jProg®

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CouchDB and Socket Installation Instructions
Version 1.4
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Revision History:
1.1 Added an update section
1.2 Added a CAREWare setup section
1.3 General editing
1.4 Added new common storage settings forms, client provider lookup index, and auto add encounter.
   Updated screenshots.

Before beginning the installation process, close all applications, including internet browsers. Copy the 'CouchDB Installation' folder to the C drive.

Java Installation:

1. Double-click the '*jdk-6u27-windows-x64.exe*' file to start the installation process.
2. Select the defaults on the Custom Setup window and Click the Next button.
3. A few brief dialog boxess may appear during the installation process; click Finish on the last of these. This will complete Java installation process.

CouchDB (Couchbase) Installation:

1. For a Windows 2008 64 bit Server, run the *'otp_win32_R14B03.exe'* file.
2. Run the '*couchbase-single-server-enterprise_x86_64_1.1.2.setup.exe*' file to start the installation process.
3. Select defaults on all the forms and complete installation.
4. To test the Installation, Double-click on 'Couchbase Console' desktop shortcut icon which should open the CouchDB editor in a browser as shown in the image below.
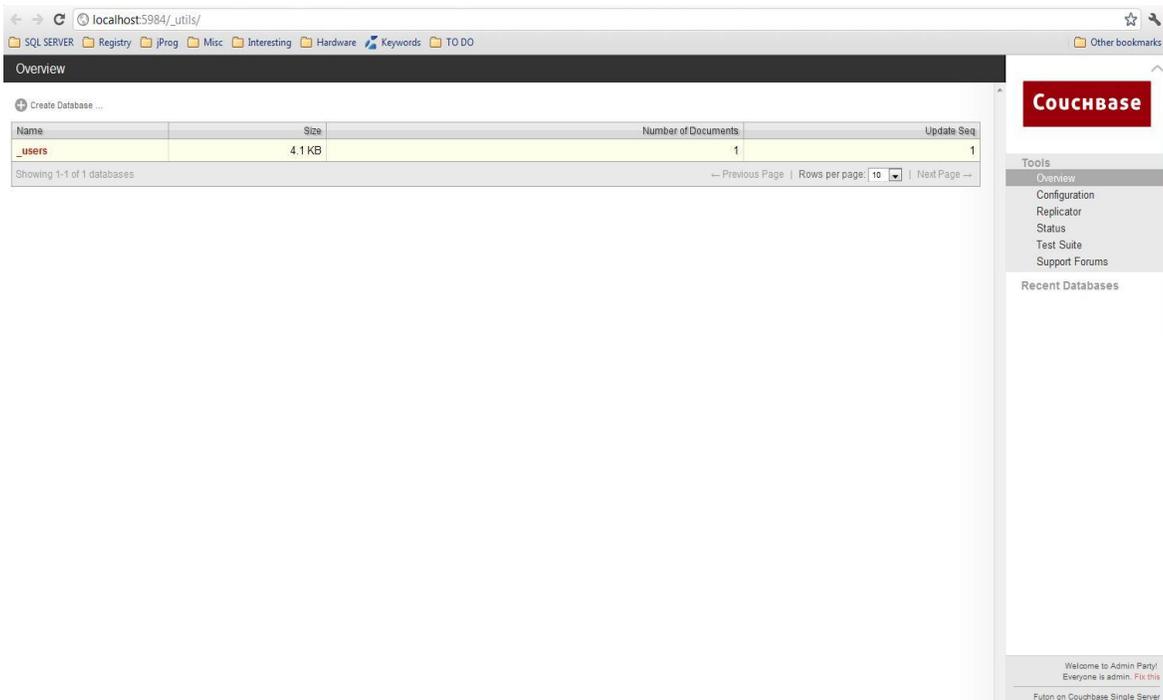
Socket Installation:

Make sure the Couchbase is listed in the Windows services and is started before you begin the socket installation process.

The Installation folder contains an executable jar file for the Socket Project and a text file that contains information about establishing a connection to CouchDB from the socket project. The file *'configSocketServer.txt'* should not be deleted.

To install the Socket Project as a Windows Service:

1. Open the Command Prompt as an Administrator and Run the following commands –

Cd C:\CouchDB Installation

prunsrv //IS/ServerSocket "--Install=C:\CouchDB Installation\prunsrv.exe" "--Classpath=C:\CouchDB Installation\SocketServer.jar" "--JavaHome=C:\Program Files\Java\jdk1.6.0_26\jre\bin" "--StartPath=C:\CouchDB Installation" "--Jvm=C:\Program Files\Java\jre6\bin\client\jvm.dll" --StartMode=jvm --StartClass=App.JPROG_Socket_to_CouchDB --StartMethod=main --StopMode=jvm --StopClass=java.lang.System --StopMethod=exit --Startup=auto

Parameters:

"*ServerSocket*" – Name of the Windows Service

"*C:\Program Files\Java\jdk1.6.0_26\jre\bin*" and "*C:\Program Files\Java\jre6\bin\client\jvm.dll*" – These should be replaced with the system's java path (installed in the first step).

2. This installs the Socket as a Windows Service with auto startup mode. Verify if the *SocketServer* service is listed in the Windows Services.

    The following are created in CouchDB when the *SocketServer* service is run for the first time.

    a. A database named "cw_socket_db" is created in CouchDB. All the HL7 files sent to CouchDB via the socket will be uploaded to the cw_socket_db database.
    b. A configuration document named "ServerSocketConfig" is created as a part of the above step. The Information related to the feed is maintained in this document.

3. The command to delete the service is: *prunsrv //DS/ServerSocket*
4. In order to edit this document, double-click on the field value. The value to be edited will be displayed as a JSON string in a textbox as shown in the image below. After editing, make sure to save the field first before saving the document.

In order to get the latest version of the socket client, you must replace the file "SocketClient.jar" with the latest one. The default path to this file is "C:\SocketClient". The latest file can be found here: http://www.jprog.com/tools/ Socket Server 1-30-2012.zip. The instructions to replace the file are listed below.

1. Stop the ServerSocket service.
2. Stop the CouchDB service.
3. Find and replace the file.

4. Start the CouchDB service
5. Start the ServerSocket Service.

CAREWare Setup

The setup steps include modifying settings in CAREWare's common storage table, turning on indexes, updating mappings, and completing the user notification and condition setup. This section provides instructions on how to complete these steps. Note: CAREWare creates some default mappings when a user activates an index; these can be updated by the site.

Configure Common Storage

There are three ways of editing common storage: through the HL7 Feed Settings screen, through the CW Admin.exe utility, or through a SQL manager like SQL Server Management Studio. Editing in CW Admin requires a stop and restart of the RW CAREWare Business Tier service.

CW Admin.exe is located in the RW CAREWare Business Tier folder. The default location is "C:\Program Files\CAREWare\RW CAREWare Business Tier\CW Admin.exe" for 32 bit OS. It is important to upgrade to a socket compatible CAREWare build before beginning this process. The first such build was 624; it is a good idea to contact the CAREWare Help Desk and ask what build is currently recommended to use with the Socket Interface.

The steps for updating the common storage table are as follows:

1. Make sure all users are logged out of CAREWare.
2. Open CW Admin.exe.
3. On the Server Settings tab, click Stop Server. This will stop the Business Tier service.
4. Click on the Common Storage Setting tab on the upper right hand corner of the utility.
5. Look for couchdbhost, couchdbName, couchDBport, and ObservationProvider in the column cmm_st_pk.
6. By default, the cmm_st_text for couchdbhost is localhost. If couchDB and the CAREWare Business Tier are on separate servers, then set to the host name of the couchDB server.
7. By default, the cmm_st_text value for couchdbName is cw_socket_db.

8. By default, the cmm_st_text value for couchDBport is 5984.
9. Set the cmm_st_text for ObservationProvider to the primary key of the observation domain, if applicable.*
10. If you decide to use a user name and password for couchDB, those must set in couchdbUserName and couchdbPassword.
11. Click back to the Server Settings tab.
12. Click on Start Server.

When editing in SQL Management Studio, please follow these steps:

1. Log into the CAREWare database instance.
2. Expand the Databases folder.
3. Expand the CW_Data database.
4. Expand the Tables folder.
5. Find and open the table called cw_common_storage.
6. Look for couchdbhost, couchdbName, couchDBport, ObservationProvider in the column cmm_st_pk.
7. By default, the cmm_st_text for couchdbhost is localhost. If couchDB and the CAREWare Business Tier are on separate servers, then set to the host name of the couchDB server.
8. By default, the cmm_st_text value for couchdbName is cw_socket_db.
9. By default, the cmm_st_text value for couchDBport is 5984.
10. Set the cmm_st_text for ObservationProvider to the primary key of the observation domain, if applicable.*
11. If you decide to use a user name and password for couchDB, those must set in couchdbUserName and couchdbPassword.

* Observation domains allow users to add and import patient data for Ryan White "suspected" patients. They must meet specific conditions in order to be added there, and they cannot already exist in the importing domain.

Edit settings in HL7 Feed Settings

HL7 Processes Main

Processes

F1: User Notifications		
F2: Field Mappings		
F3: Test Conditions		
F4: Diagnosis Conditions		
F5: Generic Conditions		
F6: Common Storage Settings		
Esc: Close		
☐ Auto Add Encounter		

Domain: Default

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Active	↑ Process	Key	Version	Description
☐	ADT_Map_Client	["ADT","Map Client"]	1	Match patients for H
☐	ADT_Map_Provider	["ADT","Map Provider"]	1	Match providers for
☐	ADT_Process_Records	["ADT","Move To Processing"]	1	Process Hospital Ad
☐	BAR_Map_Client	["BAR","Map Client"]	1	Match patients for c
☐	BAR_Map_Provider	["BAR","Map Provider"]	1	Match provider for c
☐	BAR_Process_Records	["BAR","Move To Processing"]	1	Process diagnosis in
☐	HL7_Client_Provider_Look_Up_ADT	["ADT","Map Provider"]	1	HL7 Client Provider
☐	HL7_Client_Provider_Look_Up_BAR	["BAR","Map Provider"]	1	HL7 Client Provider
☐	HL7_Client_Provider_Look_Up_ORU	["ORU","Map Provider"]	1	HL7 Client Provider
☐	HL7_Client_Provider_Look_Up_SCH	["SCH","Map Provider"]	1	HL7 Client Provider
☐	HL7_Make_Document_Stubs	["HL7","Make Stubs"]	1	HL7 Make Docume
☐	ORU_Map_Client	["ORU","Map Client"]	1	Match CAREWare
☐	ORU_Map_Provider	["ORU","Map Provider"]	1	Match domain for la
☐	ORU_Process_Records	["ORU","Move To Processing"]	1	Process lab imports
☐	SCH_Map_Client	["SCH","Map Client"]	1	Match patients for a
☐	SCH_Map_Provider	["SCH","Map Provider"]	1	Match provider for a
☐	SCH_Process_Records	["SCH","Move To Processing"]	1	Process appointmer
☑	SYSTEM EVENTS			Built in System Ever

HL7 Common Storage Settings

Observation Provider

HL7 Client Matching Table:

HL7 Client Matching Field:

Client Demographic Threshold:
75

Couch DB Host:
localhost

Couch DB Name
cw_socket_db

Couch DB Port:
5984

Couch DB User Name:

Couch DB Password:

Save   Cancel   Close

The F6: Common Storage Settings link opens the HL7 Common Storage Settings form. The form allows users to set values related to importing HL7.

Once common storage is configured, the next step is to turn on the import process indexes. There are different indexes for each message type—ADT, BAR, SCH, and ORU—and the index labels begin with those message type abbreviations. Each message type has three associated indexes: Map Provider, Map Client, and Process Records. They are separated to make it easier to track down the processes.

There are two additional indexes that are shared across all HL7 message types: the HL7_Make_Document_Stubs and the System Events. Most indexes contain default field mappings, which tell CAREWare where to look in the HL7 message for certain data. To activate an index, a user logs in to the Central Administration domain, clicks on Administrative Options, and then edits the HL7 Feed Settings in the lower right-hand corner.

HL7_Make_Document_Stubs Index

HL7 Field Mappings - Default - HL7_Make_Document_Stubs

Field Mappings   4 / 4

CAREWare Field	Position	Segment ID	Mapping Set	
Alternate Provider ID	4.0	MSH		
Alternate Client ID	4.0	PID		
Primary Client ID	2.0	PID		
Primary Provider ID	5.0	MSH		

F1: Add Field map
F2: Edit Field map
F3: Format Field Map

Del: Delete Field Map
Esc: Close

Results per page: 100   << Newer   Page 1 of 1   Older >>

This index has three functions.
- It breaks messages with multiple MSH and PID segments into single messages. A single message consists of one MSH segment, one PID segment, and the data that pertain to that pair.
- It creates a document that CAREWare uses to update the import status of the message.
- It also filters out specific event triggers associated with the message types. Currently CAREWare only imports the specified trigger events below.
    - ORU : R01
    - ADT: A01, A03, A11, A34, A35
    - BAR: P01, P02, P03, P04, P05, P06 (only imports diagnoses in these messages)
    - SCH: S12, S13, S14

CAREWare creates the four default field mappings when the HL7_Make_Document_Stubs index is activated. The four are match_ptn_id, alt_match_ptn_id, alt_provider_id, and provider_id. These fields hold the default HL7 locations for the fields used to match the CAREWare domain and patient identifying values along with their alternates. The alternates are used when no values are found in the primary location; if the alternates are blank as well, that import will fail.

Map Provider Index

This index is used to match the provider ID defined in the previous index to a domain in CAREWare. CAREWare creates a mapping record if none exists, and it deletes the messages if the mappings are incomplete or the activation code has not been entered. If a mapping is complete and an activation code is entered for the domain, CAREWare updates the status to *Map Client*.

The Lab Test Mapping Tool's Map Provider form lists all provider mappings. The Lab Test Mapping Tool can be accessed only in the Central Administration domain, via a button on the upper right side of the Administrative Options Menu. The Map Provider records indicate whether they are active—meaning that an activation code has already been registered—or inactive. There are no field mappings for this index. The activation code is generated by jProg and is sent out upon request, usually through the CAREWare Help Desk.

ADT, SCH, BAR Map Client Index

HL7 Field Mappings - Marianas Trench Care Center - ADT_Map_Client

Field Mappings

F1: Add Field map
F2: Edit Field map
F3: Format Field Map

Del: Delete Field Map

Esc: Close

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CAREWare Field	Position	Segment ID	Mapping Set
State	11.3	PID	cw_state_rft
Dgn Def	3.0	DG1	cw_diagnosis_definition
Gender	8.0	PID	cw_gender_rft
Diagnosis Type	6.0	DG1	cw_hl7_diagnosis_type_rft
Patient Race	10.0	PID	cw_client_race_rft

Results per page: 100

<< Newer   Page 1 of 1   Older >>

This index processes client matching, using the matching criteria set in the provider mappings. If the ID of an incoming record matches a CAREWare client record, and if that record meets the threshold requirement, then it will be updated to *Process Records*; otherwise the HL7 message will be deleted. The field mappings for this index are:

Field	Description
State	State code
Dgn Def	Diagnosis code
Gender	Gender code
Diagnosis Type	Diagnosis type
Patient Race	Race code

ORU Map Client Index

HL7 Field Mappings - Marianas Trench Care Center - MYSYS_Map_Client

Field Mappings

F1: Add Field map
F2: Edit Field map
F3: Format Field Map

Del: Delete Field Map
Esc: Close

CAREWare Field	Position	Segment ID	Mapping Set	3 / 3
Gender	8.0	PID	cw_gender_rft	
Patient Race	10.0	PID	cw_client_race_rft	
State	11.3	PID	cw_state_rft	

Results per page: 100   << Newer   Page 1 of 1   Older >>

This index processes client matching, using the matching criteria set in the provider mappings. If the ID of an incoming record matches a CAREWare client record, and if that record meets the threshold requirement, then it will be updated to *Process Records*; otherwise the HL7 message will be deleted. The field mappings for this index are:

Field	Description
Gender	Gender code
Patient Race	Race code
State	State code

## ADT Process Records Index

This index imports hospital admissions. The field mappings for this index are listed below.

Field	Description	Note
Gender	Gender code	
Patient Race	Race code	
State	State code	
Dgn Date	Diagnosis date	
Mrn	the patient ID for patient merge events	
Zip	Client's zip code	
Dgn Comment	Diagnosis comments	
Admission Type	Admission type code	
Vital Sign Date	Hospital admission date	
Diagnosis Type	Diagnosis type code	
Dgn Def	diagnosis definition code	
Patient Race	Race code	
Acct	client account number	The previous acct# when doing a merge trigger event.
discharccDate defines the discharge date in the HL7 message	Discharge date	
Vital_Sign_Admit_Reason	Reason for hospital admission	
Patient Type	patient type	

Patient Class	patient class	
Visit ID	the ID that is associated with the hospital admission	If a matching ID exists in a CAREWare record, the import performs an update instead of an insert.

BAR Process Records Index
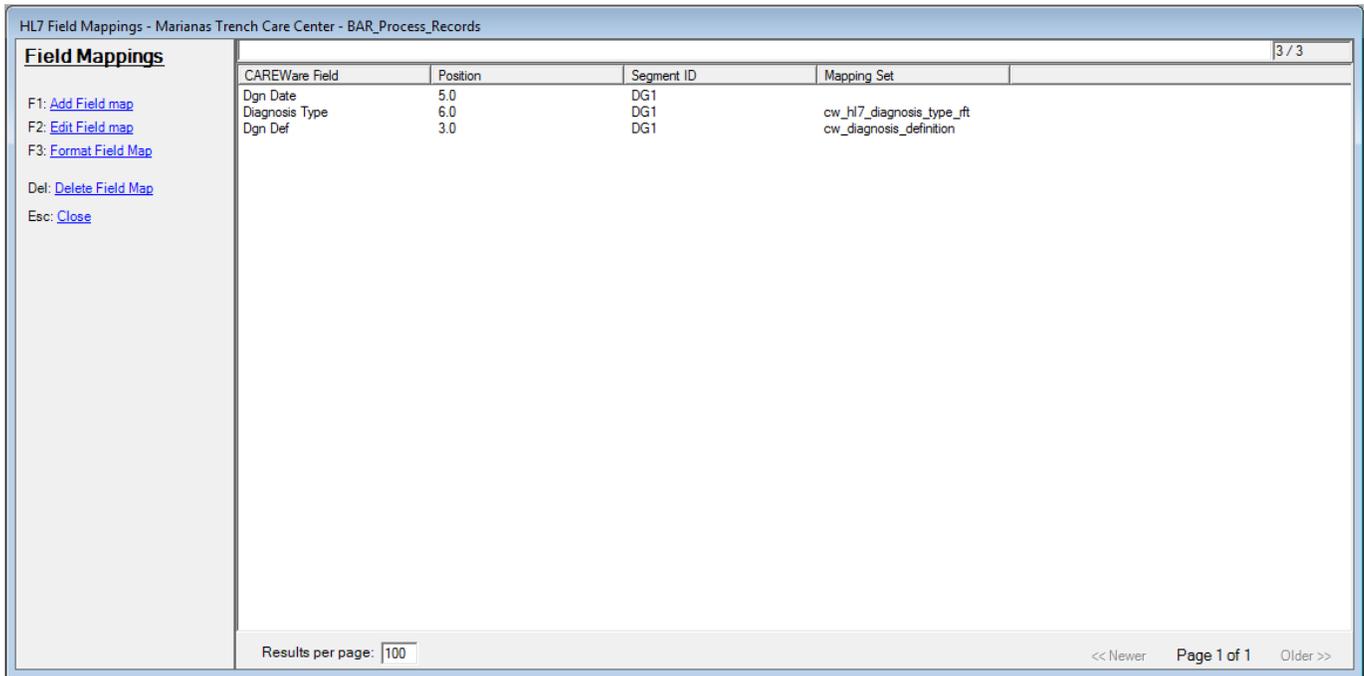
This index processes diagnosis imports.

- Dgn Def defines the diagnosis definition code in the HL7 message
- Diagnosis Type defines the diagnosis type code in the HL7 message
- Dgn Date defines where to find the diagnosis date in the HL7 message

Field	Description
Dgn Def	Diagnosis definition code
Diagnosis Type	Diagnosis type
Dgn Date	Diagnosis date

ORU Process Records Index

This index processes test data. All mappings are found in the lab test mapping tool.

SCH Process Records Index

```
HL7 Field Mappings - Marianas Trench Care Center - SCH_Process_Records
Field Mappings                                                                    8 / 8
                    CAREWare Field      Position    Segment ID    Mapping Set
F1: Add Field map    Dgn Def            3.0         DG1           cw_diagnosis_definition
                     Visit_Units        9.0         SCH
F2: Edit Field map   Appointment Subservice  3.0    AIG           cw_contract_subservice_map
F3: Format Field Map Filler Status Code  25.0       SCH           cw_filler_status_code_rft
                     Diagnosis Type     6.0         DG1           cw_hl7_diagnosis_type_rft
Del: Delete Field Map Appointment Schedule_ID  1.0  SCH           cw_appointment
                     Dgn Date           5.0         DG1
Esc: Close           Appointment Time   8.0         AIG

                     Results per page: 100                        << Newer   Page 1 of 1   Older >>
```

This index imports appointments in CAREWare. It will create services from subservice mappings when a complete appointment trigger is sent and no service exists. Below are the default field mappings.

Field	Description	Note
Dgn Def	diagnosis definition code	
Diagnosis Type	diagnosis type code	
Dgn Date	diagnosis date	
Appointment Subservice	subservice code	
Filler Status Code	filler code	
Appointment Schedule ID	ID that is associated with the appointment	If a matching ID exists in a CAREWare record, the import performs an update instead of an insert.
Appointment Time	appointment time	

HL7 Client Provider Lookup (ADT, ORU, BAR, SCH)

This index allows the process to find the CAREWare domain by looking for the client first. If a client belongs to more than one domain, the user will indicate the target domain in a custom combo box in the client custom tab. If no domain is set, the process will use the domain for which the patient has the most services. The field mappings will be the same as the client mapping index.
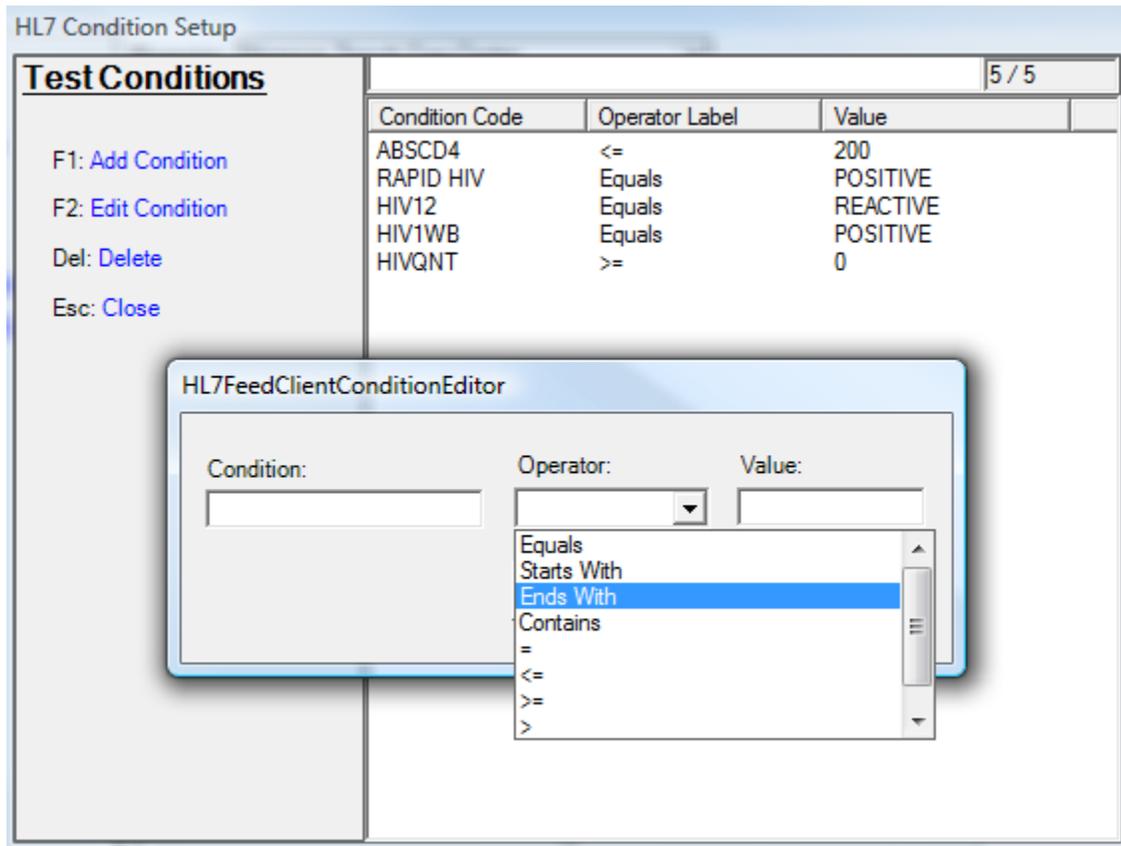
Field	Description
State	State code
Dgn Def	Diagnosis code

Gender	Gender code
Diagnosis Type	Diagnosis type
Patient Race	Race code

User Notification

This feature allows users to specify the email address to which CAREWare will send import summaries. Users can specify the time span between emails as well as the exact time to send the emails.

Test Conditions

This feature allows users to specify the test conditions that determine whether a patient is added to the observation domain when results are processed. The Condition Code is the test code sent by the lab. The Operator is the user-specified mathematical or string comparison operator. For quantitative results, it is recommended to use one of the following the mathematical operators:

- = (equals)
- < (less than)
- > (greater than)
- <= (less than or equal to)
- >= (greater than or equal to)

For qualitative test results, users can use string comparison operators such as "Equals," "Starts With," "Ends with," and "Contains."
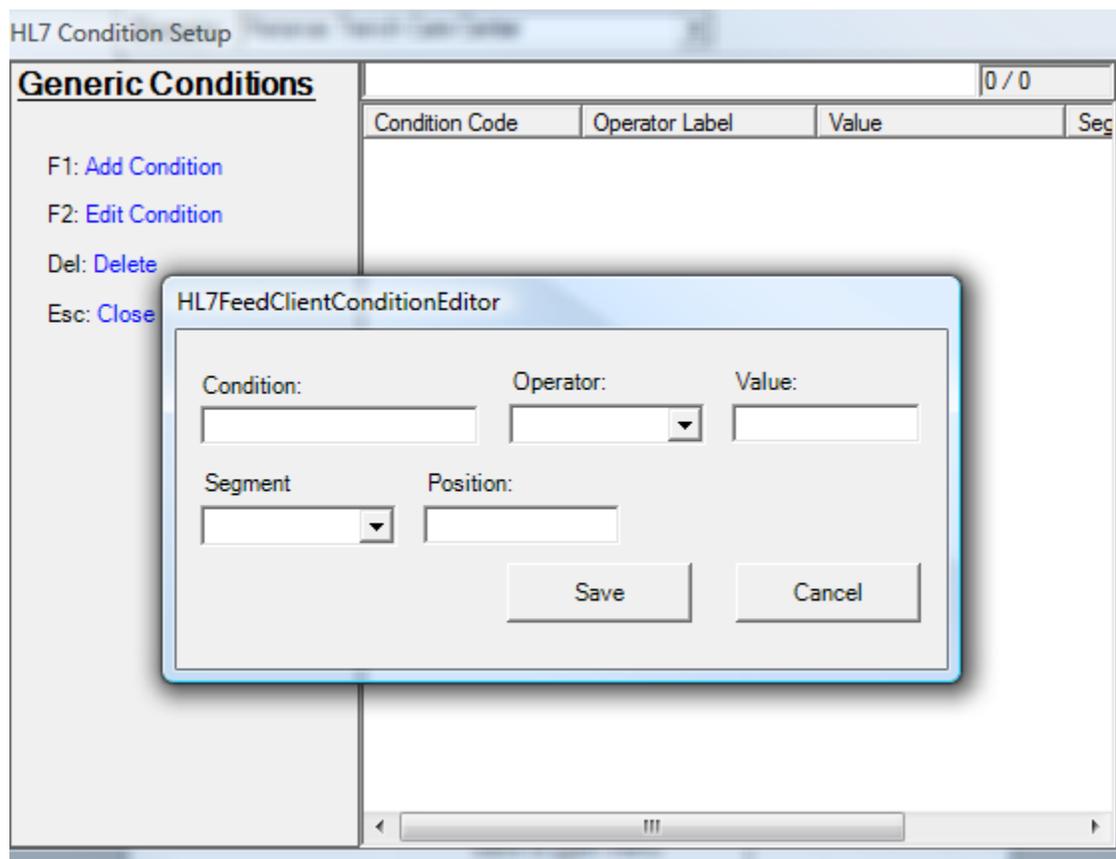
Diagnosis Conditions

This feature allows users to specify the diagnosis conditions that determine whether a patient is added to the observation domain when results are processed. The operator contains the string comparison operators, and the value is the ICD code that identifies the diagnosis.

Generic Conditions

Generic conditions allow a user to specify any value from any place in the HL7 message as a condition that will trigger the addition of a patient to the observation domain. The Condition box is where the user enters the HL7 code, the Operator box allows the user to set the comparison operator, and the Value is the HL7 value. The Segment is the HL7 message segment, and the Position allows the user to specify the exact location.

Auto Add Encounter

When this box is checked, CAREWare automatically adds an encounter date if no encounter date exists for any encounter data (tests, diagnoses, or hospital admissions) that come in. Unchecking will not remove encounter dates that were previously automatically added; it will simply not add encounter dates for existing imports.