ScImage HL7 Specifications

PICOM365

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Caution:
U.S. Federal law restricts this device to sale by or on the order of a physician.

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Indications for Use:
The PICOM365 software is a Picture Archive and Communication System intended for acceptance, transfer, display, storage and digital processing of medical images. Its hardware components may include digitizers, workstations, communications devices, computers, video monitors, magnetic, optical disk, or other digital data storage devices and hardcopy devices. The software components provide functions for performing operations related to image visualization, enhancement, compression or quantification.

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1 Interface Overview

The interfaces addressed in this document are designed to allow bi-directional communications using Health Level 7 (HL7) version 2.4 Standard for the exchange of electronic data between information systems (i.e. HIS, RIS and other HL7 interfaces). The HL7 standard defines the data fields necessary for common transactions in a health care environment. It also includes a set of encoding rules, which specify the exact string of bytes transmitted, and a Lower Level Protocol to ensure reliable transmission of the messages in simple networking environments. The scope of this documentation addresses the following:

- Communication associated with the Inbound Orders Interface
- Communication associated with the Admit, Discharge, Transfer Interface
- Communication associated with the Outbound Results Interface
- Communication associated with the Detailed Financial Transaction Interface

Each interface will be extensively described as well as all of the necessary components. Special attention will be paid to the message structures, communication protocols, and configuration.

The ScImage, Inc. implementation of HL7 is based on version 2.4 of the HL7 standard, but also includes transactions from HL7 versions 2.1, 2.2, and 2.3.

For additional information regarding the HL7 Standard, please reference http://www.hl7.org/.

TCP/IP Ports

ScImage, Inc. is capable of configuring an interface to function using either TCP/IP ports or ASCII files exchanged in shared directories. The examples below are for TCP/IP transactions.

1. Unique TCP/IP port addresses and socket numbers must be determined by the client, ScImage, Inc., and the host system vendor prior to installation.

2. The sending system will act as a TCP/IP client and is responsible for opening the port prior to sending data. The receiving system will act as a TCP/IP server.

   IMPORTANT NOTE: The sending system must be able to monitor the status of the port, and must be able to reconnect to the port without user support if it has been disconnected.

3. ScImage expects a start block character which is a hex OB (or an ASCII 11).

4. At the end of each segment, a carriage return is added (hex OD, ASCII 13).

5. At the termination of the complete message there is an end block (hex 1C, ASCII 28) followed by a carriage return.

Inbound Communications – ACK Response Message

The exchange of inbound messages will be as follows:

- ScImage, Inc. listens on the port for the HL7 message. After receipt of each message, ScImage, Inc. sends an ACK Message back to the sending device on the same port number.
- If the ACK message's MSA segment indicates that the HL7 message was received, then the sending system is free to send the next message. This is repeated until all messages are sent. If the MSA indicates that the HL7 message contained an error, the host must resend the message until either the MSA indicates the message was received, or the interface times out.
- If a study is already in Rpt Signed status, inbound ORU messages containing preliminary reports (OBR-25=P) will be rejected with an Application Reject (AR) ACK message.
- If the inbound HL7 message is not a supported message type, then an AR message with ERR code 200 will be returned to the sending device. If the inbound HL7 message is a supported message type, but unsupported event type, then an AR message with ERR code 201 will be returned.
- If ScImage, Inc. has problems updating the Orders database, an Application Error (AE) ACK message will be returned.

{ } Indicate repeatable segments
[ ] Indicate optional segments

Message Segments	Segment Name	Comments
MSH	Message Header	
MSA	Message Identification	
{[ERR]}	Error	Conforms with HL7 version 2.4

MSH -- Message Header

The MSH segment defines the intent, source, destination, and some specifics of the syntax of a message.

Seq	Element Name	Optional	Length	Comments
0	Header	R	3	
1	Field Separator	R	1	
2	Encoding Characters	R	4	'^~\&' where: '^' is the component delimiter (ASCII 94) '~' is the repeat delimiter (ASCII 126) '\' is the escape delimiter (ASCII 92) '&' is the subcomponent delimiter (ASCII 38)
3	Sending Application	R	180	
4	Sending Facility	R	180	
5	Receiving Application	R	180	
6	Receiving Facility	R	180	

7	Date/Time Of Message	R	26	
8	Security	O	40	
9	Message Type	R	7	Components: <message type (ID)> ^ <trigger event (ID)> This field contains the message type (table 0076) and trigger event (table 0003) for the message.
10	Message Control ID	R	20	
11	Processing ID	R	3	
12	Version ID	R	8	
13	Sequence Number	O	15	
14	Continuation Pointer	O	180	
15	Accept Acknowledgment Type	O	2	
16	Application Acknowledgment Type	O	2	
17	Country Code	O	2	
18	Character Set	O	6	
19	Principal Language Of Message	O	60	
R = Required, C = Conditionally Required, O = Optional, NU = Not Used, N = Numeric, AN = Alpha/Numeric, ID = Segment Identification				

Example MSH:

```
MSH|^~\&|PICOM365|55555|AML|AML|20131018143140||ACK^A04|12874|T|2.4|||||||
```

MSA – Message Acknowledgment Segment

The MSA segment contains response information when acknowledging another message.

Seg	Element Name	Optional	Length	Comments
0	Segment Header	R	3	
1	Acknowledgement Code	R	2	
2	Message Control ID	R	20	
3	Text Message	O	80	
4	Expected Sequence Number	NU		
5	Delayed Acknowledgment Type	NU		
6	Error Condition	NU		See ERR segment
R = Required, C = Conditionally Required, O = Optional, NU = Not Used, N = Numeric, AN = Alpha/Numeric, ID = Segment Identification				

Example MSA:

```
MSA|AR|12874|||||
```

ERR – Error Segment

The ERR segment specifies the error code for AR (application reject) ACK messages.

Seg	Element Name	Optional	Length	Comments
0	Segment Header	R	3	
1	Error Code and Location	R	80	Composite
1.1	Segment ID	NU		
1.2	Sequence	NU		
1.3	Field Position	NU		
1.4	Code identifying error	R		Supported: 200 (Message Type not supported) & 201 (Event Code not supported)

R = Required, C = Conditionally Required, O = Optional, NU = Not Used, N = Numeric, AN = Alpha/Numeric, ID = Segment Identification

Example ERR:

```
ERR|^^^200
```

Example HL7 ACK Inbound Message

```
MSH|^~\&|PICOM365|55555|AML|AML|20131018143140||ACK^A04|12874|T|2.4|||||||
MSA|AR|12874|||||
ERR|^^^200
```

Outbound Communications – ACK Response Message

The exchange of outbound messages will be as follows:

- ScImage, Inc. sends the HL7 message out to the receiving device over a configured port. After delivery of each message, ScImage, Inc. expects an ACK Message back from the receiving device on the same port number within a configurable number of seconds. If no ACK is received, the HL7 message will continue to be sent again by ScImage, Inc. until an ACK is received.

- If the ACK message's MSA segment indicates that the HL7 message was received, then ScImage, Inc. will continue to send other messages. This is repeated until all messages are sent. If the MSA indicates that the HL7 message contained an error, then ScImage, Inc will resend the message until either the MSA indicates the message was received, or the interface times out.

Message Segments	Segment Name	Comments
MSH	Message Header	Refer to MSH definition under Inbound Communications.
MSA	Message Identification	Refer to MSA definition under Inbound Communications.

2 Inbound ORM Order Interface

ORM – O01 Event – An Orders Message

The ORM message (event O01) is used to receive an order from a HIS/RIS or other HL7 system. Each ORM message has at least one OBR segment detailing the order request. ScImage, Inc. uses the segments and fields listed below for receiving ORM orders. Segments and fields not listed are ignored.

{ } Indicate repeatable segments
[ ] Indicate optional segments

Message Segments	Segment Name	Comments
MSH	Message Header	
PID	Patient Identification	
[PV1]	Patient Visit	
ORC	Common Order	
{OBR}	Observation Request	
[{NTE}]	Notes and Comments	
[ZDS]	Document Succession	

Segment Fields

MSH – Message Header

The MSH segment defines the intent, source, destination, and some specifics of the syntax of a message.

Seq	Element Name	Optional	Length	Comments
0	Header	R	3	
1	Field Separator	R	1	
2	Encoding Characters	R	4	'^~\&' where: '^' is the component delimiter (ASCII 94) '~' is the repeat delimiter (ASCII 126) '\' is the escape delimiter (ASCII 92) '&' is the subcomponent delimiter (ASCII 38)
3	Sending Application	R	180	
4	Sending Facility	R	180	
5	Receiving Application	R	180	
6	Receiving Facility	R	180	
7	Date/Time Of Message	R	26	
8	Security	O	40	
9	Message Type	R	7	Components: <message type (ID)> ^ <trigger event (ID)> This field contains the message type (table 0076) and trigger event (table 0003) for the message. Generally `ORM^O01` for order (ORM) events.

10	Message Control ID	R	20	
11	Processing ID	R	3	
12	Version ID	R	8	
13	Sequence Number	O	15	
14	Continuation Pointer	O	180	
15	Accept Acknowledgment Type	O	2	
16	Application Acknowledgment Type	O	2	
17	Country Code	O	2	
18	Character Set	O	6	
19	Principal Language Of Message	O	60	
R = Required, C = Conditionally Required, O = Optional, NU = Not Used, N = Numeric, AN = Alpha/Numeric, ID = Segment Identification				

Example MSH:
MSH|^~\&|PICOM365|SCI|EHR|AML|20021018143140||ORM^O01|12874|T|2.4

PID – Patient Identification

The PID segment is used by all applications as the primary means of communicating patient identification information. This segment contains permanent patient identifying and demographic information that, for the most part, is not likely to change frequently.

Seg	Element Name	Optional	Length	Comments
0	Segment Header	R	3	
1	Set ID - Patient ID	O	4	
2	Patient ID (External ID)	O	16	
3	Patient ID (Internal ID)	R	20	
4	Alternate Patient ID - PID	O	20	
5	Patient Name	R	48	
6	Mother's Maiden Name	O	48	
7	Date/Time of Birth	O	26	
8	Sex	R	1	'M', 'F', 'U'. Required for proper application of reference ranges.
9	Patient Alias	O	48	
10	Race	O	1	
11	Patient Address	O	106	
12	County Code	O	4	
13	Phone Number - Home	O	40	
14	Phone Number - Business	O	40	
15	Primary Language	O	60	
16	Marital Status	O	1	
17	Religion	O	3	
18	Patient Account Number	O	20	

19	SSN Number - Patient	O	16	SSN Number – patient
20	Driver's Lic Num - Patient	O	25	
21	Mother's Identifier	O	20	
22	Ethnic Group	O	3	
23	Birth Place	O	60	
24	Multiple Birth Indicator	O	2	
25	Birth Order	O	2	
26	Citizenship	O	4	
27	Veterans Military Status	O	60	
28	Nationality	O	80	
29	Patient Death Date and Time	O	26	
30	Patient Death Indicator	O	1	
R = Required, C = Conditionally Required, O = Optional, NU = Not Used, N = Numeric, AN = Alpha/Numeric, ID = Segment Identification				

Example PID:

PID|1||747638^^^D964655^^^A||PATIENT^TEST^L^^^^Current|GERSTIN|19570503|F||1|89Y RAINY LAKE DRIVE^^CITY^MO^63017^US^home^MO189^""||(314)555-0555^Home^""|(314)555-5555^Business^""|CD-273230|M|MET|0309500077^^^D|500506341|||""||||""|""|""||""

PV1 – Patient Visit

The PV1 segment is used to communicate information on a visit-specific basis. This segment can be used to send multiple-visit statistic records to the same patient account or single-visit records to more than one account. Individual sites must determine the use for this segment.

Seg	Element Name	Optional	Length	Comments
0	Segment Header	R	3	PV1
1	Set ID - Patient Visit	O	4	
2	Patient Class	O	1	INPATIENT, OUTPATIENT, PREADMIT, EMERGENCY
3	Assigned Patient Location	R	12	Location^Room^Bed
7	Attending Doctor	R	60	
8	Referring Doctor	O	45	
17	Admitting Doctor	O	60	
18	Patient Type	O	3	INPATIENT, OUTPATIENT
19	Visit Number	O	250	
44	Admit Date/Time	R	12	YYYYMMDDhhmmss
45	Discharge Date/Time	C	12	YYYYMMDDhhmmss
R = Required, C = Conditionally Required, O = Optional, NU = Not Used, N = Numeric, AN = Alpha/Numeric, ID = Segment Identification				

Example PV1:

PV1|1|O|OP^8713^D||||2342^Jones^Bob|18110^S^Alan^R|||||||||10900^F^MARIAH^A||2|||||||||||||||||||||20060307110111|

ORC – Common Order

The Common Order segment (ORC) is used to transmit fields that are common to all orders (all types of services that are requested). The ORC segment is required in the Order (ORM) message.

Seg	Element Name	Optional	Length	Comments
0	Segment Header	R	3	
1	Order Control	R	2	NW = New Order OC = Order Cancelled SC = Status Changed HD = Hold
2	Placer Order Number	C	22	
3	Filler Order Number	C	22	
4	Placer Group Number	O	22	
5	Order Status	O	2	
6	Response Flag	O	1	
7	Quantity/Timing	O	200	
8	Parent	O	200	
9	Date/Time of Transaction	O	26	
10	Entered By	O	120	
11	Verified By	O	120	
12	Ordering Provider	O	120	
13	Enterer's Location	O	80	
14	Call Back Phone Number	O	40	
15	Order Effective Date/Time	O	26	
16	Order Control Code Reason	O	200	
17	Entering Organization	O	60	
18	Entering Device	O	60	
19	Action By	O	120	
20	Advanced Beneficiary Notice Code	O	250	
21	Ordering Facility Name	O	250	
22	Ordering Facility Address	O	250	
23	Ordering Facility Phone Number	O	250	
24	Ordering Provider Address	O	250	
25	Order Status Modifier	O	250	
R = Required, C = Conditionally Required, O = Optional, NU = Not Used, N = Numeric, AN = Alpha/Numeric, ID = Segment Identification				

Example ORC:

```
ORC|NW|00004DX20030022524|70735||||||||||200304081215|||||||||
```

OBR – Observation Request

The OBR segment is used to transmit information specific to the order. It defines the attributes of a particular diagnostic service or clinical observation

Seg	Element Name	Optional	Length	Comments
0	Segment Header	R	3	
1	Set ID - OBR	C	4	
2	Placer Order Number	C	75	
3	Filler Order Number	C	75	
4	Universal Service ID	R	200	
5	Priority	O	2	'S'=Stat
6	Requested Date/time	O	26	
7	Observation Date/Time #	C	26	YYYYMMDDhhmmss
8	Observation End Date/Time #	O	26	YYYYMMDDhhmmss
9	Collection Volume	O	20	
10	Collector Identifier	O	60	
11	Specimen Action Code	O	1	
12	Danger Code	O	60	
13	Relevant Clinical Info.	O	300	
14	Specimen Received Date/Time	C	26	YYYYMMDDhhmmss
15	Specimen Source	O	300	
16	Ordering Provider	O	80	
17	Order Callback Phone Number	O	40	
18	Placer field 1	O	60	
19	Placer field 2	O	60	
20	Filler Field 1	O	60	
21	Filler Field 2	O	60	
22	Results Rpt/Status Chng - Date/Time	C	26	
23	Charge to Practice	O	40	
24	Diagnostic Serve Sect ID	O	10	
25	Result Status	C	1	
26	Parent Result	O	400	
27	Quantity/Timing	O	200	
28	Result Copies To	O	150	
29	Parent	O	150	
30	Transportation Mode	O	20	
31	Reason for Study	O	300	
32	Principal Result Interpreter	O	200	
33	Assistant Result Interpreter	O	200	
34	Technician	O	200	
35	Transcriptionist	O	200	

36	Scheduled Date/Time	O	26	
37	Number of Sample Containers	O	4	
38	Transport Logistics of Collected Sample	O	60	
39	Collector's Comment	O	200	
40	Transport Arrangement Responsibility	O	60	
41	Transport Arranged	O	30	
42	Escort Required	O	1	
43	Planned Patient Transport Comment	O	200	
R = Required, CR = Conditionally Required, O = Optional, NU = Not Used, N = Numeric, AN = Alpha/Numeric, ID = Segment Identification				

Example OBR:
OBR||4CT040007625|244398|41602^CT SOFT TISSUE NECK
W/CONTRAST|||||||||||||||||||||||1^^0^20040315075100^^2^ALLERGY TO IODINE||||^CERVICALGIA|

NTE – Notes and Comments

The NTE segment is a common format for sending notes and comments.

Seq	Element Name	Optional	Length	Comments
0	Segment Header	R	3	
1	Set ID	O	4	
2	Source of Comment	O	8	
3	Comment	O	65536	
R = Required, C = Conditionally Required, O = Optional, NU = Not Used, N = Numeric, AN = Alpha/Numeric, ID = Segment Identification				

Example NTE:
NTE|1||Call Results Upon Completion

ZDS – Documents Succession

The ZDS segment is used to convey the Study Instance UID of the order.

Seq	Element Name	Optional	Length	Comments
0	Segment Header	R	3	
1	Study Instance UID	R	200	
R = Required, C = Conditionally Required, O = Optional, NU = Not Used, N = Numeric, AN = Alpha/Numeric, ID = Segment Identification				

Example ZDS:
ZDS|1.2.840.113754.1.4.661.6859781.9168.1.661.21814.471^^Application^DICOM

Sample HL7 ORM Orders Inbound Message

MSH|^~\&|EHR|HNAM500|PICOM365|D|20030408121514||ORM^001|Q46430286T37802061|T|2.3||
PID|1||747638^^^D964655^^^A||PATIENT^TEST^L^^^^Current|GERSTIN|19570503|F||1|89Y RAINY LAKE DRIVE^^CITY^MO^63017^US^home^MO189^""||(314)555-0555^Home^""|(314)555-555^Business^""|CD-273230|M|MET|0309500077^^^D|500506341|||""||||""|""|""||""
PV1|1|O|OP^8713^D||||2342^Jones^Bob|18110^S^Alan^R|||||||||10900^F^MARIAH^A||2|||||||||||||||||||||||20060307110111|
ORC|NW|4CT040007625|70735||||||||||||200304081215|||||||||
OBR||4CT040007625|244398|41602^CT SOFT TISSUE NECK W/CONTRAST|||||||||||||||||||||||||1^^0^20040315075100^^2^ALLERGY TO IODINE||||^CERVICALGIA|
NTE|1||Call Results Upon Completion

3 Inbound ADT Interface

ADT Events – An Admit, Discharge, Transfer Message

ADT messages are used to receive notification of patient transfers, discharge, and changes or merges to patient demographics information from a HIS/RIS or other HL7 system. ScImage, Inc. supports the following ADT events listed below. Segments and fields not listed are ignored.

A02 - Transfer
A03 - Discharge
A08 - Patient Demographics Update
A12 - Transfer Cancellation
A18 - Merge Patient Information
A34 - Merge Patient Information-patient ID only
A40 - Merge Patient Information-internal ID
A47 - Change Patient Identifier

{ } Indicate repeatable segments
[ ] Indicate optional segments

Message Segments	Segment Name	Comments
MSH	Message Header	
EVN	Event Type	
PID	Patient Identification	
PV1	Patient Visit	
[MRG]	Merge Information	Required for Merge events

Segment Fields

MSH – Message Header

The MSH segment defines the intent, source, destination, and some specifics of the syntax of a message.

*Refer to section 2 (Inbound ORM Order Interface) for MSH segment definition table.

Example MSH:
MSH|^~\&|EHR| | PICOM365||201308221728||ADT^A08|1817457|P|2.7||3|||||||

EVN – Event Type

The EVN segment details the trigger event information to the receiving application.

Seg	Element Name	Optional	Length	Comments
0	Segment Header	R	3	
1	Event Type Code	R	3	
2	Recorded Date/Time	R	26	
3	Date/Time Planned Event	O	26	
4	Event Reason Code	O	3	
5	Operator ID	O	250	
6	Event Occurred	O	26	

7	Event Facility	O	180	
R = Required, C = Conditionally Required, O = Optional, NU = Not Used, N = Numeric, AN = Alpha/Numeric, ID = Segment Identification				

Example EVN:
EVN|A08|201308221728|||JohnDoe|201308221727

PID – Patient Identification

The PID segment is used by all applications as the primary means of communicating patient identification information. This segment contains permanent patient identifying and demographic information that, for the most part, is not likely to change frequently.

*Refer to section 2 (Inbound ORM Order Interface) for PID segment definition table.

Example PID:
PID|||12345||SMITH^GUY^R||19470411|M||White|723 ROAD OAK
DR^^City^CA^11111^USA^M^^^^^20120621~723 ROAD OAK
DR^^City^CA^11111^USA^H^^^^^20120621||2133334444||EN|M|Baptist|6665553|333224444

PV1 – Patient Visit

The PV1 segment is used to communicate information on a visit-specific basis. This segment can be used to send multiple-visit statistic records to the same patient account or single-visit records to more than one account. Individual sites must determine the use for this segment.

*Refer to section 2 (Inbound ORM Order Interface) for PV1 segment definition table.

Example PV1:
PV1||O|3G^^34503|Elective|||1620^Default^Physician^L.|||CAT||||Phys or
Self|||1620^Default^Physician^L.|SDS|||||||||||||||||||||||||201308221330

MRG – Merge Patient Information

The MRG segment provides ScImage, Inc. with the information necessary to perform a merge of clinical records between two patients using Patient ID.

Seg	Element Name	Optional	Length	Comments
0	Segment Header	R	3	
1	Prior Patient Identifier List	R	250	
2	Prior Alternate Patient ID	NU	250	
3	Prior Patient Account Number	NU	250	
4	Prior Patient ID	NU	250	
5	Prior Visit Number	NU	250	
6	Prior Alternate Visit ID	NU	250	
7	Prior Patient Name	O	250	
R = Required, C = Conditionally Required, O = Optional, NU = Not Used, N = Numeric, AN = Alpha/Numeric, ID = Segment Identification				

Example MRG:
MRG|8992560||||||

Sample HL7 ADT Inbound Message

MSH|^~\&|EHR||PICOM365||201308221728||ADT^A08|1817457|P|2.7||3|||||||
EVN|A08|201308221728||XFR|JohnDoe|201308221727
PID|||12345||SMITH^GUY^R||19470411|M||White|723 ROAD OAK
DR^^City^CA^11111^USA^M^^^^^20120621~723 ROAD OAK
DR^^City^CA^11111^USA^H^^^^^20120621||2133334444||EN|M|Baptist|6665553|333224444
PV1||O|3G^^34503|Elective|||1620^Default^Physician^L.|||CAT||||Phys or
Self|||1620^Default^Physician^L.|SDS|||||||||||||||||||||||||201308221330

4 Inbound Results ORU Interface

ORU – R01 or R03 event - An Observation Message

The ORU message is used to receive a result from a HIS/RIS or other HL7 system. Each ORU message has at least one OBR segment and at least one OBX segment. ScImage, Inc. accepts the segments and fields listed below. Segments and fields not listed are ignored.

{ } Indicate repeatable segments
[ ] Indicate optional segments

Message Segments	Segment Name	Comments
MSH	Message Header	
PID	Patient Identification	
PV1	Patient Visit	
[ORC]	Common Order	
{OBR}	Observation Request	
{OBX}	Observation/Result	
[{NTE}]	Notes and Comments	

Note: If a study is already in Rpt Signed status, any inbound preliminary report with OBR-25=P will be rejected with an AR ACK message.

Segment Fields

MSH – Message Header

The MSH segment defines the intent, source, destination, and some specifics of the syntax of a message.

*Refer to section 2 (Inbound ORM Order Interface) for MSH segment definition table.

Example MSH:
MSH|^~\&|EHR||PICOM365||20030625121952||ORU^R01|7869250|P|2.3|||AL|

PID – Patient Identification

The PID segment is used by all applications as the primary means of communicating patient identification information. This segment contains permanent patient identifying and demographic information that, for the most part, is not likely to change frequently.

*Refer to section 2 (Inbound ORM Order Interface) for PID segment definition table.

Example PID:
PID||12345|12345|000000000|Mouse^Mickey^M||19801011|F||||||||||000000000

PV1 – Patient Visit

The PV1 segment is used to communicate information on a visit-specific basis. This segment can be used to send multiple-visit statistic records to the same patient account or single-visit records to more than one account. Individual sites must determine the use for this segment.

*Refer to section 2 (Inbound ORM Order Interface) for PV1 segment definition table.

Example PV1:
PV1||I|^PTLOC^||||654321^Default^Physician^^^^|||||||||||012328329102312|||||||||||||||||||||||||2
00105100802|200203031642

ORC – Common Order

The Common Order segment (ORC) is used to transmit fields that are common to all orders (all types of services that are requested). The ORC segment is required in the Order (ORM) message.

*Refer to section 2 (Inbound ORM Order Interface) for ORC segment definition table.

Example ORC:
ORC|NW||25||||||200203061205|||654321^Default^Physician^^^^|||||

OBR – Observation Request

The OBR segment is used to transmit information specific to the order. It defines the attributes of a particular diagnostic service or clinical observation

*Refer to section 2 (Inbound ORM Order Interface) for OBR segment definition table.

Example OBR:
OBR||306180572||73075^FACTOR V LEIDEN MUTATION
ANALYSIS^HLA|||200306181234|||^^^^^^^|||||1&Blood&HLA|23104^MCCLURE^JOSEPH^""^^^MD^DOC|||||
|||^ScImage, Inc. Software^4916 El Camino Real^^Los Altos^CA^94022|F||^^^^

OBX – Observation/Result

The OBX segment is used to transmit a single observation or observation fragment. It represents the smallest indivisible unit of a report.

Its principal mission is to carry information about observations in report messages. But the OBX can also be part of an observation order. In this case, the OBX carries clinical information needed by the filler to interpret the observation the filler makes.

Seq	Element Name	Optional	Length	Comments
0	Segment Header	R	3	
1	Set ID - OBX	O	10	
2	Value Type	C	2	
3	Observation Identifier	R	590	
4	Observation Sub-ID	C	20	
5	Observation Value	C	65536	
6	Units	O	60	
7	References Range	O	10	
8	Abnormal Flags	O	5	
9	Probability	O	5	
10	Nature of Abnormal Test	O	2	

11	Observe Result Status	R	1	
12	Date Last Obs Normal Values	O	26	
13	User Defined Access Checks	O	20	
14	Date/Time of the Observation	O	26	
15	Producer's ID	O	60	
16	Responsible Observer	O	80	
17	Observation Method	O	60	
R = Required, C = Conditionally Required, O = Optional, NU = Not Used, N = Numeric, AN = Alpha/Numeric, ID = Segment Identification				

Example OBX:
OBX|1|FT|CHEST|1|Line 1 of report||||||F

NTE – Notes and Comments

The NTE segment is a common format for sending notes and comments.

*Refer to section 2 (Inbound ORM Order Interface) for NTE segment definition table.

Example NTE:
NTE|||Test Performed at: ScImage, Inc. Software, 701 Road Blvd, City, IN 46032

Sample HL7 ORU Results Inbound Message

MSH|^~\&|EHR||PICOM365||200203061205||ORU^R01|0000000092|P|2.3|2|
PID|||00000001|D000003|Test^Patient^MI^DR^^JR|Maiden Name|19250101|F|Alias^Name^MI^^^Dr||Patient Address line 1^Patient Address line 2^Anywhere^VT^11111-2222||(802)555-1212|(802)555-1212X12345||||012328329102312|111-22-3333
PV1||I|^PTLOC^||||654321^Name^Doctor^^^^|||||||||||012328329102312|||||||||||||||||||||||||200105100802|200203031642
ORC|RE||25||||||200203061205|||654321^ Name^Doctor ^^^^|||||
OBR|||25|CHEST^CHEST|||200203061200||||||003.1,003.22|||654321^ Name^Doctor ^^^^|||N||RM1|200203061204|||P||^^M15*^200203061158^^9|123122^Another^Physician^^^^~^YetAnother^Physician^^^^~309843^Third^Physician^^^^||AMB||654321^ Name^Doctor ^^^^||444555^Default^Technologist^^^^|^IDX^Development^^^^|200203061300
NTE|1|L|Exam History field #1~Exam History field #2~Exam History field #3|
OBX|1|FT|CHEST|1|Line 1 of report||||||F
OBX|2|FT|CHEST|1|Line 2 of report||||||F
OBX|3|FT|CHEST|1|Line 3 of report ||||||F
OBX|4|FT|CHEST|1|Line 4 of report ||||||F

Hemodynamic Systems Integration

ScImage, Inc. supports ORU^R01 messages from the hemodynamic systems listed below. The hemodynamic report is extracted into the ScImage, Inc. database and made available for ScImage, Inc cath reporting applications.

Vendor	System	ScImage Mode Label
Philips	Witt	HEMO_WITT
Philips	XPER	HEMO_PHILIPSXPER
Philips	Zymed Holter	HOLTER_ZYMED
GE	MacLab	HEMO_MACLAB
Siemens	Sensis	HEMO_SENSIS
Merge	Merge Hemo	HEMO_MERGE
Fuji	Prosolv	PROSOLV_DISCRETEDATA

5 Outbound Results ORU Interface

ORU – R01 or R03 event - An Observation Message

The ORU message (unsolicited transmission of an observation message - event R01) is used to send results to a HIS/RIS or other HL7 system. Each ORU message has at least one OBR segment and at least one OBX segment. ScImage, Inc. uses the segments and fields listed below. Segments and fields not listed are ignored.

{ } Indicate repeatable segments
[ ] Indicate optional segments

Message Segments	Segment Name	Comments
MSH	Message Header	
PID	Patient Identification	
[PV1]	Patient Visit	
[ORC]	Common Order	
{OBR}	Observation Request	
{OBX}	Observation/Result	
[{NTE}]	Notes and Comments	

Segment Fields

MSH – Message Header

The MSH segment defines the intent, source, destination, and some specifics of the syntax of a message.

Seq	Element Name	Optional	Length	Comments
0	Header	R	3	
1	Field Separator	R	1	
2	Encoding Characters	R	4	'^~\&' where '^' is the component delimiter (ASCII 94) '~' is the repeat delimiter (ASCII 126) '\' is the escape delimiter (ASCII 92) '&' is the subcomponent delimiter (ASCII 38)
3	Sending Application	R	180	
4	Sending Facility	R	180	
5	Receiving Application	R	180	
6	Receiving Facility	R	180	
7	Date/Time Of Message	R	26	
8	Security	O	40	Components: <message type (ID)> ^ <trigger event (ID)> This field contains the message type (table 0076) and trigger event (table 0003) for the message. Generally `ORM^O01` for order (ORM) events.

9	Message Type	R	7	
10	Message Control ID	R	20	
11	Processing ID	R	3	
12	Version ID	R	8	
13	Sequence Number	O	15	
14	Continuation Pointer	O	180	
15	Accept Acknowledgment Type	O	2	
16	Application Acknowledgment Type	O	2	
17	Country Code	O	2	
18	Character Set	O	6	
19	Principal Language Of Message	O	60	
R = Required, C = Conditionally Required, O = Optional, NU = Not Used, N = Numeric, AN = Alpha/Numeric, ID = Segment Identification				

Example MSH:
MSH|^~\&|PICOM365||EHR||20030625121952||ORU^R01|7869250|P|2.3|||AL|

PID – Patient Identification

The PID segment is used by all applications as the primary means of communicating patient identification information. This segment contains permanent patient identifying and demographic information that, for the most part, is not likely to change frequently.

Seg	Element Name	Optional	Length	Comments
0	Segment Header	R	3	
1	Set ID - Patient ID	O	4	
2	Patient ID (External ID)	O	16	
3	Patient ID (Internal ID)	R	20	
4	Alternate Patient ID - PID	O	20	
5	Patient Name	R	48	
6	Mother's Maiden Name	O	48	
7	Date/Time of Birth	O	26	
8	Sex	O	1	'M', 'F', 'U'. Required for proper application of reference ranges.
9	Patient Alias	O	48	
10	Race	O	1	
11	Patient Address	O	106	
12	County Code	O	4	
13	Phone Number - Home	O	40	
14	Phone Number - Business	O	40	
15	Primary Language	O	60	
16	Marital Status	O	1	
17	Religion	O	3	

18	Patient Account Number	O	20	
19	SSN Number - Patient	O	16	SSN Number – patient
20	Driver's Lic Num - Patient	O	25	
21	Mother's Identifier	O	20	
22	Ethnic Group	O	3	
23	Birth Place	O	60	
24	Multiple Birth Indicator	O	2	
25	Birth Order	O	2	
26	Citizenship	O	4	
27	Veterans Military Status	O	60	
28	Nationality	O	80	
29	Patient Death Date and Time	O	26	
30	Patient Death Indicator	O	1	
R = Required, C = Conditionally Required, O = Optional, NU = Not Used, N = Numeric, AN = Alpha/Numeric, ID = Segment Identification				

Example PID:
PID||12345|12345|000000000|Mouse^Mickey^M||19801011|F||||||||||000000000

PV1 – Patient Visit

The PV1 segment is used to communicate information on a visit-specific basis. This segment can be used to send multiple-visit statistic records to the same patient account or single-visit records to more than one account. Individual sites must determine the use for this segment.

Seg	Element Name	Optional	Length	Comments
0	Segment Header	R	3	PV1
1	Set ID - Patient Visit	O	4	
2	Patient Class	O	1	INPATIENT, OUTPATIENT, PREADMIT, EMERGENCY
3	Assigned Patient Location	R	12	Location^Room^Bed
7	Attending Doctor	R	60	
8	Referring Doctor	O	45	
17	Admitting Doctor	O	60	
18	Patient Type	O	3	INPATIENT, OUTPATIENT
19	Visit Number	O	250	
44	Admit Date/Time	R	12	YYYYMMDDhhmmss
45	Discharge Date/Time	C	12	YYYYMMDDhhmmss
R = Required, C = Conditionally Required, O = Optional, NU = Not Used, N = Numeric, AN = Alpha/Numeric, ID = Segment Identification				

Example PV1:
PV1||I|^PTLOC^||||654321^Default^Physician^^^^|||||||||||012328329102312|||||||||||||||||||||||||2
00105100802|200203031642

ORC – Common Order

The Common Order segment (ORC) is used to transmit fields that are common to all orders (all types of services that are requested). The ORC segment is required in the Order (ORM) message.

Seg	Element Name	Optional	Length	Comments
0	Segment Header	R	3	
1	Order Control	R	2	NW = New Order OC = Order Cancelled SC = Status Changed HD = Hold
2	Placer Order Number	C	22	
3	Filler Order Number	C	22	
4	Placer Group Number	O	22	
5	Order Status	O	2	
6	Response Flag	O	1	
7	Quantity/Timing	O	200	
8	Parent	O	200	
9	Date/Time of Transaction	O	26	
10	Entered By	O	120	
11	Verified By	O	120	
12	Ordering Provider	O	120	
13	Enterer's Location	O	80	
14	Call Back Phone Number	O	40	
15	Order Effective Date/Time	O	26	
16	Order Control Code Reason	O	200	
17	Entering Organization	O	60	
18	Entering Device	O	60	
19	Action By	O	120	
20	Advanced Beneficiary Notice Code	O	250	
21	Ordering Facility Name	O	250	
22	Ordering Facility Address	O	250	
23	Ordering Facility Phone Number	O	250	
24	Ordering Provider Address	O	250	
25	Order Status Modifier	O	250	
R = Required, C = Conditionally Required, O = Optional, NU = Not Used, N = Numeric, AN = Alpha/Numeric, ID = Segment Identification				

Example ORC:

ORC|NW||25||||||200203061205|||654321^Default^Physician^^^^|||||||||||||

OBR – Observation Request

The OBR segment is used to transmit information specific to the order. It defines the attributes of a particular diagnostic service or clinical observation

Seg	Element Name	Optional	Length	Comments
0	Segment Header	R	3	
1	Set ID - OBR	C	4	
2	Placer Order Number	C	75	
3	Filler Order Number	C	75	
4	Universal Service ID	R	200	
5	Priority	O	2	'S'=Stat
6	Requested Date/time	O	26	
7	Observation Date/Time #	C	26	YYYYMMDDhhmmss
8	Observation End Date/Time #	O	26	YYYYMMDDhhmmss
9	Collection Volume	O	20	
10	Collector Identifier	O	60	
11	Specimen Action Code	O	1	
12	Danger Code	O	60	
13	Relevant Clinical Info.	O	300	
14	Specimen Received Date/Time	C	26	YYYYMMDDhhmmss
15	Specimen Source	O	300	
16	Ordering Provider	O	80	
17	Order Callback Phone Number	O	40	
18	Placer field 1	O	60	
19	Placer field 2	O	60	
20	Filler Field 1	O	60	
21	Filler Field 2	O	60	
22	Results Rpt/Status Chng - Date/Time	C	26	
23	Charge to Practice	O	40	
24	Diagnostic Serv Sect ID	O	10	
25	Result Status	C	1	
26	Parent Result	O	400	
27	Quantity/Timing	O	200	
28	Result Copies To	O	150	
29	Parent	O	150	
30	Transportation Mode	O	20	
31	Reason for Study	O	300	
32	Principal Result Interpreter	O	200	
33	Assistant Result Interpreter	O	200	
34	Technician	O	200	
35	Transcriptionist	O	200	

36	Scheduled Date/Time	O	26	
37	Number of Sample Containers	O	4	
38	Transport Logistics of Collected Sample	O	60	
39	Collector's Comment	O	200	
40	Transport Arrangement Responsibility	O	60	
41	Transport Arranged	O	30	
42	Escort Required	O	1	
43	Planned Patient Transport Comment	O	200	
R = Required, CR = Conditionally Required, O = Optional, NU = Not Used, N = Numeric, AN = Alpha/Numeric, ID = Segment Identification				

Example OBR:

OBR||306180572||73075^FACTOR V LEIDEN MUTATION ANALYSIS^HLA|||200306181234|||^^^^^^^|||||1&Blood&HLA|23104^MCCLURE^JOSEPH^""^^^MD^DOC|||||||^ScImage, Inc. Software^4916 El Camino Real^^Los Altos^CA^94022|F||^^^^

OBX – Observation/Result

The OBX segment is used to transmit a single observation or observation fragment. It represents the smallest indivisible unit of a report. Its principal mission is to carry information about observations in report messages.

Seq	Element Name	Optional	Length	Comments
0	Segment Header	R	3	
1	Set ID - OBX	O	10	
2	Value Type	C	2	
3	Observation Identifier	R	590	
4	Observation Sub-ID	C	20	
5	Observation Value	C	65536	
6	Units	O	60	
7	References Range	O	10	
8	Abnormal Flags	O	5	
9	Probability	O	5	
10	Nature of Abnormal Test	O	2	
11	Observ Result Status	R	1	
12	Date Last Obs Normal Values	O	26	
13	User Defined Access Checks	O	20	
14	Date/Time of the Observation	O	26	
15	Producer's ID	O	60	
16	Responsible Observer	O	80	
17	Observation Method	O	60	
R = Required, C = Conditionally Required, O = Optional, NU = Not Used, N = Numeric, AN = Alpha/Numeric, ID = Segment Identification				

Example OBX:
OBX|1|FT|CHEST|1|Line 1 of report||||||F

NTE – Notes and Comments

The NTE segment is a common format for sending notes and comments.

Seq	Element Name	Optional	Length	Comments
0	Segment Header	R	3	
1	Set ID	O	4	
2	Source of Comment	O	8	
3	Comment	O	65536	
R = Required, C = Conditionally Required, O = Optional, NU = Not Used, N = Numeric, AN = Alpha/Numeric, ID = Segment Identification				

Example NTE:
NTE|||Test Performed at: ScImage, Inc. Software, 123 Road Blvd, City, IN 46032

Sample HL7 ORU Results Outbound Message

MSH|^~\&|PICOM365||EHR||200203061205||ORU^R01|0000000092|P|2.3|2|
PID|||00000001|D000003|Test^Patient^MI^DR^^JR|Maiden Name|19250101|F|Alias^Name^MI^^^Dr||Patient Address line 1^Patient Address line 2^Anywhere^VT^11111-2222||(802)555-1212|(802)555-1212X12345||||012328329102312|111-22-3333
PV1||I|^PTLOC^||||654321^Default^Physician^^^^|||||||||||012328329102312|||||||||||||||||||||||||200105100802|200203031642
ORC|RE||25||||||200203061205|||654321^Default^Physician^^^^|||||
OBR|||25|CHEST^CHEST|||200203061200|||||003.1,003.22|||654321^Default^Physician^^^^|||N||RM1|200203061204|||P||^^M15*^200203061158^^9|123122^Another^Physician^^^^~^YetAnother^Physician^^^^~309843^Third^Physician^^^^||AMB||654321^Default^Physician^^^^||444555^Default^Technologist^^^^|^IDX^Development^^^^|200203061300
NTE|1|L|Exam History field #1~Exam History field #2~Exam History field #3|
OBX|1|FT|CHEST|1|Line 1 of report||||||F
OBX|2|FT|CHEST|1|Line 2 of report||||||F
OBX|3|FT|CHEST|1|Line 3 of report ||||||F
OBX|4|FT|CHEST|1|Line 4 of report ||||||F

6 Outbound MDM Medical Document Interface

MDM – T01 & T05 Events - A Medical Document Management Message

The MDM T01 (original document notification) & T05 (document addendum notification) messages are used to notify an EMR or other HL7 system of a preliminary, final, or addendum report.

{ } Indicate repeatable segments
[ ] Indicate optional segments

Message Segments	Segment Name	Comments
MSH	Message Header	MSH-9: MDM^T01 for prelim and final reports. MDM^T05 for addendum reports.
[EVN]	Event Type	
PID	Patient Identification	
[PV1]	Patient Visit	
TXA	Document Notification	

Segment Fields

MSH – Message Header

The MSH segment defines the intent, source, destination, and some specifics of the syntax of a message.

*Refer to section 5 (Outbound Results ORU Interface) for MSH segment definition table.

Example MSH:
MSH|^~\&|PICOM365|FACILITY A|EHR|FACILITY B|20060105180000| D61AFEF1-B10E-11D5-8666-0004ACD80749|MDM^T01|20060105180000999999|P|2.4

EVN – Event Type

The EVN segment details the trigger event information to the receiving application.

Seg	Element Name	Optional	Length	Comments
0	Segment Header	R	3	
1	Event Type Code	R	3	
2	Recorded Date/Time	R	26	
3	Date/Time Planned Event	O	26	
4	Event Reason Code	O	3	
5	Operator ID	O	250	
6	Event Occurred	O	26	
7	Event Facility	O	180	

R = Required, C = Conditionally Required, O = Optional, NU = Not Used, N = Numeric, AN = Alpha/Numeric, ID = Segment Identification

Example EVN:
EVN|T02|200601041800000|||||

PID – Patient Identification

The PID segment is used by all applications as the primary means of communicating patient identification information. This segment contains permanent patient identifying and demographic information that, for the most part, is not likely to change frequently.

*Refer to section 5 (Outbound Results ORU Interface) for PID segment definition table.

Example PID:

PID||12345|12345|00000001|Mouse^Mickey^M||19801011|F||||||||||123456789|||||||||||

PV1 – Patient Visit

The PV1 segment is used to communicate information on a visit-specific basis. This segment can be used to send multiple-visit statistic records to the same patient account or single-visit records to more than one account. Individual sites must determine the use for this segment.

*Refer to section 5 (Outbound Results ORU Interface) for PV1 segment definition table.

Example PV1:

PV1||I|^PTLOC^||||654321^Default^Physician^^^^|||||||||||012328329102312|||||||||||||||||||||||||2
00105100802|200203031642

TXA – Transcription Document Header

The TXA segment contains information specific to the document, but does not contain the text of the document. It is used to update other healthcare systems of reports created or changed.

Seg	Element Name	Optional	Length	Comments
0	Segment Header	R	3	
1	Set ID - TXA	R	4	
2	Document Type	R	30	TE - Text
3	Document Context Presentation	O	2	
4	Activity Date/Time	O	26	
5	Primary Activity Provider Code/Name	O	250	
6	Origination Date/Time	O	26	Report Created Date/Time
7	Transcription Date/Time	O	26	Report Created Date/Time
8	Edit Date/Time	O	26	
9	Originator Code/Name	O	250	Physician's NPI
10	Assigned Document Authenticator	O	250	Physician's NPI
11	Transcriptionist Code/Name	O	250	
12	Unique Document Number	R	30	Report file path using escaped character \E\ for slashes
13	Parent Document Number	O	30	
14	Placer Order Number	O	22	
15	Filler Order Number	O	22	
16	Unique Document File Name	R	30	Report file name
17	Document Completion Status	O	2	LA (legally authenticated)

18	Document Confidentiality Status	O	2	
19	Document Availability Status	O	2	
20	Document Storage Status	O	2	
21	Document Change Reason	O	30	
22	Authentication Person, Time Stamp	C	250	Included for final and addendum reports.
23	Distributed Copies	O	250	
R = Required, C = Conditionally Required, O = Optional, NU = Not Used, N = Numeric, AN = Alpha/Numeric, ID = Segment Identification				

Example TXA:

```
TXA|1|TE||||20070719133258|20070719133258||123456|123456||C:\E\folder\E\report.pdf||A123||report.pdf|LA|||||123456^Dr John Doe^200707191332|
```

Sample HL7 MDM Outbound Message

```
MSH|^~\&|PICOM365|FACILITY_A|EHR|FACILITY_B|20070719134813||MDM^T01|20070719134813|P|2.4
PID||12345|12345|00000001|Patient^Name^M||19801011|F||||||||||123456789||||||||||
TXA|1|TE||||20070719133258|20070719133258||123456|123456||C:\E\folder\E\report.pdf||A123||report.pdf|LA|||||123456^Dr John Doe^200707191332|
```

7 Outbound DFT Interface

DFT - P03 Event – A Post Detailed Financial Transaction

The DFT message is used to notify a billing system of charge(s) after a report is signed off. ScImage, Inc. uses the segments and fields listed below. Other segments and fields are ignored.

{ } Indicate repeatable segments
[ ] Indicate optional segments

Message Segments	Segment Name	Comments
MSH	Message Header	MSH-9: DFT^P03
EVN	Event	
PID	Patient Identification	
[PV1]	Patient Visit	
FT1	Financial Transaction	

Segment Fields

MSH – Message Header

The MSH segment defines the intent, source, destination, and some specifics of the syntax of a message.

*Refer to section 5 (Outbound Results ORU Interface) for MSH segment definition table.

Example MSH:
MSH|^~\&|PICOM365|SCIMAGE|EHR||20150702105806905||DFT^P03|20150702105806905|T|2.3

EVN – Event Type

The EVN segment details the trigger event information to the receiving application.

*Refer to section 5 (Outbound Results ORU Interface) for EVN segment definition table.

Example EVN:
EVN|P03|20150701084238||

PID – Patient Identification

The PID segment is used by all applications as the primary means of communicating patient identification information. This segment contains permanent patient identifying and demographic information that, for the most part, is not likely to change frequently.

*Refer to section 5 (Outbound Results ORU Interface) for PID segment definition table.

Example PID:
PID|1||910111111||PATIENT^NAME||19740428|M|||||||||111223333|||

PV1 – Patient Visit

The PV1 segment is used to communicate information on a visit-specific basis. This segment can be used to send multiple-visit statistic records to the same patient account or single-visit records to more than one account. Individual sites must determine the use for this segment.

*Refer to section 5 (Outbound Results ORU Interface) for PV1 segment definition table.

Example PV1:
PV1|1||Room123||||||||||||||||Visit123|||||||||||||||||||||||||

FT1 – Financial Transaction

The FT1 segment contains a patient's transaction information such as charges, payments and adjustments.

Seq	Element Name	Optional	Length	Comments
0	Segment Header	R	3	FT1
1	Set ID – FT1	O	4	
2	Transaction ID	O	12	
3	Transaction Batch ID	O	10	
4	Transaction Date	R	26	
5	Transaction Posting Date	O	26	
6	Transaction Type	R	8	CG - Charge
7	Transaction Code	R	250	
8	Transaction Description	O	40	
9	Transaction Description – Alt	O	40	
10	Transaction Quantity	O	6	
11	Transaction Amount – Extended	O	12	
12	Transaction Amount – Unit	O	12	
13	Department Code	O	250	
14	Insurance Plan ID	O	250	
15	Insurance Amount	O	12	
16	Assigned Patient Location	O	80	
17	Fee Schedule	O	1	
18	Patient Type	O	2	
19	Diagnosis Code – FT1	O	250	
20	Performed By Code	O	250	
21	Ordered By Code	O	250	
22	Unit Cost	O	12	
23	Filler Order Number	O	22	
24	Entered By Code	O	250	
25	Procedure Code	O	250	
26	Procedure Code Modifier	O	250	
R = Required, C = Conditionally Required, O = Optional, NU = Not Used, N = Numeric, AN = Alpha/Numeric, ID = Segment Identification				

Example FT1:
FT1|1|||20150702104817|20150702105806905|CG|71020|CHEST 2 VIEWS PA AND LAT||1|||DEPT||||||V70.7|374^Tests^Physician|374^Test^Physician^^^^^^CCPROVID^^^^CCPROVID||48797483||71020|

Sample HL7 DFT Outbound Message

MSH|^~\&|PICOM365|SCIMAGE|EHR||20150702105806905||DFT^P03|20150702105806905|T|2.3
EVN|P03|20150701084238||
PID|1||910111111||PATIENT^NAME||19740428|M|||||||||111223333|||
PV1|1||Room123|||||||||||||||Visit123|||||||||||||||||||||||||
FT1|1|||20150702104817|20150702105806905|CG|71020|CHEST 2 VIEWS PA AND
LAT||1|||DEPT||||||V70.7|374^Tests^Physician|374^Test^Physician^^^^^^CCPROVID^^^^CCPROVID||4879748
3||71020|

8 Outbound Image Pointer (EMR Browser Interface)

The EMR/PMS Browser Interface allows for integration with 3rd party[1] Electronic Medical Records or Practice Management Systems by providing image links to PicomWeb, the PicomEnterprise image web portal.
The image link message, as is the case with other outbound messaging, is template-based and is highly configurable per installation. The receiving system extracts the URL information and imbeds the functionality appropriately.

Authentication Options

1. **PicomEnterprise authentication:** In this configuration, users that launch the PicomWeb viewer from within the 3rd party application will be prompted with a PicomEnterprise login.

2. **Encrypted URL:** In this configuration, the PicomEnterprise username and password are encrypted within the web link. The user will be automatically logged in upon selecting the link. Additional information will be provided per installation.

3. **HTML-Post Method authentication:** In this configuration, the 3rd party application should incorporate the Image Pointer link into an HTML form post method. Here is an example HTML code snippet:

```
<form method="post" action="https://www.picom365.com">
        Accession <input name="ACC" type="text" /><br />
        Username <input name="Username" type="text" /><br />
        Password <input name="Password" type="text" /> <BR>
        MRN <input name="MRN" type="text" />
        <button name="Button" type="submit">View in PicomWeb</button>
</form>
```

4. **LDAP authentication[2]:** PicomEnterprise supports LDAP authentication for user login. This is applicable to standard PICOM Client login as well as Image Link launch. Additional information will be provided per installation.

5. **Integrated Windows Authentication:** PicomEnterprise supports IWA authentication for user login. This is applicable to standard PICOM Client login as well as Image Link launch. Additional information will be provided per installation.

Sample Image Link Message

```
MSH|^~\&|PICOM|SCIMAGE|||20110103124626134||ORM^O01|20110103124626134|P|2.3
PID|1||10002||TILLEY^FRAN^Q||19331212|F|||||||||SCI-43261
PV1|1|||||||||||||||||||||||||||||||||||||||||20050724190102
ORC|SC|||||||20110103124626134
OBR|1|A122||73500^HIP
LEFT|||20110103124626134|20110103124626134|||||||ROSE^JODY||||||20110103124626134|||2|||||||||
||20050724190102
OBX|1|RP|||https://www.Picom365.com/?ACC=A122||||||2
```

[1] 3rd party costs and limitations may apply
[2] LDAP integration is sold separately

Sample Image Link Message with Encrypted URL

MSH|^~\&|PICOM|SCIMAGE|||20170710162629034||ORM^O01|20170710162629034|P|2.3
PID|1||10002||Demo^Patient A||19331212|F|||||||||SCI-43261
PV1|1|||||||||||||||||||||||||||||||||||||||||||||||20050724190102
ORC|SC|||||||20170710162629034
OBR|1|A122||73500^HIP LEFT|||20170710162629034|20170710162629034|||||||Dr.
Referring^M.D.||||||20170710162629034|||2|||||||||||20050724190102
OBX|1|TX|||https://www.Picom365.com/?/OzpAUi8GxqMQ0vwX8AlxwJpwXAmslE0VnSz8wPW1cN3/sgrbZG8bH2
Dl2vKUvF7C0CXGTshCtT3jgQ3dRm/lg==||||||2

9 Additional PicomEnterprise Interfaces

ScImage offers the following additional interfaces to enhance the interoperability of the PicomEnterprise solution. These interfaces are sold separately.

PDF Report Pointer Interface

To maintain the finished look of a report, PicomEnterprise offers an "ORU with shared PDF" interface. This interface, upon successful event trigger, will generate a copy of the report in PDF format on a designated shared network folder. This is accompanied by an ORU message to the 3rd party application with standard ORU message and the PDF filename and fully qualified path in an OBX segment as a text or remote pointer type.

Sample ORU with PDF Pointer Message

MSH|^~\&|PICOM|SCIMAGE|PICOM|SCIMAGE|20110103151157492||ORU^R01|20110103151157492|P|2.3
PID|1||10001||MEYER^BILL^A|10001|19591023|M|||||||||A178|
PV1|1||ER|||||||||||||||||||||||||||||||||||||||||20091103074042
ORC|RE|A178|A178|^ECHOCARDIOGAM COMPLETE (Vivd7)
OBR|1|A178|A178||||20091103074042|||||||||||||||20110103151157492|||F||||||||||20091103074042
OBX|1|TX|||**C:\PDFOutbox\20110103151157492.PDF**||||||F

Encapsulated PDF Report Interface

PicomEnterprise offers an "ORU with Encapsulated PDF" interface. This interface, upon successful event trigger, will generate an ORU containing a Base64 encoded PDF.

Sample ORU with Encapsulated PDF Message

MSH|^~\&|PICOM|SCIMAGE||SCI000|20170711115855546||ORU^R01|20170711115855546|P|2.3
PID|1|10001|10001|10001|Demo^Patient B||19591023|M|||||||||10001|
PV1|1||Cardiology|||||||||||||||||||||||||||||||||||||||||20131029085712
ORC|RE|SAMPLE|SAMPLE||||||20170711115855546
OBR|1|SAMPLE|SAMPLE||||20131029085712|20170711115855546|||||||Dr.^Referring^M.D.||||2TEST||201
70612125740384|||F^20170612125740384|||||||Electronically Signed By: John^Reading||Dr.^Referring^M.D.
OBX|1|ED|PDFReport^PDF Report1|1|^AP^PDF^Base64^
JVBERi0xLjMKJcfsj6IKNSAwIG9iago8PC9MZW5ndGggNiAwIFIvRmlsdGVyIC9GbGF0ZURlY29kZT4+CnN0cmVhbQp4n
MVaWXMctxF+318xLy4vUtoR7gH4ZtEU5ZRlyxStOBXngSLFo0Jy15QoR/8+3cAA3bMDHk6kWCqRWByN7g9fH8Dqt07
2SncS/5bG8dXi6cHQnb1fpO7uYH9s3JwtfluE3uCf1MHbx1fds0NYGLvYa2V96A5PFyoNqc4p21vbDcH0F|||||F|
OBX|2|ED|PDFReport^PDF Report1|2|^AP^PDF^Base64^(Continued Base64 encoded PDF to follow)||||||F|

Audio File (Transcriptionist) Interface

PicomEnterprise offers an "ORU with Audio" interface. This interface is a transport mechanism to deliver the radiologist's recorded audio file (WMA / WAV) to a 3rd party transcription system/service. This interface, upon successful event trigger, will generate a copy of the audio file on a designated shared network folder. This is accompanied by an ORU message to the 3rd party indicating that an audio file is ready to be picked-up.
Typical filename format: MRN~StudyDate~OrderNumber~AccessionNumber.wav

Sample ORU with Audio Message

MSH|^~\&|PICOM|SCIMAGE|PICOM|SCIMAGE|20110103154400323||ORM^O01|20110103154400323|P|2.3
PID|1||10007||GREEN^JAMES^ ||19410907|M|||||||||||
PV1|1|||||||||||||||||||||||||||||||||||||||||||20061115131809
ORC|RE|A110|A110|^ECHOCARDIOGRAM 2D/MM COMP
OBR|1|A110|A110|93307^ECHO
COMP|||20061115131809|||||||||||||||20110103154400323|||||^^^^^|||||||||20061115131809

Discrete Data Elements

Discrete Data Interface is used to export Echocardiography measurements to 3rd party system using HL7 or XML formats. The message is standard ORM message with the measurements exported as OBX segment with value type of numeric (NM).

Sample ORU with Discrete Data Message

MSH|^~\&|PICOM|SCIMAGE|MIDDLETOWN|PHP|20170711111913462||ORU^R01|20170711111913462|P|2.3
PID|1|TEST0002^^|SCI-123213||PATIENT 20^DEMO||19491025|F||||||||||SCI-123213
ORC|RE|TEST0002|TEST0002|^ECHO
OBR|1|TEST0002|
|16b02234628813^ECHO|||20170711111913462|SCIAMGE|||||||REFERRING^JOHN||||||2017071111191346
2|||||||||||||20150113085739
OBX|1|NM|PatientHeight||149|cm
OBX|2|NM|PatientWeight||58|kg
OBX|3|NM|BSA||1.5|m2
OBX|4|NM|IVSs||1.8|cm
OBX|5|NM|Aor_Diam||2.5|cm
OBX|6|NM|LA_Dimen||3.6|cm
OBX|7|NM|LVOT_Diam||2.0|cm
OBX|8|NM|LVOT_Peak_Velocity||0.0|cm/sec
OBX|9|NM|MV_E_Peak_Velocity||0.6|cm/sec
OBX|10|NM|MV_A_Peak_Velocity||0.5|cm/sec
OBX|11|NM|MV_Mean_Gradient||0.0|mmHg
OBX|12|NM|MV_PHT||72.9|msec
OBX|13|NM|TR_Peak_Velocity||1.9|cm/sec
OBX|14|NM|RA_Pressure||10.0|mmHg
OBX|15|NM|RV_Sys_Press||25.3|mmHg
OBX|16|NM|PV_Peak_Velocity||0.8|cm/sec
OBX|17|NM|MV_EA_Ratio||1.1|
OBX|18|NM|MV_Decel_Time||251|msec
OBX|19|NM|TestDate||20150113|
OBX|20|NM|OrderingProvider||REFERRING, JOHN|