OMEGAAI
HL7 CONFORMANCE STATEMENT

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Overview

The RamSoft Mirth Connect (RMC) facilitates communication between RamSoft PACS products and external systems. RMC conforms to the HL7 2.3.1 specification.

Message Types Supported

Inbound

Event	Message Type	Message Event
Patient Create / Update	ADT	A01, A02, A03, A04, A05, A06, A07, A08, A12, A13, A28, A31
Patient Merge	ADT	A30, A34, A35, A39, A40, A44, A47
Patient Cancel / Delete	ADT	A11, A23, A38
Order	ORM	O01
Result	ORU	R01
Scheduling	SIU	S12, S13, S14, S15
Billing Account Create / Update	BAR	P01, P05
Billing Account Cancel	BAR	P06
User Information	MFN	M02

Outbound

Event	Message Type	Message Event
Patient Create / Update	ADT	A04, A08
Patient Merge	ADT	A40
Patient Cancel / Delete	ADT	A23
Order	ORM	O01
Result	ORU	R01
Billing Account Create / Update	BAR	P01, P05
Financial Transaction	DFT	P03
User Information	MFN	M02
Scheduling	SIU	S12, S13, S14, S15, S17

Inbound Processing

- RMC parses all related FHIR resources from the HL7 message.
- RMC constructs a bundle request from FHIR resources and consumes FHIR-Services API.
- See https://ramsoftinc.atlassian.net/wiki/spaces/OA/pages/edit-v2/76120074#Handle-Replaced-by-Patient to handle replaced-by patient

- See Handle Resource References when constructing a bundle request.
- The original input HL7 message is also converted into JSON and stored in DB via FHIR document Reference resource (see Store HL7 JSON)

Patient Level Messages

- Mandatory resources: patient
- Other resources:
  - account, coverage, insured (use FHIR Patient), guarantor (use FHIR Patient), payer (use FHIR Organization), employer of insured (use FHIR Patient)
  - encounter (visit), observation (height/weight)
  - allergyIntolerance, condition

Study Level Messages

- Include all resources in Patient Level
- Mandatory resources: imagingstudy
- Other resources:
  - procedureRequest, referring physician (use FHIR Practitioner), referring Organization (use FHIR Organization), consulting physician (use FHIR Practitioner), consulting Organization (use FHIR Organization)
  - reading physician (use FHIR Practitioner), reading Organization (use FHIR Organization), transcriptionist (use FHIR Practitioner), transcriptionist Organization (use FHIR Organization), performing physician (use FHIR Practitioner), performing technologist (use FHIR Practitioner)

Billing Account Cancelation

Billing Account messages (BAR^P06) is used to cancel the insurance information of the patient. All active patient coverages that have coverage level 1, 2, and 3 are deactivated.

Scheduling

1. We support only one study per SIU message.
2. We match existing service request by accession number (SCH-26) and managing organization (PID)
   - If not match, create new serviceRequest with basic information present in SCH segment
   - If match, update this existing serviceRequest with information present in SCH segment
3. We match existing study by accession number + patient id + mananging organization
   - If multiple matches, don't process this message
   - If not match, create new study (with basic information present in AIS segments) via creating new serviceRequest
   - If match, update this study with study type code present in AIS segments
4. We match existing healthcareService by healthcareService name (RGS-3)

- If it is not a match, don't process this message

5. We read SCH to construct appointment resource
6. We read SCH to construct serviceRequest resource
7. We read AIS segments to construct StudyType resource and ImagingStudy resource
   7.1 In the 1st AIS segment, we read AIS:3-1 as Study Type Code.
   7.2 If there are additional AIS segments, they must correspond to Procedure Codes. We set AIS:3-1 as additional Procedure Codes of the study type.

Master File Notification Message

We use the following behavior to perform inserting/updating/deleting a user based on value of MFE.1

- For MAD:
  - If user does not exist, perform creating new user
  - Otherwise, perform updating this existing user
- For MUP:
  - Only perform updating if user exists
  - Otherwise reject message
- For MAC/MDC:
  - Only perform updating user status with status of (MAC/MDC) if user exists
  - Otherwise: reject message
- For MDL:
  - Only perform deleting if this user exists
  - Otherwise, reject message
- Search existing user by username (ZLI1.)
- If user imaging facility (STF.8) is present, search existing by name
  - if imaging facility does not exist, create it in DB.
  - otherwise, update this existing facility
- Message is rejected if username (ZLI1.), user action (MFE.1), or role (STF.4.1) or imaging facility (STF.8) is not provided

Mirth ORM Study Match Flow

1. If Study Instance UID is received in ZDS segment. Mirth will update study.
2. If Study Instance UID does not match, Mirth will check the organization name, accession # and requested procedure ID.
3. If many results are returned after Mirth checks the organization name, accession # and requested procedure ID, it will reject the message.
4. If one match was found, Mirth will update the study.
5. If no matches are found, Mirth will call the FHIR API to search for empty requested procedure IDs which have the same accession # and organization name.
6. If many matches are returned, Mirth will reject the message.
7. If one match is returned, Mirth will update the study.
8. If no matches are returned, Mirth will add a new study.

Handle Replaced-by Patient

If inbound patient was merged by another patient, we are able to traverse the chain of merge to find the last replaced-by patient and process on the found last replaced-by patient instead of using inbound patient.

We have message input options (traversePatientMerge, updateTraversedPatientMergeDemographics) (https://ramsoftinc.atlassian.net/wiki/spaces/OA/pages/76120074/HL7+Conformance+Statement#Inbound-Channel-Options) to enable this feature.

Outbound Processing

- RMC receives messages pushed from SignalR to trigger the outbound message process.
- RMC creates a new FHIR task based on the received message.
- RMC queries for the task.
- RMC constructs all related resources by consuming FHIR-Services APIs for sending message (via outbound channels)
- If the message is sent successfully, RMC updates the task status to "completed".
- In case of failure, RMC updates the task status to "failed" for the next retry.

Store and Retrieve HL7 JSON

RMC has the ability to store the original inbound HL7 message and retrieve it for outbound.

Store HL7 JSON

1. We have switch/option in Mirth interface code to allow for storing or not of HL7 JSON.
2. If option is set to true to allow storing, we convert input HL7 into HL7 JSON and use FHIR documentReference resource to store HL7 JSON.
3. We will match existing FHIR documentReference for particular message type by searching by subject, identifier and related:
    - If no match, create a new one
    - Otherwise, update the existing one

FHIR documentReference structure JSON for storing HL7 JSON

- $.type , $.category: using loinc code (56444-3, Healthcare communication Document)
- $.content: store HL7 JSON as JSON string
- $.subject: refer to patient (PID)
- $.context: refer to visit (if PV1 presents)
- $.identifier: for each type of message. E.g, for ADT^A08. This identifier allow us to search FHIR documentReference to store HL7 JSON for each messages

```
"identifier": [
```

```
    {
      "system": "http://www.ramsoft.com/fhir",
      "value": "ADT^A08"
    }
  ]
```

- $.context.related to corresponding resource (e.g imagingstudy for ORM, appointment for SIU, diagnosticReport/documentReference for ORU)

Retrieving HL7 JSON

1. For the outbound process, we match existing FHIR documentReference by searching subject (patient), identifier (message type, event) and related (relating resource according to message Type^Event).
2. We retrieve HL7 JSON from FHIR documentReference.
3. The interface developer can manually map from HL7 JSON to constructed outbound HL7 message via transformer.

Segment Definitions

The **Inbound** and **Outbound** columns specify which fields are mandatory and which are optional.

- Mandatory fields are marked by an “R” for “Required”.
- conditional fields are marked by a “C”
- non-mandatory ones are marked with “O” for “Optional”.

Communication

General Message Format

Syntax

- All HL7 messages begin with \x0B (ASCII 11) and terminate with \x1C (ASCII 28) and \x0D (ASCII 13).
- Each message segment sends with the carriage return character (\x0D, ASCII 13).
- Field sequences in the message segments are separated by “|” (\xC0, ASCII 124).
- Field components are separated by “^” (\x5E, ASCII 94).
- Field sub-components are separated by “&” (\x26, ASCII 38).
- Repeated fields are separated by “~” (\x7E, ASCII 126).
- Any message segment not listed in our conformance statement will be ignored on inbound messages.

Message Queueing

RMC uses a set of message queues to manage message transmission. These queues allow the RMC to maintain a backlog of messages in the event that the receiving system is unavailable. When the receiving system comes back online, messages in the queue remain waiting to be sent. This ensures that messages do not become lost in the event of network of other IT-related issues.

Message Segment Definitions

MSH - Message Header Segment

Seq	Inbound	Description	FHIR	Logic
1	R	Field Separator	n/a	Value must be |, (ASCII 124).
2	R	Encoding Characters	n/a	Values are ^~\&, (ASCII 94, 126, 92, and 38 respectively).
3	O	Sending Application	messageHeader.msgSendingApplication	**Outbound:** Configurable **Default:** 'RAMSOFT'
4	O	Sending Facility	messageHeader.msgSendingFacility	**Inbound:** *See PID-3.4 and OBR-16* **Outbound:** Configurable **Default:** 'RAMSOFT'
5	O	Receiving Application	messageHeader.msgReceivingApplication	**Outbound:** Configurable **Default:** 'RAMSOFT'
6	O	Receiving Facility	messageHeader.msgReceivingFacility	**Outbound:** Configurable **Default:** 'RAMSOFT'
7	O	Date/Time of Message	messageHeader.msgDatetime	**Outbound:** Sends the date/time that the sending system created the message.

9.1 **9.2**	R R	Message Type	messageHeader.msgType messageHeader.msgEvent	.1 - Message Type (e.g. ADT, ORM) .2 - Trigger Event (e.g. A08, O01) **Outbound:** We copy MSH-9.2 to EVN-1
10	O	Message Control ID	messageHeader.msgControlId	
11	O	Processing ID	messageHeader.msgProcessingId	**Outbound:** 'P'
12	O	Version ID	messageHeader.msgVersionId	**Outbound:** '2.3.1'
18	O	Character Set	n/a	**Outbound:** 'UNICODE UTF-8'

MSA - Message Acknowledgement Segment

Seq	Inbound	Description	FHIR	Logic
1	R	Acknowledgement Code	n/a	**Inbound:** We support both original mode and enhanced mode codes: 'AA' - Application Accept 'AE' - Application Error 'AR' - Application Reject 'CA' - Commit Accept 'CE' - Commit Error 'CR' - Commit Reject
2	O	Message Control ID	n/a	
3	O	Text Message	n/a	Describes the acknowledgement condition.

ERR - Error Segment

Seq	Inbound	Description	FHIR	Logic
1	R	Error Code and Location	n/a	Error information that is only used in ACK messages.

EVN - Event Type Segment

Seq	Inbound	Description	FHIR	Logic
1	O	Event Type Code	messageHeader.msgEvent	*See MSH-9.2*

2	O	Recorded Date/Time	messageHeader.msgDatetime	**Outbound:** Sends the date/time that the sending system created the message.

PID - Patient Identification Segment

Seq	Inbound	Description	FHIR	Logic
1	O	Set ID	n/a	**Outbound:** '1'
2	O	Patient ID		*See PID-3*
3.1 **3.4** **3.5** **3.10**	R C O C	Patient Identifier List	patient.identifier	.1 - ID (0010,0020) **Inbound:** We read PID-3.1 **Outbound:** We copy PID-3.1 to PID-2.1 .4 - Assigning Authority (Issuer of Patient ID) (0010,0021) **Inbound:** We read PID-3.4, MSH-4.1, if blank, then we set to a configurable value which defaults to 'UNKNOWN'. **Outbound:** We copy PID-3.4 to PID-2.4 .5 - Identifier Type Code **Outbound:** 'MR' .10 - Assigning Agency (Managing Organization) **Outbound:** We copy PID-3.10 to PID-2.10 *** If repeated fields are received, then only the first is parsed.**
5.1 **5.2** **5.3** **5.4** **5.5**	R O O O O	Patient Name	patient.name	Patient Name (0010,0010) .1 - Family Name .2 - Given Name .3 - Middle Name .4 - Suffix .5 - Prefix
6.1 **6.2**	O O	Mother's Maiden Name	patient.extension.patient-mothersMaidenName	.1 - Mother's Maiden Family Name .2 - Mother's Maiden Given Name
7	O	Date/Time of Birth	patient.birthDate	Date/Time of Birth (0010,0030) Time is not stored in our system.

8	O	Sex	patient.gender	Sex (0010,0040) 'F' - FEMALE 'M' - MALE 'O' - OTHER 'U' - NULL **Inbound:** We translate any other value to 'O' when inserting new patients and ignore any other value when updating existing patients.
10.1 **10.2** **10.3**	O O O	Race	patient.extension.us-core-race	.1 - Race Identifier Code .2 - Race Text .3 - Coding System See User-defined Table 0005 - Race **Inbound:** - We translate any other value to 'UNK' when inserting new patients and ignore any other value when updating existing patients. **Outbound:** Multiple races are repeated with delimiter ~
11.1 **11.3** **11.4** **11.5** **11.6**	O O O O O	Address	patient.address	Address (0010,1040) .1 - Street Address .3 - City .4 - State/Province .5 - Zip/Postal Code .6 - Country (0010,2150)
13.1 **13.4** **13.7**	O O O	Home Phone	patient.telecom	.1 - Phone Number (0010,2154) .4 - Email Address .7 - Cell Phone Number
14.1 **14.7**	O O	Business Phone	patient.telecom	.1 - Phone Number .7 - Fax Number
15.1	O O	Language	patient.communication.language	Language (0010,0101) .1 - Language Identifier Code

15.2				.2 - Language Text ISO 639-5 Codes: https://www.loc.gov/standards/iso639-5/id.php **Outbound:** For multiple languages, we only send the first one in the list.
16.1 **16.2**	O O	Marital Status	patient.maritalStatus	'A' - ANNULLED 'I' - INTERLOCUTORY 'M' - MARRIED 'D' - DIVORCED 'W' - WIDOWED 'L' - LEGALLY SEPARATED 'P' - POLYGAMOUS 'S' - NEVER MARRIED 'T' - DOMESTIC PARTNER 'U' - UNMARRIED 'UNK' - UNKNOWN 'O' - OTHER Uses FHIR standard values: https://hl7.org/fhir/valueset-marital-status.html **Inbound:** We ignore any other value.
18	C	Patient Account Number	account.identifier	Account Number (0010,0050) **Inbound:** This field is required if the guarantor is sent in GT1.
19	O	SSN, SIN, RR	patient.identifier (code "SS")	SSN / Alternate Patient ID (0010,1000)
20	O	Driver's License Number	patient.identifier (code "DL")	Driver's License / Alternate Patient ID
22.1 **22.2** **22.3**	O O O	Ethnic Group	patient.extension.us-core-ethnicity	.1 - Ethnicity Identifier Code .2 - Ethnicity Text .3 - Coding System http://terminology.hl7.org/ValueSet/v3-Ethnicity **Inbound:** We translate any other value to 'UNK' when inserting

				new patients and ignore any other value when updating existing patients. **Outbound:** Multiple ethnicities are repeated with delimiter ~
29	O	Patient death date and time	patient.deceasedDateTime	Time is not stored in our system.
30	O	Patient Death Indicator	n/a	'Y' - the patient is deceased 'N' - the patient is not deceased
33	O	Last Update Date/Time	patient.meta.lastUpdated	

PV1 - Patient Visit Segment

Seq	Inbound	Description	FHIR	Logic
1	O	Set ID	n/a	**Outbound:** '1'
2	O	Patient Class	encounter.class	'E' - EMERGENCY 'I' - INPATIENT 'O' - OUTPATIENT 'P' - PREADMIT 'R' - RECURRING PATIENT 'B' - OBSTETRICS We translate any other value to 'O' in both directions.
3.1 **3.2** **3.4** **3.9**	O O O O	Assigned Patient Location	imagingStudy.extension.department, imagingStudy.healthcareservice, encounter.serviceProvider, encounter.location	.1 - Department .2 - HealthcareService .4 - Imaging Organization .9 - Patient's Location
7	O	Attending Doctor	serviceRequest.requester	*See OBR-16*
8	O	Referring Doctor	serviceRequest.requester	*See OBR-16*
9.1 **9.2** **9.3** **9.4** **9.5** **9.6**	O O O O O	Consulting Doctor	serviceRequest.consultingPhysician#	Consulting Physician .1 - NPI/ID .2 - Family Name .3 - Given Name .4 - Middle Name .5 - Suffix

9.14	O O			.6 - Prefix .14 - Assigned Facility **Inbound/Outbound:** We can send and receive multiple physicians delimited by ~
15	O	Ambulatory Status	encounter.extension.ambulatoryStatus	https://terminology.hl7.org/CodeSystem-v2-0009.html
16	O	VIP Indicator	patient.meta.security	https://terminology.hl7.org/CodeSystem-v3-Confidentiality.html
19	R	Visit Number	encounter.identifier	**Inbound:** Visit number is required to insert/update encounter resource.
22.1 **22.2**	O O	Courtesy Code	patient.extension.specialcourtesy	https://hl7.org/fhir/valueset-encounter-special-courtesy.html
39	O	Servicing Facility	encounter.serviceProvider	
41	O	Account Status	account.status	**Outbound:** Sends on outbound DFT messages.
44	O	Admit Date	encounter.period	Admission Date
46	O	Current Patient Balance	account.extension.balance	**Inbound:** Updates patient balance.
51	O	Visit Indicator	n/a	**Outbound:** Sends 'V' if visit number is present.

AL1 - Patient Allergy Information Segment

Seq	Inbound	Description	FHIR	Logic
1	O	Set ID	n/a	**Outbound:** Auto-generated sequence number.

2	O	Allergy Type	n/a	'DA' - Drug allergy 'FA' - Food allergy 'MA' - Miscellaneous allergy 'MC' - Miscellaneous contraindication
3.1 3.2	C C	Allergy code/mnemonic/description	AllergyIntolerance.code AllergyIntolerance.display	.1 - Allergy identifier .2 - Allergy text **Inbound:** One of these 2 fields is required.
4	O	Allergy Severity	AllergyIntolerance.reaction.severity	'SV' - SEVERE 'MO' - MODERATE 'MI' - MILD All other values are displayed as blank.
5	O	Allergy Reaction	AllergyIntolerance.note	
6	O	Identification Date	AllergyIntolerance.onSetDate	

MRG - Merge Patient Information Segment

Seq	Inbound	Description	FHIR	Logic
1.1 **1.4** **1.10**	R C C	Prior Patient Identifier List	patient.link	.1 - Patient ID .4 - Issuer of Patient ID .10 - Assigning Agency (Managing Organization)

				Inbound: We read MRG-1 then MRG-4 **Outbound:** We copy MRG-1 to MRG-4
4	C	Prior Patient ID		*See MRG-1*

OBR - Observation Request Segment

Seq	Inbound	Description	FHIR	Logic
1	O	Set ID	n/a	**Outbound:** Auto-generated sequence number.
2	O	Placer Order Number	serviceRequest.identifier (code PLAC)	**Inbound:** We read OBR-2 then ORC-2
3	O	Filler Order Number	serviceRequest.identifier (code FILL)	**Inbound:** We read OBR-3 then ORC-3
4.1 **4.2**	O O	Universal Service Identifier	studytype.studytype, studytype.description, imagingstudy.extension (studytype)	Order Set .1 - Order Set Code .2 - Order Set Description **Inbound:** If the study set code matches a code in the database, then we update the study using this study set code's description, procedure codes, modality, laterality, and quantity. If no study set is found, then we insert it as 'UNKNOWN' and set the study description using OBR-4.2
7	O	Observation Date/Time	ServiceRequest.authoredOn	Requested Appointment Date/Time **Inbound:** We read OBR-7 then ORC-9
12	O	Danger Code		*See OBR-27 for priority*

13	O	Relevant Clinical Info	imagingstudy.extension (symptoms)	History/Symptoms (Not displayed)
15.4 **15.5**	O O	Specimen Source	imagingstudy.extension (bodyPart, laterality)	.4 - Body Part .5 - Laterality
16.1 **16.2** **16.3** **16.4** **16.5** **16.6** **16.14**	O O O O O O O	Ordering Provider	practitioner.identifier (NPI), practitioner.name, organization.name	.1 - NPI/ID .2 - Family Name .3 - Given Name .4 - Middle Name .5 - Suffix .6 - Prefix .14 - Assigned Facility **Inbound:** We read OBR-16, ORC-12, PV1-8, PV1-7, and MSH-4 in that order. **Outbound:** We copy OBR-16 to ORC-12, PV1-8, and PV1-7
17	O	Order Callback Phone Number	practitioner.telecom (“work”)	Referring Physician Business Phone Number **Inbound:** We read OBR-17 then ORC-14
18	R	Placer Field 1	serviceRequest.identifier (code ACSN), imagingstudy.identifier (code ACSN)	Accession Number **Outbound:** We copy OBR-18 to OBR-20
19	R	Placer Field 2	imagingstudy.extension (requestedprocedureID)	Requested Procedure ID
20	O	Filler Field 1		*See OBR-18*
22	O	Results Rpt/Status Chng - Date/Time	DiagnosticReport.issuedDate	Date report was issued.
24	O	Diagnostic Serv Sect ID	imagingstudy.modality, studytype.modality	Modality
27.1 **27.4** **27.6**	O O O	Quantity/Timing	serviceRequest.priority, imagingStudy.started or imagingStudy.extention (AppointmentDateTime), imagingingStudy.procedureCode	.1 - Quantity .4 - Study Date/Time or Appointment (Scheduled) Date/Time (Default)

				.6 - Priority 'S' - STAT 'P,T,C' - ASAP 'A' - URGENT 'R' - ROUTINE **Inbound:** We read OBR-27, ORC-7, OBR-12 (for priority only), in that order. **Outbound:** We copy OBR-27 to ORC-7
29	O	Parent	n/a	Parent's Accession Number **Inbound:** Currently ignored. **Outbound:** We copy OBR-29 to ORC-8
30	O	Transportation Mode	n/a	**Outbound:** Set to a preconfigured value 'WALK'.
31.1 **31.2** **31.3**	O O O	Reason for Study	serviceRequest.ReasonCode	Diagnosis Code .1 - Diagnosis Code .2 - Diagnosis Description .3 - Name of Coding System **Inbound:** We handle multiple diagnoses delimited by ~ and only update if not blank. **Outbound:** Name of coding system defaults to "I10".
32.1	O	Principal Result Interpreter	practitioner.identifier (NPI), practitioner.name	Reading Physician .1.1 - ID/NPI .1.2 - Family Name .1.3 - Given Name

				.1.4 - Middle Name .1.5 - Suffix .1.6 - Prefix .1.7 - Organization
34.1	O	Technician	practitioner.identifier (NPI), practitioner.name	Technologist .1.1 - ID/NPI .1.2 - Family Name .1.3 - Given Name .1.4 - Middle Name .1.5 - Suffix .1.6 - Prefix .1.7 - Organization
35.1	O	Transcriptionist	practitioner.identifier (NPI), practitioner.name	Transcriptionist .1.1 - ID/NPI .1.2 - Family Name .1.3 - Given Name .1.4 - Middle Name .1.5 - Suffix .1.6 - Prefix .1.7 - Organization
39	O	Collector's Comment	imagingStudy.extension (comments)	Comments
41	O	Transport Arranged	n/a	**Outbound:** Always set to 'U'.
44.1 **44.2**	O O	Procedure Code	imagingStudy.procedureCode	.1 - Procedure Code .2 - Procedure Code Description **Inbound:** We handle multiple procedures delimited by ~ and only read the first OBR segment.
45	O	Procedure Code Modifier	imagingStudy.extension (procedureModifier)	**Inbound:** We handle multiple modifiers delimited by ~ and only update if not blank.

ORC - Common Order Segment

Seq	Inbound	Description	FHIR	Logic
1	O	Order Control	imagingStudy.extension.Order.Control	
2	O	Placer Order Number		*See OBR-2*

3	O	Filler Order Number		*See OBR-3*
5	O	Order Status	imagingStudy.extension.studyStatus	Mapped to FHIR statuses.
7	O	Quantity/Timing		*See OBR-27*
8	O	Parent		*See OBR-29*
9	O	Date/Time of Transaction		*See OBR-7*
10	O	Entered By	serviceRequest.extension (enteredBy)	**Outbound:** Sends the username that updated the study.
12	O	Ordering Provider		*See OBR-16*
13	O	Enterer's Location		*See OBR-16 for assigned facility*
14	O	Call Back Phone Number		*See OBR-17*
17	O	Entering Organization		*See OBR-16 for assigned facility*

ORC-1 and ORC-5 Status Mappings

RamSoft OmegaAI Status	Status Value	ORC-1 Value	ORC-5 Value
ORDERED	< 30	SN	SC
SCHEDULED / CONFIRMED	30 to 69	SC	SC
ARRIVED	70 to 79	SC	ZA
CANCELLED / NO SHOW	80 to 89	OC	CA
READY FOR SCAN / IN PROGRESS	90 to 99	SC	IP
STARTED	100 to 104	SC	ZP
COMPLETED / EXAMCOMPLETED / IMPORT	105 to 109, 115 to 129, 150 to 159	SC	CM
EXAMDISCONTINUED	110 to 114	DC	CA
HOLD	130 to 139	SC	HD
REJECTED	140 to 149	SC	CA
VERIFIED / TO BE AMENDED	160 to 179	SC	ZW
DICTATED	180 to 189	SC	ZX
TRANSCRIBED	190 to 199	SC	ZY
SIGNED	>= 200	SC	ZZ

Inbound: Unknown values are inserted as ORDERED status.
Outbound: Unknown values are translated to SN/SC.

NTE - Notes and Comments Segment

Seq	Inbound	Description	FHIR	Logic
1	O	Set ID	n/a	**Outbound:** Auto-generated sequence number.
2	O	Source of Comment	n/a	**Outbound:** Always set to 'O'.
3	O	Comment	imagingStudy.extension (clinical)	Clinical Notes
4	O	Comment Type	n/a	**Outbound:** Always set to 'RE'.

ZDS - Custom DICOM Study Instance UID Segment

Seq	Inbound	Description	FHIR	Logic
1.1 **1.2** **1.3** **1.4**	R O R R	Study Instance UID	imagingStudy.extension.urn:dicom:uid	.1 - Study Instance UID .2 - 'RAMSOFT' .3 - 'Application' .4 - 'DICOM'

OBX - Observation/Result Segment for Height and Weight

Seq	Inbound	Description	FHIR	Logic
1	O	Set ID	n/a	**Outbound:** Auto-generated sequence number.
2	O	Value Type	n/a	**Outbound:** Always set to 'ST'.
3.2	R	Observation Identifier	Observation.code.coding	.2 - Observation Identifier **Inbound/Outbound:** 'BODY HEIGHT' or 'BODY WEIGHT'
5	R	Observation Value	Observation.valueQuantity.value	**Inbound:** We round the input value to 1 decimal place and only update if not blank. **Outbound:** Height or weight according to unit type in OBX-6
6	O	Units	Observation.valueQuantity.unit	**Inbound:** For Height: 'in' - inches 'm' - meters 'cm' - centimeters (default) We translate all other values to 'cm'.

				For Weight: 'lb' - pounds 'kg' - kilograms (default) We translate all other values to 'kg'. **Outbound:** 'm' - Body Height 'kg' - Body Weight
11	O	Observation Result Status	Observation.status	**Outbound:** Always set to 'F'.

OBX - Observation/Result Segment for Report / Document

Seq	Inbound	Description	FHIR	Logic
1	O	Set ID	n/a	**Outbound:** Auto-generated sequence number.
2	O	Value Type	n/a	**Outbound:** 'FT' - Text, RTF, and HTML 'CR' - Binary PDF
3.1 **3.2** **3.4**	O R R	Observation Identifier	DiagnosticReport.Identifier / documentReference.Identifier	.1 - Report UID **Inbound:** If there is an existing report based on the Report UID, then we reject the report. Otherwise, we continue to process the report. **Outbound:** We send the Report UID of the report. .2 - Document Type **Inbound/Outbound:** We support the following document types: 'TXT' - Plain text 'RTF' - Rich text 'PDF' - PDF 'DOC' - Microsoft Word 2000 'DOCM' - Microsoft Word Macro-Enabled 'DOCX' - Microsoft Word 2007 'HTML' - HyperText Markup Language 'TIF' - Tag image file .4 - Document Type ID

				Inbound/Outbound: For diagnostic reports we use FHIR diagnosticReport resource (Inbound we use our ID = 1 or FHIR code = 68604-8). For all other documents we use FHIR DocumentReference. If the input value does not match any supported document type ID, then we use value from reportDocumentTypeId field.
5	R	Observation Value	DiagnosticReport.presentedForm.data / documentReference.content.attachment.data	Report Text **Inbound/Outbound:** The content can be formatted in TXT, RTF, or HTML without encoding. If the report content is base64 encoded, it can be formatted in PDF, DOC, DOCM, DOCX, and TIF.
11	C	Observation Result Status	DiagnosticReport.presentedForm.title / documentReference.docStatus	Result Status 'P' - Preliminary 'F' - Final (verified / signed) 'A' - Addendum **Inbound:** The report is filed as signed if the result status of either 'F' or 'A' is received along with OBX-14 and OBX-16.
14	C	Date/Time of the Observation	DiagnosticReport.effectiveDateTime / documentReference.content.attachment.creation documentReference.date	**Inbound:** Date/time the report was signed. This is required to file as a signed report.
16.1 **16.2** **16.3** **16.4** **16.5** **16.6**	C	Responsible Observer	Practitioner.name / documentReference.author practitioner	Signing Physician .1 - ID/NPI .2 - Family Name .3 - Given Name .4 - Middle Name .5 - Suffix .6 - Prefix

				Inbound: Required to file as a signed report.
17	C	Observation Method	DiagnosticReport.status	**Inbound:** Sets the document title in case observation result is not present. **Outbound:** 'PRELIMINARY', 'FINAL', or 'ADDENDUM'.

SCH - Schedule Activity Information Segment

Seq	Inbound	Description	FHIR	Logic
1	O	Placer Appointment ID	serviceRequest.identifier (code PLAC)	Placer Order Number
2	O	Filler Appointment ID	serviceRequest.identifier (code FILL)	Filler Order Number
5	O	Schedule ID	imagingStudy.extension (RequestedProcedureID)	Requested Procedure ID **Inbound:** If blank, then we use the accession number.
6	O	Event Reason	n/a	**Outbound:** Always set to '^APT'.
7	O	Appointment Reason	studytype.studytype, studytype.description, imagingstudy.extension (studytype)	.1 - Order Set Code .2 - Order Set Description **Inbound:** If the study set code matches a code in the database, then we update the study using this study set code's description, procedure codes, modality, laterality, and quantity. If no study set is found, then we insert it as 'UNKNOWN' and set the study description using SCH-7.2
9	O	Appointment Duration	studytype.duration	
10	O	Appointment Duration Units	n/a	**Outbound:** Always set to 'min'.
11.1 **11.3** **11.4**	O O C	Appointment Timing Quantity	appointment.minutesDuration, appointment.start,	.1 - Quantity .3 - Duration .4 - Appointment Start Time .5 - Appointment Finish Time

11.5 **11.6**	O O		appointment.end, appointment.priority	.6 - Priority 'S' - STAT 'P,T,C' - ASAP 'A' - URGENT 'R' - ROUTINE **Inbound:** We update the quantity of procedures according to AIS segments. We read/calculate duration of appointment from SCH-11.3, AIS-7.1, SCH-11.5, in that order. **Outbound:** We send multiple quantity of procedures delimited by ~
12.1 **12.2** **12.3** **12.4** **12.5** **12.6** **12.14**	O O O O O O O	Placer Contact Person	referringPhysician.identifier (NPI), referringPhysician.name, referringOrganization.name	Referring Physician .1 - NPI/ID .2 - Family Name .3 - Given Name .4 - Middle Name .5 - Suffix .6 - Prefix .14 - Assigned Facility
13	O	Placer Contact Phone Number	referringPhysician.telecom (“work”)	Referring Physician Phone Number
15.4	O	Placer Contact Location	referringOrganization.name	.4 - Referring Facility
16	O	Filler Contact Person	lastUpdate.lastupdateuser	Imaging Organization Contact Person **Outbound:** Sends the user that updated the study.
19.1 **19.2** **19.4**	O C R	Filler Contact Location	imagingStudy.extension.department, imagingStudy.healthcareservice, encounter.serviceProvider	Imaging Organization .1 - Department .2 - HealthcareService .4 - Imaging Organization **Inbound:** *See RGS-3 for the HealthcareService.*

				We read SCH-19.4 then PV1-3.4 for Imaging Organization. If SCH-19.4 is blank, then PV1-19 is required.
20	O	Entered by Person	n/a	**Outbound:** Sends the user's name that updated the appointment.
25	C	Filler Status Code	appointment.status	*See AIS-10*
26	C	Placer Order Number	appointment.identifier	Accession Number **Inbound:** We read SCH-26 then SCH-27. One of these fields is required.
27	C	Filler Order Number		*See SCH-26*

RGS - Resource Group Segment

Seq	Inbound	Description	FHIR	Logic
1	O	Set ID	n/a	**Outbound:** Auto-generated sequence number.
3	C	Resource Group ID	healthcareservice.name	Resource Name **Inbound:** We insert/update appointment if healthcareservice exists by name in the imaging organization.

AIS - Appointment Information - Service Segment

Seq	Inbound	Description	FHIR	Logic
1	O	Set ID	n/a	**Outbound:** Auto-generated sequence number.
3.1 **3.2**	R O	Universal Service Identifier	imagingStudy.procedureCode	.1 - Procedure Code .2 - Procedure Description
4	C	Start Date/Time	imagingstudy.started	Appointment Date/Time **Inbound:** We read AIS-4 then SCH-11.4. This is required to generate the appointment but not to cancel.
5	O	Start Date/Time Offset	n/an/an/a	**Inbound:** The actual appointment start time is

				calculated based on this value.
6	O	Start Date/Time Offset Unin/ats	n/an/a	
7	O	Duration	studytype.duration	*See SCH-11.3 for duration*
8	O	Duratin/aon Units	n/an/a	**Outbound:** Always set to 'min'.
10	C	Filler Status Code	appointment.status	**Inbound:** We read AIS-10 then SCH-25

AIS-10 Status Mappings

Study Status	Appointment Status	FHIR Appointment State
ORDERED	Requested	proposed
SCHEDULED	Scheduled	pending
CONFIRMED	Confirmed	booked
ARRIVED	Arrived	arrived
	<not implemented>	fulfilled
CANCELLED	Cancelled	cancelled
NO SHOW	No Show	noshow
	<not implemented>	entered-in-error
READY FOR SCAN	Ready for Scan	checked-in
	<not implemented>	waitlist

GT1 - Guarantor Segment

Seq	Inbound	Description	FHIR	Logic
1	O	Set ID	n/a	**Outbound:** Auto-generated sequence number.
2.1 **2.4** **2.5** **2.10**	C R O R	Guarantor Number	Guarantor.identifier (code "MR"), Guarantor.managing Organization	.1 - Patient ID of Guarantor .4 - Assigning Authority of Guarantor .5 - Identifier Type Code **Inbound:** If no patient ID is specified, a new patient ID will be generated where the relationship is not 'SEL' and the SSN is provided. One of these 2 fields is required. **Outbound:** 'MR' .10 - Assigning Agency (Managing Organization of Guarantor)
3.1 **3.2** **3.3**	R O O	Guarantor Name	Guarantor.name	.1 - Family Name .2 - Given Name .3 - Middle Name

3.4 **3.5**	O O			.4 - Suffix .5 - Prefix
5.1 **5.3** **5.4** **5.5** **5.6**	O O O O O	Guarantor Address	Guarantor.address	.1 - Street Address .3 - City .4 - State/Province .5 - Zip/Postal Code .6 - Country
6	O	Guarantor Home Phone	Guarantor.telecom	
7	O	Guarantor Business Phone	Guarantor.telecom	
8	O	Guarantor Date/Time of Birth	Guarantor.birthDate	Time is not stored in our system.
9	O	Guarantor Sex	Guarantor.gender	'F' - FEMALE 'M' - MALE 'O' - OTHER 'U' - NULL **Inbound:** We translate any other value to 'O' when inserting new patients and ignore any other value when updating existing patients.
11	O	Guarantor Relationship	Account.Guarantor.Extension.relationship	'SEL' - SELF 'SPO' - SPOUSE 'CHD' - CHILD 'OTH' - OTHER 'PAR' - PARENT/GUARDIAN **Inbound:** We translate any other value to 'OTH'.
12	C	Guarantor SSN	guarantor.identifier (code "SS")	
17.1 **17.3** **17.4** **17.5** **17.6**	O O O O O	Guarantor Employer Address	employer.address	.1 - Street Address .3 - City .4 - State/Province .5 - Zip/Postal Code .6 - Country

18.1 **18.4**	O O	Guarantor Employer Phone Number	guarantor.extension.telecome	.1 - Primary Phone Number .4 - Email Address **Inbound:** GT1-51 is required to create the employer organization with the phone number and email.
20	O	Guarantor Employment Status	guarantor.extension.employmentstatus	'1' - FULL-TIME '2' - PART-TIME '3' - UNEMPLOYED '5' - RETIRED 'S' - STUDENT 'O' - OTHER '9' - OTHER **Inbound:** We translate any other value to 'O'. Only updates when relationship is not SELF.
24	O	Guarantor Death Date/Time	guarantor.deceasedDateTime	Time is not stored in our database.
25	O	Guarantor Death Flag	n/a	‘Y' - the guarantor is deceased ’N' - the guarantor is not deceased
30	O	Guarantor Marital Status Code	guarantor.maritalStatus	‘A' - ANNULLED ’I' - INTERLOCUTORY ‘M' - MARRIED 'D' - DIVORCED 'W' - WIDOWED 'L' - LEGALLY SEPARATED 'P' - POLYGAMOUS 'S' - NEVER MARRIED 'T' - DOMESTIC PARTNER 'U' - UNMARRIED 'UNK' - UNKNOWN 'O' - OTHER Uses FHIR standard values: https://hl7.org/fhir/valueset-marital-status.html **Inbound:** We ignore any other value.
36.1 **36.2**	O O	Primary Language	guarantor.communication.language	Language .1 - Language Identifier Code .2 - Language Text ISO 639-5 Codes: https://www.loc.gov/standards/iso639-5/id.php

				Outbound: For multiple languages, we only send the first one in the list.
39	O	Protection Indicator	guarantor.meta.security	'Y' - Restrict access 'N' - Do not restrict access
42.1 **42.2**	O O	Mother's Maiden Name	guarantor.extension.patient-mothersMaidenName	.1 - Mother's Maiden Family Name .2 - Mother's Maiden Given Name
44.1 **44.2** **44.3**	O	Ethnic Group	guarantor.extension.us-core-ethnicity	.1 - Ethnicity Identifier Code .2 - Ethnicity Text .3 - Coding System http://terminology.hl7.org/ValueSet/v3-Ethnicity **Inbound:** We translate any other value to 'UNK' when inserting new patients and ignore any other value when updating existing patients. **Outbound:** Multiple ethnicities are repeated with delimiter ~
45.1 **45.2** **45.3** **45.4** **45.5**	O O O O	Contact Person's Name	contact.extension.name	Patient's Emergency Contact .1 - Family Name .2 - Given Name .3 - Middle Name .4 - Suffix .5 - Prefix
46.1 **46.4**	O	Contact Person's Phone Number	contact.telecom	.1 - Patient's Emergency Contact Phone Number .4 - Patient's Emergency Contact Email
48	O	Contact Relationship	contact.extension.relationship	Patient's Emergency Contact Relationship 'SEL' - SELF 'SPO' - SPOUSE 'CHD' - CHILD 'OTH' - OTHER 'PAR' - PARENT/GUARDIAN **Inbound:** We translate any other value to 'OTH'.

51.1 **51.3**	C C	Guarantor Employer's Organization Name	coverage.policyHolder	.1 - Employer Organization Name .3 - Employer Organization ID
55.1 **55.2** **55.3**	O O O	Guarantor Race	guarantor.extension.us-core-race	.1 - Race Identifier Code .2 - Race Text .3 - Coding System See User-defined Table 0005 - Race **Inbound:** • We translate any other value to 'UNK' when inserting new patients and ignore any other value when updating existing patients. **Outbound:** Multiple races are repeated with delimiter ~

IN1 - Insurance Segment

Seq	Inbound	Description	FHIR	Logic
1	R	Set ID		Insurance Level '1' - Primary Insurance '2' - Secondary Insurance '3' - Tertiary Insurance
2	C	Insurance Plan ID		*See IN1-49*
3.1 **3.2**	C O	Insurance Company ID	Payer.extension.eligibility PayerID	.1 - *See IN1-4.3* .2 - Insurance Company Eligibility Payer ID
4.1 **4.3**	C C	Insurance Company Name	Payer.name, Payer.identifier	.1 - Insurance Payer Name .3 - Insurance Payer ID **Inbound:** We read IN1-4.3, IN1-35.1, then IN1-3.1 in that order. The insurance payer name or payer ID is required to update the insurance company.
5.1 **5.3** **5.4** **5.5** **5.6**	O O O O O	Insurance Company Address	Payer.address	.1 - Street Address .3 - City .4 - State/Province .5 - Zip/Postal Code .6 - Country

6	O	Insurance Company Contact Person	Payer.extension.contactName	
7.1 **7.4** **7.9**	O O O	Insurance Company Contact Phone Number	Payer.telecom	.1 - Business Phone .4 - Email .9 - Web Site
8	O	Group Number	coverage.grouping.group	
11.1 **11.3**	O O	Insured's Group Employer Name	coverage.policyHolder	.1 - Employer Organization Name .3 - Employer Organization ID
12	O	Plan Effective Date	coverage.period.start	
13	O	Plan Expiration Date	coverage.period.end	
14.1 **14.2**	O O	Authorization Information	Not implemented	.1 - Authorization Number .2 - Authorization Date
15	O	Plan Type	Payer.extension.financial Class	Payer Financial Class 'CP' - CAPITATED 'SP' - SELF-PAY 'CM' - COMMERCIAL 'ME' - MEDICARE 'OT' - OTHER 'OH' - OHIP 'MA' - MEDICAID 'WC' - WORKERS COMP
16.1 **16.2** **16.3**	C	Name of Insured	insured.name	.1 - Family Name .2 - Given Name .3 - Middle Name **Inbound:** This is required if the insured differs from the patient.
17	C	Insured's Relationship to Patient	coverage.relationship	'SEL' - SELF 'SPO' - SPOUSE 'CHD' - CHILD 'OTH' - OTHER 'PAR' - PARENT/GUARDIAN **Inbound:** This is required if the name of insured is not the same

				as the patient. We translate any other value to ‘OTH’.
18	O	Insured’s Date of Birth	insured.birthDate	**Inbound:** Only updates when relationship is not SELF.
19.1 **19.3** **19.4** **19.5** **19.6**	O O O O O	Insured’s Address	insured.address	.1 - Street Address .3 - City .4 - State/Province .5 - Zip/Postal Code .6 - Country **Inbound:** Only updates when relationship is not SELF.
35	C	Company Plan Code		*See IN1-4.3*
36	O	Policy Number		*See IN1-49*
42	O	Insured’s Employment Status	insured.extension.employmentstatus	'1' - FULL-TIME '2' - PART-TIME '3' - UNEMPLOYED '5' - RETIRED 'S' - STUDENT 'O' - OTHER '9' - OTHER **Inbound:** We translate any other value to 'O'. Only updates when relationship is not SELF.
43	O	Insured’s Sex	insured.gender	‘F' - FEMALE ’M' - MALE 'O' - OTHER 'U' - NULL **Inbound:** We translate any other value to 'O' when inserting new patients and ignore any other value when updating existing patients. Only updates when relationship is not SELF.
44.1 **44.3** **44.4**	O O O	Insured’s Employer’s Address	employer.address	.1 - Street Address .3 - City .4 - State/Province

44.5 **44.6**	O O			.5 - Zip/Postal Code .6 - Country
49.1 **49.4** **49.10**	C C C	Insured's ID Number	insured.identifier (Code MR), insured.managingOrganization	.1 - Subscriber ID of Insured .4 - Assigning Authority of Insured .10 - Managing Organization of Insured **Inbound:** We read IN1-49 then IN1-2. **Outbound:** We copy to IN1-2 and IN1-36

FT1 - Financial Transaction Segment

Seq	Inbound	Description	FHIR	Logic
1	O	Set ID	n/a	**Outbound:** Auto-generated sequence number.
2	O	Transaction ID	imagingStudy.id	**Outbound:** Unique value for each charge generated with InternalStudyID + '.' + Set ID. We copy FT1-2 to FT1-7.
4	O	Transaction Date	imagingStudy.started	Study Date/Time
5	O	Transaction Posting Date	n/a	**Outbound:** Sends the date/time that the sending system created the message.
6	O	Transaction Type	n/a	**Outbound:** Always set to 'CG'.
7	O	Transaction Code		*See FT1-2*
8	O	Transaction Description	imagingStudy.description	Study Description
10	O	Transaction Quantity	chargeItem.quantity	Procedure Code Quantity
11	O	Transaction Amount - Extended	chargeItem.PriceOverride	Charge Amount Multiplied by Quantity
12	O	Transaction Amount - Unit	chargeItem.FactorOverride	Charge Amount
14	O	Insurance Plan ID	insured.identifier (Code MR)	Insured ID

16.1 **16.2** **16.4** **16.9**	O O O O	Assigned Patient Location	imagingStudy.extension.department, imagingStudy.healthcareservice, imagingStudy.extension.imaging, encounter.location	.1 - Department .2 - Room .4 - Imaging Institution .9 - Patient's Location
17	O	Fee Schedule	chargeItem.extension.feeSchedule	
18	O	Patient Type	payer.extension.financialClass	Patient's Financial Type 'CP' - CAPITATED 'SP' - SELF-PAY 'CM' - COMMERCIAL 'ME' - MEDICARE 'OT' - OTHER 'OH' - OHIP 'MA' - MEDICAID 'WC' - WORKERS COMP
19.1 **19.2** **19.3**	O O O	Diagnosis Code	imagingStudy.extension.reasonCode	Diagnosis Code .1 - Diagnosis Code .2 - Diagnosis Description .3 - Name of Coding System **Inbound:** We handle multiple diagnoses delimited by ~ and only update if not blank. **Outbound:** Name of coding system defaults to "I10".
20	O	Performed by Code	practitioner.identifier (NPI), practitioner.name, readingOrganization	Reading Physician .1 - ID/NPI .2 - Family Name .3 - Given Name .4 - Middle Name .5 - Suffix .6 - Prefix .14 - Reading Organization
21	O	Ordered by Code		Referring Physician *See OBR-16*
23	O	Filler Order Number	serviceRequest.identifier (code ACSN)	Accession Number
25	O	Procedure Code	chargeItem.code	.1 - Procedure Code .2 - Procedure Code Description .3 - Procedure Coding Method

				Outbound: Name of coding system defaults to “CPT-4”.
26	O	Procedure Code Modifier	chargeItem.extension (modifier)	**Outbound:** Multiple modifiers are delimited with ~ character.

DG1 - Diagnosis Segment

Seq	Inbound	Description	FHIR	Logic
1	R	Set ID	N/A	**Outbound:** Auto-generated sequence number.
3.1 **3.2** **3.3**	R R O	Diagnosis Code	serviceRequest.ReasonCode	.1 - Diagnosis Code Identifier .2 - Diagnosis Code Description .3 - Name of Coding System **Outbound:** Always set to ‘I10’.
6	O	Diagnosis Type	n/a	**Outbound:** Always set to ‘W’.

PR1 - Procedures Segment

Seq	Outbound	Description	FHIR	Logic
1	R	Set ID	n/a	**Outbound:** Auto-generated sequence number.
2	R	Procedure Coding Method	n/a	**Outbound:** Always set to ‘CPT-4’.
3.1 **3.2**	R R	Procedure Code	imagingStudy.procedureCode	.1 - Procedure Code .2 - Procedure Code Description
5	O	Procedure Date/Time	imagingStudy.started	Study Date/Time
6	R	Procedure Functional Type	n/a	**Outbound:** Always set to ‘D’.
12.1 **12.2** **12.3** **12.4** **12.5** **12.6** **12.13**	O O O O O O R	Procedure Practitioner	practitioner.identifier (NPI), practitioner.name	Reading Physician .1 - ID/NPI .2 - Family Name .3 - Given Name .4 - Middle Name .5 - Suffix .6 - Prefix .13 - Always set to ‘RD’ for Radiologist

14	O	Procedure Priority	n/a	Number of Study Procedures '0' - The admitting procedure '1' - The primary procedure '2' and higher - For ranked secondary procedures
15.1 **15.2** **15.3**	O O O	Associated Diagnosis Code	imagingStudy.extension.reasonCode	.1 - Diagnosis Code Identifier .2 - Diagnosis Code Description .3 - Name of Coding System **Outbound:** Always set to 'I10'.
16	O	Procedure Code Modifier	imagingStudy.extension (procedureModifier)	**Outbound:** Multiple modifiers are delimited with ~ character.

MFI - Master File Identification Segment

Seq	Outbound	Description	FHIR	Logic
1	R	Master File Identifier	n/a	**Outbound:** 'PRA' - Practitioner master file
2	R	Master File Application Identifier	n/a	**Outbound:** Always set to 'RAMSOFT'.
3	R	File-Level Event Code	n/a	**Outbound:** Always set to 'UDP'.
5	R	Effective Date/Time	n/a	**Outbound:** Sends the date/time that the sending system created the message.
6	R	Response Level Code	n/a	**Outbound:** Always set to 'NE'.

MFE - Master File Entry Segment

Seq	Inbound	Description	FHIR	Logic
1	R	Record-Level Event Code	messageHeader.msgUserAction	'MAD' - Add a new user 'MUP' - Update an existing user 'MDC' - Deactivate a user 'MAC' - Reactivate a user
2	O	Message Control ID	messageHeader.msgControlId	*See MSH-10*

3	O	Effective Date/Time	n/a	**Outbound:** Sends the date/time that the sending system created the message.

STF - Staff Identification Segment

Seq	Inbound	Description	FHIR	Logic
2.1 **2.4**	C O	Staff ID Code	practitioner.identifier	.1 - NPI **Inbound:** We read PRA-6 then STF-2 .4 - SSN
3.1 **3.2** **3.3** **3.4** **3.5**	R O O O O	Staff Name	practitioner.name	.1 - Family Name .2 - Given Name .3 - Middle Name .4 - Suffix .5 - Prefix
4	R	Staff Type	practitionerRole.extension (role)	Role Name
5	O	Sex	practitioner.gender	'M' - Male 'F' - Female 'O' - Other
6	O	Date/Time of Birth	practitioner.birthDate	
7	O	Active/Inactive Flag	practitioner.active	
8.1 **8.2**	O R	Department	practitionerRole.organization, practitionerRole.extension (organizationUserId)	.1 - Internal Organization ID .2 - Organization Name Multiple facilities are repeated with delimiter ~
10.1 **10.2** **10.3**	O O O	Phone	practitioner.telecom	.1 - Business Phone Number .2 - Cell Phone Number .3 - Pager Multiple numbers are repeated with delimiter ~
11.1 **11.3** **11.4** **11.5** **11.6**	O O O O O	Office/Home Address	practitioner.address	.1 - Street Address .3 - City .4 - State/Province .5 - Zip/Postal Code .6 - Country
15	O	Email Address	practitioner.telecom (email)	
18	O	Job Title	practitioner.note	User Notes

PRA - Practitioner Detail Segment

Seq	Inbound	Description	FHIR	Logic
6.1 **6.2** **6.3** **6.6**	C C C C	Practitioner ID Numbers	practitioner.extension (DEA), practitioner.license	License Information **Inbound/Outbound:** 1 - License Number 2 - Type of license We support the following types: 'DEA' - Drug Enforcement Agency 'SL' - State License 'NPI' - Unique Physician ID **Inbound:** We read PRA-6 then STF-2 3 - Licensing State (applies to SL only) 6 - Licensing Country (applies to SL only) Multiple licenses are repeated with delimiter ~

ZLI - Custom User Account Information Segment

Seq	Inbound	Description	FHIR	Logic
1	R	Username	practitioner.extension (loginName)	Login Email **Inbound:** We use username as the login email address to create the user. Upon creation of the user, the invite will be sent to this email to setup the password. The user can be located by the username when updating/deleting users.

ACC - Accident Segment

Seq	Outbound	Description	FHIR	Logic
1	C	Accident Date/Time	n/a	Date of Injury
2.1 **2.2**	R O	Accident Code	n/a	.1 - Accident Type Code 'AUTO' 'EMP' 'OTH' .2 - Claim #: Patient insurance insured ID (Primary)
4	C	Accident State	n/a	Insurance Coverage Place State

5	R	Accident Job Related Indicator	n/a	'Y' if accident code is 'EMP', otherwise 'N'.

NK1 - Next of Kin / Associated Parties Segment

Seq	Inbound	Description	FHIR	Logic
2.1 **2.2** **2.3** **2.4** **2.5**	R O O O O	Name	contact.name	Contact Name .1 - Family Name .2 - Given Name .3 - Middle Name .4 - Suffix .5 - Prefix
3	O	Relationship	contact.extension.relationship	Relationship to Patient 'SEL' - SELF 'SPO' - SPOUSE 'CHD' - CHILD 'OTH' - OTHER 'PAR' - PARENT/GUARDIAN **Inbound:** We translate any other value to 'OTH'.
5.1 **5.4**	O	Phone Number	contact.telecom	.1 - Phone Number .4 - Email
7	R	Contact Role	contact.relationship.code	**Inbound:** Process this segment when this value is 'C' and emergency information is not provided in the GT1 segment.

AUT - Authorization Information Segment

Seq	Inbound	Outbound	Description	FHIR	Logic
1	O	O	Authorizing Payor, Plan ID		Coverage Plan ID
2	O	O	Authorizing Payor, Company ID		Insurance Company ID
3	O	O	Authorizing Payor, Company Name		Insurance Company
4	O	O	Authorization Effective Date		**Inbound:** We read IN1-14.2 then AUT-4

					Outbound: <to do>
5	O	O	Authorization Expiration Date		**Inbound:** We read IN1-13 then AUT-5 **Outbound:** <to do>
6	O	O	Authorization Identifier		Authorization Number **Inbound:** We read IN1-14.1 then AUT-6 **Outbound:** <to do>

PRB - Problem Detail Segment

Seq	Inbound	Description	FHIR	Logic
2	O	Action Date/Time	Condition.onSetDate	
3.1 **3.2**	R O	Problem ID	Condition.coding.code, Condition.coding.display	.1 - Problem Code .2 - Problem Description
7	O	Problem Established Date/Time	Condition.AssertedDate	

Configuration

General Configuration Options

Parameter	Description	Default Value
enableMirthOmegaAI	Allows RMC FHIR channels.	true
enableMirth6	Allows RMC 6.0 channels.	false
Debug_Set	Debug option for verbose logging information.	true
Debug_Set_API	Debug option for verbose API logging information.	true
RS_Append_Delimiter_Char	Concatenation character for symptoms, clinical notes, and comments.	'\\'

Inbound Channel Options

Parameter	Description	Default Value
updatePatientDemographics Message	Allows updating patient, guarantor, employers, insured, payers, account, coverage, observations, allergies, and conditions resources when receiving	true

	ADT, ORM, ORU, BAR, and SIU messages.	
updateStudyDemographicsMessage	Allows updating imagingstudy, servicerequest, and appointment resources when receiving ORM, ORU, and SIU messages.	true
updateVisitDemographicsMessage	Allows updating encounter resource when receiving ADT, ORM, ORU, and SIU messages.	true
updateProblemcodesMessage	Allows updating patient problem codes when receiving ADT messages.	true
deleteProblemcodesMessage	Allows deleting patient problem codes when receiving ADT messages.	true
setFhirUpdated	Determines whether to set FhirUpdated flag in database to true.	true
updateStudyDateTimeAsAppointmentDateTime	Allows appointment date/time to be set from the study date/time field.	true This parameter uses a globalChannelMap variable and is set from the deploy script.
searchBlankRequestedProcedureid	Allows searching for studies by managing organization and accession number only.	false
useOrderVisit	Determines whether to set the visit number from the existing order instead of the value received in the PV1 segment.	true
preventStatusRollBack	Determines whether to allow study updates to transition backwards in workflow.	false
allowDistributionReport	Allows the ability for the received report to be distributed.	false
reportDocumentTypeId	Defines the document type of the report when storing it in the database.	Default: 1 See OBX Report section for a list of valid values.
reportDocumentTitle	Defines the document title.	This only applies to non-diagnostic reports. Diagnostic Report titles are set automatically.
reportEncoding	Determines how to decode a report.	Default: 0 Possible values:

		0 - perform unescaping HL7 characters and no decode for TXT, HTML, and RTF. Decode for all other report types. 1 - Perform decoding for all report types.
allowDuplicateSignedOruInbound	Determines whether to allow a duplicate report when receiving ORU messages.	true
traversePatientMerge	If the inbound patient was merged (replaced) by another patient, then locate the surviving patient by traversing merged patients chain.	true Possible values: true - use the found last replaced-by patient false - reject the message if the inbound patient was merged by another patient
updateTraversedPatientMergeDemographics	If patient record was found by traversing merge patients chain, then allow current message patient info to update the found patient data.	true Possible values: true - update patient info of the last replaced-by patient by the input patient info false - don't update the patient info of the last replaced-by patient
appendSymptoms	Appends symptoms received in a message to existing symptoms. Symptoms are separated with RS_Append_Delimiter_Char global variable.	false
appendClinicalNotes	Appends clinical notes received in a message to existing clinical notes. Notes are separated with	false

	RS_Append_Delimiter_Char global variable.	
appendComments	Appends comments received in a message to existing comments. Comments are separated with RS_Append_Delimiter_Char global variable.	false

Outbound Channel Options

Parameter	Description	Default Value
isIHEimagemanager	Disable ADT and BAR messages to comply with IHE Image Manager Actor.	false
allow_send_financial_segments_adt_outbound	Sends GT1 and IN1 segments in ADT messages.	false
allow_send_event_segment_outbound	Sends EVN segments in all messages.	true
allow_send_obx_weight_height_segment_adt_outbound	Sends OBX height and weight segments in ADT messages.	false
allow_send_obx_weight_height_segment_orm_outbound	Sends OBX height and weight segments in ORM messages.	false
allow_send_obx_weight_height_segment_oru_outbound	Sends OBX height and weight segments in ORU messages.	false
allow_send_pr1_segment_dft_outbound	Sends PR1 segments in DFT messages.	false
allow_send_financial_segments_dft_outbound	Sends GT1 and IN1 segments in DFT messages.	true
allow_send_financial_segments_orm_oru_outbound	Sends GT1 and IN1 segments in ORM and ORU messages.	false
allow_send_inactive_insurances_outbound	Sends IN1 segments where insurance is set to INACTIVE in all outbound messages when financial segments are configured to send.	true
allow_send_dg1_segment_adt_outbound	Sends DG1 segments in ADT messages.	false
allow_send_dg1_segment_orm_oru_dft_outbound	Sends DG1 segments in ORM, ORU, and DFT messages.	false
allow_send_utc_offset_outbound	Sends UTC offset in all outbound messages.	false
allow_send_aut_segment_orm_oru_dft_outbound	Sends AUT segment in ORM, ORU, and DFT messages.	false
allow_send_prb_segment_adt_outbound	Sends PRB segments in ADT messages.	false

allow_send_prb_segment_orm_oru_dft_outbound	Sends PRB segments in ORM, ORU, and DFT messages.	false
allowedOutputDocumentTypes	Sets string array of document types allowed to be sent in ORU messages.	(1)
obxSegmentSize	Sets the maximum size of each OBX segment.	65536 (per HL7 Standard) If the document format is plain-text, RTF, or HTML, then word wrapping will be performed so that segments are not broken in the middle of a word unless the word exceeds the segment size.
obxSplitDelimiters	Sets the delimiter character for outbound plain-text OBX segments.	Default: NULL A new OBX segment is created each time a delimiter character is encountered in the report text.
obxLinebreak	Sets the string to send a line break in plain-text OBX segments.	Default: '\.br\' Set this to NULL to create a new segment instead of sending a line break string. Typical line break strings are '~', '\E\n', '\X0D\'
allowSendOriginalForm	Determines whether to send the report content as it stored in the database. Set outputDocType to RS_rxtNative when set to true.	false
reportEncoding	Determines how to encode OBX segments.	Default: 0 Possible values: 0 - perform escaping HL7 characters and no encoding for TXT, HTML, RTF. Encode for all other

		report types. 1 - perform encoding for all report types. 2 - perform no escaping, no encoding, and only replace the character '|' by “ for TXT, HTML, RTF. Encode for all other report types.
outputDocType	Sets content type of the report.	Default: RS_rxtNative Possible values: RS_rxtPDF RS_rxtDOC RS_rxtDOCBody RS_rxtRTF RS_rxtRTFBody RS_rxtTextBody RS_rxtTextBodyRenderFull RS_rxtChartScriptXML RS_rxtChartScriptXMLRTF RS_rxtChartScriptXMLASCII RS_rxtDOCX RS_rxtDOCXBody RS_rxtHTML RS_rxtHTMLBody RS_rxtJPEG RS_rxtBMP RS_rxtTIFF RS_rxtDOCM