

# STAR 2000™



## STAR RADIOLOGY REFERENCE GUIDE Speech Recognition Interface Guide

Release 17.0  
October 2011

X17000111

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## Publication date

October 2011

Produced in Cork, Ireland

## Product and version

STAR 2000 Release 17.0

## Publication number

X17000111

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# Preface

**NOTE:** The Speech Recognition Interface is a billable module. For information on how to obtain this feature, contact your McKesson Sales Center representative at 1-800-469-4262.

McKesson's Speech Recognition Interface provides the STAR Radiology system with a generic speech recognition interface based on HL7<sup>®</sup> standards and TCP/IP communications. To ensure the standard interface is operational, the interface has been developed in a cooperative effort with Talk Technology's Talk Station/Radiology<sup>™</sup>. Other speech recognition systems may use this interface if they use the same specifications. These specifications are provided in this guide.

The interface sends orders, revisions, cancellations, and add-on orders. One record is sent for each exam performed on STAR Radiology. When the transcription is received from the speech recognition system, the STAR Radiology system files the results and places the report in the Radiologist Review Queue when appropriate. Transcription can be modified on STAR Radiology using the editor defined for the STAR Radiology product. Transcription modified on the STAR Radiology is not sent to the speech recognition system. Radiology Final Reports are printed from STAR Radiology.

This interface is compliant with HL7 version 2.2. Implementation requires STAR Radiology 15.1 or above, and that the interfaced system is HL7 compliant.

This guide contains technical information about the Speech Recognition Interface as well as information for the user of the interface.



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# Documentation Conventions

Documentation for McKesson's STAR 2000™ line of products follows these conventions:

## Revisions

Text revisions are indicated by a change bar in the left margin. Paragraphs that contain grammatical changes that do not affect content are not marked.

## Canadian Documentation

This volume may include documentation for Canadian users of this product. Complete sections of Canadian text are identified by "CN" and "CN Only."

## Key Names

Named keys, such as ENTER, SHIFT, CTRL, and ALT, appear in this document in uppercase (capital) letters. Symbol keys are displayed according to the key name, followed by the symbol on the key in parentheses, such as hyphen (-) and asterisk (\*).

## Key Chords

Key chords are key entries that require you to hold down one or more keys (typically, CTRL, ALT, or SHIFT) before pressing another key. In this document, key chords are displayed as the names of each key in the chord with a hyphen (-) between each (for example, CTRL-ALT-DEL). You should press the keys in the order indicated.

## ENTER

ENTER is a key on a computer keyboard used to complete an entry on a STAR system. (This key may also be referred to as NEW LINE or NL in the STAR System.)

## Data Entries

Letters or words you enter in response to the system are displayed in **boldface** letters in this document. For example: Enter **Y** for Yes or **N** for No.

## Selecting an Entry

This document often instructs you to "select an entry." The method you use to select an entry depends on whether you are using STAR from a terminal or IBM-compatible personal computer. Entry methods include:

- Entering the option number
- Using your arrow keys to highlight the option and pressing ENTER
- Clicking on the option using a mouse or other pointing device (PC only)

For more information about these options, see the *General Information Volume*.

## Prompts

System prompts are displayed at the bottom of many STAR screens when the system requests an entry or displays a message. In this document, these prompts are indented and the text italicized, as shown in the following example:

*Enter patient name--*

**Field Characteristics**

STAR product documentation provides field explanation codes, in addition to a narrative description for each field on a screen. These codes display the maximum length of your entry in the field, the type of entry you make in the field, and whether the field is required. This information is displayed in the following format:

- DISPLAY ONLY for a field you cannot edit.
- For X-YY-Z field types, where:
  - X is the maximum number of characters permitted in the field:
    - P for a field length determined by a Parameter
    - T for a field length determined by a Table
    - U for a field having an Undefined length
  - YY is the type of entry technique permitted in the field:
    - A for Letters only
    - N for Numerals only
    - C for Characters (including punctuation)
    - AC for Letters and Punctuation only (no numbers)
    - NC for Numerals and Punctuation only (no letters)
    - AN for Numerals and Letters only (no punctuation)
  - Z is the requirement indicator of the field:
    - R if an entry is required to complete the function

**NOTE:** Facilities can designate that certain fields be Required. STAR product documentation does not display R for fields designated as Required by a facility.

    - O if an entry is Optional to complete the function
    - C if an entry is Conditionally required or optional
  - For YY-Z field types, where YY is:
    - TABLE LOOKUP for a field that enables you to select from a displayed table. See the *General Information Volume* for more information regarding this entry technique.
    - SPECIAL FORMAT for a field having data entry requirements not conforming to standard format. The field definition contains the specific data entry requirements for the field.
    - DATE for a field subject to the date entry conventions described in the *General Information Volume*.
    - TIME for a field subject to the time entry conventions described in the *General Information Volume*.

**NOTE:** For use of the Z position in this format, refer to the explanations for Z under X-YY-Z.

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# Introduction

This guide contains technical and user information about the Speech Recognition Interface, which is accessed through functions available on the STAR Radiology Generic Interface Maintenance Functions Processor. For more information about Maintenance Functions in STAR Radiology, see the *Maintenance Volume* of the *STAR Radiology Reference Guide*.

## Chapter 1: Overview/Description

This chapter provides a general description of the Speech Recognition Interface and the functions available in the Maintenance Functions Processor.

## Chapter 2: System Requirements

This chapter provides the hardware and software requirements needed for the Speech Recognition Interface.

## Chapter 3: Installation

This chapter provides information for the McKesson employee installing the interface.

## Chapter 4: User Functions

This chapter documents the user functions for the Speech Recognition Interface.

## Chapter 5: Technical Notes

This chapter contains information about outgoing and incoming transactions between STAR Radiology and the speech recognition system.



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## NON-TECHNICAL FUNCTIONAL OVERVIEW

**NOTE:** The Speech Recognition Interface is a billable module. For information on how to obtain this feature, contact your McKesson Sales Center representative at 1-800-469-4262.

The Speech Recognition Interface allows STAR Radiology to transmit order and demographic information to a speech recognition application and accept the textual results and associated ID codes from the speech recognition system.

This interface is an HL7 point-to-point interface between STAR Radiology and Talk Technology's Talk Station/Radiology using the interface specifications provided by Talk Technology. Other speech recognition vendors may use this interface if they use the same specifications. The interface uses TCP/IP communications protocol.

## FEATURES/FUNCTIONS

By implementing this interface, STAR Radiology customers are able to utilize a speech recognition application to generate the Final Report, reduce transcription costs, and decrease average report turnaround time.

### Sending Orders to the Speech Recognition System

The order is sent to the speech recognition system from STAR Radiology upon check-in. Orders *must* be checked in before the speech recognition system can receive them.

#### TRIGGER EVENTS

##### **Exam Check-in**

The order message is sent whenever an exam is checked in. An order status of "IP" is sent.

##### **Exam Cancellation**

The order message is sent when an exam is cancelled. An order status of "CA" is sent so that the speech recognition system can remove the exam from its database.

##### **Exam Revision**

The order message is sent twice. The first message contains the old order information. An order status of "CA" is sent with the old order information so the speech recognition system can remove the exam from its database. The second message contains the new order information. An order status of "IP" is sent with the new order information.

##### **Exam Resulting**

The order message is sent whenever exam results are filed in Exam Data Entry. If the exam is clinically complete, an order status of "CM" is sent to the speech recognition system; otherwise, an order status of "IP" is sent.

### Filing Results Received from the Speech Recognition System

Upon receipt of the results from the speech recognition system, STAR Radiology files the results for all exam codes passed back. In general, application processing treats the results as if they were entered through Exam Data Entry and accepted manually. The way the results update depends on the result status that is passed from the speech recognition system and on the role(s) (radiologist or resident) associated with the ID code(s) passed from the speech recognition system.

#### PRELIMINARY STATUS

##### **Report Text**

The report text document number and report date/time are filed to the result field associated with the Report Summary Result in the Final Report Printing Parameters screen for each master exam.



**Transcriptionist result**

The ID code passed from the speech recognition system is filed to the result field associated with the Transcriptionist Result in the Final Report Printing Parameters screen for the master exam. If two ID codes (radiologist and resident) are returned, the system uses the resident ID code.

**Reading Radiologist Result**

This ID code is filed to the result field associated with the Radiologist Result in the Review Queue results for the master exam.

**Reading Resident Result**

This ID code is filed to the result field associated with the Resident Result in the Review Queue results for the master exam.

**Review Queue**

If two ID codes are passed from the speech recognition system, the exam(s) are queued to both ID codes. The first ID Code is the Reading Radiologist and the second ID Code is the Reading Resident.

If a single ID code is passed from the speech recognition system, it is treated as the Reading Radiologist.

**Final Report Status**

The Final Report status is updated to *Preliminary*.

**Statistical Data**

All associated statistical data such as Activity Tracking, Productivity, etc., are updated as though results filing had been done through STAR Radiology.

**FINAL STATUS****Report Text**

The report text document number and report date/time is filed to the result field associated with the Report Summary Result in the Final Report Printing Parameters screen for each master exam.

**Transcriptionist Result**

The ID code passed from the speech recognition system is filed to the result field associated with the Transcriptionist Result in the Final Report Printing Parameters screen for the master exam. If two ID codes (radiologist and resident) are returned, the system uses the resident ID code.

**Reading Radiologist Result**

This ID code is filed to the result field associated with the Radiologist Result in the Review Queue results for the master exam.

**Releasing Radiologist Result**

This ID code is filed to the result field associated with the Releasing Radiologist Result in the Review Queue results for the master exam.

**Reading Resident Result**

This ID code is filed to the result field associated with the Resident Result in the Review Queue results for the master exam.

**Releasing Resident Result**

This ID code is filed to the result field associated with the Resident Result in the Review Queue results for the master exam.

**Review Queue**

If two ID codes are passed from the speech recognition system and the report is final, the exam(s) are not queued.

**Final Report Status**

The Final Report status is updated based on the results that have been filed. If all clinically required fields are complete, the Final Report status is updated to *Final*, otherwise it is the appropriate status based on the current application rules.

**Statistical Data**

All associated statistical data such as Activity Tracking, Productivity, Incomplete Work, etc., is updated just as though results filing had been done through STAR Radiology.

**ADDENDUM STATUS****Report Text**

The report document number and report date/time file to the result field associated with the Report Summary Result in the Final Report Printing Parameters screen for each master exam. It is appended to the current report text according to the rules for Addendum Reporting. The current report is versioned as though an Addendum Report had been added through STAR Radiology.

**Transcriptionist Result**

The ID code passed from the speech recognition system is filed to the result field associated with the Transcriptionist Result in the Final Report Printing Parameters screen for the master exam. If two ID codes (radiologist and resident) are returned, the system uses the resident ID code.

**Reading Radiologist Result**

This ID code is filed to the result field associated with the Radiologist Result in the Review Queue results for the master exam.

**Releasing Radiologist Result**

This ID code is filed to the result field associated with the Releasing Radiologist Result in the Review Queue results for the master exam.

**Reading Resident result**

This ID code is filed to the result field associated with the Resident Result in the Review Queue results for the master exam.

**Releasing Resident Result**

This ID code is filed to the result field associated with the Resident Result in the Review Queue results for the master exam.

**Review Queue**

The exam is forwarded to the current Reading Radiologist.

**Final Report Status**

The Final Report status is updated based on the results that have been filed. If all clinically required fields are complete, the Final Report status is updated to Addendum. Otherwise, it is the appropriate status based on the current application rules.

**Statistical Data**

All associated statistical data such as Activity Tracking, Productivity, Incomplete Work, etc., are updated as though results filing had been done through STAR Radiology.

## Bar Code Labels for the Speech Recognition System

If your department wants to use bar code labels to identify a patient on the speech recognition system, Talk Station/Radiology can be configured to interpret a range of characters from a bar code label.

The folder ID bar code contains the medical record number of the patient. The exam label and check-in label bar codes contain the Check-In Number and Exam Code sent to Talk Station/Radiology. Talk Station/Radiology can be configured to use these labels without additional programming on the STAR Radiology system.

**NOTE:** In the case of other speech recognition systems, it might be necessary to customize one of the base bar code labels.

## User-defined Fields

The Speech Recognition Interface permits the definition of up to five user-defined fields that can be passed back and forth between STAR Radiology and the speech recognition system.

STAR Radiology sends the following information in these fields:

- User Field 1: ICD Code
- User Field 2: SIM Dept Code
- User Field 3: Master Exam Code
- User Field 4: Check-in number
- User Field 5: Exam code with L/R indicator (when applicable)

## Reports

### PRELIMINARY REPORTS

If a report is sent from the speech recognition system with a Preliminary status, it can be authenticated on STAR Radiology via the Review Queue. It is queued to the dictating radiologist queue.

There are special considerations when the dictating radiologist is a resident. If STAR Radiology receives both a resident radiologist ID code and a staff ID code from the speech recognition system and the report is preliminary, it queues the report to both queues. The speech recognition system must be configured properly so that a resident has to identify the staff radiologist for whom he or she is reading. The resident also gets credit for transcription.

In the case of a single ID code, the system assumes that the ID code passed is a staff radiologist. In this case, the staff radiologist gets credit for transcription.

### FINAL REPORTS

If a report is sent from the speech recognition system with a Final status, the exam normally is completed on STAR Radiology. There are some important exceptions to this general rule.

If there are any clinically required results besides Transcriptionist, Report, Read By, and Released By, they need to be filled in manually on STAR Radiology before the exam can go to a Complete status. (Resident Read By and Resident Released By are not normally clinically required results. However, if a resident ID code comes back to STAR Radiology, these results are filled in by the system in addition to the results mentioned above.)

There are special considerations when the dictating radiologist is a resident. If STAR Radiology receives both a resident radiologist ID code and a staff ID code from the speech recognition system, it populates the Read By and Released By results for both the resident and the staff radiologist (in addition to the Report and Transcription fields). Note that the resident also gets credit for the transcription because the system assumes that he or she dictated the report.

### ADDENDUM REPORTS

The Speech Recognition Interface permits Addendum Reporting. Addendum Reporting functionality exists in STAR Radiology release 16.1 and above.

If a report is sent from the speech recognition system with an Addendum status, the Addendum is appended to the current report and reports are versioned.

## REPORT LINKING

The Speech Recognition Interface permits different exams to share the same report. If the exams do not belong to the same master exam, however, they cannot be linked on STAR Radiology in releases prior to 17.1. If this interface is retrofitted to a release of STAR Radiology prior to 17.1, reports from different Master Exams should not be linked on the speech recognition system. This issue needs to be handled procedurally. The safest procedure is to generate only one report per exam.



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# MINIMUM SYSTEM REQUIREMENTS

## STAR Radiology

### HARDWARE REQUIREMENTS

The speech recognition server needs to have a fixed IP address assigned to it. This is usually done by your IS department.

Two MSE ports must be assigned: an outbound port and an inbound port. This is also done by the IS department.

### SOFTWARE REQUIREMENTS

The minimum software requirements for implementation of the Speech Recognition Interface are as follows:

- STAR Radiology, Release 15.1 or higher
- HL7, Release 2.2 or higher

## Speech Recognition System

Hardware and software requirements for the speech recognition vendor need to be obtained from that vendor.



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## INSTALLING THE SPEECH RECOGNITION INTERFACE

**NOTE:** Installation of the Speech Recognition Interface is performed by McKesson. If you wish to have this interface installed, your facility must first submit a work order. Note that this is a billable module and that there is a software license fee for the interface.

### Defining the Speech Recognition Interface in STAR Radiology

To implement the Speech Recognition Interface, the McKesson installer uses the Interface Parameter Maintenance function to define the interface parameters for the system to use in communicating the data over the interfaced system. This function allows users to define the characteristics of the interface. If there are multiple interface lines, each line must be defined using this function.

Access this function by selecting Interface from the Maintenance Functions screen. Then select Interface Control - Generic Interface and the appropriate department. After selecting the department, select the Interface Parameter Maintenance option.

For the Speech Recognition Interface, there must be one Inbound Interface line and one Outbound Interface line from STAR Radiology to the speech recognition system. Select either Inbound or Outbound Parameter Maintenance accordingly. After you choose this option, the following prompt is displayed:

*Enter communication code --*

Enter **SRO** as the code for outbound definition or **SRI** for inbound definition. The system displays the Parameter Maintenance Processor screen for the Speech Recognition Interface.

If you enter a code that does not exist, the following prompt is displayed:

*Add this code [code]? (Y/N) [Y]--*

The default is Yes. If you enter **Y** or press ENTER, the system displays the Parameter Maintenance Processor screen. If you enter **N**, the system returns to the communication code prompt.

The data transmission from STAR Radiology to the speech recognition system is driven by the parameters and values set in the Interface Parameter Maintenance screens.

**NOTE:** Changes made to these parameters do not take effect until the parameters are filed and the interface is reactivated.

## DEFINING OUTBOUND PARAMETERS

The following screen displays for Outbound Parameter definition in STAR Radiology:

General Hospital Outbound Parameter Maintenance Processor									
Communication Code: SRO					Tue Sep 07, 2004 02:04 pm				
					Updated last by: #32763 on 08/13/04 1421				
1 Description	2 Facilities	3 Port	4 HIS						
SPEECH OUTBND	A	157	Horizon Clinicals						
5 Protocol Pgm	6 Error Pgm	7 Error Log	8 Products	9 Audit	10 Days				
LR^AHL7CT	^AHL7TCPE	AXMEXER000	X	Yes	7				
11 Inc Trans Pgm	12 Incoming Transactions								
^CCHIS1									
13 Historize	14 Same Internal #	15 HL7							
Yes		Yes							

Enter field number or '/' starting field number--

## Field Explanations

### 1. DESCRIPTION (19-C-R)

This field contains a free-text descriptive name of the interface (for example, SRO for the Speech Recognition Outbound Interface). This name is displayed on the system list and must be unique for each interface.

### 2. FACILITIES (TABLE DISPLAY-R)

This field identifies the facilities serviced by the interface. When you access this field, the system displays a table of available facilities for your system. Enter the option number(s) of the facilities for which data should be communicated over this HL7 interface. To select a range of facilities, enter the option numbers of the first and last facility in the range, separated by a hyphen(-). To remove a selected facility, enter the option number of the facility to be removed preceded by a hyphen (-).

### 3. PORT (2-N-R)

This field identifies the outbound MSE port number to which the interfaced system is attached. This port is defined in the system using the Port Modification Utility. For more information about this utility, refer to the *MultiSTAR Software Environment for UNIX Operations Guide*.

### 4. HIS

This field displays the health information system used for this interface.

### 5. PROTOCOL PGM(16 C-R)

This field identifies the program that manages the interface queue. For outbound HL7 interfaces in STAR Radiology, this is LR^AHL7CT.

**6. ERROR PGM**

This field contains the program to be executed upon an error occurring. For this interface, the program is ^AHL7TCPE.

**7. ERROR LOG**

This field identifies the system report to which the error messages generated by this interface should print. When you access this field, the system displays a table of defined reports. For STAR Radiology interfaces, select AXMEXER000.

**8. PRODUCTS**

This field identifies which products are to cross the interface. For this interface, this field contains X.

**9. AUDIT**

This field identifies whether or not to turn on the audit.

**10. DAYS**

This field determines the amount of time, in days, to retain the audit information.

**11. INC TRANS PGM**

This field determines which program is used to determine the STAR transactions containing triggering events for transmitting transactions over the interface. For this interface, this field needs to be set to ^CCHIS1.

**12. INCOMING TRANSACTIONS**

Not applicable for this interface.

**13. HISTORIZE**

Although not applicable to for this interface, should be set to YES.

**14. SAME INTERNAL #**

Not applicable for this interface.

**15. HL7 (1-A-R)**

This field identifies whether this is an HL7 compliant interface. The Speech Recognition Interface is an HL7 compliant interface. Enter Y for Yes in this field.

When you complete these fields, the system prompts you to accept the screen. Enter **Y** to accept the contents of the screen. Enter **N** to continue editing the screen. After the screen is accepted, the system displays the following screen:

```

      General Hospital Outbound Parameter Maintenance Processor
                                Tue Sep 07, 2004 02:05 pm
Communication Code: SRO          Updated last by: #32763 on 08/13/04 1421
HL7 Parameters
 1 STX Character    2 ETX Character    3 Receiver Binary    4 Sending Application
 11                28                Yes                   HBOX
 5 Receiving Application 6 Query Level    7 Number of Result Query Lines
 SRO                Single
 8 Result Query Lines          9 Minor Error Halt
                                Yes
10 HL7 Version            11 NULL/Not Present Support    12 Encode
 2.2                      No
13 HBOCHI                 14 HL7 Queue/Audit Routine

Enter field number or '/' starting field number--

```

## Field Explanations

### 1. STX CHARACTER (3-C-R)

This field contains the character for the start of text message header. Enter the numeric value for the ASCII character set. The system displays the ASCII character in brackets ([ ]) to the right of your entry; if the character set is not a printable ASCII character, the system displays only your entry.

### 2. ETX CHARACTER (3-C-R)

This field contains the character for the end of text message header. Enter the numeric value for the ASCII character set.

### 3. RECEIVER BINARY (1-A-R)

This field identifies whether the start of text character from the receiver is a binary character. Enter **Y** if this is a binary character. Enter **N** if this is a non-binary (printable) character. For the Speech Recognition Interface, set this field to Yes.

### 4. SENDING APPLICATION (15-C-R)

This field identifies the STAR Application that originates this message transmitted over this HL7 interface. The interface places this code in the MSH header segment. McKesson recommends HBOX code for STAR Radiology.

### 5. RECEIVING APPLICATION (15-C-R)

This field identifies the system receiving this message transmitted over this HL7 interface. This code must be unique for each receiving application. For the speech recognition system, the code used is SRO.



**6. QUERY LEVEL (1-A-R)**

This field determines whether the system should use single level or double level queries. For the Speech Recognition Interface, enter **S** to use single-level query since all order/check-in information needed to send the check-in and exam information resides on the STAR Radiology system.

**7. NUMBER OF RESULT QUERY LINES (1-N-R)**

This field identifies the number of query lines available for this interface.

**8. RESULT QUERY LINES (40-C-R)**

This field identifies each query line available for this interface. The system rotates through these query lines, one query at a time, to accommodate traffic over this interface.

**9. MINOR ERROR HALT (1-A-R)**

This field determines whether the interface should halt or continue to communicate data in the event of a minor error. Errors are classified as either fatal or minor. In the HL7 interface, the only fatal error occurs when protocol numbers are not synchronized. Enter **Y** to halt this interface in the event of all system errors. Enter **N** to only halt this interface in the event of a fatal error.

**10. HL7 VERSION (6-C-R)**

This field identifies the version of the HL7 standards. Enter 2.2 of the HL7 standard versions.

**11. NULL/NOT PRESENT SUPPORT**

Not applicable for this interface.

**12. ENCODE**

Not applicable for this interface.

**13. HBOCHI**

Not applicable for this interface.

**14. HL7 QUEUE/AUDIT ROUTINE**

Not applicable for this interface.

When you complete these fields, the system prompts you to accept the screen. Enter **Y** to accept the contents of the screen. Enter **N** to continue editing the screen. After the screen is accepted, the system displays the following prompt:

*Set Product Specifications? (Y/N)—*

Enter **Y**. The system prompts you for the product. This corresponds to the Products field from the initial screen. Select the product, and the following screen is displayed:

General Hospital Outbound Parameter Maintenance Processor			
Communication Code: SRO		Tue Sep 07, 2004 02:10 pm	
Radiology Interface		Updated last by: #32763 on 08/13/04 1422	
1 Incoming Tx OR,OU,CO	2 Incoming Pgm ^XZGI	3 Outgoing Tx CA,NO,OT,RE	4 Outgoing Pgm ^AHL7XO
5 Error Log 122	6 Error Pgm AHL7TCPE	7 SIM Department(s) RAD	
8 HL7 Outbound Message		9 HL7 Outbound Tables	
10 Result Menu Name for Normal Codes			
Enter field number or '/' starting field number--			

## Field Explanations

### 1. INCOMING TX (TABLE LOOKUP-O)

This field displays the STAR transactions containing triggering events for transmissions to STAR Radiology over this interface, as defined in the Incoming Transaction field on the first screen of the communication definition.

### 2. INCOMING PGM (9-C-O)

This field indicates the program used to process incoming transactions. Press ENTER to accept the default program.

### 3. OUTGOING TX (TABLE LOOKUP-O)

This field identifies STAR transactions containing trigger events for transmission to systems over this interface.

When you access this field, enter a hyphen (-) to display a menu of Transaction Codes for the system. Enter the option numbers of the transactions that trigger a data transmission. To remove a selected transaction, enter the option number preceded by a hyphen (-).

### 4. OUTGOING PGM (9-C-R)

This field identifies the program used to process outgoing transactions. Enter the name of the program preceded by a caret (^), or press ENTER to accept the default program.

**5. ERROR LOG (TABLE DISPLAY-O)**

This field identifies the report name to which error messages generated by this interface should print. When you access this field, the system displays a table of defined reports. Select the desired report.

For more information about defined reports in the system, refer to the Print Spooler Functions chapter in the *MultiSTAR Software Environment for UNIX Operations Guide*.

**6. ERROR PGM (16-C-R)**

This field identifies the program used to process errors. Press ENTER to use the default error program.

**7. SIM DEPARTMENT(S) (TABLE DISPLAY-O)**

This field identifies the SIM departments for which the interface transaction should be processed. Select all STAR Radiology departments using the interface.

**8. HL7 OUTBOUND MESSAGE (SPECIAL FORMAT-O)**

This field identifies the version of the messages to be transmitted over this interface. You can only edit this field for HL7 type interfaces.

When you access this field, the system displays a table of events and the messages associated with each event. The events displayed are based on your entries in the Outgoing Transactions field. Select each message type and associate it with the Speech Recognition Interface via the table lookup.

Messages for each event are defined by McKesson according to the HL7 standard. You can modify the version of the message transmitted by placing your cursor on the message line and entering the number of the version to use, or enter a hyphen (-) to display and select from a list of versions for the message.

**9. HL7 OUTBOUND TABLES (TABLE DISPLAY-O)**

The HL7 Interface can download STAR tables to an interfaced system or device, thus enabling a higher degree of connectivity and minimizing communications traffic. This field identifies the STAR Radiology tables to be transmitted over this HL7 interface. The system processes all additions, revisions, and deletions of outbound tables through the interface.

**NOTE:** If you define outbound tables, you must download them to the interfaced device before going live with this interface.

**10. RESULT MENU NAME FOR NORMAL CODES**

Not applicable for this interface.

When this screen is completed, the system asks you to accept it. When the screen is accepted the system displays *Filed!* and returns you to the Interface menu.

## DEFINING INBOUND PARAMETERS

The following screen is an example of the Inbound Interface Parameter Maintenance screen in STAR Radiology:

```

      General Hospital Inbound Parameter Maintenance Processor
                                Tue Sep 07, 2004 03:22pm
Communication Code: SRI                      Updated last by: #32763 on 08/13/04 1422
 1 Description          2 Facilities  3 Port  4 Status    5 Protocol Routine
  SPEECH REC IN         A           172      ^AHL7IBR
 6 Lab SIM Departments  7 Rad SIM Departments  8 Rx SIM Departments
                                RAD
 9 Interface Audit Report Name 10 Audit Zblock  11 Audit Global
  AXMEXER000-INTERFACE ERROR REPOR          Yes
12 Dump Queue Report Name    13 Queue Zblock  14 DCU Ports

15 Outgoing Transactions      16 Outgoing table/s 17 Format Routine 18 PCM
19 Incoming Transactions      20 Incoming table/s 21 Process Routine 22 HL7
  X                               Yes
23 Line Out                   24 IMNET

Enter field number or '/' starting field number--

```

## Field Explanations

### 1. DESCRIPTION (19-C-R)

This field contains a free-text descriptive name of the interface (for example, SRI for the Speech Recognition Interface). This name displays on the system list and must be unique for each interface.

### 2. FACILITIES (TABLE DISPLAY-R)

This field identifies the facilities serviced by the interface. When you access this field, the system displays a table of available facilities for your system. Enter the option number(s) of all of the facilities for which data should be communicated over this HL7 interface. To select a range of facilities, enter the option numbers of the first and last facility in the range, separated by a hyphen(-). To remove a selected facility, enter the option number of the facility to be removed preceded by a hyphen (-).

### 3. PORT (2-N-R)

This field identifies the MSE port number to which the interfaced system is attached. This port is defined in the system using the Port Modification Utility. For more information about this utility, refer to the *MultiSTAR Software Environment for UNIX Operations Guide*.

### 4. STATUS (DISPLAY ONLY)

This field displays the status of the interface; either Active or Inactive. This field cannot be edited.

**5. PROTOCOL PGM(16-C-R)**

This field identifies the program that manages the interface queue. For inbound HL7 interfaces in STAR Radiology, this is ^AHL7IBR.

**6. LAB SIM DEPT**

Not applicable for this interface.

**7. RAD SIM DEPT**

This field contains the Radiology departments for which the interface is being defined.

**8. Rx SIM DEPT**

Not applicable for this interface.

**9. INTERFACE AUDIT REPORT NAME (TABLE DISPLAY-O)**

This field identifies the system report to which the error messages generated by this interface should print. When you access this field, the system displays a table of defined reports. For STAR Radiology interfaces, select AXMEXER000.

**10. AUDIT Z-BLOCK**

Not applicable for this interface.

**11. AUDIT GLOBAL(1-A-R)**

This field determines whether the system should create an audit global of inbound and outbound messages. Enter **Y** to create the audit global; enter **N** if you do not want to create the audit global. You must enter **Y** if you want to view an audit trail of inbound and outbound messages using the HL7 Audit Inquiry function.

**12. DUMP QUEUE REPORT NAME**

Not applicable for this interface.

**13. QUEUE ZBLOCK**

Not applicable for this interface.

**14. DCU PORTS**

Not applicable for this interface.

**15. OUTGOING TRANSACTIONS**

Not applicable for this interface.

**16. OUTGOING TABLES**

Not applicable for this interface.

**17. FORMAT ROUTINE**

Not applicable for this interface.

**18. PCM**

This field should be set to *No*.

**19. INCOMING TRANSACTIONS (TABLE DISPLAY-O)**

This field identifies the STAR transactions containing triggering events for transmissions to STAR systems over this interface. When you access this field, the system displays a menu of Transaction Codes for the system. Enter the option number(s) of the transactions that trigger a data transmission over this interface. This field should contain X.

**20. INCOMING TABLES**

Not applicable for this interface.

**21. PROCESS ROUTINE**

Not applicable for this interface.

**22. HL7 (1-A-R)**

This field identifies whether this is an HL7 compliant interface. The Speech Recognition Interface is an HL7 compliant interface. Enter **Y** for Yes in this field.

**NOTE:** If you do not enter **Y** in this field, you cannot access the remaining screens used to define communications for an HL7 interface.

**23. LINE OUT**

Not applicable for this interface.

**24. IMNET**

Not applicable for this interface.

When you complete these fields, the system prompts you to accept the screen. Enter **Y** to accept the contents of the screen. Enter **N** to continue editing the screen. After the screen is accepted, the system displays the following screen:

General Hospital Inbound Parameter Maintenance Processor				
Communication Code: SRI		Tue Sep 07, 2004 03:25 pm		
HL7 Interface Definition		Updated last by: #32763 on 08/13/04 1424		
1 STX Character	2 ETX Character	3 Receiver Binary	4 Sending Application	
11	28	No	SRI	
5 Receiving Application	6 Query Level	7 Number of Result Query Lines		
HBOX	Single			
8 Result Query Lines	9 Minor Error Halt			
	No			
10 HL7 Version	11 HBOXCHI	12 Price From	13 Multiple Merge Segments	
2.2		SIM File	No	
14 Broadcast ADT Changes	15 Ack Audit	16 Encode	17 NULL/Not Present Support	
No			Yes	
18 Inbound Messages	19 Outbound Messages	20 Outbound Tables	21 GUI HL7?	
See Table	See Table	See Table		
22 HL7 Queue/Audit Routine				
Enter field number or '/' starting field number--				

## Field Explanations

### 1. STX CHARACTER (3-C-R)

This field contains the character for the start of text message header. Enter the numeric value for the ASCII character set. The system displays the ASCII character in brackets ([ ]) to the right of your entry; if the character set is not a printable ASCII character, the system displays only your entry.

### 2. ETX CHARACTER (3-C-R)

This field contains the character for the end of text message header. Enter the numeric value for the ASCII character set.

### 3. RECEIVER BINARY (1-A-R)

This field identifies whether the start of text character from the receiver is a binary character. Enter **Y** if this is a binary character. Enter **N** if this is a non-binary (printable) character. For the Speech Recognition Interface, set this field to **Yes**.

### 4. SENDING APPLICATION (15-C-R)

This field identifies the STAR Application that originates this message transmitted over this HL7 interface. The interface places this code in the MSH header segment. McKesson recommends the code SRI for STAR Radiology.

### 5. RECEIVING APPLICATION (15-C-R)

This field identifies the system receiving this message transmitted over this HL7 interface. This code must be unique for each receiving application. For speech recognition systems, the code used is HBOX.

### 6. QUERY LEVEL (1-A-R)

This field determines whether the system should use single level or double level queries. For the Speech Recognition Interface, enter **S** to use single-level query since all order/check in information needed to send the check-in and exam information resides on the STAR Radiology system.

### 7. NUMBER OF RESULT QUERY LINES (1-N-R)

This field identifies the number of query lines available for this interface.

### 8. RESULT QUERY LINES (40-C-R)

This field identifies each query line available for this interface. The system rotates through these query lines, one query at a time, to accommodate traffic over this interface.

### 9. MINOR ERROR HALT (1-A-R)

This field determines whether the interface should halt or continue to communicate data in the event of a minor error. Errors are classified as either fatal or minor. In the HL7 interface, the only fatal error occurs when protocol numbers are not synchronized. Enter **Y** to halt this interface in the event of all system errors. Enter **N** to only halt this interface in the event of a fatal error.

**10. HL7 VERSION (6-C-R)**

This field identifies the version of the HL7 standards. Enter 2.1 or 2.2 of the HL7 standard versions.

**11. HBOCHI**

Not applicable for this interface.

**12. PRICE FROM**

Not applicable for this interface.

**13. MULTIPLE MESSAGE SEGMENTS**

Not applicable for this interface.

**14. BROADCAST ADT CHANGES**

Not applicable for this interface.

**15. ACK AUDIT**

Not applicable for this interface.

**16. ENCODE**

Not applicable for this interface.

**17. NULL/NOT PRESENT SUPPORT (1-A-R)**

This field identifies whether the receiving application supports null and not present as defined in the HL7 specifications. Enter **Y** if the receiving application supports null or not present. This should be set to Yes for the Speech Recognition Interface.

**18. INBOUND MESSAGES**

This field identifies the inbound HL7 message for Inbound interface. For the Speech Recognition inbound interfaces, this contains the HL7 message "ORU".

**19. OUTBOUND MESSAGES**

Not applicable for this interface.

**20. OUTBOUND TABLES**

Not applicable for this interface.

**21. GUI HL7**

Not applicable for this interface.

**22. HL7 QUEUE/AUDIT ROUTINE**

Not applicable for this interface.

When this screen is completed, the system prompts you to accept it. Enter **Y** to accept the screen. When you accept the screen, the system displays *Filed!* and returns you to the menu.



## TESTING GUIDELINES

Use the following guidelines to test that the Speech Recognition Interface is working properly once it is installed. First test the Outbound orders (STAR Radiology -> Speech Recognition System) and Inbound results (Speech Recognition System -> STAR Radiology). Then test that the Error Messages are being produced appropriately.

### Outbound Orders (from STAR Radiology to Speech Recognition System)

Order messages are sent to the speech recognition system based on four trigger events:

- Exam Check-in
- Exam Data Entry
- Exam Cancellation
- Order Revision

Three order statuses are supported in the interface specifications:

- IP (In progress)
- CA (Cancel)
- CM (Complete)

### Setup

Check in four exams on the same check-in number on STAR Radiology.

### Sending the Order

Purpose: To verify that the speech recognition system receives the order and demographic information when exams are checked in on STAR Radiology.

### Exam clinically complete on STAR Radiology

Purpose: to verify that a clinically completed exam on STAR Radiology is removed from the database on the speech recognition system.

Complete all clinically required results on the first exam. Verify on the speech recognition system that the exam has been removed from the database.

### Exam canceled on STAR Radiology

Purpose: to verify that a canceled exam on STAR Radiology is removed from the database on the speech recognition system.

Enter one technical result on the second exam in Exam Data Entry and accept the screen. Verify that the exam order passed by doing a patient lookup on the speech recognition system. Verify that the information displayed is correct.

**NOTE:** The exam date/time is the Exam Stop time, unless it was not entered, in which case it is the check-in date/time.

Cancel the exam through the exam cancellation process. Verify on the speech recognition system that the exam has been removed from the database.

### **Exam revised on STAR Radiology**

Purpose: to verify that a revised exam on STAR Radiology is updated on the Talk Station/Radiology database.

Enter one technical result on the third exam in Exam Data Entry and accept the screen. (Be sure that you do not charge the exam by entering the charge result, if you charge on resulting. Otherwise you cannot revise the exam.) Verify that the exam order passed by doing a patient lookup on the speech recognition system. Verify that the information displayed is correct.

**NOTE:** The exam date/time is the Exam Stop time, unless it was not entered, in which case it is the check-in date/time.

Revise the exam to another exam code through the Order Revision process. Verify that the exam information on the speech recognition system has been updated properly.

### **Demographic update on STAR Radiology**

Purpose: to verify that demographic updates pass to the speech recognition system.

Verify that the "RE" message type is defined in the outbound parameters.

**NOTE:** The speech recognition system must be capable of updates via the A08 HL7 message.

Do a name change on the patient through the HIS. Verify that the name change took effect on STAR Radiology and on the speech recognition system.

### **Inbound Results (from Speech Recognition System to STAR Radiology)**

STAR Radiology processes the results and text when a radiologist releases the report on the speech recognition system or when the radiologist sends back a preliminary report without signing off of it.

## Setup

Check in four exams on the same check-in number on STAR Radiology. Enter all technically required results for all the exams on STAR Radiology.

## Preliminary Results

Purpose: to verify that the proper results are filed on STAR Radiology when a preliminary report is sent back from the speech recognition system.

Sign-on to the speech recognition system as a staff radiologist and look up the first exam. Dictate a report and send it back as a preliminary report. Sign-on to STAR Radiology as the staff radiologist. Verify that the report is in the radiologist's queue. Release the report through the Review Queue function. Verify that the exam has now been removed from the speech recognition system database.

If you have residents, sign-on to the speech recognition system as a resident radiologist and look up the second exam. Dictate a report and send it back as a preliminary report. On STAR Radiology, verify that it was queued to the resident and associated staff radiologist. Sign-on to the speech recognition system as the staff radiologist and finalize the report. On STAR Radiology, verify that the exam has been removed from the resident and staff radiologist queue. Verify that the exam is complete.

## Final Results

Purpose: to verify that the proper results are filed on STAR Radiology when a finalized report is sent back from the speech recognition system.

Sign-on to the speech recognition system as a staff radiologist and look up the third exam. Dictate a report and finalize it. Verify on STAR Radiology that the exam has been completed.

If you have residents, sign-on to the speech recognition system as a resident radiologist and look up the fourth exam. Dictate a report and finalize it. On STAR Radiology, verify that it is not in a complete status and that it was queued to the staff radiologist associated with the resident. Sign-on to STAR Radiology as the staff radiologist and release the report through the Report Review function. Verify that the exam is complete.

## Addendum Reporting

Purpose: to verify that the proper results are filed on STAR Radiology when an Addendum Report is sent back from the speech recognition system.

**NOTE:** This functionality should be used only if you are using STAR Radiology release 16.1 or above.

On STAR Radiology, verify that the report is Final. Sign-on to the speech recognition system as a staff radiologist (different from the first) and look up the first exam. Dictate a Addendum Report and finalize it. On STAR Radiology verify that the Addendum Report has been appended to the original and that the Transcriptionist, Read By and Released By results have been overridden with the new radiologist. Verify that the original report has been versioned through the Patient Inquiry function.

If you have residents, on STAR Radiology, sign-on to the speech recognition system as a resident radiologist and look up the second exam. Dictate an Addendum Report and finalize it. On STAR Radiology, verify that it was queued to the staff radiologist associated with the resident and that the exam is in an In Edit status. Sign-on to STAR Radiology as the staff radiologist and release the report. Verify that the Addendum has been appended to the report. Verify that the exam is complete.

## Report Linking

Purpose: to verify that results from exams sharing the same report on the speech recognition system are properly updated on STAR Radiology.

**NOTE:** This functionality should be used only if you are using STAR Radiology Release 16.1 or above.

Check in four new exams on the same check-in number on STAR Radiology. Complete the technical results on all exams so they are sent to the speech recognition system.

Sign-on to the speech recognition system as a staff radiologist and look up the first and second exam. Dictate a report, share it between the two exams and finalize it. Verify on STAR Radiology that the two exams are linked, that the results have been filed properly, and that the exams have been completed. On the speech recognition system, verify that the exams have been removed from the database.

If you have residents, sign-on to the speech recognition system as a resident radiologist and look up the third and fourth exam. Dictate a report and finalize it. On STAR Radiology, verify that they are not in a complete status and that they are queued to the staff radiologist associated with the resident. Sign-on to STAR Radiology as the staff radiologist and release the reports through the Report Review function. Verify that the exam have been completed.

## Error Messages

Purpose: to verify that proper error messages are generated under certain circumstances.

### Result not mapped

Prior to filing results, the system checks to see if all the results are properly mapped. Error messages are generated when a result passed from the speech recognition system to STAR Radiology is not mapped to the application database. All other results are filed.

The error message is as follows:

*(Interface name) error! (Check-in number – exam code) Result (result name) not properly mapped for master exam (master exam code) in SIM department (Department code)! Result not filed! Contact STAR Radiology system coordinator!*

This error message generally occurs only when you have residents and the Resident result has not been mapped in the Report Review function under the master exam. If you do not have residents, you can generate the error by following the directions below and substituting Radiologist wherever Resident is mentioned.

To generate the error, access Administration, Maintenance Functions, Exam Builder. Look up a master exam. Access the Report Review function. Remove the resident results from the queuing functions. Check in an exam belonging to this master exam and enter some technical results. Sign-on to the speech recognition system as a resident, dictate and release the report for this exam. Verify that the error message above was generated on STAR Radiology. (Go back to the Exam Builder and re-map the resident result after you are finished.)

#### **ID Code not found**

Prior to filing results, the system checks to see if the ID code passed from the speech recognition system is a valid ID code in STAR Radiology. If it is not, the following error message is generated:

*(Interface name) error! (Check-in number – exam code) ID code (ID code) not found in Radiology Employee file! Results filed anyway! Contact Star Radiology system coordinator!*

To generate this error, create a new user onto the speech recognition system using an ID code that does not exist on STAR Radiology. Check in an exam, enter some technical results, sign-on to the speech recognition system using the new ID code, dictate the report, and release the report. Verify that the error message was generated on STAR Radiology.



---

## Chapter 4 - USER FUNCTIONS

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## SPEECH RECOGNITION INTERFACE USER FUNCTIONS

This chapter describes user functions such as activating and deactivating the Speech Recognition Interface, displaying interface errors, and interface parameter maintenance.

To access the Interface Maintenance Processor, first select the Interface option from the Maintenance Processors menu. The following screen is displayed:

```

                                General Hospital Interface Processor
                                Tue Sep 07, 2004 05:09 pm

                                Interface Maintenance Processors
( 1) General Interface Parameters
( 2) Interface Control - Clinipac Interface
( 3) Interface Control - Generic Interface
( 4) Interface Control - Lanier
( 5) Interface Control - Mammography
( 6) Interface Control - Old Interface

Enter option number --

```

Select Interface Control - Generic Interface and the appropriate department. The following screen is displayed:

```

                                General Hospital Maintenance Functions Processor
                                Tue Sep 07, 2004 05:09 pm

Maintenance Functions Input Options

Option No. Option
-----
      1      Interface Control
      2      Display Interface Errors
      3      PATIENT CARE to CLINSTAR Audit
      4      CLINSTAR to PATIENT CARE Audit
      5      Interface Parameter Maintenance

      6      HL7 Interface Functions
      7      Communication Line Status

      8      Image Manager Cold Feed Interface Functions
      9      Mammography HL7 Parameters
     10      Speech Recognition HL7 Parameters

Enter option number--

```

The rest of this section describes the user functions on the Maintenance Functions Processor that pertain to the Speech Recognition Interface.

## Interface Control

This function enables you to either activate or deactivate the Speech Recognition Interface after it has been installed. It also allows you to modify the various characteristics of the Interface. When you select the Interface Control option, a screen similar to the following is displayed:

General Hospital Interface Control Processor	
Tue Sep 07, 2004 05:09 pm	
Interface Control Input Options	
Option No.	Option
1	Outbound Interface Control
2	Inbound Interface Control
3	Outbound Parameter Maintenance
4	Inbound Parameter Maintenance

Enter option number--

When you enter an option number to select a function, the following prompt is displayed:

*Enter communication code--*

Enter the appropriate communication code. If the code matches an existing interface code, the system displays the chosen function. If the interface is not installed, the system displays the following message:

*Error: Invalid communication code!*

**NOTE:** The last two functions, Outbound Parameter Maintenance and Inbound Parameter Maintenance, are described in [“Chapter 3 - INSTALLATION”](#). These functions are used when installing the Speech Recognition Interface.

## OUTBOUND INTERFACE CONTROL

Use this function to activate or inactivate the outbound interface. When you select this option and enter the communication code, the status of the interface is displayed as either Active or Inactive.

### Activating the Outbound Interface

If the status of the outbound interface is Inactive, the system displays the following prompt:

*Start the interface? (Y/N)--*

If you enter **Y**, the system displays the following message:

*Are you SURE you want to START the interface?--*

If you enter **Y**, the system displays the following message and returns you to the previous screen:

*Interface STARTING!*

If you enter **N** to elect not to activate the interface, the system returns you to the previous screen and the interface remains inactive.

### Deactivating the Outbound Interface

If the status of the outbound interface is Active, the system displays the following prompt:

*Halt the interface? (Y/N)--*

If you enter **Y**, the system displays the following message:

*Are you SURE you want to HALT the interface?--*

If you enter **Y**, the system displays the following message and returns you to the previous screen:

*Interface HALTING!*

If you enter **N** to elect not to terminate the interface, the system returns you to the previous screen and the interface remains active.

## INBOUND INTERFACE CONTROL

Use this function to activate or deactivate the inbound interface. When you select this option and enter the communication code, the status of the interface is displayed as either Active or Inactive.

### Activating the Inbound Interface

If the status of the inbound interface is Inactive, the system displays the following prompt:

*Activate the SPEECH REC IN (Y/N)? --*

If you enter **Y** to activate the interface, the system displays the following message:

*SPEECH REC IN will be activated!                      Accept? (Y/N)--*

If you accept, the system activates the interface and displays the following prompt:

*Enter communication code, or `` to list--*

If you enter **N** to elect not to activate the interface, the interface remains inactive and the following prompt is displayed:

*Enter communication code, or `` to list--*

### Deactivating the Inbound Interface

If the status of the inbound interface is Active, the system displays the following prompt:

*Inactivate the SPEECH REC IN (Y/N)? --*

If you enter **Y** to deactivate the interface, the system displays the following message:

*SPEECH REC IN will be terminated!                      Accept? (Y/N)--*

If you accept, the system terminates the interface and displays the following prompt:

*Enter communication code, or `` to list--*

If you enter **N** to elect not to terminate the interface, the interface remains active and the following prompt is displayed:

*Enter communication code, or `` to list--*

## Display Interface Errors

This function displays any interface errors that may have occurred on the date selected. When you select this option, the system prompts you for the appropriate interface code. After you select the interface code, the system displays the following prompt:

*Enter date to review [today]--*

Enter the date for which you want to view the errors in either a MMDDYY or MM/DD/YY format or press ENTER for the default of today's date. If there are no errors for that date, the following message is displayed:

*None to display!*

You are returned to the date prompt. If there are any interface errors for the selected date, a screen similar to the following is displayed:

General Hospital Display Interface Errors Processor				
Tue Sep 07, 2004 05:11 pm				
Interface Error Log				
Date = 06/20/04				
TC	Trans Dte/Tme	Patient #	Account #	Name
NW	06/20/04	00003155	9715400002	WILLIS,BILL E

Errors displayed are for outgoing transactions only and are caused by records missing required fields or that are not formatted correctly.

## HL7 Interface Maintenance

From the Maintenance screen, select Interface and then Interface Control - Generic Interface. Select the appropriate department, and the HL7 Interface Functions option. Use this function to define HL7 specific information and to view audit for the interface.

```
General Hospital HL7 Interface Functions Processor
Wed Jan 26, 2011 04:33 pm
HL7 Interface Functions Input Options

Option No.  Option
-----
1           HL7 Queue Inquiry
2           HL7 Audit Inquiry
3           HL7 Error Inquiry
4           Errors/Audit Report Options

5           HL7 Table Processing Functions

6           HL7 Audit Re-send

7           HL7 User Maintenance
8           Remove Top Record from Interface

Enter option number--
```

Select the HL7 Queue Inquiry option to display a list of all of the interfaces defined on the system, as well as the number of transactions in the queue for each interface. Select the Speech Recognition interface queue that you would like to view. The system displays the following prompt:

*Display in (C)hronological or (R)everse chronological order? [C]--*

Select **C** or press ENTER to view the transactions in chronological order, or select **R** to view the transactions in reverse chronological order. The following screen shows the transactions displayed in chronological order:

```

                                General Hospital HL7 Queue Inquiry Processor
                                Tue Sep 07, 2004 05:12 pm

Page:01                                Queued Messages for SRO
( 1) 06/19 0701 ORDER MESSAGE (ORM-001-09)      [A1]
( 2) 06/19 0701 ORDER MESSAGE (ORM-001-09)      [A2]
( 3) 06/19 1502 ORDER MESSAGE (ORM-001-09)      [A3]
( 4) 06/19 1600 ORDER MESSAGE (ORM-001-09)      [A4]
( 5) 06/19 2001 ORDER MESSAGE (ORM-001-09)      [A5]
( 6) 06/19 2001 ORDER MESSAGE (ORM-001-09)      [A6]
( 7) 06/20 0301 ORDER MESSAGE (ORM-001-09)      [A7]
( 8) 06/20 0701 ORDER MESSAGE (ORM-001-09)      [A8]
( 9) 06/20 0701 ORDER MESSAGE (ORM-001-09)      [A9]

Enter choice--

```

If you select a transaction, the segment contained in this message is displayed. In the following example, the first transaction from the screen above has been selected:

```

                                General Hospital HL7 Queue Inquiry Processor
                                Tue Sep 07, 2004 05:13 pm

Message: on 06/19 0701
Page:01                                Segments
( 1) MSH-07 MESSAGE HEADER
( 2) PID-07 PATIENT IDENTIFICATION
( 3) ORC-08 COMMON ORDER
( 4) OBR-05 OBSERVATION REQUEST

Enter choice--

```

The ORM message for the Speech Recognition Outbound Interface consists of MSH, PID, ORC, and OBR segments, which are displayed in the screen above. The A08 message for Speech Recognition Outbound Interface consists of MSH and PID. When you select each segment, the transaction data that is being sent across the interface is displayed.

For more detailed explanations of these segments, see [“Chapter 5 - TECHNICAL NOTES”](#).

## Speech Recognition HL7 Parameters

The purpose of this function is to verify the outbound line definition used for the interface.

This is necessary due to the way that the speech recognition system handles revisions. For revisions, both a new order and a cancellation transaction are sent across the interface. This is not the normal way revisions are handled, so the outbound line definition for this function must be defined.

When you select this function, the following screen is displayed:

```
General Hospital Speech Recognition HL7 Parameters Processor
                                Tue Sep 07, 2004 05:14 pm

1 Interface Outbound Line Definition
  SRO

Enter field number or '/' starting field number--
```

When you select field 1, the following prompt is displayed:

*Enter Outbound Line Definition of Speech Recognition Interface --*

Enter the name of the code used for the outbound speech recognition interface. McKesson recommends the use of the code **SRO**.



## ERROR MESSAGES

### Fatal Errors

The following errors are fatal errors and cause the inbound results to be rejected:

*Account number does not exist!*

*Check-in number does not exist!*

*Account number mismatch!*

*Department code mismatch!*

*Exam does not exist under Check In Number!*

*Invalid Account Number!*

*Radiologist Code does not exist!*

*Addendum already exists! Only one addendum allowed!*

*Addendum not allowed for preliminary reports!*

*Exam Status is CANCEL!-Status Update is not allowed!...Data Discarded!*



---

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## HL7 SEGMENT DEFINITION

This chapter contains the elements in each segment that are used by STARRadiology. The tables contain several columns, which are defined as follows:

**SEQ**

This column contains a sequence ID or field number which is used to identify the position of the data field within the segment. The identifier is a positive, non-zero integer.

**LEN**

This column indicates the maximum number of characters that one occurrence of the data field may occupy in any message.

**TYPE**

This column indicates the HL7 data type.

**RQ**

This column indicates the option available in a data element. The designations are:

- R Indicates this data element is required and the message segment cannot be transmitted without the presence of this field.
- O Indicates this data element is optional and the message segment can be transmitted with or without the presence of this field.
- C Indicates this data element is conditional. The message segment can be transmitted with or without the presence of this field. This is dependent on the trigger event or the presence of another piece of data in the segment.

**RP**

This column indicates whether or not the field is a repeating field.

**NAME**

This column contains the unique identifying name of the field.

### Outbound Orders (from STAR Radiology to Speech Recognition System)

The following steps are required to send an order from STAR Radiology to the speech recognition system:

- Connect to the speech recognition system server port.
- Send an order to the speech recognition system.
- Receive an acknowledgment from the speech recognition system.

The speech recognition system can be configured with any valid TCP/IP port number. STAR Radiology should issue a TCP/IP connect to that port.

## SENDING ORDERS

STAR Radiology sends unsolicited orders to the speech recognition system when an exam has been completed. The order is sent as an HL7 ORU message. The speech recognition system inspects the message, checking for required fields. If they are not present, the message is rejected.

## MSH - Message Header

SEQ	Len	Type	RQ	RP	Name
1	1	ST	R		Field Separator
2	4	ST	R		Encoding characters
9	7	ID			Message Type (ORU)
10	20	ST	R		Message Control ID

The speech recognition system expects SEQ 9, the message type, to always be ORU. This can be overridden in agentapp.ini using the following attributes:

InboundOrderMessage= < message type> (defaults to ORU)

InboundResultMessage= < message type>

InboundResultMessage indicates the message type for new orders, updates, and cancellations. InboundResultMessage indicates the message type for orders containing results ONLY. If InboundResultMessage is specified, it MUST be different than the InboundOrderMessage type.

A trigger event code can be included as a component of the message type but is ignored by the speech recognition system (for example, ORU^R01).

**PID - Patient Information**

SEQ	Len	Type	RQ	RP	Name
3	16	CK	R		Patient ID (MRN)
5	48	PN	R		Patient Name
7	8	TS			Date of Birth
8	1	ID			Sex (M or F)
11	106	AD			Patient Address
13	40	TN			Phone Number (Home)
14	40	TN			Phone Number (Business)
19	16	ST			Social Security Number - Patient

**OBR - Observation Request**

SEQ	Len	Type	RQ	RP	Name
3	75	CM	R		Filler's Order Number (Accession Number)
4	200	CE			Universal Service ID (Exam Code)
7	26	TS	R		Observation Date/Time
13	300	ST			Relevant Clinical Information (Order Notes)
16	60	CN			Ordering Provider (Clinician)
18	400	CM			Placer1 Field (user field - five components; see below)

The Placer1 Field contains up to five components, each designating a site-specific user field. These user fields each have a maximum length of 128.

**ORC - Order Control (Optional)**

SEQ	Len	Type	RQ	RP	Name
1	2	ID	R		Order Control
5	2	ID	R		Order Status

This segment is optional. If not included, the speech recognition system assumes that this is order is a new order or an update to an existing order (which are treated the same). If included, the speech recognition system examines the codes as follows:

- If a new or updated order is being sent to the speech recognition system, the order control ID should be "SC" and the order status should be any valid HL7 status other than CA or CM (see below).
- If an order is being sent as a cancellation, the order control ID should be "CA" (cancel order request) and the order status should be "CA" (order was cancelled).

- If results are being sent in the order, the order control ID should be “SC” (status change) and the order status “CM” (complete). Alternatively, results can be sent as a different message type (see MSH description).

**NOTE:** If the results were produced on the speech recognition system, and the speech recognition system is configured to use addenda (DeleteAccepted=No in agentapp.ini), the report is NOT deleted from the speech recognition system database. The transaction is ignored.

### OBX - Observation Results (Optional)

SEQ	Len	Type	RQ	RP	Name
1	4	SI	R		Set ID (Sequence Number)
2	2	ID	R		Value Type (FT)
3	80	CE	R		Observation Identifier
4	200	ST			Observation Sub-ID
5	64K	FT	R		Observation Value

This message segment is optional. If included, the OBX segment contains the order notes (clinical history, procedure info, etc.). Order notes may also be sent in SEQ 13 of the OBR segment.

The interface agent can be configured to filter the inbound OBX observation IDs. The AGENTAPP.INI file contains an entry called OBXIDFilter that is used for this purpose. OBX segments containing the observation ids specified in this entry are added to the speech recognition system's order notes.

Example: OBXIDFilter = /HISTORY/ALLERGIES/

**NOTE:** The first character specified is interpreted by the speech recognition system as the delimiter character. The same character MUST appear at the end of the string, or the last ID is not recognized.

### RECEIVING ACKNOWLEDGMENTS

The speech recognition system sends an HL7 ACK message back to STAR Radiology after it receives each ORU message. The ACK message is formatted as follows.



**MSH - Message Header**

SEQ	Len	Type	RQ	RP	Name
1	1	ST	R		Field Separator
2	4	ST	R		Encoding characters
9	7	ID			Message Type (ACK)
10	20	ST			Message Control ID

**MSA - Message Acknowledgment**

SEQ	Len	Type	RQ	RP	Name
1	2	ID	R		Acknowledgment Code (see below)
2	20	ST	R		Message Control ID (Control ID from ORU MSH)
3	80	ST			Text Message

The Acknowledgment code is as follows:

AA     Application Accept - Talk Station/Radiology has accepted the order.

AR     Application Reject - Talk Station/Radiology has rejected the order. The text message (SEQ 3) contains a reason for the rejection.

The speech recognition system accepts duplicate orders as replacements or corrections. This means that The speech recognition system replaces the order that has an accession number (SEQ 3 in OBR) equal to an existing order in the database.

If your system is unable to handle AR or AE acknowledgment codes, the AGENTAPP.INI file should specify: AlwaysAccept = Yes. This causes the speech recognition interface agent to log the rejection in the reject log file, but it responds with an "AA" code in the HL7 MSA segment.

**Example**

The following message may be sent by the STAR Radiology:

```
MSH|^~\&|||||ORU|0123456
PID|||012-345||Doe^John^P||19610122|M|||1 Fairway Lane|||||012-34-
OBR|||263459901|26345^Head,left view||199604181202|||||||1234^Welby
```

The speech recognition system would provide the following acknowledgment:

```
MSH|^~\&|||||ACK|2345678
MSA|AA|0123456
```

## Inbound Reports (from Speech Recognition System to STAR Radiology)

The following steps are required for STAR Radiology to accept a radiology report from the speech recognition system:

- Accept a connection from the speech recognition system port.
- Wait for messages from the speech recognition system.
- Read and process the message.
- Send an acknowledgment back to the speech recognition system.

### ACCEPTING THE SPEECH RECOGNITION SYSTEM CONNECTION

The STAR Radiology server should accept the client connection over a standard TCP/IP port. The speech recognition system must be configured with the appropriate port number. If you are using Talk Station/Radiology as your speech recognition system, see Talk Station/Radiology's Installation and Administration Guide for more details.

### WAITING FOR SPEECH RECOGNITION SYSTEM REPORTS

The speech recognition system sends STAR Radiology a report at the following times:

- When a report has been just been accepted and signed by the radiologist.
- When the radiologist has just saved a report, and wants all preliminary reports to be sent to STAR Radiology.
- When the speech recognition system has just established a connection with the STAR Radiology server and has one or more reports pending delivery.

### READING THE SPEECH RECOGNITION SYSTEM REPORT

The report is sent from the speech recognition system as an HL7 ORU message. The table columns are denoted as follows:

#### **SEQ**

This column contains a sequence ID or field number which is used to identify the position of the data field within the segment. The identifier is a positive, non-zero integer.

#### **LEN**

This column indicates the maximum number of characters that one occurrence of the data field may occupy in any message.

**TYPE**

This column indicates the HL7 data type.

**RQ**

This column indicates the option available in a data element. The designations are as follows:

- R Indicates this data element is required and the message segment cannot be transmitted without the presence of this field.
- O Indicates this data element is optional and the message segment can be transmitted with or without the presence of this field.
- C Indicates this data element is conditional. The message segment can be transmitted with or without the presence of this field. This is dependent on the trigger event or the presence of another piece of data in the segment.

**RP**

This column indicates whether the field is a repeating field.

**NAME**

This column contains the unique identifying name of the field.

**MSH - Message Header**

SEQ	Len	Type	RQ	RP	Name
1	1	ST	R		Field Separator
2	4	ST	R		Encoding Characters
3	15	ST			Sending Application
4	20	ST			Sending Facility
5	15	ST			Receiving Application
6	30	ST			Receiving Facility
7	26	TS			Timestamp
9	7	ID			Message Type
10	20	ST	R		Message Control ID

By default, the message type (SEQ 9) contains only the first component, which is "ORU". If a trigger event code is desired, the administrator must place an entry in the agentapp.ini file as follows:

TriggerEvent=R01

SEQs 3-6 (sending and receiving application/facility strings) can be set using the following entries in the agentapp.ini file:

SendingApplication = <string> Example: Talk Station/Radiology Dictation  
 SendingFacility = <string> Example: Radiology Lab #1  
 ReceivingApplication = <string>  
 ReceivingFacility = <string>

### PID - Patient Information

SEQ	Len	Type	RQ	RP	Name
3	16	CK	R		Patient ID (MRN)
5	48	PN			Patient Name
19	16	ST			SSN

### ORC - Order Control

SEQ	Len	Type	RQ	RP	Name
1	2	ID	R		Order Control

The order control is either “CN” or “RE”. This allows combined results to be sent back to STAR Radiology. See the examples section below for usage.

### OBR - Observation Request

SEQ	Len	Type	RQ	RP	Name
3	75	CM	R	Y	Filler's Order Number (Accession Number)
4	200	CE	R		Universal Service ID
20	640*	CM			Filler1 Field (User Fields, see below)
22	26	TS	R		Results/Rpt Status Change (Date/Time)
25	1	ID	R	Y	Result Status (Preliminary, Final, or Addendum)
32	60	CN	R	Y	Principal Result Interpreter (Radiologist)

The Status Change time is the date/time the report was accepted and signed by the radiologist (or last saved if status is *preliminary*).

Talk Station/Radiology allows residents and attending physicians to produce reports. In these cases, the status and radiologist fields are repeating.

The Filler1 Field contains up to five components, each designating a site-specific user field. These user fields each have a maximum length of 128 characters. If you are using Talk Station/Radiology as your speech recognition system, refer to the product documentation for more details about configuring user fields. The user fields can also be sent as “result sections” in the OBX. See the following section (OBX – Observation) for details.

By default, the status field (SEQ 25) is P, F, or A as described above. The preliminary status ID can be configured differently. To do so, the administrator must place an entry in the agentapp.ini file as follows:

PreliminaryStatusCode=<x>Example: R (Result not verified)

## OBX - Observation

SEQ	Len	Type	RQ	RP	Name
1	4	SI	R		Set ID (Sequence Number)
2	2	ID	R		Value Type (FT)
3	80	CE	R		Observation Identifier
4	200	ST			Observation Sub-ID
5	64K	FT	R		Observation Value

The Observation Identifier contains the universal service ID with a modifier of either BODY or IMP, describing the record as being part of the body of the report, or part of the impression section. These string values can be reconfigured by including the following lines in the agentapp.ini file:

OBXBodyIdentifier = <string>      Example: REPORT

OBXImpressionIdentifier = <string>      Example: IMPRESSION

The User Fields data can be sent back to STAR Radiology in the OBX as a Results Section similar to the BODY and IMP sections. For example, if User Field #2 contains a diagnostic code that the STAR Radiology expects to see in the OBX with an Observation Identifier of DIAG, then the following entry would be made in the agentapp.ini file:

OBXUserField2 = DIAG      Syntax: OBXUserField<1-5> = <string>

The Universal Service ID field contains ONLY the first ID when the report contains an observation for multiple exams (accession numbers).

The Interface Agent can be configured to generate a single OBX section for each section (BODY and IMP). Paragraphs are delimited by the HL7 escape sequence “\.br\”. The Agent’s default behavior is to generate a separate OBX for each paragraph, so to generate the single OBX, the administrator must place the following entry in the agentapp.ini file:

OBX=standard

The interface agent can also be configured to contain one line of result text. This is done using the OBXMaxLength configuration option. For example, to send 80

character lines (ideal for typical dumb terminal display), the following would be coded in the AGENTAPP.INI file:

OBXMaxLength = 80

**NOTE:** OBXMaxLength may NOT be specified with OBX=standard.

The observation value for a Final or Preliminary is the report text. For an Addendum, the observation value contains the Addendum only. The original report is *not* resent.

## ACKNOWLEDGING THE REPORT

STAR Radiology acknowledges the speech recognition system in the same manner that the speech recognition system acknowledges STAR Radiology when receiving an order. See the section describing this above.

### Examples

The following is an example of a report for a single exam:

```
MSH|^~\&|||||ORU|2345678
PID|||012-345
ORC|RE
OBR|||263459901|201A2^PA & Lat.Chest|||||||199604201055|||F|||||D12345
OBX|1|FT|201A2&BODY^PA & Lat. Chest||FINDINGS: Comparison, 03/01/04.
OBX|2|FT|201A2&BODY^PA & Lat. Chest||The patient is status post right
mastectomy. The lungs are clear.
OBX|3|FT|201A2&IMP^PA & Lat. Chest||No active cardiopulmonary disease. No
interval change since 03/01/04.
```

A combined result may also be sent. This is a single report for multiple exams, using the “standard” OBX, and containing two user fields (ICD code and radiologists e-mail address):

```
MSH|^~\&|||||ORU|2345678
PID|||012-345
ORC|CN
OBR|||201A29901|201A2^PA & Lat. Chest |||||741.9^joerad@nyu.edu
|||199604201055|||F|||||D12345
ORC|CN
OBR|||265469903|26546^MRI Thoracic Spine
|||||741.9^joerad@nyu.edu|||199604201055|||F|||||D12345
ORC|RE
OBR|||265469903|26546^CT Abdomen|||||741.9^joerad@nyu.edu
|||199604201055|||F|||||D12345
OBX|1|FT|201A2&BODY^PA & Lat. Chest ||Lungs are clear. No pleural
effusions.\.br\No evidence of vertabral body collapse.
OBX|2|FT|201A2&IMP^PA & Lat. Chest ||Patient's lungs, abdomen and spine are
normal.
```

Notice the use of the CN ORC segments for the first two exams, followed by a RE ORC which has the actual observation OBX's following it. Also notice that when a combined result is sent back to STAR Radiology, only the first (primary) procedure is specified in the OBX, because the speech recognition system application does not support the differentiation of procedures within a single report. The one observation applies unilaterally to all the exams included in the message.

**NOTE:** If you are using Talk Technology's Talk Station/Radiology as your speech recognition system, it sends the OBRs in the same order that the radiologist included the exams when creating the report. This may be helpful if the receiving system expects a "primary" exam distinguished from the other associated exams.

---

## TALK STATION/RADIOLOGY PARAMETERS

These parameters are provided as a convenience to the speech recognition vendor. Some parameters vary for each installation.

### Agentapp.ini file on Talk Station/Radiology Server

```
[Main]
; host name of RIS (Site Specific)
RIS_HOST= 139.177.2.59

; port that the RIS listens for connections from Talk Station/Radiology (to receive
completed reports)
RIS_PORT= 1078

; port that the Interface Agent listens for connections from the RIS (to receive new
orders)
RIS_SERVER_PORT= 1077

;port that the Interface Agent listens for connections from the Talk Station/Radiology
client(s) (to send completed reports)
APP_SERVER_PORT= 1079

;rejection log (reports rejected by RIS)
RejectLogFile= reject.log

;delete accepted reports or keep them around for addenda (default=Yes) Use no only
for 16.1 and later.
DeleteAccepted = Yes

;uncomment line below to get problem determination output (Use during testing)
;DebugMode = On

;Set value to STAR Radiology Soft-key editor line length in Final Report General
Parameters
OBXMaxLength = 72

;uncomment line below to use a "standard" OBX
;OBX = standard

;uncomment and complete the line below to specify a trigger word in the MSH
;TriggerWord =

;change line below to specify an acknowledgment timeout period.
AckTimeout = 90

;change line below to specify a connection-retry timeout period.
ConnectTimeout = 90
```



;uncomment and complete line below to specify the impression section indicator  
;ImpressionSection =

## Folder Label

The Folder ID label bar code contains the facility code, the patient medical record number, and the folder information. If you wish to use the medical record number for look up, configure Talk Station/Radiology to extract the portion of the label containing the Medical Record number.

Example:

Barcode string = AA00000035310100

Facility indicator = A

MR number = A000000353

Folder info = 10100

Configure Talk Station/Radiology to pull characters 2-11 in this case.

## Exam or Check-in Label

The Exam label and Check-in label contain an @, the exam code, L/R indicator, and the check-in number. If you wish to use the order number for lookup, configure Talk Station/Radiology to extract the portion of the label following the @ sign.

Example:

Barcode string = @70461010971

@ sign

Exam code = 7046

No L/R indicator

Check-in number= 1010971

Talk Station/Radiology order number = 70461010971

Configure Talk Station/Radiology to pull all characters following the @ sign.



---

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