



Visual Analysis and Measurement Systems Technologies

Issa Server
Issa Workstation

HL7 Specification

Revision 1.0

Date: 01.02.2006

HL7 Specification

HL7 Message Processing Requirements

HL7 server processes HL7 messages with the following conditions:

original acknowledgment rules apply,

non-deferred reply is used,

messages are not batched.

Messages from the RIS are sent individually, and are acknowledged individually, immediately after HL7 server has parsed the message for validity. See the section on HL7 acknowledgment. HL7 server supports continuation pointers.

Transport and Minimal Lower Level Processing Requirements

The transfer protocol is TCP/IP socket stream. The data protocol is HL7 MLLP; that is, each HL7 message is preceded and succeeded by start block and end block (respectively) characters.

An HL7 message sent by the RIS client via TCP/IP (socket stream) should take the following form:

<SB><HL7 Data><EB><CR>

where <SB> is ACSII VT, 11, \x0B

<HL7 Data> is MSH segment<CR>PID segment<CR>...other segments...<CR>

<EB> is ASCII FS, 28, \x1C

<CR> is ASCII CR, 13, \x0D

Messages and events

Message	Event
ADT	A08 A40
OMG	O19
ORG	O20
QRY	R02
ORF	R04

Segments and Fields Requirements

HL7 server accepts, parses, and processes MLLP HL7 messages, which contain the following segments and required fields. The MSH segment should be as fully populated as possible, per HL7 specification. Some optional and all conditional IHE fields are left out.

MSH - Message header segment

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	1	ST	R			00001	Field Separator
2	4	ST	R			00002	Encoding Characters
3	227	HD	O		0361	00003	Sending Application
4	227	HD	O		0362	00004	Sending Facility
5	227	HD	O		0361	00005	Receiving Application
6	227	HD	O		0362	00006	Receiving Facility
7	26	TS	O			00007	Date/Time Of Message
8	40	ST	O			00008	Security
9	15	MSG	R			00009	Message Type
10	20	ST	R			00010	Message Control ID
11	3	PT	R			00011	Processing ID
12	60	VID	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	3	ID	O		0399	00017	Country Code
18	16	ID	O	Y	0211	00692	Character Set
19	250	CE	O			00693	Principal Language Of Message
20	20	ID	O			01317	Alternate Character Set Handling Scheme
21	427	EI	O	Y		01598	Message Profile Identifier

MSA - Message acknowledgment segment

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME
1	2	ID	R			0008	Acknowledgment Code
2	20	ST	R			00010	Message Control ID
3	80	ST	O			00020	Text Message
4	15	NM	O			00021	Expected Sequence Number
5			W			00022	Delayed Acknowledgment Type
6	250	CE	B		0357	00023	Error Condition

EVN - Event type segment

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM #	ELEMENT NAME	
1	3	ID	B			0003	00099	Event Type Code
2	26	TS	R				00100	Recorded Date/Time
3	26	TS	O				00101	Date/Time Planned Event
4	3	IS	O		0062		00102	Event Reason Code
5	250	XCN	O	Y	0188		00103	Operator ID
6	26	TS	O				01278	Event Occurred
7	241	HD	O				01534	Event Facility

PID - Patient identification segment

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	SI	O			00104	Set ID – PID
2	20	CX	O			00105	Patient ID
3	250	CX	R	Y		00106	Patient Identifier List <ul style="list-style-type: none"> • PI = RegistarSKI broj u BIS-u • PN = JMBG • HC = HZZO broj osigurane osobe
4	20	CX	B	Y		00107	Alternate Patient ID – PID
5	250	XP	R	Y		00108	Patient Name
6	250	XP	O	Y		00109	Mother's Maiden Name
7	26	TS	O			00110	Date/Time of Birth
8	1	IS	O		0001	00111	Sex
9	250	XP	B	Y		00112	Patient Alias
10	250	CE	O	Y	0005	00113	Race
11	250	XAD	O	Y		00114	Patient Address

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
							<ul style="list-style-type: none"> • P - stalna adresa • H - privremena adresa • M - kontakt adresa
12	4	IS	B		0289	00115	County Code
13	250	XTN	O	Y		00116	Phone Number – Home
14	250	XTN	O	Y		00117	Phone Number – Business
15	250	CE	O		0296	00118	Primary Language
16	250	CE	O		0002	00119	Marital Status
17	250	CE	O		0006	00120	Religion
18	250	CX	O			00121	Patient Account Number
19	16	ST	B			00122	SSN Number – Patient
20	25	DLN	B			00123	Driver's License Number – Patient
21	250	CX	O	Y		00124	Mother's Identifier
22	250	CE	O	Y	0189	00125	Ethnic Group
23	250	ST	O			00126	Birth Place
24	1	ID	O		0136	00127	Multiple Birth Indicator
25	2	NM	O			00128	Birth Order
26	250	CE	O	Y	0171	00129	Citizenship
27	250	CE	O		0172	00130	Veterans Military Status
28	250	CE	O		0212	00739	Nationality
29	26	TS	O			00740	Patient Death Date and Time
30	1	ID	O		0136	00741	Patient Death Indicator
31	1	ID	O		0136	01535	Identity Unknown Indicator
32	20	IS	O	Y	0445	01536	Identity Reliability Code
33	26	TS	O			01537	Last Update Date/Time
34	241	HD	O			01538	Last Update Facility
35	250	CE	C		0446	01539	Species Code
36	250	CE	C		0447	01540	Breed Code
37	80	ST	O			01541	Strain
38	250	CE	O	2	0429	01542	Production Class Code
39	250	CWE	O	Y	0171	01840	Tribal Citizenship

PV1 - Patient Visit segment

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	250	CX	O			00135	Preadmit Number
6	80	PL	O			00136	Prior Patient Location
7	250	XCN	O	Y	0010	00137	Attending Doctor
8	250	XCN	O	Y	0010	00138	Referring Doctor
9	250	XCN	B	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	Re-admission Indicator
14	6	IS	O		0023	00144	Admit Source
15	2	IS	O	Y	0009	00145	Ambulatory Status
16	2	IS	O		0099	00146	VIP Indicator
17	250	XCN	O	Y	0010	00147	Admitting Doctor
18	2	IS	O		0018	00148	Patient Type
19	250	CX	O			00149	Visit Number
20	50	FC	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	4	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	47	DLD	O		0113	00167	Discharged to Location
38	250	CE	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

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
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	250	CX	O		0203	00180	Alternate Visit ID
51	1	IS	O		0326	01226	Visit Indicator
52	250	XCN	B	Y	0010	01274	Other Healthcare Provider

MRG - Merge patient information segment

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	250	CX	R	Y		00211	Prior Patient Identifier List
2	250	CX	B	Y		00212	Prior Alternate Patient ID
3	250	CX	O			00213	Prior Patient Account Number
4	250	CX	B			00214	Prior Patient ID
5	250	CX	O			01279	Prior Visit Number
6	250	CX	O			01280	Prior Alternate Visit ID
7	250	XPN	O	Y		01281	Prior Patient Name

ORC - Common order segment

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	B	Y		00221	Quantity/Timing
8	200	EIP	O			00222	Parent
9	26	TS	O			00223	Date/Time of Transaction
10	250	XCN	O	Y		00224	Entered By
11	250	XCN	O	Y		00225	Verified By
12	250	XCN	O	Y		00226	Ordering Provider
13	80	PL	O			00227	Enterer's Location
14	250	XTN	O	Y/2		00228	Call Back Phone Number
15	26	TS	O			00229	Order Effective Date/Time
16	250	CE	O			00230	Order Control Code Reason
17	250	CE	O			00231	Entering Organization
18	250	CE	O			00232	Entering Device
19	250	XCN	O	Y		00233	Action By
20	250	CE	O		0339	01310	Advanced Beneficiary Notice Code
21	250	XON	O	Y		01311	Ordering Facility Name
22	250	XAD	O	Y		01312	Ordering Facility Address
23	250	XTN	O	Y		01313	Ordering Facility Phone Number
24	250	XAD	O	Y		01314	Ordering Provider Address
25	250	CWE	O			01473	Order Status Modifier
26	60	CWE	C		0552	01641	Advanced Beneficiary Notice Override Reason
27	26	TS	O			01642	Filler's Expected Availability Date/Time
28	250	CWE	O		0177	00615	Confidentiality Code
29	250	CWE	O		0482	01643	Order Type
30	250	CNE	O		0483	01644	Enterer Authorization Mode

OBR - Observation request segment

SEQ	LEN	DT	OPT	RP/#	TBL #	ITEM #	ELEMENT NAME
1	4	SI	O			00237	Set ID - OBR
2	22	EI	C			00216	Placer Order Number
3	22	EI	C			00217	Filler Order Number +
4	250	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	250	XCN	O	Y		00244	Collector Identifier *
11	1	ID	O		0065	00245	Specimen Action Code *

SEQ	LEN	DT	OPT	RP/#	TBL #	ITEM #	ELEMENT NAME
12	250	CE	O			00246	Danger Code
13	300	ST	O			00247	Relevant Clinical Info.
14	26	TS	B			00248	Specimen Received Date/Time *
15	300	SPS	B			00249	Specimen Source *
16	250	XCN	O	Y		00226	Ordering Provider
17	250	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	MOC	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	PRL	O			00259	Parent Result +
27	200	TQ	B	Y		00221	Quantity/Timing, PHIN str. 78 ???
28	250	XCN	O	Y		00260	Result Copies To
29	200	EIP	O			00261	Parent
30	20	ID	O		0124	00262	Transportation Mode
31	250	CE	O	Y		00263	Reason for Study
32	200	NDL	O			00264	Principal Result Interpreter +
33	200	NDL	O	Y		00265	Assistant Result Interpreter +
34	200	NDL	O	Y		00266	Technician +
35	200	NDL	O	Y		00267	Transcriptionist +
36	26	TS	O			00268	Scheduled Date/Time +
37	4	NM	O			01028	Number of Sample Containers *
38	250	CE	O	Y		01029	Transport Logistics of Collected Sample *
39	250	CE	O	Y		01030	Collector's Comment *
40	250	CE	O			01031	Transport Arrangement Responsibility
41	30	ID	O		0224	01032	Transport Arranged
42	1	ID	O		0225	01033	Escort Required
43	250	CE	O	Y		01034	Planned Patient Transport Comment
44	250	CE	O	N	0088	00393	Procedure Code
45	250	CE	O	Y	0340	01316	Procedure Code Modifier
46	250	CE	O	Y	0411	01474	Placer Supplemental Service Information
47	250	CE	O	Y	0411	01475	Filler Supplemental Service Information
48	250	CWE	C	N	0476	01646	Medically Necessary Duplicate Procedure Reason.
49	2	IS	O	N	0507	01647	Result Handling

OBX - Observation/result segment

SEQ	LEN	DT	OPT	RP/#	TBL#	ITEM#	ELEMENT NAME
1	4	SI	O			00569	Set ID - OBX
2	2	ID	C		0125	00570	Value Type
3	250	CE	R			00571	Observation Identifier
4	20	ST	C			00572	Observation Sub-ID
5	99999	Varies	C	Y		00573	Observation Value
6	250	CE	O			00574	Units
7	60	ST	O			00575	References Range
8	5	IS	O	Y	0078	00576	Abnormal Flags
9	5	NM	O			00577	Probability
10	2	ID	O	Y	0080	00578	Nature of Abnormal Test
11	1	ID	R		0085	00579	Observ Result Status
12	26	TS	O			00580	Date Last Obs Normal Values
13	20	ST	O			00581	User Defined Access Checks
14	26	TS	O			00582	Date/Time of the Observation
15	250	CE	O			00583	Producer's ID
16	250	XCN	O	Y		00584	Responsible Observer
17	250	CE	O	Y		00936	Observation Method
18	22	EI	O	Y		01479	Equipment Instance Identifier
19	26	TS	O			01480	Date/Time of the Analysis

QRD - Original-style Query Definition segment

SEQ	LEN	DT	OPT	RP/#	TBL #	ITEM #	ELEMENT NAME
1	26	TS	R			00025	Query Date/Time
2	1	ID	R		0106	00026	Query Format Code
3	1	ID	R		0091	00027	Query Priority
4	10	ST	R			00028	Query ID
5	1	ID	O		0107	00029	Deferred Response Type
6	26	TS	O			00030	Deferred Response Date/Time
7	10	CQ	R		0126	00031	Quantity Limited Request
8	250	XCN	R	Y		00032	Who Subject Filter
9	250	CE	R	Y	0048	00033	What Subject Filter
10	250	CE	R	Y		00034	What Department Data Code
11	20	VR	O	Y		00035	What Data Code Value Qual.
12	1	ID	O		0108	00036	Query Results Level

QRF - Original style query filter segment

SEQ	LEN	DT	OPT	RP/#	TBL#	Item #	Element Name
1	20	ST	R	Y		00037	Where Subject Filter
2	26	TS	B			00038	When Data Start Date/Time
3	26	TS	B			00039	When Data End Date/Time
4	60	ST	O	Y		00040	What User Qualifier
5	60	ST	O	Y		00041	Other QRY Subject Filter
6	12	ID	O	Y	0156	00042	Which Date/Time Qualifier
7	12	ID	O	Y	0157	00043	Which Date/Time Status Qualifier
8	12	ID	O	Y	0158	00044	Date/Time Selection Qualifier
9	60	TQ	O			00694	When Quantity/Timing Qualifier
10	10	NM	O			01442	Search Confidence Threshold

HL7 Acknowledgments

The acknowledgment message consists of MSH and MSA segments, with MSA-1 taking on one of AA, AE, or AR. The message type is ACK or ORR^O02. Normally, HL7 server sends an AR if it detects syntactical errors, an AE if there is an internal HL7 server error, and AA otherwise. Syntactical errors include missing required fields, incomplete segments, and non-MLLP messages. The customization phase will set the standard. Per HL7 specification, HL7 server echoes the originating message's message control ID in MSA-2. The ERR segment is not used.

Samples of HL7 Messages

Message:

MSH|^~\&|BIS||RIS||20051017130114||OMG^O19^OMG_O19|6bc754f51|P|2.5-||||8859/2
PID|||57860^^^^PI~2905978325505^^^^PN~""^^^^HC||Ivo Ivic|Vrsaljko|-19551023000000|M||
Adresa1^^Zagreb^^10000^^P~Adresa2^^^^^^H~""^^^^^^M||^^^^^^(053)4709753||4||||||
191
ORC|NW|23||||D||200512091011
OBR|1|23||605|||||||1

Message reply:

MSH|^~\&|BIS||RIS||20051017130134||ORG^O20^ORG_O20|7bc7423f51|P|2.5-||||8859/2
MSA|AA|6bc754f51

Message:

MSH|^~\&|BIS||RIS||20051017130134||QRY^R02^QRY_R02|7bc742351|P|2.5-||||8859/2
QRD|20051021150308|D||16465489||1^RD|156456^Ivo Ivic|RES|456465
QRF|RIS|||15645564

Message reply:

MSH|^~\&|BIS||RIS||20051017130534||ORF^R04^ORF_R04|7b7423432|P|2.5-||||8859/2
MSA|AA|7bc742351
QRD|20051021150308|D||16465489||1^RD|156456^Ivo Ivic|RES|456465
OBR|1|56546515||154
OBX|1|ST|15645564|| text report |||F