



Integration and HL7 Specification Guide for Opal

OPAL

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Contents

OVERVIEW	3
MODALITY WORKLIST.....	4
REQUIRED SEGMENTS AND FIELDS.....	5
MESSAGE LAYOUT AND EXAMPLES	6
ADMIT DISCHARGE TRANSFER (ADT) MESSAGE	6
SAMPLE ADT MESSAGE	6
SCHEDULING INFORMATION UNSOLICITED (SIU) MESSAGE.....	7
SAMPLE SIU MESSAGE.....	7
ORDER (ORM) MESSAGE	8
SAMPLE ORM MESSAGE	9
Http(s) URL Link	9
DICOM IMAGE VIEWER	10
OPENING THE URL LINK FOR A SPECIFIC STUDY:	10
URL LINK RESULTS:.....	11
DISPLAYING THE URL LINK STUDY LIST:.....	11
REPORT RESULT	12
OUTBOUND RESULT MESSAGE (ORU) STRUCTURE	12
REQUIRED SEGMENTS AND FIELDS.....	12
MESSAGE LAYOUT AND EXAMPLES	13
RESULTS (ORU) MESSAGE	13
SAMPLE ORU MESSAGE.....	16
BASIC HL7 WORKFLOW.....	17

OVERVIEW

This guide is designed to help you understand the messages used in the integration process with the Information System (IS) provider such as Practice Management, Electronic Medical Record, or Electronic Health Record.

Konica Minolta Healthcare Americas, Inc. (KMHA) provides the following options for IS integration.

- **Modality Work List (MWL)** – This is a DICOM service that bridges the information system and the modality (X- Ray) together. The purpose of this integration is to provide patient demographic information directly to the modality to eliminate the need for manual data entry. By doing this, the probability of having a typographic error of the patient’s demographic information is reduced. Additionally, by eliminating the time required for manual data entry, the acquisition process becomes significantly more efficient. This use of this feature requires an Inbound Order (ORM) or Scheduling (SIU) message.
- **Orders (ORM)** – This interface will be using order specific messages will contain all PID, Date and time of service, Modality type, Procedure code and Procedure Description, Referring Physician Code and Description. These orders will be for new, cancelled, and updates based on the accession number of the associated order. This is accomplished via a HL7 message using an ORM^O01 message type.
- **Scheduling (SIU)** – This interface receives patient demographic information and appointment information. These messages do not contain detailed exam information as the procedures will be selected by the technician. It covers use cases such as new appointments, updates to the appointment, and cancellations. This is accomplished via a HL7 message using a SIU message type.
- **HTTP(S) URL Link** – The process of embedding a hyperlink into the Information System that will trigger direct access to the study images within the PACS. This logic can be hardcoded in the third-party information system or sent to the Information System via an ORU^R01 message type.
- **Reports Results (ORU)** – Textual report data, created either in the PACS or a 3rd Party system (such as a Reading Radiologist) that is sent to the PACS via HL7 to your Information System. This is accomplished via a HL7 message using an ORU^R01 message type.
- **Patient Demographic (ADT)** – Patient specific information, such as name, date of birth, gender, address, insurance information and location are provided via an Admit Discharge Transfer (ADT) Message. It covers use cases such as admissions and cancellation of admits. It is a way to match patient information across multiple system.

MODALITY WORKLIST

Before getting into the configuration details for MWL, let us first look at how it works and what variable there may be. MWL is a service that is part of the DICOM standard. This service is part of what is referred to as an MWL Server or MWL Broker. It provides DICOM modalities (e.g. digital x-ray systems) a list of patients that are to have an exam and in some cases what specific exam has been ordered. This information is provided to the MWL service from one of two types of HL7 messages that are sent from your information system.

The two types of HL7 message that can be used are:

- **Scheduling (SIU)** – This message contains basic patient demographic information and schedule date only. This message is sent or triggered by the patient arrival status in your information system. This helps to keep the list of patients clear of no shows or irrelevant patients. These messages do not contain detailed exam information as the procedures will be selected by the technician.
- **Orders (ORM)** – This message contains the same basic information housed in the SIU, but with the added details of what type of x-ray exam has been ordered by the physician. Order specific messages will contain all PID, Date and time of service, Modality type, Procedure code and Procedure Description, Referring Physician Code and Description. These orders will be for new, cancelled, and updates based on the accession number of the associated order.

The software can handle either the **ORM** or **SIU**, but not both. However, the ORM is preferred for integration as this will eliminate the need of the technologist to enter station and other data and to sift through the list of all patients scheduled that day regardless of room / station, etc. With an ORM, only the patients assigned to that station will appear.

Setup of the MWL will require the following information.

- **Server IP Address:**
 - Variable and is assigned to the server at install
- **Port Number for Inbound SIU/ORM messages**
 - OPAL – 10005
- **Port Number to pull the Modality Worklist (MWL)**
 - OPAL – 4105
- **Port Number to send DICOM images**
 - OPAL – 104
- **AE Title**
 - OPAL – OPALMWL

REQUIRED SEGMENTS AND FIELDS

The following are the **required, unless otherwise noted**, fields and segments. We will use the following segments and fields listed for the configuration. Edits or modifications must be done within the EMR/ EHR.

Segments:

- HL7 segments that are required for the **ADT** are:
 - MSH - Message Header
 - PID - Patient Identification Segment
 - PV1 - Patient Visit Segment

- HL7 segments that are required for the **SIU** are:
 - MSH - Message Header
 - SCH – Scheduling Activity Information Segment
 - PID - Patient Identification Segment
 - PV1 - Patient Visit Segment

- HL7 segments that are required for the **ORM** are:
 - MSH - Message Header
 - PID - Patient Identification Segment
 - PV1 - Patient Visit Segment
 - ORC - Common Order Segment
 - OBR - Order Detail/Observation Request Segment

Fields:

- HL7 fields that are required for **ADT**:
 - PID-2 – Must contain the Patient Account Number/Visit Number/Encounter Number
 - PID-3 – Must contain the Medical Record # for the patient
 - PID-5 – Patient Name

- HL7 fields that are required for **SIU**:
 - SCH-2 – Must contain the Appointment ID
 - SCH-8 – Must contain the Appointment Type Code that matches what is listed within EXA.
 - SCH-11 – Must contain the date and time of the appointment.
 - SCH-25 – Must contain the Appointment Status code
 - PID-2 – Must contain the Patient Account Number/Visit Number/Encounter Number if you would like it returned in field PID-18 within the ORU message
 - PID-3 – Must contain the Medical Record # for the patient
 - PID-5 – Patient Name

- HL7 fields that are required for **ORM**:
 - PID-2 – Must contain the Patient Account Number/Visit Number/Encounter Number if you would like it returned in field PID-18 within the ORU message
 - PID-3 – Must contain the Medical Record # for the patient
 - PID-5 – Patient Name
 - ORC-1 – Must contain the proper Order Control Code
 - ORC-2 and ORC-3 – Must contain the Accession #
 - OBR-2 and OBR-3 – Must contain the Accession #
 - OBR-4 – Must contain the Procedure code (Appointment code/Ref Code) and description
 - OBR-24 – Must contain the Modality Code

MESSAGE LAYOUT AND EXAMPLES

This section provides the layout and examples of the ADT, SIU, and ORM message types. The required segments and fields are included. If the mapping of these fields is different, please enter it into the last column and return the document to your Integration Developer.

Admit Discharge Transfer (ADT) Message

Configuration Segment	Description	Value	Vendor Mapped Segment
PID.2	Patient id external	Unique number / ID for each patient	
PID.3	Patient id external	Unique number / ID for each patient	
PID.5	Patient Name	Last Name ^ First Name ^ Mi	
PID.7	DOB	Data (19460610)	
PID.8	Gender	F/M	
PV1.3	Facility/Location Code and Name	Code ^ Facility Name	
PV1.8	Code ^ Referring Physician Name	NPI ^ Last Name ^ First Name ^ Mi Name	

Sample ADT Message

```

MSH|^~\&|EHR
VENDOR|SENDINGFACILITY|RECVAPP|RECEIVINGFACILITY|20200214143842||ADT^A04^ADT_A04|19
263||2.5.1||NE|||
EVN|A01|20200214143830|||
PID||MRN943550||LASTNAME^FIRSTNAME^|19640101|F||137 TEST
ST^^CITY^NY^11216|US|||MRN943550|||US|
PV1|1||TMI^TEST Medical Imaging|||
IN1|1||80141|HEALTHFIRST|P.O. BOX 958438^^LAKE
MARY^FL^32795|||LASTNAME^FIRSTNAME|Self||^|110000011111100|||F||11000
0011111100
    
```

Scheduling Information Unsolicited (SIU) Message

Configuration Segment	Description	Value	Vendor Mapped Segment
SCH.2	Appointment ID	Unique number for each appointment	
SCH.8	Appointment Type Code	Appointment Type Code that matches what is in EXA	
SCH.11	Schedule date and time	Date and time [20090423142500]	
SCH.25	Appointment Status Code	Status of appointment (Pending, Scheduled, Arrived)	
PID.2	Patient id external	Unique number / ID for each patient	
PID.5	Patient Name	Last Name ^ First Name ^ Mi	
PID.7	DOB	Data (19460610)	
PID.8	Gender	F/M	
PV1.8	Code ^ Referring Physician Name	Dr Code^ Last Name ^ First Name^ Mi Name	

Sample SIU Message

```

MSH|^~\&|GPMS|CTX||MED2000|200803060953||SIU^S12|20080306953450|P|2.3|||||
SCH|00331839401||||58||HLCK^HEALTHCHECK ANY
AGE|20|MIN|^^^200803061000||||JOHN|||VALERIE||||ARRIVED|
PID|1||489671|0|SMITH^MICHAEL^||20080205|F||176215TH STREET^HOUSTON^TX^77306|(832)795-
8259||S||999999999|||||
PV1|1|O||||HHR^NGUYENSUSAN MD|^||||||||||||||||||||||||||||||||||||| RGS|1||
AIL|1||HHR^FPCS NGUYEN, MD||||| NTE|1||1 MONTH HLCK^^^|
AIP|1||PBN^LISAPORTER|50|||||
    
```

Order (ORM) Message

Configuration Segment	Description	Value	Vendor Mapped Segment
PID.2	Patient id external	Unique number / ID for each patient	
PID.5	Patient Name	Last Name ^ First Name ^ Mi	
PID.7	DOB	Data (19460610)	
PID.8	Gender	F/M	
PV1.3	Facility/Location Code and Name	Code ^ Facility Name	
PV1.8	Code ^ Referring Physician Name	NPI ^ Last Name ^ First Name ^ Mi Name	
ORC.2 ORC.3	Accession Number	Unique number for each exam	
ORC.18	Scheduled Station (<i>optional if scheduled station is not being implemented.</i>)	CR, MR, NM etc or CR1, CR2, MR1, MR2 etc. <i>This the ID for the station as created by the practice/hospital/clinic</i>	
ORC.21	Office name / Institution name	Text only	
OBR.2 OBR.3	Accession Number	Unique number for each exam	
OBR.4	Exam Name /Study description	Exam Code^ description (one exam per order)	
OBR.7	Schedule date and time	Date and time [20090423142500]	
OBR.24	Modality	Resource Name / Modality name such as XR, CR, etc. Must match the modality mnemonic associate with CPT code in the orders compendium.	
OBR.31	Reason for the exam	Text Only No Subfields e.g. Text Identifier	

Sample ORM Message

```
MSH|^~\&|EHR VENDOR|SENDINGFACILITY|RCVAPP|RECEIVINGFACILITY
||201707051639||ORM^O01|1077612M11695|T|2.3.1|||||
PID||102181^^^EMPI|102181^^^EMPI|102181^^^|TESTER^JUAN^C||19790714|M||2131-6|1406
MAIN ST APT 150^NEW TEST CITY^AL^19965^|(334)999-99999||||43878547|||||
PV1||O|2D11694^^^MOBILE||||7^SMITH|7^SMITH ||||||7^SMITH|||||||||||||||||
ORC|NW|4494895|4494895||||||140782441^TESTDR^JOSEPH|||||STATIONTEST|||OFFICE|||
OBR|1|4494895|4494895|MISC^MRI, FOOT, W/O
CONTRAST||20170713153957|20170713153957|||^L||||^|140782441^TESTDR^JOSEPH|||||OFFICE|||C
T|||||STUDY REASON TEXT|||||||||
```

Please note:

- o All received messages should be wrapped as follows: CHAR (11) + Message + CHAR (28) + CHAR (13)
- o Each segment of the message needs to be separated by CHAR (13).
- o The same format on our outbound messages will be used.
- o An ACK for all successfully processed messages will be sent.
- o A NACK for all errors will be sent

Http(s) URL Link

Http(s) URL Link is a feature for the images from PACS to be viewed from your Information System (IS). Exam images are not really viewed in your IS, rather they are launched or triggered from within the application.

This is accomplished using html hyperlinks or URL's. The URL can be placed in the Information System:

- By the IS vendor
- By imbedding the URL logic into the application
- Or by receiving the URL via an HL7 message.

Depending on the interface type, the approval of a report or a completed status of the study, will trigger a **Result (ORU)** message or **Medical Document Management (MDM)** message with the link to the EMR/HER application.

The ORU is the preferred method of sending the URL link. The link for the image will be listed in OBX-5 of the last OBX sent. Typically, this message only has one OBX segment:

```
MSH|^~\&|RAD|OPAL|VENDOR|SITE|20170724123057||ORU^R01|20170724123057677|P|2.3|||||
PID|1|102181|102181||TESTER^TEST^T||19790714|M||0|||||||||||||
PV1|1|O|||||||||||||||||||||||||
ORC|RE|44979291123|44979291123|CM|||||20170724123057|||||
OBR|1|44979291123|44979291123|MISC^MRI,FOOT,W/O
CONTRAST||20170724122655|20170724122655|||||^|||||20170724122655||RAD|F|||||
OBX|1|RP|||http://10.0.0.33/opalweb/IntegrationProcessor.aspx?CMD=OPENSTUDY&SUID=1.3.6.1.4.1.111
57.2 017.7.24.12.25.36.1|||||F||20170724122655
```

If the MDM message is used, the URL for the image will be listed in OBX-5 of the last OBX sent. Typically, this message only has one OBX segment:

```

MSH|^~\&|PACS|OPALPACS|RAD|RECVAPP|20170728125049||MDM^T02|20170728125049264|P|2.3||A
L|||
EVN|T02|20170728125049
PID|1|102181|102181||TESTER^TEST^T||19790714|M|||||||||||||||||
PV1|1|O|^^^STATIONTEST|||^^^|||||||||||||||||||||||||||^^^|||||
TXA|1|URL||20170724122655|^^^|||||44979291123|44979291123|||IP|
OBX|1|RP|IMAGE_REF||http://10.0.0.33/opalweb/IntegrationProcessor.aspx?CMD=OPENSTUDY&SUID=1.
3.6.1.4.1.11157.2017.7.24.12.25.36.1|||||F|||20170724122655

```

Once the URL has been established, the URL can be used to invoke two types of triggers:

- **Opening of Specific Study** – This launches the PACS viewer and displays a specific exam.
- **Opening/Displaying a Study List for a patient** – This launches a patient specific list of all exams that a specific patient has had. From this list you can then select the exam that you wish to review. This allows you to see priors for comparison.

DICOM Image Viewer

Opal Viewer must be installed on any computer viewing the URL link. The viewer can be installed by logging directly onto the web portal of the PACS server. Once logged onto the PACS, you will be prompted to download and install the Opal-Viewer application.

The Internet Explorer browser is required to open the URL Image Link. The link will not open in Google Chrome, Fire Fox, Microsoft Edge, or Safari.

URL Logic for embedding into a Third-Party Application

By providing your Information System vendor with this information, they should be able to embed the logic into their application. Below you will find several variations of the URL. In each, your vendor is only required to populate one segment of the string with variable data.

PACS Logon where "OPALSRV" is the IP address or hostname of the PACS Server.

<http://OPALSRV/OpalWeb>

Opening the URL Link for a specific Study:

To open a URL link for a specific study, one of the following is required:

- DICOM study UID [information generated by modality]
- Accession Number [Information provided to modality by MWL and/or technician]
- Patient ID [Information provided to modality by MWL and/or technician]

It is required for the third-party vendor to open the URL in Internet Explorer (or internet explorer control); where OPALSRV is IP address or hostname of the PACS Server. Google Chrome, Fire Fox, Microsoft Edge, or Safari are not supported.

- **Study UID Example:**
<http://OPALSRV/OpalWeb/IntegrationProcessor.aspx?CMD=OPENSTUDY&SUID=<studyuid>>
- **Study ID Example:**
http://OPALSRV/OpalWeb/IntegrationProcessor.aspx?CMD=OPENSTUDY&STUDY_ID=<studyid>

- **Accession Number Example:**
<http://OPALSRV/OpalWeb/IntegrationProcessor.aspx?CMD=OPENSTUDY&ACCESSION=<accession>>
- **Patient ID Example:**
http://opalsrv/OpalWeb/IntegrationProcessor.aspx?CMD=STUDYLIST&PATIENT_ID=<patientid>

URL Link Results:

When the URL link to a specific study is opened, the result will look like the example below.



Displaying the URL Link Study List:

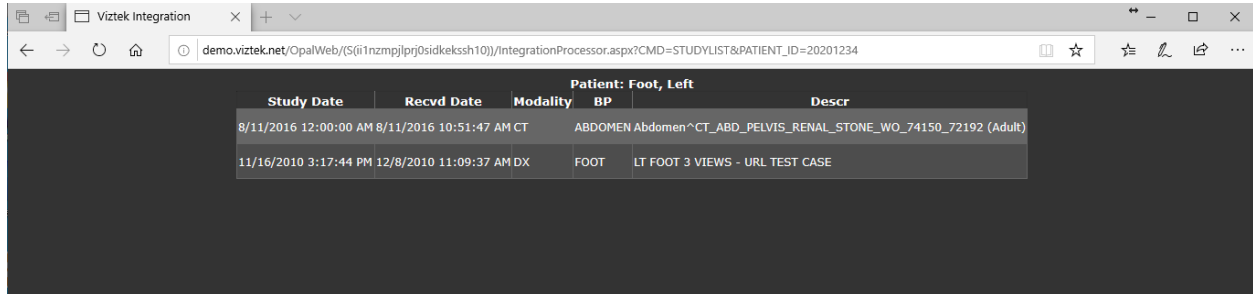
To open a list of studies for a specific patient, the Patient ID is required. From the list the user can select a study to open by double clicking the row on the list.

It is required for the third-party application to open the URL in **Internet Explorer** (or internet explorer control). Google Chrome, Fire Fox, Microsoft Edge, or Safari are not supported:

- **Patient ID Example:**
http://opalsrv/OpalWeb/IntegrationProcessor.aspx?CMD=STUDYLIST&PATIENT_ID=<patientid>

URL Link Study List Results:

When the URL link to a study list is opened, you will have the ability to select the specific study you want to view.



Study Date	Recvd Date	Modality	BP	Descr
8/11/2016 12:00:00 AM	8/11/2016 10:51:47 AM CT	ABDOMEN	Abdomen ^	CT_ABD_PELVIS_RENAL_STONE_WO_74150_72192 (Adult)
11/16/2010 3:17:44 PM	12/8/2010 11:09:37 AM DX	FOOT		LT FOOT 3 VIEWS - URL TEST CASE

REPORT RESULT

The reporting structure is usually handled by using empty OBX.5 fields to represent line breaks. As another option, we can send the report in a single OBX segment using the tilde character (Field repeat separator) as the line feed.

Please note that the report can be configured such that addendums are sent containing the full report or just the addendum itself.

Outbound Result Message (ORU) Structure

Please see the list of fields we can send and note that some fields populate only if the data is received from the originating EMR/EHR/PM system. Other fields may be available for output based on data sent to our system. If the mapping of these fields is different please enter it into the last column and return the document to your Integration Developer.

REQUIRED SEGMENTS AND FIELDS

The following are the **required, unless otherwise noted**, fields and segments for the ORU message. We will use the following segments and fields listed for the configuration. Edits or modifications must be done within the EMR/ EHR.

Segments:

- HL7 segments that are required for the **ORU** are:
 - MSH - Message Header
 - PID - Patient Identification Segment
 - PV1 - Patient Visit Segment
 - ORC - Common Order Segment
 - OBR - Order Detail/Observation Request Segment
 - OBX - Observation Result Segment

Fields:

- HL7 fields that are required for **ORU**:
 - PID-2 – Must contain the Patient Account Number/Visit Number/Encounter Number if you would like it returned in field PID-18 within the ORU message
 - PID-3 – Must contain the Medical Record # for the patient

- ORC-1 – Must contain the proper Order Control Code
- ORC-2 and ORC-3 – Must contain the Accession #
- OBR-2 and OBR-3 – Must contain the Accession #
- OBR-4 – Must contain the Procedure code (Appointment code/Ref Code) and description
- OBR-22 – Must contain the Approved Date
- OBR-24 – Must contain the Modality Code
- OBR-32 – Must contain Approving Provider NPI and name
- OBX-11 – must contain the Final/Addendum identifier (F/A)

MESSAGE LAYOUT AND EXAMPLES

This section provides the layout and examples of the ORU message type. The required segments and fields are included. If the mapping of these fields is different, please enter it into the last column and return the document to your Integration Developer.

Results (ORU) Message

Configuration	Description	Value	Vendor Mapped
Segment			Segment
MSH.3	Sending Application	This field will contain a reference to which one of our applications is sending the message. (OPAL, EXA, RIS)	
MSH.4	Sending Facility	This field will contain specific information related to the location the message is coming from.	
MSH.5	Receiving Application	This field will contain a reference to the application we are sending to and can be specified by the client or vendor receiving the message.	
MSH.6	Receiving Facility	This field will contain a reference to the facility we are sending to and can be specified by the client or vendor receiving the message.	
MSH.7	Date / Time of Message	Specific date / time that the message is sent.	
MSH.9	Message Type / Event Type	For outbound reports, an ORU^R01 message will be used to send report data out of the system.	
MSH.10	Message Control ID	Unique message date / time driven control ID sent with each message.	

MSH.11	Processing ID	This field will be either set to "P" to signify that the data coming across is production data or it will be set to "T" signifying that the messages are test/training related.	
MSH.12	Version ID	Depending on the product being used, our systems output messages using either HL7 2.3 (i.e. OPAL) or 2.5.1 (i.e. EXA).	
PID.2	External Patient Acct Number	Unique number / ID for each patient	
PID.3	Internal Patient Acct Number	Unique number / ID for each patient	
PID.4	Alternate Patient Acct Number	Unique number / ID for each patient	
PID.5	Patient Name	Patient last name, first name, and middle initial	
PID.7	DOB	Patient date of birth. (Format: 19460610)	
PID.8	Patient Gender	Gender of patient. (M (male), F (female), etc.	
PID.10	Patient Race	Race of Patient.	
PID.11	Patient address	Address for patient.	
PID.12	Country Code	Country code.	
PID.13	Patient home phone number	Home phone number for patient.	
PID.14	Patient work phone number	Work phone number for patient.	
PID.15	Patient primary language	Primary language of patient.	
PID.16	Patient marital status	Marital status of patient.	
PID.18	Patient account number	Account number for patient.	
PID.19	Patient SSN	Social security number for Patient.	
PID.22	Patient ethnic group	Ethnic group of Patient.	
PV1.2	Patient class	Class of patient. (example: Outpatient)	

PV1.3	Assigned patient location	Patient assigned location.	
PV1.7	Physician information	Reading or radiologist of patient study. Code (NPI), first name, middle initial and last name.	
PV1.8	Physician information	Referring doctor. Code (NPI), first name, middle initial, and last name.	
PV1.17	Physician information	Approving doctor. Code (NPI), first name, middle initial, and last name.	
ORC.1	Order control code	Example: RE (Observation/Performed service to follow)	
ORC.2	Accession number	Placer order number field used to hold accession number.	
ORC.3	Accession number	Filler order number field alternate field used to hold accession number.	
ORC.5	Order Status	Status of appointment.	
ORC.9	Date / Time of transaction	Date / Time of transaction.	
ORC.12	Referring Doctor information	Referring Doctor. Code (NPI), first name, middle initial, and last name.	
ORC.18	Scheduled Station (<i>optional if scheduled station is not being implemented</i>)	CR, MR, NM etc. or CR1, CR2, MR1, MR2 etc. <i>This the ID for the station as created by the practice/hospital/clinic</i>	
OBR.2	Accession number	Filler order number field alternate field used to hold accession number.	
OBR.3	Accession number	Filler order number field alternate field used to hold accession number.	
OBR.4	Exam Name /Study description	Reference code and description for Study. (one exam per order)	
OBR.7	Schedule date and time	Date and time [20090423142500]	
OBR.24	Modality	Resource Name / Modality name such as XR, CR, etc. Must match the modality mnemonic associate with CPT code in the orders compendium.	
OBR.25	Result status	Example: F (final results) or A (addendum)	
OBR.31	Reason for the exam	Text Only No Subfields e.g. Text Identifier	

OBR.32	Principal Result Interpreter	Reading or radiologist of patient study. Code (NPI), first name, middle initial, and last name.	
OBX.1	Set ID	OBX Set ID	
OBX.2	Value type	Value type	
OBX.3	Study description	Study description	
OBX.5	Observation value	Reports are typically sent out using multiple OBX segments and utilize empty OBX.5 fields for line feeds. If single OBX is used a tilde will be used to represent a line feed.	
OBX.11	Observation result	Example: F - final or A - addendum.	
OBX.14	Study Date / Time	Date / time of study	

Sample ORU Message

```

MSH|^~\&|OPAL|client|vendor|site|20170907101753||ORU^R01^ORU_R01|7979||2.5.1||AL|||
EVN|A01|20170907101738|||||
PID||89414|89414|021322135|TEST^TEST^^^||19000101|U||Other|100Broadway^100
Broadway^Bronx^NY^10000|US||||Prefer not to answer||89414|021322135|||||US|
PV1|1|||||^1992972269^Uche^Akwuba^^^|||||RADIARADIA^Radia^Radia^Harrison^^^|||||
|||||
ORC|RE|10001|10001||Approved|||||1992972269^Akwuba^Uche|DX|Harrison||20170907173500
OBR|1|10001|10001|13983^MAMMOGRAM: BREAST LEFT
DIAGNOSTIC||DX||20170907173500|RADIARADIA^Radia^Radia^|||||1992972269^Akwuba^Uche|1992972
269||||Approved||F|||||RADIARADIA^Radia^Radia^||20170907173500|
OBX|1|TX|MAMMOGRAM: BREAST LEFT DIAGNOSTIC||This is a test Report. There are only 4
lines.||||F||20170907173500||
OBX|2|TX|MAMMOGRAM: BREAST LEFT DIAGNOSTIC||This is line 2.||||F||20170907173500||
OBX|3|TX|MAMMOGRAM: BREAST LEFT DIAGNOSTIC||IMPRESSION: This is line
3.||||F||20170907173500||
OBX|4|TX|MAMMOGRAM: BREAST LEFT DIAGNOSTIC||This is line 4.||||F||20170907173500||
OBX|5|TX|MAMMOGRAM: BREAST LEFT DIAGNOSTIC||||F||20170907173500||
OBX|6|TX|MAMMOGRAM: BREAST LEFT DIAGNOSTIC||||F||20170907173500||
OBX|7|TX|MAMMOGRAM: BREAST LEFT DIAGNOSTIC||Electronically Signed by: Rad
Rad||||F||20170907173500||
    
```


BASIC HL7 WORKFLOW

This diagram shows a basic HL7 workflow. This workflow can be modified to include multiple modalities, a RIS system, as well as other 3rd party vendors and locations.

Basic HL7 Workflow

