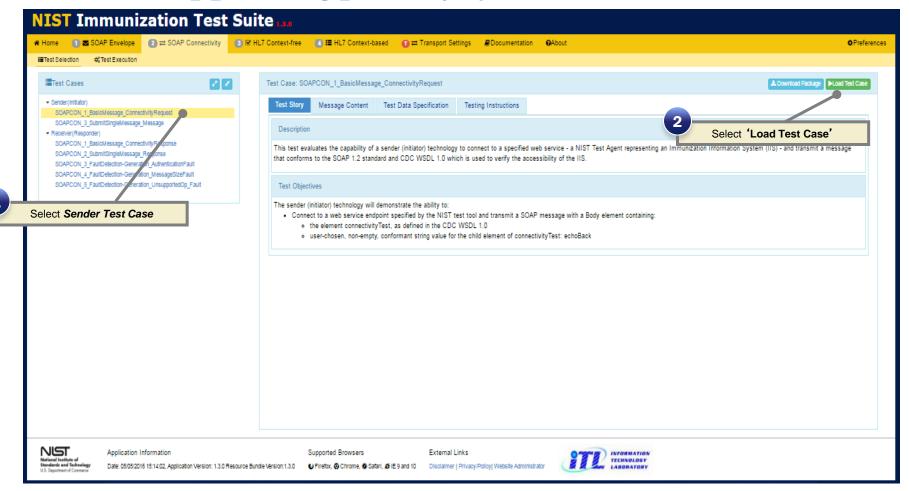
Sender

# **SOAP Connectivity Tests Sender (initiator)**

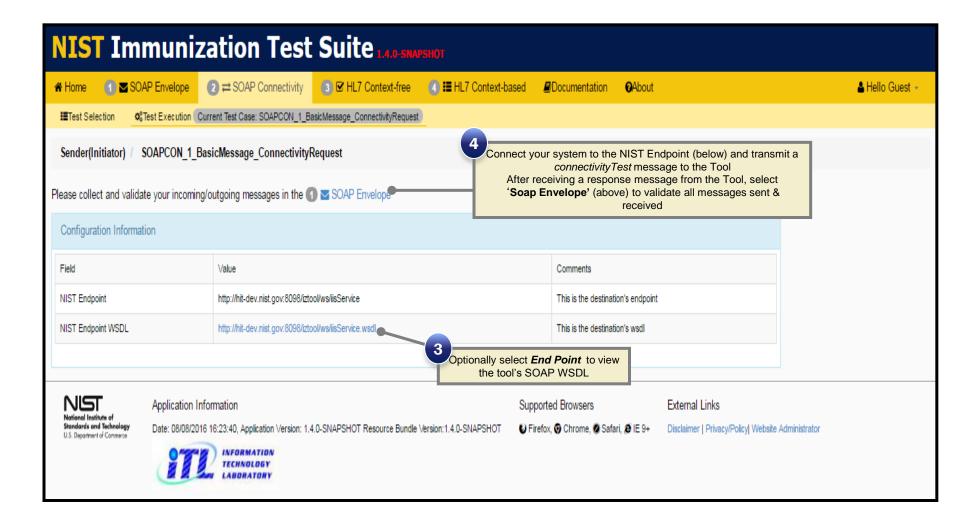
#### **Test Case:** SOAPCON\_1\_BasicMessage\_ConnectivityRequest

 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.

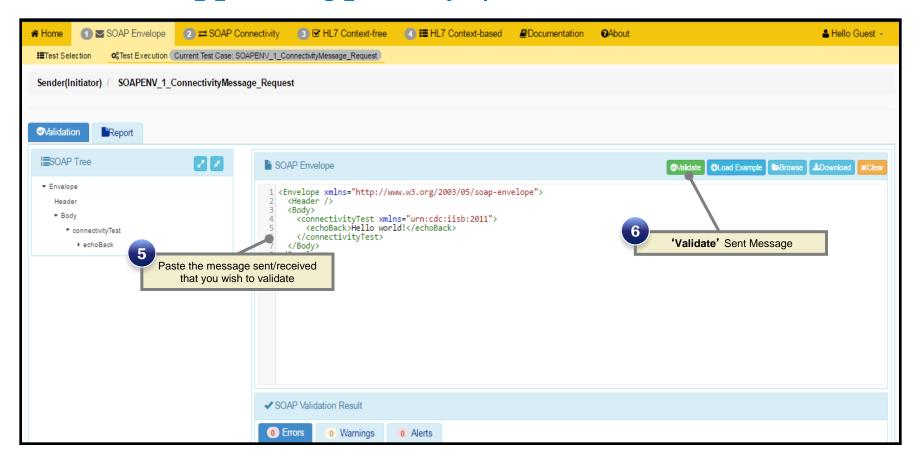
Test Case: SOAPCON\_1\_BasicMessage\_ConnectivityRequest



Test Case: SOAPCON\_1\_BasicMessage\_ConnectivityRequest



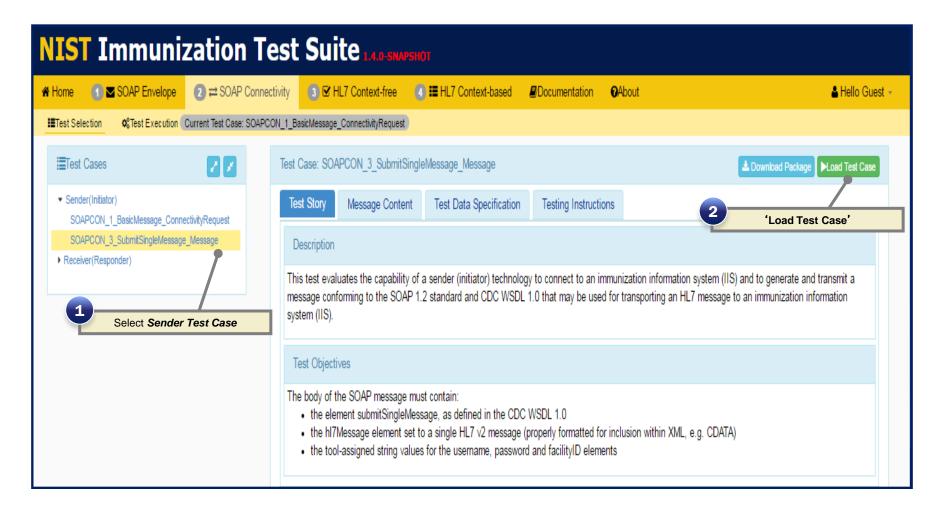
Test Case: SOAPCON\_1\_BasicMessage\_ConnectivityRequest



# **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).



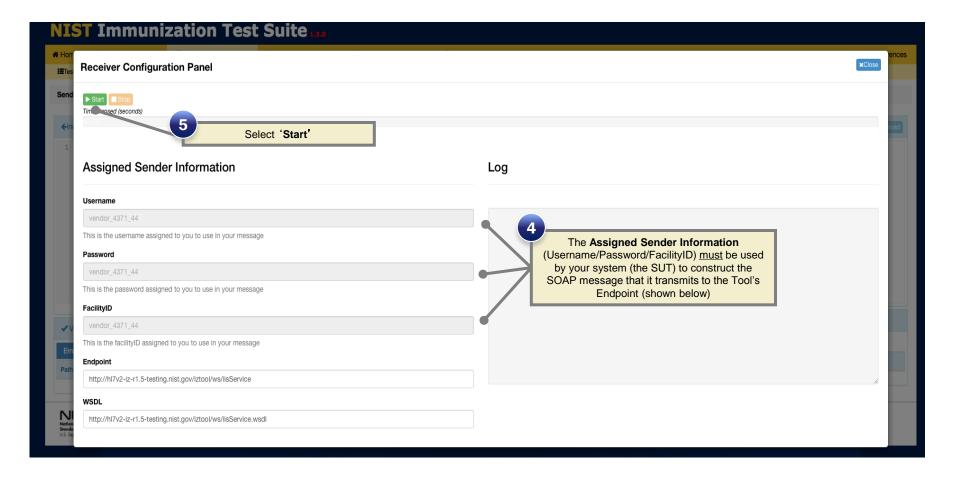


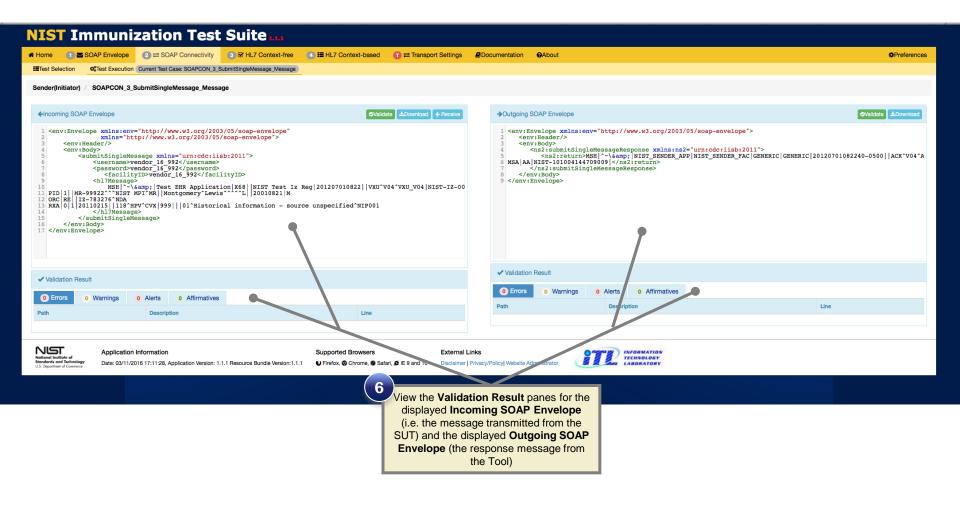
Test Case: SOAPCON\_3\_SubmitSingleMessage\_Message

#### **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)







# **SOAP Connectivity Tests**

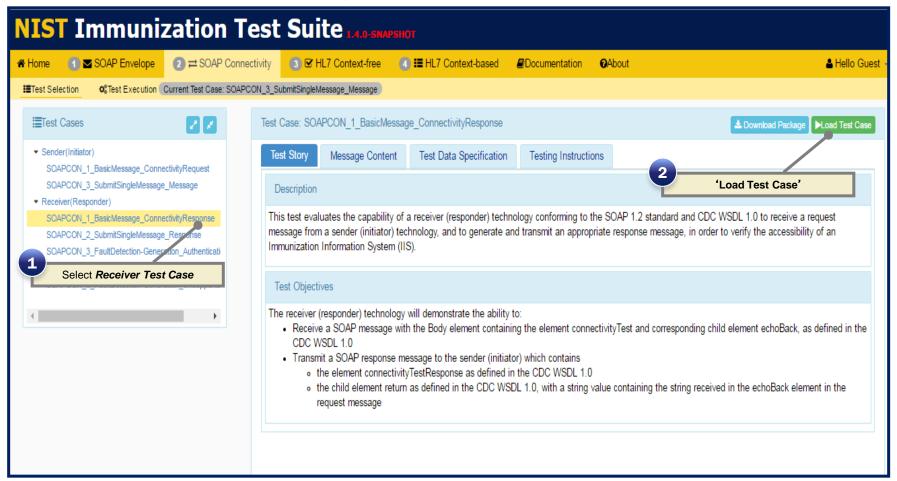
Receiver

# **SOAP Connectivity Tests Receiver (responder)**

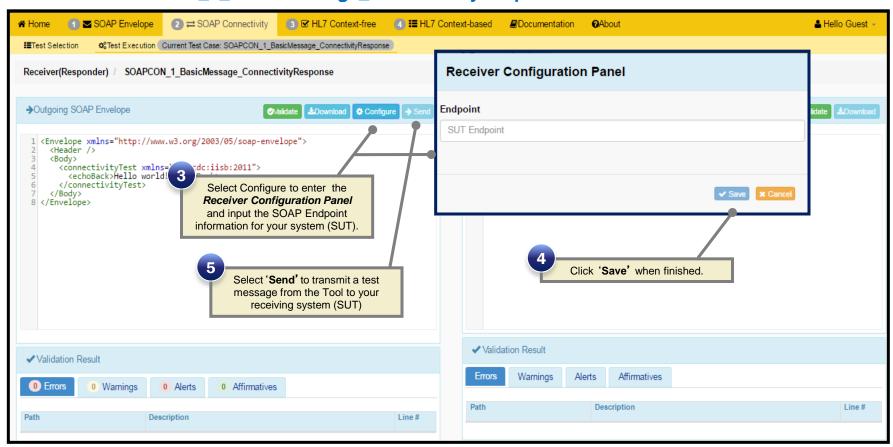
#### **Test Case: SOAPCON\_1\_BasicMessage\_ConnectivityResponse**

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).

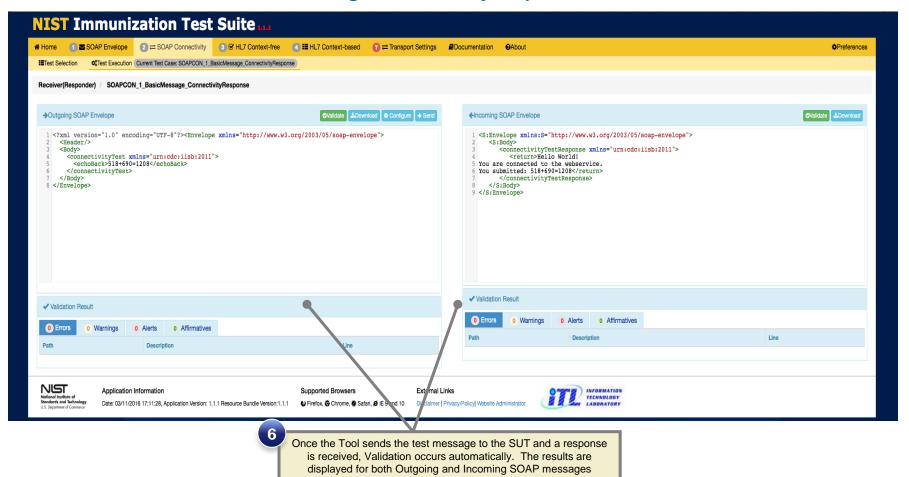
Test Case: SOAPCON\_1\_BasicMessage\_ConnectivityResponse



Test Case: SOAPCON\_1\_BasicMessage\_ConnectivityResponse



Test Case: SOAPCON\_1\_BasicMessage\_ConnectivityResponse



# **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.

