

Integrate IIS Documentation

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Integrate IIS

The Integrate IIS project's goal is to achieve interoperability between state IIS and NEDSS Based System (NBS) systems. The Integrate IIS platform consists of two projects housed in the American Immunization Registration Association's (AIRA) GitHub instance. IISCore is a Java class library that utilizes AIRA's Simple Message Mover (SMM) platform to connect to and communicate with individual state IIS systems. IISConnect implements IIS Core inside a Spring MVC Java Application.

The IISConnect application is a pseudo NBS application that demonstrates executing the IISCore functionality within a web application and a Web API. The functionality of both components of the Integrate IIS platform are detailed in this document.

IIS Core

The IIS Core class library uses the code from AIRA's SMM application to retrieve immunization information for an individual from a state's Immunization Information Service (IIS). The source code for IIS Core can be found at the following URL:

<https://github.com/immregistries/IISConnectCore>

Prerequisites

The following software is required to run the Integrate IIS application:

- Maven: Java package management software
- SMM-Tester: AIRA Simple Message Mover

The pom.xml file contains the dependency information for the SMM jar file.

Note:

The SMM-Tester jar file is included in the Integrate IIS project in GitHub. If the SMM-Tester code requires updating, or if you want to run the SMM-Tester, you must download the source code from GitHub and build the application. See Installing SMM-Tester Software for details.

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Installing IIS Core

To install IIS Core, do the following:

- 1) Clone the IISCore application to a local folder on your computer from [GitHub](https://github.com/immregistries/IISConnectCore) (<https://github.com/immregistries/IISConnectCore>)
- 2) From the directory where IISCore is stored, Build the project using Maven.
 - a. From the Windows command line or Mac/Linux terminal, navigate to the folder where the IIS Core code was cloned.
 - b. Type `mvn install` and press Enter.
- 3) From Eclipse or another Java IDE, open the project in the folder where the project was cloned.

IIS Core Classes

The classes for the IIS Core application are detailed below:

IISData

The IISData class is used to return data from an ISS communication. The properties of this class are:

RequestHL7	The request HL7 message formulated from the SMM.
ResponseHL7	HL7 response received from the state IIS
QueryResponse	The QueryResponse is the HL7 parsed into a Java object. QueryResponse is part of the AIRA SMM source code.
Person	IIS Core person class that contains the person search parameters and the IIS Connection as a string property.

Person

The Person class contains search parameters to send to the state IIS and the IIS configuration information.

IISConfig	String of IIS Configuration information. Required to connect to state IIS
PatientIdentifierType	String of the type of patient identifier. Valid values are MR: MRN, SR: State Registry ID, and PT: External Patient Identifier
PatientIdentifier	The patient identifier string
Authority	String of the IIS record authority.
FirstName	String of person first name.
LastName	String of person last name.

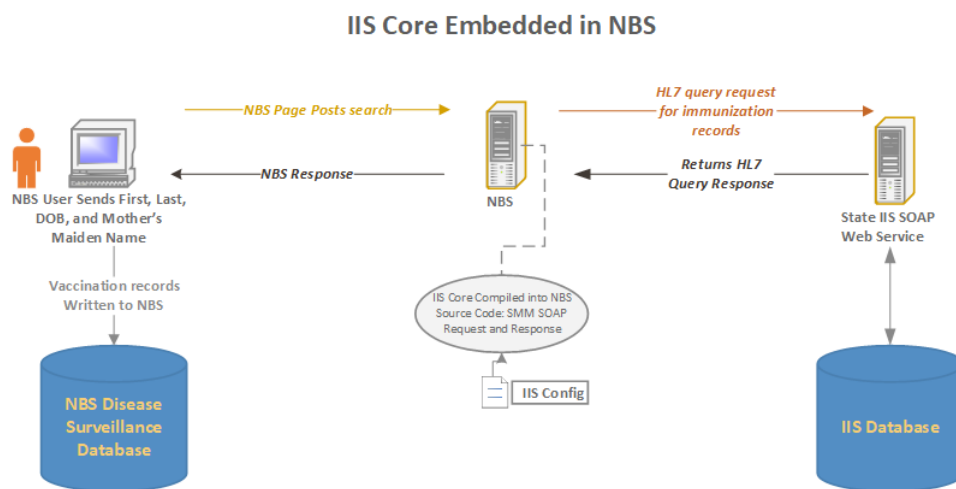
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MiddleName	String of person middle name.
Sex	String of gender. Valid values are M, F, and U.
DOB	Date of the person date of birth.
MotherFirstName	String of mother first name.
MotherLastName	String of mother last name.
MotherMiddleName	String of mother middle name.
MaidenName	String of mother maiden name.
AddressLine1	String of address line 1
AddressLine2	String of address line 2
City	String of city
State	String of state. Can be abbreviation or name.
ZipCode	String of zip code.
Country	String of country
AreaCode	String of area code
PhoneNumber	String of phone number

IISService

The IISService class has a single method, queryIIS, with two overloads. One takes an IISCore.Person object as a single argument. The Person object passed as a parameter must have the IISConfig property properly configured to successfully connect to a state IIS registry. The IISService class contains the API for IIS Core. The second takes an IISCore.Person object, and a string with the IIS Configuration method. Both overloads return an IISData class. The IISData class is documented above.

The diagram below illustrates using IIS Core within another Java based application:



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Messaging

The Messaging class contains methods for preparing communications to an IIS using the SMM framework. The Messaging class contains the following method:

getQueryRequestFromPatient

Parameter is an IIS Core Person object. The return object is an SMM QueryRequest object.

createTestCaseMessage

Parameter is an SMM QueryRequest object. Returns an SMM TestCaseMessage object.

cleanMessage

Input is a string. This method cleans up a string and returns the modified string passed in.

IIS Connect

The IIS Connect project is a prototype application that demonstrates interoperability capabilities between NEDSS Based Systems (NBS) and Immunization Information Services (IIS). The Integrate IIS source code is available on GitHub at the following URL:

<https://github.com/immregistries/IISConnect>

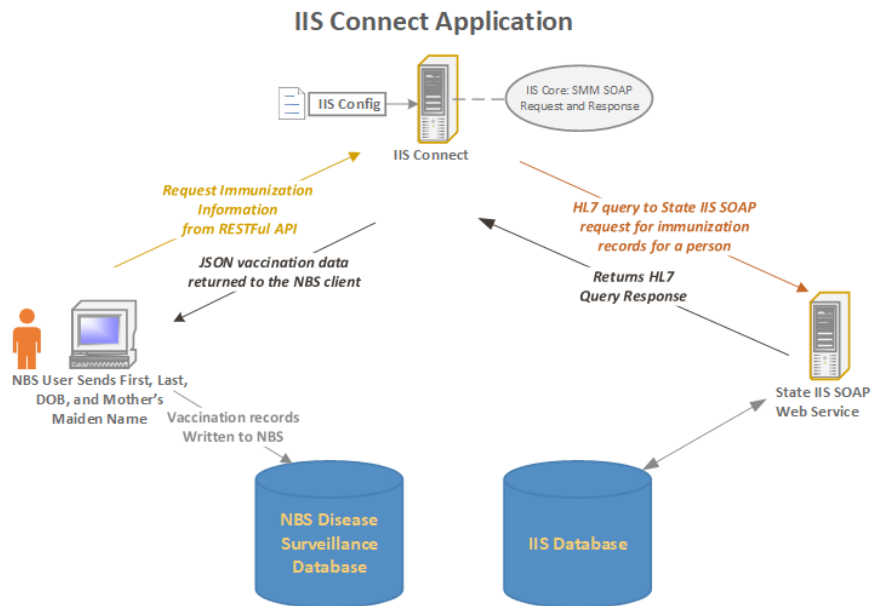
The Integrate IIS is built using the Java based Spring Boot framework. The application has two primary components:

- Sample Web Application
- RESTful IIS API

The sample application simulates an NBS client or any client whose purpose is to query a state's IIS registry to obtain immunization data for a single person. The RESTful (Representational State Transfer) API allows a calling application to receive a JSON result set of immunization data. Most application development platforms are capable of handling JSON data. Interoperability between an IIS and other applications is achieved by using the lightweight method of accessing data with a Web API and manipulating the returned JSON data.

The primary dependency of the IIS Connect application is the IIS Core class library. IIS Core uses the SMM API to search a State's IIS and receive the results in the form of a collection of Java classes. The returned JAVA objects are serialized to JSON and returned to the calling application.

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SMM is open source software and can be found on GitHub at the following URL:

https://github.com/immregistries/smm-tester/tree/v2_01

See the section on installing and using the SMM Tester below.

Prerequisites

The following software is required to run the Integrate IIS application:

- Maven: Java package management software
- IIS Core

Installing IIS Connect

Use the following instructions to retrieve the Integrate IIS (IIIS) from GitHub.

- 1) Clone the Integrate IIS application to a local folder on your computer from <https://github.com/immregistries/IISConnect>
- 2) Open the project in Eclipse or another Java IDE. Navigate to the src/main/resources folder and open the application.properties file and edit the following properties if necessary:
 - a. H2 data properties for sample data. These properties can use the default value or you can adjust to suit your data testing requirements.
 - i. spring.jpa.hibernate.ddl-auto=none
 - ii. spring.h2.console.enabled=true
 - iii. spring.jpa.hibernate.naming.physical-strategy=org.hibernate.boot.model.naming.PhysicalNamingStrategyStandardImpl
 - b. Configure Spring Boot logging properties. These settings can be changed to suit your development environment:
 - i. logging.level.org.springframework.web=ERROR
 - ii. logging.level.com.cdcnbs.integrateiis=ERROR
 - iii. logging.level.org.hibernate=ERROR
 - c. Configure the logging.file property to point to the location where Spring Boot will log information.
 - d. Configure the location of the IIS Configuration file. This file is required to connect to a State's IIS. See IIS Configuration for details on what is required .
iiservice.Config = path/iis config file name
- 3) Build the project using Maven.
 - a. From the Windows command line or Mac/Linux terminal, navigate to the folder where the IIIS code is stored.
 - b. Type mvn install and press Enter.
- 4) From Eclipse, or another Java IDE, run the application.
- 5) Navigate to <http://localhost:8080/patient/list>. You should see a list of patients. This indicates that the application is installed, builds, and runs properly.

***Note:**

Maven is a prerequisite.

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Using the IIS Connect API

The IIS Connect Application has two paths to test the RESTful API to search for a state's immunization records. The Patient controller has a List view and Search view that allows you to search the API methods from a web page.

List View

Once you have installed IIS Connect, and have a configuration file configured for a state IIS SOAP based web service, you can run the following URL locally:

<http://localhost:8080/patient/list>

This URL will return a list of patient records stored in the local H2, in memory, SQL database. The patients listed in the List view should exist in the target IIS system. To configure the patients you want to test, edit the data.sql file found under src/main/resources inside Eclipse. The code for the patient views is found under src/main/java/com.cdcnbs.integrateiis.web.application.

The list of patients has two hyperlinks to test the IIS API. If you click the Patient Identifier value, you will go to the detail view. If you click "detail" you will go to the patientdetail view. The patientdetail view displays all the data returned from an API call for troubleshooting or development purposes.

Once the patient detail page displays, click "Check Immunization Records" to initiate an API call using the values retrieved from the database as search criteria. For details on configuring the JavaScript for making the API call, review the detail and patientdetail views found under src/main/resources/templates.

NBS Patient (Sam Watkins)

[Back to List](#)

Patient Identifier	042320181439
Patient IdentifierType	MR
Patient Name	Sam Watkins
Gender	M
Birthdate	01/05/2010
Mother's Name	Sylvia Watkins
Maiden Name	Smith
Address Line 1	34 Elm St
City, State Zip	Omaha, NE 68007
Phone	(555) 444-1212

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NBS Patient (Sam Watkins)

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Patient Identifier 042320181439
Patient IdentifierType MR
Patient Name Sam Watkins
Gender M
Birthdate 01/05/2010
Mother's Name Sylvia Watkins
Maiden Name Smith
Address Line 1 34 Elm St
City, State Zip Omaha, NE 68007
Phone (555) 444-1212

[Check Immunization Records](#)

Immunization Records Found for SAM WATKINS DOB: 2010-05-01 Maiden Name: SMITH

Select Vaccination	Admin Date	Vacco Label	Vacco Cvx	Manu Label	Manu Cvx	Lot #	Comp Status	Info Src	Info Src Label	Refusal Reason	Admin Amt	Admin Amt Unit
<input type="checkbox"/>	2018-05-16	Influenza, seasonal, P-free	140			20860BB		00			1.0	

[Save Vaccine Data](#)

Search

The search view allows you to enter patient search criteria in a web form and execute a search against the configured IIS SOAP based web service. The search view is found at the following URL when running locally:

<http://localhost:8080/patient/search>

There is also a searchdetail view that displays the JSON return object for diagnostic/development purposes.

Normally, the minimum search criteria required for IIS system is First, Last, Date of Birth, and Mother Maiden Name. After you enter the search criteria and click “Search Immunization Records”, you will either get no results found, a list of patients if the search matched more than one person, or a list of immunizations returned from the state IIS.

In the IIS Connect project, the search view is found under `src/main/resources/templates`.

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NBS Patient Search

Detail Search

ID Patient Identifier Authority Medical Record Number

Patient Kyle Middle Name Jones Male

Mother First Name Middle Name Last Name Maiden Name

Birth 04/15/2008 ☐ Multiple Indicator Order

Address Address Line 1 Address Line 2 City ST Zip USA

Phone Phone

Search Immunization Records

Immunization Records Found for KYLE JONES DOB: 2008-04-15 Maiden Name: DAVIS

Select Vaccination	Admin Date	Vacc Label	Vacc Cvx	Manu Label	Manu Cvx	Lot #	Comp Status	Info Src	Info Src Label	Refusal Reason	Admin Amt	Admin Amt Unit
<input type="checkbox"/>	2018-08-12	Influenza, seasonal, P-free	140			22860088		00			1.0	

Save Vaccine Data

IIS Connect API

The IIS Connect API has one method for searching a state IIS system: search. To execute the API, you must post an IIS Core Person object to the API. The API returns an IIS Core IISData class. The URL for the API running locally is: <http://localhost:8080/api/search>

The code is found under `src/main/java/com.cdcnbs.integrateiis.web.service`

For testing purposes, you can return data for a patient record stored in the IIS Connect H2 database. [http://localhost:8080/api/vaccinations/\[id of patient\]](http://localhost:8080/api/vaccinations/[id of patient]) will return the JSON representation of the IIS search result. This is useful for troubleshooting and development purposes.

Using SMM-Tester Locally

This section outlines the steps for install and run the American Immunization Registry Associations (AIRA) SMM Tester application. The AIRA code for searching state IIS registries is used in the IIS Connect platform.

Prerequisites

Maven must be installed

Installing

Source code for the SMM-Tester can be found on GitHub:

<https://github.com/nathanbunker/smm-tester>

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Download the source code locally and attempt to build the application using:
`mvn install`

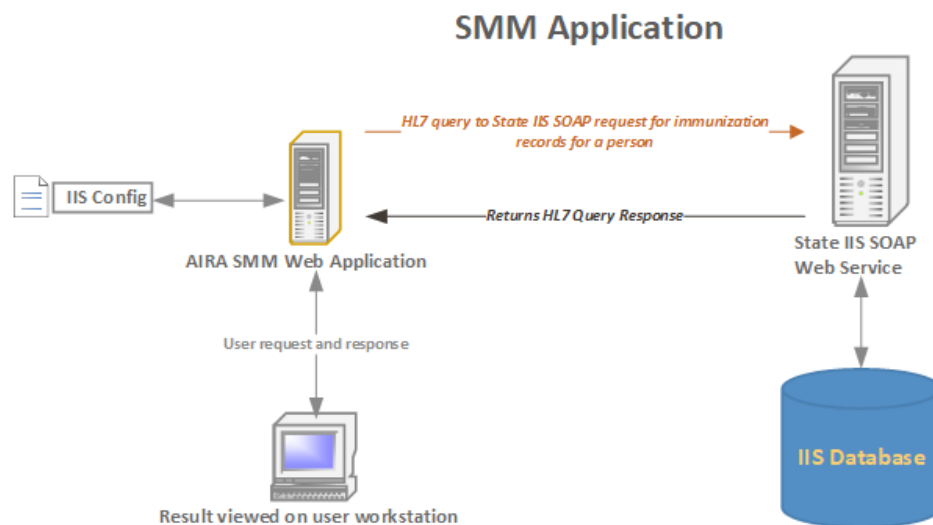
If you receive errors concerning tests that failed, attempt to build the SMM-Tester using:
`mvn install -Dmaven.test.skip=true`

To use SMM-Tester with eclipse, from the root folder where SMM-Tester was downloaded run:

```
mvn eclipse:eclipse
```

Running SMM-Tester

The SMM-Tester is a web application developed by Nathan Bunker at the American Immunization Registry Association. This application allows you to interact with multiple configured state IIS registries.



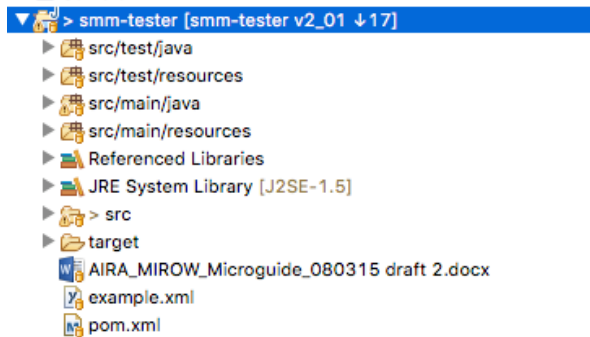
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To run the SMM-Tester in eclipse, and create a test patient record for a test state IIS system, do the following:

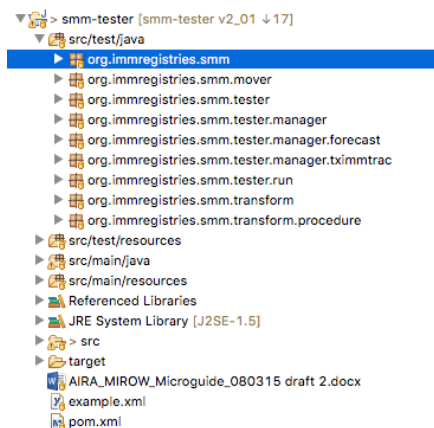
1. From the folder you downloaded the smm-tester project, navigate to the /smm-tester/src/main/webapp/WEB-INF/web.xml file. Open the file and add the folder where you stored the smm.config.txt file for the state's IIS. The value in the param-value element contains the folders smm-tester will scan to look for a config file.

```
<servlet>
  <servlet-name>ManagerServlet</servlet-name>
  <servlet-class>org.immregistries.smm.mover.ManagerServlet</servlet-class>
  <init-param>
    <param-name>scan.start.folders</param-name>
    <param-value>/home/oisptorg/ois-pt.org/data/tester;C:/test/Tools/dqa-tester/</param-value>
    <!--
    <param-value>/home/oisptorg/ois-pt.org/data/tester;C:/test/smm/</param-value>
    <param-value>C:/test/smm/UT_USIIS/dev</param-value>
    <param-value>C:\data\Dropbox (AIRA)\Shared AIRA Files\Technical Assistance\IIS\</param-value>
    -->
  </init-param>
```

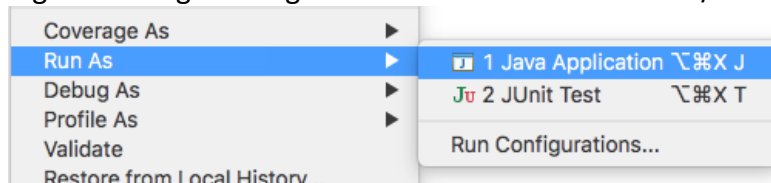
2. Open the folder where you saved the SMM-Tester project in eclipse.



3. Expand the scr/test/java folder



4. Right-click org.immregistries.smm and choose Run As/Java Application



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5. The Console window should indicate a success.

```
SMM Folder Scan: Looking in folder /Users/markellingson/eclipse-workspace/test
SMM Folder Scan: Found SMM configuration file in this folder: /Users/markellingson/eclipse-workspace/test
SMM Folder Scan: Scan completed
INFO - AbstractConnector - Started {}
INFO - AbstractConnector - Started {}
```

6. Open a browser and paste the following url which has user credentials for the locally running smm-tester application:

<http://localhost:8282/LoginServlet?username=Mafai&password=LU0Z23LJlqW1bQR&action=Login>

The screenshot shows the application's home page with a navigation bar at the top containing links: Home, Connect to IIS, Manage Test Cases, Edit Test Case, Send Message, Test, and Logout. The user's name, Nathan Bunker, is displayed on the right. A red banner below the navigation bar says "Welcome Nathan Bunker". The main content area is titled "Primary Test Functions" and contains a table with two columns: Function and Details. The table lists several functions like "Connect to IIS", "Manage Test Cases", "Edit Test Case", and "Send Message". Below this is a section titled "Other Functions" with another table listing functions like "Stress Test", "Message Viewer", "Generate Data", "Run Tests", "View Profile", "Profile Interface", and "Test IIS Results". At the bottom, a footer line reads "American Immunization Registry Association - IIS HL7 Tester & Simple Message Mover - Version 2.01.03".

Function	Details
Connect to IIS	Setup connection to an IIS.
Manage Test Cases	Load, select, and download test case scripts.
Edit Test Case	Edit a selected test case or create a new test case.
Send Message	Submit a message or a test case to an IIS for processing.

Function	Details
Stress Test	Send multiple messages to an IIS to verify it's ability to handle many different requests at the same time.
Message Viewer	View Message Details
Generate Data	Create sample messages
Run Tests	This is a deprecated function that is now covered by the Test IIS.
View Profile	View test settings for a particular connection.
Profile Interface	This is a deprecated function that is now covered by the Test IIS.
Test IIS Results	Review previously run Test IIS reports.

American Immunization Registry Association - IIS HL7 Tester & Simple Message Mover - Version 2.01.03

7. Click Connect to IIS in the top menu. The following screen should display.

The screenshot shows the "Select Account" screen. At the top is the same navigation bar as the previous screen. Below it, the "Select Account" title is followed by an "Account" field showing "NE NESIS" and a "Switch" button. The "Connections" section contains a table with fields: Label, Type, URL, User Id, and Facility Id. The table is populated with values for a connection labeled "NE NESIIS". Below the table is a form with fields for Label, Type, URL, User Id, Password, and Facility Id, each with a corresponding input field. At the bottom of the form is a "Load Connections" button. A footer line at the very bottom reads "American Immunization Registry Association - IIS HL7 Tester & Simple Message Mover - Version 2.01.03".

Label	Type	URL	User Id	Facility Id
NE NESIIS	SOAP	https://testnesis-dhhs-testwebservice.ne.gov/uat-webservices/cdc?wsdl	CDCT	CDCT

Script

Load Connections

American Immunization Registry Association - IIS HL7 Tester & Simple Message Mover - Version 2.01.03

8. Select from the list of state IIS systems found in the Account field and click switch. The connection information should populate.

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9. Click Home. Click Query IIS

Home	Connect to IIS	Manage Test Cases	Edit Test Case	Send Message	Test	Logout	Nathan Bunker
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Primary Test Functions

Function	Details
Connect to IIS	Setup connection to an IIS.
Manage Test Cases	Load, select, and download test case scripts.
Edit Test Case	Edit a selected test case or create a new test case.
Send Message	Submit a message or a test case to an IIS for processing.

Other Functions

Stress Test	Send multiple messages to an IIS to verify it's ability to handle many different requests at the same time.
Install Cert	Install certificate for use on a particular connection.
Query IIS	Query and read response from IIS.
Message Viewer	View Message Details
Generate Data	Create sample messages
Run Tests	This is a deprecated function that is now covered by the Test IIS.
View Profile	View test settings for a particular connection.
Profile Interface	This is a deprecated function that is now covered by the Test IIS.
Test IIS Results	Review previously run Test IIS reports.

American Immunization Registry Association - IIS HL7 Tester & Simple Message Mover - Version 2.01.03

10. Fill in the following fields for the Patient

- ID (Must be unique. Use MonthDayYearHourMinute (081620181535) in 24 hour time format
- Authority should be CDC
- Patient: First and Last. Middle is optional
- Mother: First, Last, and Maiden
- Birth: You must include birthdate in mm/dd/yyyy format.
- Multiple can be ignored
- Address: Address line 1, city, state, zip code, and country should be entered.
- Phone: Enter the area code and phone number.

11. Click Refresh:

Patient			
Id	08162018	CDC	MR - Medical Record Number
Patient	Joe	Middle	Johnson M
Mother	Elaine	Middle	Johnson George
Birth	01/10/2010	<input type="checkbox"/> Multiple	Order
Address	44 Main St Apt 101 Omaha NE 68007 USA		
Phone	(444) 3214567		
<input type="button" value="Refresh"/>			

12. In the Update section, click Send Update:

Home	Connect to IIS	Manage Test Cases	Edit Test Case	Send Message	Test	Logout
------	----------------	-------------------	----------------	--------------	------	--------

Patient

Id	0816201 CDC MR - Medical Record Number	
Patient	Joe Middle Johnson M	
Mother	Elaine Middle Johnson George	
Birth	01/10/2010	<input type="checkbox"/> Multiple <input type="button" value="Order"/>
Address	44 Main St Apt 101 Omaha NE 68007 USA	
Phone	(444) 3214567 <input type="button" value="Refresh"/>	

Update

```
MSH|^~\&|Test EHR Application|X68||NIST Test Iz Reg|20180816154651-0400||VXU^V04^VXU_V
PID|1||081620181542^^^CDC^MR||Johnson^Joe^^^^^L|George^Elaine|20100110|M||2076-8^Nativ
PD1|||||||02^Reminder/Recall - any method^HL70215|||||A|20120701|20120701
NK1|1|Johnson^Elaine^^^^^L|MTH^Mother^HL70063|44 Main St^^Omaha^NE^68007^USA^L|^PRN^PH
ORC|RE||IZ-783274^NDA|||||I-23432^Burden^Donna^A^^^^^NIST-AA-1||57422^RADON^NICHOLAS
RXA|0|1|20180816||140^Influenza, seasonal, injectable, preservative free^CVX|0.5|mL^Mi
RXR|IM^Intramuscular^HL70162|LA^Left Arm^HL70163
OBX|1|CE|64994-7^Vaccine funding program eligibility category^LN|1|V05^VFC eligible -
OBX|2|CE|30956-7^vaccine type^LN|2|88^Influenza, unspecified formulation^CVX|||||F
OBX|3|TS|29768-9^Date vaccine information statement published^LN|2|20120702|||||F
OBX|4|TS|29769-7^Date vaccine information statement presented^LN|2|20180816|||||F
```

Query

Query Type

```
MSH|^~\&|Test EHR Application|X68||NIST Test Iz Reg|20180816154651-0400||QBP^Q11^QBP_Q
QPD|Z34^Request Immunization History^CDCPHINVS|1534448811619.2|081620181542^^^CDC^MR|J
RCP|I|20^RD&Records&HL70126|
```


13. Click the first Submit button in the top section of the page:

Home Connect to IIS Manage Test Cases Edit Test Case Send Message Test Logout	
Connection	NE NESIIS (SOAP)
Message	<pre> MSH ^~\& Test EHR Application X68 NIST Test Iz Reg 20180816154832-0400 VX PID 1 081620181542^*CDC*MR Johnson*Joe*^*^*George*Elaine 20100110 M 2 PD1 02*Reminder/Recall - any method*HL70215 A 20120701 20120701 NK1 1 Johnson*Elaine*^*^*L MTH*Mother*HL70063 44 Main St**Omaha*NE*68007 ORC RE IZ-783274*NDA I-23432*Burden*Donna*A*^*^*NIST-AA-1 57422*RA RXA 0 1 20180816 140*Influenza, seasonal, injectable, preservative free*CVX 0.5 RXR IM*Intramuscular*HL70162 LA*Left Arm*HL70163 OBX 1 CE 64994-7*Vaccine funding program eligibility category*LN 1 V05*VFC elig OBX 2 CE 30956-7*vaccine type*LN 2 88*Influenza, unspecified formulation*CVX OBX 3 TS 29768-9*Date vaccine information statement published*LN 2 20120702 OBX 4 TS 29769-7*Date vaccine information statement presented*LN 2 20180816 </pre>
Transform	<input checked="" type="checkbox"/> MSH-3=CDCT <input checked="" type="checkbox"/> MSH-4=[OTHERID] <input checked="" type="checkbox"/> ORC-17.1*= <input checked="" type="checkbox"/> ORC-17.2*= <input checked="" type="checkbox"/> ORC-17.3*=
Debug	<input type="checkbox"/>
Validate with NIST	<input type="checkbox"/>
Show WSDL	<input type="checkbox"/>
<input type="button" value="Refresh"/> <input type="button" value="Submit"/>	
Status for NE NESIIS (SOAP): Sent from client 'Mark?s MacBook Pro'	
Submit QBP Z34 query message based from VXU displayed above	
Connection	NE NESIIS (SOAP)
Message	<pre> MSH ^~\& Test EHR Application X68 NIST Test Iz Reg 20180816154832-0400 QB QPD Z34*Request Immunization History*CDCPHINVS 1534448913195.3 08162018 RCP 20*RD&Records&HL70126 </pre>
Transform	<input checked="" type="checkbox"/> MSH-3=CDCT <input checked="" type="checkbox"/> MSH-4=[OTHERID] <input checked="" type="checkbox"/> ORC-17.1*=

Click this
Submit

14. Review the Message status. If it was successful, you should see something similar to the following:

Home Connect to IIS Manage Test Cases Edit Test Case Send Message Test Logout	
Connection	NE NESIIS (SOAP)
Message	<pre>MSH ^~\& Test EHR Application X68 NIST Test Iz Reg 20180816154832-0400 VXU PID 1 081620181542***CDC*MR Johnson*Joe*****L George*Elaine 20100110 M 2 PD1 02*Reminder/Recall - any method*HL70215 A 20120701 20120701 NK1 1 Johnson*Elaine*****L MTH*Mother*HL70063 44 Main St**Omaha*NE*68007 ORC RE IZ-783274*NDA I-23432*Burden*Donna*A*****NIST-AA-1 57422*RA RXA 0 1 20180816 140*Influenza, seasonal, injectable, preservative free*CVX 0.5 RXR IM*Intramuscular*HL70162 LA*Left Arm*HL70163 OBX 1 CE 64994-7*Vaccine funding program eligibility category*LN 1 V05*VFC elig OBX 2 CE 30956-7*vaccine type*LN 2 88*Influenza, unspecified formulation*CVX OBX 3 TS 29768-9*Date vaccine information statement published*LN 2 20120702 OBX 4 TS 29769-7*Date vaccine information statement presented*LN 2 20180816 </pre>
Transform	<input checked="" type="checkbox"/> MSH-3=CDCT <input checked="" type="checkbox"/> MSH-4=[OTHERID] <input checked="" type="checkbox"/> ORC-17.1*= <input checked="" type="checkbox"/> ORC-17.2*= <input checked="" type="checkbox"/> ORC-17.3*=
Debug	<input type="checkbox"/>
Validate with NIST	<input type="checkbox"/>
Show WSDL	<input type="checkbox"/>
<input type="button" value="Refresh"/> <input type="button" value="Submit"/>	
Message Accepted	
<pre>MSH ^~\& NESIIS9.4.1 NESIIS CDCT 20180816 ACK*V04*ACK NIST-Iz-001.00 874710.1 2.5.1 NE NE Z23*CDCT MSA AE NIST-Iz-001.00 ERR MSH*1*21 101*Required field missing*HL70357 W 4*Invalid value*HL70533 Message processed, but field ERR OBX**0 101*Required field missing*HL70357 W 6*Required observation missing*HL70533 Informational ex</pre>	
Request Submitted	
What was actually sent to NE NESIIS (SOAP):	
<pre>MSH ^~\& CDCT CDCT NIST Test Iz Reg 20180816154832-0400 VXU*V04*VXU_V04 NIST-Iz-001.00 P 2.5.1 AL ER PID 1 081620181542***CDC*MR Johnson*Joe*****L George*Elaine 20100110 M 2076-8*Native Hawaiian or Other PD1 02*Reminder/Recall - any method*HL70215 A 20120701 20120701 NK1 1 Johnson*Elaine*****L MTH*Mother*HL70063 44 Main St**Omaha*NE*68007*USA*L ^PRN*PH***444*3214567 ORC RE IZ-783274*NDA I-23432*Burden*Donna*A*****NIST-AA-1 57422*RADON*NICHOLAS*****NIST-AA-1*L RXA 0 1 20180816 140*Influenza, seasonal, injectable, preservative free*CVX 0.5 ml*MilliLiter [SI Volume RXR IM*Intramuscular*HL70162 LA*Left Arm*HL70163 ORX 1 CE 64994-7*Vaccine funding program eligibility category*LN 1 V05*VFC eligible - Federally Qualified</pre>	