Lifetrack Medical Systems

LifeSys

HL7 Specification and Technical Requirement

Version 2.4
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[1] *The information contained in this document is accurate as of the date of publication. It may however become outdated quickly, because it deals with technical specifications and similar matters. For the latest information and version of Lifetrack's Platform Requirements, please visit https://lifetrackmed.com/en/platform-requirements/.*

Lifetrack Medical Systems

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1. Introduction

This document serves as a functional specification and technical requirement for integrating with LifeSys™ RIS PACS (LifeSys) via HL7. LifeSys receives and stores messages and it is assumed that readers have a working knowledge of HL7. The HL7 version used must conform to the specifications of this document.

2. Communication Interface

HL7 Standard recommends the Minimal Lower Layer Protocol (MLLP) for communication between HL7 Systems. The Lower Layer Protocol defined by the HL7 standard is implemented as follows:

- Message Start Character: 0x0B
- Segment End Character: 0x0D
- Message Stop Characters: 0x1C and 0x0D
- Character Encoding: UTF-8

3. Supported HL7 Versions

- HL7 v 2.4 and higher

4. Supported HL7 Messages

LifeSys supports the reception and processing of several messages types. Note that LifeSys will accept other HL7 message types, but will ignore them.

- HL7 ORU^R01 – Observation Report Unsolicited
- HL7 ORM^001 – Order Message

5. Audience

This document is intended for hospital staff, health system integrators, software designers or implementers. The reader should have a working knowledge of the HL7 standard (HL7 v2), DICOM and DICOM MWL.

NOTE
LifeSys follows HL7 standard. To make it compatible with the institution's existing HIS/EMR, Lifesys can move fields around and add or leave blanks in some fields. LifeSys can send reports back to the HIS in text or pdf format. OBX segment can be a single line or repeated lines depending on the requirement of the institutions HIS/EMR.

6. Definition of Terms

- DICOM - Digital Imaging and Communications in Medicine
- HL7 - Health Level 7
- HIS - Hospital Information System
- EMR - Electronic Medical Record
- MWL - DICOM Modality Worklist
- ORM - Order Request Message
- ORU - Observation Result
- TCP/IP - Transmission Control Protocol / Internet Protocol
- MSH - Message Header segment
- PID - Patient ID segment
- PV1 - Patient Visit segment
- ORC - Common Order segment
- OBR - Observation Request segment
- ORX - Observation/ Result segment

7. Configuration

TCP/IP Port
The HL7 Interface listens to port 2580 for incoming HL7 messages

8. Related Document/s

- HL7 Standard
  - www.hl7.org

9. DICOM and ORM Segment Mapping

The following fields are required for MWL.

9.1. PID segment mapping

DICOM	HL7
(0x0010,0x0020) Patient ID (0x0010,0x0021) Issuer of PID (0x0010,0x0010) Patient name (0x0010,0x0030) Patient birthdate (0x0010,0x0040) Patient sex	Field 3 Field 3 segment 3 Field 5 Field 7 Field 8

9.2. *PV1 segment mapping*

DICOM	HL7
(0x0008,0x0090) Referring physician name (0x0010,0x21C0) Pregnancy status (ambulant status) (0x0038,0x0010) Admission ID (issuer)	Field 8 Field 15 (B6) *(leave blank if unknown or patient is not pregnant)* Field 19

9.3. *ORC segment mapping*

DICOM	HL7
(0x0040,0x2016) Placer order number (0x0040,0x2017) Filler order number (0x0040,0x0002, 0x0040,0x0003) Scheduled procedure step start date / time (0x0040,0x1003) Scheduled procedure priority	Field 2 Field 3 Field 7 component 3 Field 7 component 5

9.4. *OBR segment mapping*

DICOM	HL7
(0x0032,0x1032) Requesting physician (0x0008,0x0050)Accession number (0x0040,0x1001)Requested procedure ID (0x0040,0x0009)Scheduled procedure step ID (0x0008,0x0060) Modality (0x0008,0x1050)Scheduled performing physician name	Field 16 Field 18 Field 19 Field 20 Field 24 Field 34

9.5. *Required for scheduling*

DICOM	HL7

(0x0040,0x0007) Scheduled procedure step description (0x0008,0x0100) Scheduled procedure code sequence (code) (0x0008,0x0102) Scheduled procedure code sequence (scheme)	Field 4 component 4 Field 4 component 3 Field 4 component 5
(0x0032,0x1060) Requested procedure description (0x0008,0x0100) Requested procedure code sequence (code) (0x0008,0x0102) Requested procedure code sequence (scheme)	Field 44 component 1 Field 44 Field 44 component 2

9.6. ZDS segment (required if using MWL)

DICOM	HL7
(0x0020,0x000D) Study UID (0x0040,0x0001) Station AET (0x0040,0x0010) Station Name	Field 1 Field 1 component 1 Field 1 component 2

10. INBOUND MESSAGE

10.1. HL7 Trigger Event

Trigger Event Code	ADT Trigger Event
ORM_O01	Order Message

10.2. ORM Message

The HL7 ORM message is for transmitting order information

ORM messages contain the following segments

Segment	Order Message	HL7 Chapter
MSH	Message Header	2

PID	Patient Identification	3
PV1	Patient Visit Segment	3
ORC	Common Order	4
OBR	Order Detail	4
ZDS	Z Segment	

HL7 ORM structure sample:

MSH|^~\&|ADS|RS|||201704191447||ORM^O01|19|P|2.3|||AL|||ASCII||
PID|1|101|11001100^^^ISSUER|101|MAGTALAS,^MARLLYN^E.||19831029|F|||255 SPRING VALLEY AVENUE^^MAYWOOD^NJ^07607||8008994237^PRN^PH^^^~^ORN^CP^^~^CON^EP^^|||||101||||||||||||
PV1||O|RS^^^^^^^^RIVERSIDE|||||BURP|||||||B6||||1739^1234^5678^ABCDE||||||||||||||||||||||||||||||||
ORC|NW|17391|17391||CM||^^^20170420080828^^S|||||||||RS^RIVERSIDE|||
OBR|1|17391|17391|^^^CODE VALUE^SCHED PROC STEP DESCRIPTION^SCHEME DESIG||20170419082001||||||OK||||B2|~|1100|44|55|||CR|CR|||1^^^20170419082001^^R|||TRANSPORT|||SCHED PHYS NAME||201704191446|||||||CODE VALUE^REQUESTED PROC DESCRIPTION^SCHEME DESIG||
ZDS|1.2.840.113564.1026170.12345^station_aet1^station_name1

MSH Format

[MSH:1]	Field Separator will always be "|"
[MSH:2]	Encoding characters will always be "^~\&"
[MSH:3]	Client sending application
[MSH:4]	Client sending facility
[MSH:5]	Will always be "LMSSCHED"
[MSH:6]	Will always be "LMS"
[MSH:7]	Format is YYYYMMDDHHMM - Eg: 201511200256 - time will be specified UTC.
[MSH:9]	Will always be "ORM^O01"
[MSH:10]	Required, non-zero, ideally this will be a unique value.

[MSH:11]	Required, use "P"
[MSH:12]	HL7 version is not critical, but must conform to the specifications of this document.
[MSH:18]	Empty for ASCII

Example:

MSH|^~\&|CLIENT_APP|CLIENT_SYSTEM|LMSSCHED|LMS|20170322182245||ORM^O01|20170119224029|P|2.3.1

MSH Fields

The following is a listing of all the fields defined for the MSH Segment in HL7, and their usage in the order message.

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	1	ST	R			00001	Field Separator
2	4	ST	R			00002	Encoding Characters
3	180	HD	O			00003	Sending Application
4	180	HD	O			00004	Sending Facility
5	180	HD	O			00005	Receiving Application
6	180	HD	O			00006	Receiving Facility
7	26	TS	O			00007	Date/Time Of Message
8	40	ST	O			00008	Security
9	7	CM	R			00009	Message Type
10	20	ST	R			00010	Message Control ID
11	3	PT	R			00011	Processing ID
12	8	ID	R		0104	00012	Version ID
13	15	NM	O			00013	Sequence Number

14	180	ST	O			00014	Continuation Pointer
15	2	ID	O		0155	00015	Accept Acknowledgment Type
16	2	ID	O		0155	00016	Application Acknowledgment Type
17	2	ID	O			00017	Country Code
18	6	ID	O	Y/3	0211	00692	Character Set
19	60	CE	O			00693	Principal Language Of Message

PID Format

		HL7 Element Name	DICOM Data Element
[PID:1]	Will always be "1"	Set ID	
[PID:3]	Required, Patient ID	Patient ID (Internal ID)	Patient ID (0010,0020)
[PID:3:3]	Required, Issuer of PID, PID field 3 segment 3	Patient Identifier List	IssuerOfPatientID (0010, 0021)
[PID:5]	Patient Name Delimited field where each component has the following meaning: <family name (ST)> ^ <given name (ST)> ^ <middle initial or name (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (ST)> ^ <name type code (ID) >	Patient Name	Patient Name (0010,0010)
[PID:7]	Date of birth	Date/Time of Birth	Patient's Birthdate (0010,0030) and Birthtime (0010,0032)
[PID:8]	Patient Sex	Sex	Patient's Sex (0010,0040)

	Valid gender are defined in HL7 Table 0001 SexCodes		

Example:

PID|1||ACH00000001^^^ISSUER||LASTNAME^FIRSTNAME^R|||M||||

PID Fields

The following is a listing of all the fields defined for the PID Segment in HL7, and their usage in the order message.

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	SI	O			00104	Set ID - Patient ID
2	20	CX	O			00105	Patient ID (External ID)
3	20	CX	R	Y		00106	Patient identifier list
4	20	CX	O	Y		00107	Alternate Patient ID - PID
5	48	XPN	R			00108	Patient Name
6	48	XPN	O			00109	Mother's Maiden Name
7	26	TS	O			00110	Date/Time of Birth
8	1	IS	O		0001	00111	Sex
9	48	XPN	O	Y		00112	Patient Alias
10	1	IS	O		0005	00113	Race
11	106	XAD	O	Y		00114	Patient Address
12	4	IS	B			00115	County Code
13	40	XTN	O	Y		00116	Phone Number - Home
14	40	XTN	O	Y		00117	Phone Number - Business
15	60	CE	O		0296	00118	Primary Language
16	1	IS	O		0002	00119	Marital Status

17	3	IS	O		0006	00120	Religion
18	20	CX	O			00121	Patient Account Number
19	16	ST	O			00122	SSN Number - Patient
20	25	CM	O			00123	Driver's License Number - Patient
21	20	CX	O	Y		00124	Mother's Identifier
22	3	IS	O		0189	00125	Ethnic Group
23	60	ST	O			00126	Birth Place
24	2	ID	O		0136	00127	Multiple Birth Indicator
25	2	NM	O			00128	Birth Order
26	4	IS	O	Y	0171	00129	Citizenship
27	60	CE	O		0172	00130	Veterans Military Status
28	80	CE	O			00739	Nationality
29	26	TS	O			00740	Patient Death Date and Time
30	1	ID	O		0136	00741	Patient Death Indicator

PV1 Format

		HL7 Element Name	DICOM Element Name
[PV1:2]	Patient Status E Emergency I Inpatient O Outpatient P Preadmit R Recurring patient B Obstetrics	Patient Class	
[PV1:8]	Referring Physician	Referring Doctor	ReferringPhysicianName (0008,0090)

[PV1:15]	Pregnancy status Leave a blank if an unknown or patient is not pregnant. Set to B6 if the patient is pregnant.	Ambulatory Status	Pregnancy Status (0010,21C0)
[PV1:19]	Admission ID (Visit Number) Components: <ID (ST)> ^ <check digit (ST)> ^ <code identifying the check digit scheme employed (ID)> ^ <assigning authority (HD)> ^ <identifier type code (IS)> ^ <assigning facility (HD)>	Visit Number	Admission ID (0038,0010)

Example:

PV1||0||||||^DRLAST^DRFIRST|||||||B6||||1111^123^3456^ABCD||

PV1 Fields

The following is a listing of all the fields defined for the PIV Segment in HL7, and their usage in the order message.

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	4	SI	O			00131	Set ID - PV1
2	1	IS	R		0004	00132	Patient Class
3	80	PL	O			00133	Assigned Patient Location
4	2	IS	O		0007	00134	Admission Type

5	20	CX	O			00135	Preadmit Number
6	80	PL	O			00136	Prior Patient Location
7	60	XCN	O	Y	0010	00137	Attending Doctor
8	60	XCN	O	Y	0010	00138	Referring Doctor
9	60	XCN	O	Y	0010	00139	Consulting Doctor
10	3	IS	O		0069	00140	Hospital Service
11	80	PL	O			00141	Temporary Location
12	2	IS	O		0087	00142	Preadmit Test Indicator
13	2	IS	O		0092	00143	Readmission Indicator
14	3	IS	O		0023	00144	Admit Source
15	2	IS	O	Y	0009	00145	Ambulatory Status
16	2	IS	O		0099	00146	VIP Indicator
17	60	XCN	O	Y	0010	00147	Admitting Doctor
18	2	IS	O		0018	00148	Patient Type
19	20	CX	O			00149	Visit Number
20	50	CM	O	Y	0064	00150	Financial Class
21	2	IS	O		0032	00151	Charge Price Indicator
22	2	IS	O		0045	00152	Courtesy Code
23	2	IS	O		0046	00153	Credit Rating
24	2	IS	O	Y	0044	00154	Contract Code
25	8	DT	O	Y		00155	Contract Effective Date
26	12	NM	O	Y		00156	Contract Amount
27	3	NM	O	Y		00157	Contract Period
28	2	IS	O		0073	00158	Interest Code

29	1	IS	O		0110	00159	Transfer to Bad Debt Code
30	8	DT	O			00160	Transfer to Bad Debt Date
31	10	IS	O		0021	00161	Bad Debt Agency Code
32	12	NM	O			00162	Bad Debt Transfer Amount
33	12	NM	O			00163	Bad Debt Recovery Amount
34	1	IS	O		0111	00164	Delete Account Indicator
35	8	DT	O			00165	Delete Account Date
36	3	IS	O		0112	00166	Discharge Disposition
37	25	CM	O		0113	00167	Discharged to Location
38	2	IS	O		0114	00168	Diet Type
39	2	IS	O		0115	00169	Servicing Facility
40	1	IS	B		0116	00170	Bed Status
41	2	IS	O		0117	00171	Account Status
42	80	PL	O			00172	Pending Location
43	80	PL	O			00173	Prior Temporary Location
44	26	TS	O			00174	Admit Date/Time
45	26	TS	O			00175	Discharge Date/Time
46	12	NM	O			00176	Current Patient Balance
47	12	NM	O			00177	Total Charges
48	12	NM	O			00178	Total Adjustments
49	12	NM	O			00179	Total Payments
50	20	CX	O		0192	00180	Alternate Visit ID
51	1	IS	O		0326	01226	Visit Indicator

52	60	XCN	O	Y	0010	01224	Other Healthcare Provider

ORC Format

		HL7 Element Name	DICOM Data Element
[ORC: 1]	Specifies the code in HL7 table 0119 that identifies the action to be taken for the order Example: NW for new order	Order Control	
[ORC:2]	Identifies the application requesting the order. This should be identical to OBR:2 if populated	Placer order number	(0040,2016)PlacerOrderNum-ImagingServiceReq
[ORC:3]	This is the order number of the application filling the order and should be identical to OBR:3	Filler order number	(0040,2017)FillerOrderNum-ImagingServiceReq
[ORC:7]	Scheduled procedure step start date/time - component 3 Scheduled procedure priority - component 5	Quantity/timing (TQ) 00221	(0x0040,0x0002, 0x0040,0x0003) Scheduled procedure step start date / time (0x0040,0x1003) Scheduled procedure priority

Example:

ORC|NW|71010|71010||SC||^^^20170420080828^^S|||||||||LIFETRACK|

ORC Fields

The following is a listing of all the fields defined for the PIV Segment in HL7, and their usage in the order message.

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	2	ID	R		0119	00215	Order Control
2	22	EI	C			00216	Placer Order Number
3	22	EI	C			00217	Filler Order Number
4	22	EI	O			00218	Placer Group Number
5	2	ID	O		0038	00219	Order Status
6	1	ID	O		0121	00220	Response Flag
7	200	TQ	O			00221	Quantity/Timing
8	200	CM	O			00222	Parent
9	26	TS	O			00223	Date/Time of Transaction
10	120	XCN	O			00224	Entered By
11	120	XCN	O			00225	Verified By
12	120	XCN	O			00226	Ordering Provider
13	80	PL	O			00227	Enterer's Location
14	40	XTN	O	Y/2		00228	Call Back Phone Number
15	26	TS	O			00229	Order Effective Date/Time
16	200	CE	O			00230	Order Control Code Reason
17	60	CE	O			00231	Entering Organization
18	60	CE	O			00232	Entering Device
19	120	XCN	O			00233	Action By

OBR Format

		HL7 Element Name	DICOM Element Name
[OBR:1]	Will always be "1"	Set ID	
[OBR:2]	Required - Order number This identifies the application requesting the order. This value should be identical to ORC:2. This appears as the order number in EHR/EMR	Placer Order Number	
[OBR:3]	Required - Order number This is the order number of the application filling the order and must be identical to OBR:3 This appears as the accession number in EHR	Filler Order Number +	Accession Number (0008,0050)
[OBR:4]	Required - Scheduled Procedure descipition This is the identifier code for the requested observation HL7 table 0396: Coding Systems list the coding systems Identifier ^ Text ^ Name of System ^ Alternate	Universal Service ID	Study Description (0008,1030) (0x0040,0x0007) Scheduled procedure step description ------- Field 4 component 4 (0x0008,0x0100) Scheduled procedure code sequence (code) --- Field 4 component 3

	identifier^Alternate text^ Name of alternate coding system Example: ^^^CODE VALUE^SCHED PROC STEP DESCRIPTION^SCHEME DESIG		(0x0008,0x0102) Scheduled procedure code sequence (scheme) - Field 4 component 5
[OBR:13]	Clinical Information (Medical Alerts) (DICOM: 0010, 2000) Contains additional information about the patient such as suspected diagnosis and clinical findings on requests for interpreted diagnostic studies	Relevant Clinical Info	Medical Alerts(0010,2000)
[OBR:16]	Requesting Physician (DICOM: 0032, 1032)	Ordering Provider	Requesting Physician (0032,1032)
[OBR:18]	Accession Number (DICOM: 0008, 0050)	Placer Field 1	Accession Number (0008, 0050)
[OBR:19]	Required: Requested Procedure ID (Numeric, cannot be zero or undefined)	Placer Field 2	Requested Procedure ID (0040, 1001)
[OBR:20]	Scheduled Procedure step ID	FIller FIeld 1	Scheduled Procedure step ID (0040, 0009)
[OBR: 24]	Modality- use DICOM Standard designations i.e CR, CT, DX etc	Diagnostic Serv Sect ID	Modality (0008, 0060)
[OBR:34]	Scheduled Performing Physician Name	Technician	Scheduled Performing Physician Name (0008, 1050)

[OBR:44]	Requested Procedure Information Components: <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate text (ST)> ^ <name of alternate coding system (ST)> EX: CODE VALUE^REQUESTED PROC DESCRIPTION^SCHEME DESIGN	Procedure Code	(0x0032,0x1060) Requested procedure description ---------- Field 44 component 1 (0x0008,0x0100) Requested procedure code sequence (code) --- Field 44 (0x0008,0x0102) Requested procedure code sequence (scheme) - Field 44 component 2

Example:

OBR|1|684403b8722|71010|^^^CODE VALUE^SCHED PROC STEP DESCRIPTION^SCHEME DESIG||20170119224029|||||||||^LNAME^FNAME||684403b8722|71010|5567||||CR|||20170119224029|||||||CHED^PHYS^NAME|||||||||CODE VALUE^REQUESTED PROC DESCRIPTION^SCHEME DESIGe|

OBR Fields

The following is a listing of all the fields defined for the OBR Segment in HL7.

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	4	SI	C			00237	Set ID - OBR
2	75	EI	C			00216	Placer Order Number
3	75	EI	C			00217	Filler Order Number +
4	200	CE	R			00238	Universal Service ID
5	2	ID	B			00239	Priority
6	26	TS	B			00240	Requested Date/time

7	26	TS	C			00241	Observation Date/Time #
8	26	TS	O			00242	Observation End Date/Time #
9	20	CQ	O			00243	Collection Volume *
10	60	XCN	O	Y		00244	Collector Identifier *
11	1	ID	O		0065	00245	Specimen Action Code *
12	60	CE	O			00246	Danger Code
13	300	ST	O			00247	Relevant Clinical Info.
14	26	TS	C			00248	Specimen Received Date/Time *
15	300	CM	O		0070	00249	Specimen Source *
16	80	XCN	O	Y		00226	Ordering Provider
17	40	XTN	O	Y/2		00250	Order Callback Phone Number
18	60	ST	O			00251	Placer field 1
19	60	ST	O			00252	Placer field 2
20	60	ST	O			00253	Filler Field 1 +
21	60	ST	O			00254	Filler Field 2 +
22	26	TS	C			00255	Results Rpt/Status Chng - Date/Time +
23	40	CM	O			00256	Charge to Practice +
24	10	ID	O		0074	00257	Diagnostic Serv Sect ID
25	1	ID	C		0123	00258	Result Status +
26	400	CM	O			00259	Parent Result +
27	200	TQ	O	Y		00221	Quantity/Timing

28	150	XCN	O	Y/5		00260	Result Copies To
29	150	CM	O			00261	Parent
30	20	ID	O		0124	00262	Transportation Mode
31	300	CE	O	Y		00263	Reason for Study
32	200	CM	O			00264	Principal Result Interpreter +
33	200	CM	O	Y		00265	Assistant Result Interpreter +
34	200	CM	O	Y		00266	Technician +
35	200	CM	O	Y		00267	Transcriptionist +
36	26	TS	O			00268	Scheduled Date/Time +
37	4	NM	O			01028	Number of Sample Containers *
38	60	CE	O	Y		01029	Transport Logistics of Collected Sample *
39	200	CE	O	Y		01030	Collector's Comment *
40	60	CE	O			01031	Transport Arrangement Responsibility
41	30	ID	O		0224	01032	Transport Arranged
42	1	ID	O		0225	01033	Escort Required
43	200	CE	O	Y		01034	Planned Patient Transport Comment
44	80	CE	O				Procedure Code
45	80	CE	O				Procedure Code Modifier

ZDS Segment

*ZDS segment does not appear in HL7 standard. It is a custom segment whose implementation is defined by the user. This segment is used to transmit information that is not explicitly defined by the HL7 standard, but is nonetheless needed. The ZDS segment transmits the studyUID, the station AE title and the AE Station name. This segment is parsed and entered into the modality worklist for scheduling purposes.

ZDS Structure

ZDS|<StudyUID>|<AETitle>|<StationName>

Study UID	for MWL With MWL the Study UID is supposed to be generated by the entity that created the ORM - it makes matching ORM to study extremely simplistic (automatic in the PACS because the scanner will use the generated UID to build the DICOM header
AETitle	of the scanner that will send the study to us
Station Name	of the scanner that will send the study to us.

10.3. HL7 Acknowledgement (ACK)

The HL7 Acknowledgement message or ACK ensures that ongoing HL7 communication proceeds.

LifeSys sends back an ACK message to the sending interface after receiving a message to indicate that the message was received.

The sending interface will assume the message was not received until it receives an ACK message.

ACK message contain the following segment

Segment	Message
MSH	Message header

MSA	Acknowledgment status

ACK Structure

MSH|^~\&|REDACTED|REDACTED|LIFETRACK|REDACTED|20170323061755||ACK^R01|1|P|2.3|
MSA|AA|20170323061755|Message successfully received.|

- MSH segment contains information about the sending and receiving applications
- MSA segment indicates if the message has been accepted

MSA segment

	Information	Description
MSA:1	Acknowledgment code As defined in HL7 Table 0008	Indicates whether or not the message was successfully received AA-Positive acknowledgment AE- Application error: there is a problem processing the message. The sending application must correct the problem before attempting to resend the message AR- Application reject: there is a problem with field 9, field 11 or field 12 of the MSH segment of the incoming message, or there is a problem with the receiving application that is not related to the message or its structure
MSA:2	Message Control ID	
MSA:3	Text Message	

11. OUTBOUND MESSAGE

11.1. ORU Message

The HL7 ORU message (Observation Result) is usually in response to an order and provides clinical observations.

The HL7 ORU message will contain the following information:

Segment	Message
MSH	Message Header
PID	Patient Identification
ORC	Common order
OBR	Observation Request
OBX	Observation result

HL7 ORU structure sample:

MSH|^~\&|LIFETRACK|TEST SITE|RADIS1|TEST SITE|201701010140355||ORU^R01|266673|P|2.3|||||||
PID|1||1110208^^^^MR||TEST, APPLE||19800101|F|||||||||||||||||||||
ORC|RE|8002855|||||||||||||||
OBR|1||8002855|8002855^ANKLE|||||||||||||||||201701010140||DR|P|||||||99999&testdoctor&&^20170306040355^20170306040355||||||||||
OBX|1|FT|L&BODY||START OF REPORT:||||||P|||||99999^testdoctor^^|
OBX|2|FT|L&BODY|||||||P|||||99999^testdoctor^^|
OBX|3|FT|L&BODY||Technique/Views: AP and lateral views of both ankles.||||||P|||||99999^testdoctor^^|
OBX|4|FT|L&BODY|||||||P|||||99999^testdoctor^^|
OBX|5|FT|L&BODY||Comparison: None.||||||P|||||99999^testdoctor^^|
OBX|6|FT|L&BODY|||||||P|||||99999^testdoctor^^|
OBX|7|FT|L&BODY||Clinical History: Pain. R/O fracture.||||||P|||||99999^testdoctor^^|
OBX|8|FT|L&BODY|||||||P|||||99999^testdoctor^^|
OBX|9|FT|L&BODY||Findings:||||||P|||||99999^testdoctor^^|
OBX|10|FT|L&BODY||Alignment: Normal.||||||P|||||99999^testdoctor^^|
OBX|11|FT|L&BODY||Mineralization: Normal.||||||P|||||99999^testdoctor^^|
OBX|12|FT|L&BODY||Bones:||||||P|||||99999^testdoctor^^|
OBX|13|FT|L&BODY||Tibia: Intact with no fracture.||||||P|||||99999^testdoctor^^|
OBX|14|FT|L&BODY||Fibula: Intact with no fracture.||||||P|||||99999^testdoctor^^|
OBX|15|FT|L&BODY||Tarsal bones: Intact with no fracture.||||||P|||||99999^testdoctor^^|
OBX|16|FT|L&BODY||Ankle mortise: Intact.||||||P|||||99999^testdoctor^^|
OBX|17|FT|L&BODY|||||||P|||||99999^testdoctor^^|
OBX|18|FT|L&BODY||Miscellaneous:||||||P|||||99999^testdoctor^^|
OBX|19|FT|L&BODY||Soft Tissues: Normal.||||||P|||||99999^testdoctor^^|

OBX|20|FT|L&BODY|||||||P|||||99999^testdoctor^^|
OBX|21|FT|L&BODY|||||||P|||||99999^testdoctor^^|
OBX|22|FT|L&IMP||Impression:||||||P|||||99999^testdoctor^^|
OBX|23|FT|L&IMP||1. Unremarkable bilateral ankle study.||||||P|||||99999^testdoctor^^|
OBX|24|FT|L&IMP|||||||P|||||99999^testdoctor^^|
OBX|25|FT|L&IMP||This preliminary report was electronically signed by: Eric Schulze MD PhD||||||P|||||99999^testdoctor^^|
OBX|26|FT|L&IMP||Signature Date/Time: 03/06/2017 10:41:40||||||P|||||99999^testdoctor^^|

ORC Format

ORC|RE|8002855|||||||||||||||

[ORC:1]	Order Control Code. Will always be "RE" for observation results
[ORC:2]	Placer Order Number (Accession Number)

OBX Format

Called the observation segment
Contains the radiology report narrative text
This segment is required and may repeat

[OBX:1]	These values should be a numeric sequence, increasing with each OBX segment present in the message Example: OBX|1| OBX|2| ...
[OBX:3]	Accession Number
[OBX:5]	Contains the value observed by the producer
[OBX:11]	Specifies the codes in HL7 table 0085 that identifies the current completion status of the observation result C - Record coming over is a correction and thus replaces a result D - Deletes the OBX record F- Final results (can only be changed with a corrected result) P- Preliminary results R- Results entered- not verified

OBX Fields

The fields in the OBX segment are as follows:

SEQ	LENGTH	DT	OPT	RPT / #	TBL #	NAME
OBX.1	4	SI	O	1		Set ID - OBX
OBX.2	2	ID	C	125	125	Value Type
OBX.3	250	CE	R	1		Observation Identifier (Accession No)
OBX.4	20	ST	C	1		Observation Sub-ID
OBX.5	99999	VARIES	C	*		Observation Value
OBX.6	250	CE	O	1		Units
OBX.7	60	ST	O	1		References Range
OBX.8	5	IS	O	*	78	Abnormal Flags
OBX.9	5	NM	O	1		Probability
OBX.10	2	ID	O	*	80	Nature of Abnormal Test
OBX.11	1	ID	R	1	85	Observation Result Status
OBX.12	26	TS	O	1		Effective Date of Reference Range
OBX.13	20	ST	O	1		User Defined Access Checks
OBX.14	26	TS	O	1		Date/Time of the Observation
OBX.15	250	CE	O	1		Producer's ID
OBX.16	250	XCN	O	*		Responsible Observer
OBX.17	250	CE	O	*		Observation Method
OBX.18	22	EI	O	*		Equipment Instance Identifier
OBX.19	26	TS	O	1		Date/Time of the Analysis
OBX.20	0	ST	O	1		Reserved for v2.6
OBX.21	0	ST	O	1		Reserved for v2.6
OBX.22	0	ST	O	1		Reserved for v2.6
OBX.23	567	XON	O	1		Performing Organization Name

OBX.24	631	XAD	O	1		Performing Organization Address
OBX.25	3002	XCN	O	1		Performing Organization Medical Director

Example:

OBX|1|FT|L&BODY||START OF REPORT:||||||P|||||99999^testdoctor^^|

LifeSys™ RIS PACS
HL7 Specification

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Revision and Review Table

Rev	Date	By	Notes
1.0	12/15/2015	Brendan Rees	Initial release
1.1	2/2/2016	CGabat	Changed to Lifetrack Document Management Standard
2.0	2/10/2017	CGabat	Updated order message
2.1	3/23/2017	CGabat	Updated order message to include ACK structure and ZDS structure
2.2	5/17/2017	CFurlong	Update to match MWL fields
2.3	1/16/2018	CGabat	Reviewed and updated format
2.4	9/9/2019	CGabat	Reviewed