Department of Veterans Affairs
Decentralized Hospital Computer Program

DHCP

HEALTH LEVEL SEVEN

(HL7)

USER MANUAL

Version 1.6

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Preface

The DHCP Health Level Seven (HL7) software package provides an interface that allows DHCP applications to exchange healthcare data with other applications using the HL7 Protocol. This manual provides instructions to IRM Service personnel for the operation of the DHCP HL7 package through the use of various menu options.

Table of Contents

Introduction

Overview

The first step in understanding the DHCP Health Level Seven (HL7) package is a basic understanding of HL7 itself. HL7 is a standard protocol which specifies the implementation of interfaces between two computer applications (sender and receiver) for electronic data exchange in healthcare environments. HL7 allows healthcare institutions to exchange key sets of data from different application systems. Specifically, it defines the following:

- The data to be exchanged
- The timing of the interchange
- The communication of errors to the sending/receiving application

The formats are generic in nature, and must be configured to meet the needs of the two applications involved. An HL7 interface specification should be written detailing what formats (events, messages, segments, and fields) will be used, and the lower level protocol that will be implemented in order for the two applications to interface with one another. Appendix B of this manual is an example of an HL7 interface specification.

The HL7 Protocol defines the content and format of abstract messages and transactions for interface capabilities for the following areas:

- Admission, discharge, and transfer (ADT)
- Order entry
- Query
- Financial applications such as charge, payment adjustments, and insurance
- Ancillary data reporting for Laboratory, Radiology, Pharmacy, etc.

In HL7, information is exchanged using HL7 messages when an event occurs in an application. Each HL7 message consists of one or more HL7 segments. A segment can be thought of as a record in a file. Each segment consists of one or more fields separated by a special character called the *field separator*. The field separator character is defined in the Message Header (MSH) segment of an HL7 message. The MSH segment is always the first segment in every HL7 message. Each field is assigned an HL7 data type (e.g., numeric, text, etc.).

Overview, cont.

In addition to the field separator character, there are four other special characters called *encoding characters*. Encoding characters are also defined in the MSH segment. They operate on a single field in an HL7 segment. Each encoding character must be unique, and serves a specific purpose. None of the encoding characters can be the same as the field separator character.

- The first encoding character is the *component separator*. Some data fields can be divided into multiple components. The component separator is used to separate adjacent components within a data field.

- The second encoding character is the *repetition separator*. Some data fields can be repeated multiple times in a segment. The repetition separator character is used to separate multiple occurrences of a field.

- The third encoding character is the *escape character*. Data fields defined as text or formatted text can include escape sequences. The escape character is used to separate escape sequences from the actual text.

- The fourth encoding character is the *sub-component separator*. Some data fields can be divided into components, and each component can be further divided into sub-components. The sub-component separator is used to separate adjacent sub-components within a component of a field.

The DHCP HL7 Package

The purpose of the DHCP HL7 package is to assist DHCP applications in exchanging healthcare information with other applications using the HL7 Protocol. The DHCP HL7 package consists of a set of utility routines and files that provide a generic interface to the HL7 Protocol for all DHCP applications. The DHCP HL7 package can be divided into two parts:

- Lower level protocol support between sending and receiving applications
- DHCP interface to the HL7 Protocol

Lower Level Protocols

The term lower level refers to a portion of the Open Systems Interconnect (OSI) model. The OSI model is divided into seven layers or levels. The lower levels (layers 1 through 4) support the actual movement of data between systems. This includes the actual physical connection between the systems and the communications protocol used.

DHCP HL7 V. 1.6 supports the following lower level interfaces:

- HL7 Hybrid Lower Layer Protocol over an RS-232 connection
- DHCP MailMan messages
- X3.28

Using these lower level interfaces, the DHCP HL7 package can support layers 1 through 4 of the OSI model and eliminate the need for DHCP applications to write lower level interfaces each time they want to exchange data with another application.

These lower level interfaces provide the following functions:

- Receive and send HL7 messages.
- Validate the HL7 Message Header (MSH) information.
- Invoke the appropriate DHCP application routine to process the data in the message.
- Send HL7 accept acknowledgment (ACK) messages back to the sending application.

The DHCP Interface to the HL7 Protocol

With the release of V. 1.6, DHCP HL7 supports several methods for interfacing to the HL7 protocol. The method established by V. 1.5 is still supported (for backwards compatibility), and a new method is introduced, as well as new routines, file structures, templates, menus, and options. There are some significant differences between the V. 1.5 and V. 1.6 interface methods, as shown in the following table.

V. 1.5 Interface Method	V. 1.6 Interface Method
One sender and one receiver per message.	One sender, one or more receivers.
Sender and receiver must be on different systems.	Sender and receiver can be on the same or different systems.
Messages must go through a communications protocol.	Messages sent to applications on the same system do not have to go through a communications protocol.
All messages are processed in the background.	Messages are processed in either the foreground or background, based on the priority assigned by sending/receiving applications.
No support for event points.	Event points are supported.

The DHCP HL7 package assists DHCP applications in interfacing to the HL7 Protocol. In addition to the lower levels mentioned previously, all applications must perform the following upper level functions in order to exchange data with another application:

- Event analysis
- Data extraction
- Data filing
- Data formatting
- Message administration

Currently, the functions of event analysis, data extraction, and data filing must be performed by each application package. The DHCP HL7 package provides the following utilities to assist the application package with data formatting:

- Creation of HL7 Message Header (MSH) segments
- Utility calls to convert HL7 data to VA FileMan formats and vice versa
- Validation of Message Header information for all HL7 messages received
- A set of pre-defined variables for use in building HL7 messages/segments

The DHCP Interface to the HL7 Protocol, cont.

The DHCP HL7 package provides the following functions to assist the application package with message administration:

- Support for tracking transmissions and providing a status for each
- Generation of reports on pending transmissions and transmissions with errors
- A queue for incoming and outgoing transmissions
- A real-time monitor that monitors active transmission links and their statuses

The DHCP HL7 package has been designed to be modular, table-driven, and extensible. It appears that with minor modifications, the package could support other protocols (e.g., EDI/X12) in addition to HL7. Current development efforts are concentrated on adding table-driven support for the functions of event analysis, data extraction, data filing, and data formatting. Once these four areas are automated, it will be possible for an application to implement a new HL7 interface to exchange data without writing MUMPS routines.

Related Manuals

For applications using the V. 1.6 interface method, you might also want to refer to the following manuals:

- DHCP HL7 V. 1.6 Installation Guide
- DHCP HL7 V. 1.6 Package Security Guide
- DHCP HL7 V. 1.6 Release Notes
- DHCP HL7 V. 1.6 Technical Manual
- DHCP HL7 V. 1.6 User Manual

For applications using the V. 1.5 interface method, you might also want to refer to the following manuals:

- DHCP HL7 V. 1.5 Developer Manual
- DHCP HL7 V. 1.5 Installation Guide
- DHCP HL7 V. 1.5 Package Security Guide
- DHCP HL7 V. 1.5 Release Notes
- DHCP HL7 V. 1.5 Technical Manual
- DHCP HL7 V. 1.5 User Manual

Organization of this Manual

This manual is divided into the following sections:

- *Preface* - States the purpose of the software and the intended audience for this manual.
- *Table of Contents* - Lists the topics in the order in which they appear in this manual.
- *Introduction* - Provides an overview of the software and its purpose, refers you to related manuals, and explains the organization of this manual.
- *Orientation* - Provides useful tips to help you use this manual.
- *Package Management* - Addresses unique legal requirements and security precautions to be taken while using this software and its related data.
- *Package Operation* - Divided into the following sections that address the menus and options separately in each of the following categories:
    - *V. 1.5 OPTIONS Menu* - Provides instructions for using the options exported with this version of DHCP HL7 that support the V. 1.5 interface method.
    - *V. 1.6 OPTIONS Menu* - Provides instructions for using the options exported with this version of DHCP HL7 that support the V. 1.6 interface method.
    - *HL7 Main Menu Options that Support Both Versions* - Provides instructions for using the options exported with this version of DHCP HL7 that support both the V. 1.5 and V. 1.6 interface methods.
- *Glossary* - Provides a list of terms used in this manual with their definitions.
- *Appendices* - Contain supplemental information.
- *Index* - Provides an alphabetical listing of the topics presented in this manual.

Orientation

Package Operation

The Package Operation section provides documentation of each option, including a brief introduction to the option, a sample of what might appear on your screen when using the option, and sample outputs, when applicable.

The ＼ icon is used to highlight enhancements and functionality changes in the option documentation.

User Responses

All user responses are shown in boldface type. The <RET> symbol is used when referring to the user pressing the Return or Enter key.   This symbol is not shown, but is implied, after boldface type. The <^> symbol is used when referring to the up-arrow or caret.

List Manager

DHCP HL7 V. 1.6 uses the List Manager utility, a tool designed to list items for selection and action. A double question mark entered at the "Select Action:" prompt gives you a list of all actions available for a particular screen. Please refer to Appendix A of this manual for more information about List Manager actions.

Orientation

Package Management

1. The DHCP HL7 package consists of a set of utility routines and files that provide a generic interface to the HL7 Protocol for DHCP packages. HL7 allows healthcare institutions to exchange key sets of data from different application systems. Proper handling of this information is important to ensure patient confidentiality.

2. Per VHA Directive 10-93-142 regarding security of software, do not modify the DHCP HL7 routines and data dictionaries due to the high level of package integration.

Package Operation

On-line Help

When the format of a response is specific, a Help message is usually provided for that prompt. Help messages provide lists of acceptable responses or format requirements which provide instruction on how to respond.

You can request a Help message by typing single or double question marks. The Help message appears under the prompt, then the prompt repeats. For example, perhaps you see the prompt

```
Enter Last Date Of Visit: APR 30,1992//
```

and you need assistance answering. You enter ? and the Help message would appear.

```
Enter Last Date Of Visit: APR 30,1992//   ?
     Examples of Valid Dates:
       JAN 20 1957 or 20 JAN 57 or 1/20/57 or 012057
       T   (for TODAY),  T+1 (for TOMORROW),  T+2,  T+7,  etc.
       T-1 (for YESTERDAY),  T-3W (for 3 WEEKS AGO), etc.
     If the year is omitted, the computer uses the CURRENT YEAR.
     You may omit the precise day, as:  JAN, 1957
     If the date is omitted, the current date is assumed.
     Follow the date with a time, such as JAN 20@10, T@10AM, 10:30, etc.
     You may enter a time, such as NOON, MIDNIGHT or NOW.
     Seconds may be entered as 10:30:30 or 103030AM.
     Enter the date the patient was last seen at that facility.
Enter Last Date Of Visit: APR 30,1992//
```

For some prompts, the system lists the possible answers from which you can choose. When numbered lists of choices appear, the system usually accepts either the number or the name corresponding to the selection.

Note to Users with QUME Terminals

It is very important that you set up your QUME terminal properly. After entering your access and verify codes, you will see the following prompt.

```
Select TERMINAL TYPE NAME: {type}//
```

Please make sure that C-QUME is entered here. This entry will become the default and you can then enter <RET> for all subsequent log-ins. *If any other terminal type configuration is set, options using the List Manager utilities will neither display nor function properly on your terminal.*

V. 1.5 OPTIONS Menu

Non-DHCP Application Parameter Enter/Edit

Introduction

Use the Non-DHCP Application Parameter Enter/Edit option to

- Enter non-DHCP applications (applications that will be communicating with the DHCP system via the HL7 Protocol) in the HL7 NON-DHCP APPLICATION PARAMETER file (#770).
- Enter or edit parameters associated with non-DHCP applications.
- Delete an application from the HL7 NON-DHCP APPLICATION PARAMETER file (#770).

The applications entered in this file are referred to as non-DHCP applications simply as a way of distinguishing them from the DHCP system with which they will be communicating. These non-DHCP applications could also be other DHCP applications (e.g., Radiology sending/receiving HL7 messages to/from MAS). A non-DHCP application might have more than one entry in this file depending on how many DHCP applications it communicates with and how many versions of the HL7 Protocol it utilizes.

For V. 1.6 interfaces, use the Interface Workbench option on the V. 1.6 OPTIONS menu. (Please refer to the V. 1.6 OPTIONS Menu portion of the Package Operation section of this manual.)

Non-DHCP Application Parameter Enter/Edit

Example

```
Select HL7 Main Menu Option:    Non-DHCP Application Parameter Enter/Edit

Select HL7 NON-DHCP APPLICATION PARAMETER NAME:    AMCH-RADIOLOGY
  ARE YOU ADDING 'AMCH-RADIOLOGY' AS
    A NEW HL7 NON-DHCP APPLICATION PARAMETER (THE 3RD)?    Y  (YES)
   HL7 NON-DHCP APPLICATION PARAMETER DHCP STATION NUMBER:    500          ALBANY
NEW YORK                   500
   HL7 NON-DHCP APPLICATION PARAMETER NON-DHCP FACILITY NAME:    AMCH XRAY
   HL7 NON-DHCP APPLICATION PARAMETER DHCP APPLICATION:    EDR-MAS          ACTIVE
NAME: AMCH-RADIOLOGY//  <RET>
NON-DHCP FACILITY NAME: AMCH XRAY//   <RET>
DHCP STATION NUMBER: 500//   <RET>
MAXIMUM BLOCK SIZE: 245//   <RET>
NUMBER OF RETRIES: 3//  <RET>
HL7 DEVICE:  HLLP
HL7 VERSION NUMBER: 2.1//   <RET>          HEALTH LEVEL SEVEN
DHCP APPLICATION: EDR-MAS//   <RET>
LOWER LEVEL PROTOCOL TIMEOUT: 30//    <RET>
MAIL GROUP:  <RET>
HL7 PROCESSING ID:  P   PRODUCTION
PURPOSE:
  1>Data exchange between Albany VAMC and Albany Medical Center Hospital
  2><RET>
EDIT Option:  <RET>
```

Initiate Background Task

Introduction

Use the Initiate Background Task option to create a background task to start up the lower level protocol routine for a specific non-DHCP application. *You must select a non-DHCP application for which an HL7 device has been defined. Non-DHCP applications that use MailMan as their lower level protocol do not need a background task.* This option also checks to make sure a background task is not already queued in TaskMan. *If a task is already queued, a second task will not be started.*

For V. 1.6 interfaces, use the Interface Workbench option on the V. 1.6 OPTIONS menu. (Please refer to the V. 1.6 OPTIONS Menu portion of the Package Operation section of this manual.)

Example

```
Select HL7 Main Menu Option:    Initiate Background Task

Note:  You must select a Non-DHCP Application for which an HL7 Device has
been defined.
Select HL7 NON-DHCP APPLICATION PARAMETER NAME:        AMCH-RADIOLOGY        500
  AMCH XRAY       EDR-MAS
```

Start/Stop Log of HL7 Transmissions

Introduction

The Start/Stop Log of HL7 Transmissions option is a diagnostic tool. Use this option to

- Test the HL7 interface when the HL7 Hybrid Lower Level Protocol is used as the communications protocol.
- Check that HL7 messages are being proper ly exchanged with a particular non-DHCP application.

This option should not be used if your application uses DHCP MailMan as the lower level protocol.

There are three prompts used with this option. The first asks for a non-DHCP application parameter name. Enter a ? to produce a list of the entries in the HL7 NON-DHCP APPLICATION PARAMETER file (#770). The system then tells you if the log for that particular application is currently running. You can start or stop the transmission log at the next prompt. The final prompt asks if you wish to purge existing log entries. *You should purge existing entries when you start the transmission log to ensure a clean start. Use the operating system routine that lists a global (%G, %GL, etc.) to view the contents of the log.*

After you finish the test, you should stop the log to save disk space and reduce global sets. The log data is stored descendant from the ^TMP("HL",HLION) global node where HLION is equal to the name of the HL7 device that was entered into Field #6 of the HL7 NON-DHCP APPLICATION PARAMETER file (#770). It can be purged at any time by killing the ^TMP(HL",HLION) global.

Example

```
Select HL7 NON-DHCP APPLICATION PARAMETER NAME:    AMCH-RADIOLOGY         500
 AMCH XRAY       EDR-MAS

The HL7 log is currently turned off.

START/STOP TRANSMISSION LOG:    START LOG

Do you want to purge existing log entries? Yes//    <RET>
```

V. 1.6 OPTIONS Menu

Communications Server
   Edit Communication Server parameters

   New option

Introduction

Use the Edit Communication Server parameters option to edit the default value of the following fields in the HL COMMUNICATION SERVER PARAMETERS file (#869.3):

- DEFAULT NUMBER INCOMING FILERS (#11)
- DEFAULT NUMBER OUTGOING FILERS (#12)

The values you enter for these fields determine the number of filers that will be started when you use the Start default number of incoming & outgoing filers option in the Manage incoming & outgoing filers menu. A default value of "1" is set for both fields during package initialization. *Filers must be running for messages to be processed.*

Example

```
Select Communications Server Option:   1   Edit Communication Server parameters
Default number of incoming filers: 1//   2
Default number of outgoing filers: 1//   3
```

Communications Server
    Manage incoming & outgoing filers

        New option

Introduction

Use the options in the Manage incoming & outgoing filers menu to control the number of incoming/outgoing filers that are running. Filers must be running for messages to be processed. With these options, you can perform the following tasks:

- Start the default number of incoming/outgoing filers.
- Start/stop a single incoming/outgoing filer.
- Stop all incoming/outgoing filers.

Since the option names are self-explanatory, this manual discusses them in two groups: start options and stop options.

Start Options

```
1      Start default number of incoming & outgoing filers
```

This option queues individual background jobs, and assigns separate task numbers, for each of the number of filers specified in the DEFAULT NUMBER INCOMING FILERS field (#11) and the DEFAULT NUMBER OUTGOING FILERS field (#12) of the HL COMMUNICATION SERVER PARAMETERS file (#869.3). It adds the jobs to the appropriate lists of incoming and outgoing filers that are running (which are displayed in the Filer Monitor when you use the Monitor incoming & outgoing filers option). The message "(Incoming) or (Outgoing) filer has not started yet" (whichever is appropriate) is displayed for each filer until it is physically started. The software then goes through the list of *incoming* filers sequentially by task number, and starts the first one that is *not* running. It continues starting the incoming filers until the default number of filers are running. The process is then repeated for the *outgoing* filers.

Communications Server
    Manage incoming & outgoing filers

Introduction, cont.

Start Options, cont.

```
2       Start an incoming filer
3       Start an outgoing filer
```

These options work in the same way as the Start default number of incoming & outgoing filers option, with the following basic differences:

- A single incoming or outgoing background job is queued, and a single task number is assigned.
- A single job is added to the appropriate list of incoming or outgoing filers that are running (which are displayed in the Filer Monitor when you use the Monitor incoming & outgoing filers option).
- The Start an incoming filer option starts *only* the first sequential incoming filer that is *not* running.
- The Start an outgoing filer option starts *only* the first sequential outgoing filer that is *not* running.

Stop Options

```
4       Stop all incoming filers
5       Stop all outgoing filers
```

These options first ask "Are you sure you want to stop all (incoming/outgoing) filers ? NO//". If you accept the "No", the message "(Incoming/Outgoing) filers will not be stopped" is displayed and you return to the Manage incoming & outgoing filers menu. If your response is "Yes", the options look through the list of incoming/outgoing filers (whichever is appropriate for the option used), finds the filers that are running, and flags them to stop sequentially by task number. When they physically stop, they are automatically deleted from the list of filers that are running.

Communications Server
Manage incoming & outgoing filers

Introduction, cont.

Stop Options, cont.

```
6       Stop an incoming filer
7       Stop an outgoing filer
```

These options work in the same way as the Stop all incoming/outgoing filers options, except for the following basic differences:

- You are *not* asked "Are you sure you want to stop an (incoming/outgoing) filer".
- The first filer in the incoming/outgoing list that is running gets flagged to stop.

Example - Start default number of incoming & outgoing filers

```
Select Manage incoming & outgoing filers Option:   1  Start default number of
incoming & outgoing filers
Incoming filer queued as task number 130593
Incoming filer queued as task number 130594
Incoming filer queued as task number 130595

Outgoing filer queued as task number 130596
Outgoing filer queued as task number 130597
```

Example - Stop all incoming filers

```
Select Manage incoming & outgoing filers Option:   4  Stop all incoming filers


Are you sure you want to stop all incoming filers ? NO//   Y  YES

Please wait while all incoming filers are asked to stop ...
All incoming filers have been asked to stop
```

Communications Server
     Monitor incoming & outgoing filers

     New option

Introduction

Use the Monitor incoming & outgoing filers option to display and maintain the lists of incoming and outgoing filers that are running. This option provides a Filer Monitor in List Manager (a list processor utility) screen format. It provides the actions that let you start, stop, or delete filers, and displays the following information about the filers that are running.

NOTE: You must select the correct terminal type at sign-on for proper display of the Filer Monitor. The Filer Monitor cannot be displayed on a QUME terminal.

- *Task Number of (Incoming/Outgoing) Filer* - The task number that is assigned to each background job that is queued whenever you use any of the Start options in the Manage incoming & outgoing filers menu or any of the Start actions at the bottom of the Filer Monitor screen.

- *Asked To Stop* - Indicates whether the filer has been flagged to stop. "No" in this column means that the filer *is* running (has not been asked to stop). "Yes" in this column means that the filer is *not* running (has been asked to stop).

- *Last Known Date/Time* - The most recent date and time that the filer did any updating.

- *Time Difference* - The difference between the current date and time and the last date and time that the filer did any updating.

Communications Server
Monitor incoming & outgoing filers

Introduction, cont.

The following actions are available at the bottom of the Filer Monitor screen. At the "Type selection:" prompt, enter the character(s) shown in the parentheses. *Do not press the Return or Enter keys after you enter your response, as these will return you to the menu.*

- *(+I) Start incoming filer* - Queues a background job, assigns a task number, and adds it to the list of incoming filers. The message "**Incoming filer has not started yet**" is displayed until the filer is physically started.

- *(+O) Start outgoing filer* - Queues a background job, assigns a task number, and adds it to the list of outgoing filers. The message "**Outgoing filer has not started yet**" is displayed until the filer is physically started.

- *(-I) Stop incoming filer* - Searches through the list of incoming filers until it finds the *first* one that is running and flags it to stop. "Yes" is displayed in the "Asked To Stop" column. The message "**Incoming filer has been asked to stop**" is displayed until the filer is physically stopped, at which time it is automatically deleted from the Filer Monitor display and the list of incoming filers that are running.

- *(-O) Stop outgoing filer* - Searches through the list of outgoing filers until it finds the *first* one that is running and flags it to stop.. "Yes" is displayed in the "Asked To Stop" column. The message "**Outgoing filer has been asked to stop**" is displayed until the filer is physically stopped, at which time it is automatically deleted from the Filer Monitor display and the list of outgoing filers that are running.

- *(*I) Delete incoming filer* - You should use this option only when "Error" is displayed in the "Asked To Stop" column, the message "**Incoming filer has stopped due to an error**" is displayed, and the filer is stopped. Use the options in Task Manager to diagnose the problem, then use this action to delete the filer(s) from the Filer Monitor display and from the list of incoming filers that are running. If "Error" is displayed for multiple filers, you are prompted to select which of these filer(s) you want to delete. If "Error" displays for a single filer, it will be automatically deleted when you use this action.

Communications Server
Monitor incoming & outgoing filers

Introduction, cont.

- *(*O) Delete outgoing filer* - You should use this option only when "Error" is displayed in the "Asked To Stop" column, the message "**Outgoing filer has stopped due to an error**" is displayed, and the filer is stopped. Use the options in Task Manager to diagnose the problem, then use this action to delete the filer(s) from the Filer Monitor display and from the list of outgoing filers that are running. If "Error" is displayed for multiple filers, you are prompted to select which of these filer(s) you want to delete. If "Error" displays for a single filer, it will be automatically deleted when you use this action.

- *(N) Next 4 lines in list* - Displays the next 4 lines in the Filer Monitor for both incoming and outgoing filers.

- *(B) Back 4 lines in list* - Backs up 4 lines in the Filer Monitor for both incoming and outgoing filers.

- *(Q) Quit* - Exits the option and returns you to the menu.

Example

```
Task Number of      Asked
Incoming Filer       To Stop     Last Known Date/Time     Time Difference
130594              No           07-JUN-95 @ 13:22:25   0 Day   00 Hr   00 Min   02 Sec
130595              No           07-JUN-95 @ 13:22:22   0 Day   00 Hr   00 Min   05 Sec




Task Number of      Asked
Outgoing Filer       To Stop     Last Known Date/Time     Time Difference
130596              No           07-JUN-95 @ 13:22:48   0 Day   00 Hr   00 Min   04 Sec
130597              No           07-JUN-95 @ 13:22:49   0 Day   00 Hr   00 Min   03 Sec
[End of list - total of 2]




(+I) Start incoming filer  (-I) Stop incoming filer  (*I) Delete incoming filer
(+O) Start outgoing filer  (-O) Stop outgoing filer  (*O) Delete outgoing filer
 (N) Next 4 lines in list   (B) Back 4 lines in list  (Q) Quit
Type selection:
```

Communications Server
Start LLP

New option

Introduction

Use the Start Hybrid LLP option to start the LLP for the appropriate device that will be receiving HL7 messages. The device must be defined in the DEVICE field (#2) of the HL LOGICAL LINK file (#870), and must be off-line/shutdown.

The only prompts ask for a link node and a method for running the receiver. After you enter the name of the link node with which you want to communicate, the system warns you if the LLP for the selected link node is already running, or if the device is not defined in File #870. If the LLP is not running, the system tells you the date and time of the last shutdown. You can then select the method for running the receiver from the following choices:

- Foreground (and trace)
- Background (normal)
- Quit without starting the receiver

Example

```
Select V. 1.6 Communications Server Option:   2   Start Hybrid LLP

This option is used to launch the lower level protocol for the
appropriate device.  Please select the node with which you want
to communicate

Select HL LOGICAL LINK NODE:       HEMOCARE
The LLP was last shutdown on NOV 29, 1994 09:42:10.

     Select one of the following:

          F         FOREGROUND
          B         BACKGROUND
          Q         QUIT

Method for running the receiver: B//   <RET> ACKGROUND
Job was queued as 16868.
```

Communications Server
   Stop LLP

New option

Introduction

Use the Stop Hybrid LLP option to shut down the LLP for the appropriate device that is receiving HL7 messages.

The only prompts ask for a link node and verification that you want to shut down the job. After you enter the name of the link node, the system displays the date and time that the LLP was last started, and asks, "Okay to shut down this job?". Depending on your response, the system tells you whether or not the LLP will be shut down.

Example

```
Select V. 1.6 Communications Server Option:   3  Stop Hybrid LLP

This option is used to shut down the lower level protocol for the
appropriate device.  Please select the node which you would
like to shutdown.

Select HL LOGICAL LINK NODE:   HEMOCARE
The lower level protocol was started on NOV 29, 1994 09:13:41.

Okay to shut down this job?   YES
The job for the HEMOCARE Lower Level Protocol will be shut down.
```

Communications Server
   Systems Link Monitor

New option

Introduction

Use the Systems Link Monitor option to display the following real-time information
about serial links.

*NOTE: You must select the correct terminal type at sign-on for proper display of
the Filer Monitor. The Systems Link Monitor cannot be displayed on a QUME
terminal.*

- *NODE* - Name of the logical link over which data will be sent.
- *MESSAGES RECEIVED* - Number of messages in the "In" queue.
- *MESSAGES PROCESSED* - Number of messages that have been passed to
  application processing routines.
- *MESSAGES TO SEND* - Number of messages in the "Out" queue waiting to be
  transmitted.
- *MESSAGES SENT* - Number of messages transmitted.
- *DEVICE ON-LINE* - Can be "Y" (Yes) or "N" (No). Indicates whether or not the
  LLP is currently running for the appropriate device that will be receiving the
  messages. Use the Start LLP option to set this to "Y". Use the Stop LLP option
  to set this to "N".
- *STATE* - Indicates the current state of the LLP (e.g., Idle, Shutdown, Reading,
  Writing, Validating, etc.)

The display also indicates the number of incoming and outgoing filers that are
running. *Filers must be running for messages to be processed.* Please refer to the
Manage incoming & outgoing filers and Monitor incoming & outgoing filers options
for information about how to monitor, start, stop, and delete filers.

Communications Server
    Systems Link Monitor

Introduction, cont.

This option scrolls through File #870, and displays up to 10 entries at a time to the Messaging Monitor screen. Use the following actions at the bottom of the display to scroll through the list of serial links displayed in the monitor, or to exit the option and return to the menu. At the "TYPE:" prompt, enter the character(s) shown in parentheses. *Do not press the Return or Enter keys after you enter your response, as these will return you to the menu.*

- *(N) NEXT* - Advances the display to the next 10 entries in the file. When you reach the end of the list, the last entry from the previous page will be displayed in lieu of a blank page, and the system tells you that it cannot advance beyond the end of the buffer.
- *(B) BACKUP* - Backs up to the display of the previous 10 entries. If you try to back up beyond the beginning of the list, the system tells you that it cannot backup beyond the end of the buffer.
- *(Q) QUIT* - Exits the option and returns you to the menu.

To display the most recent communications error for a particular link, use the Show Communications Error option. To clear the communications error for a particular link, use the Clear Communications Error option.

When the node (link name) flashes in the Messaging Monitor, it means that an LLP error has occurred.

Communications Server
Systems Link Monitor

Screen Example

```
1       Communications Server ...
    2       Interface Workbench

Select V1.6 OPTIONS Option:   1  Communications Server


    1       Edit Communication Server parameters
    2       Manage incoming & outgoing filers ...
    3       Monitor incoming & outgoing filers
    4       Start LLP
    5       Stop LLP
    6       Systems Link Monitor
    7       Logical Link Queue Management ...
    8       Report

Select Communications Server Option:   6  Systems Link Monitor
```

Output Example

```
                        MESSAGING MONITOR

            MESSAGES   MESSAGES   MESSAGES   MESSAGES   DEVICE
  NODE      RECEIVED   PROCESSED  TO SEND    SENT       ON-LINE   STATE

  HEMOCARE
            4          4          35         35         Y         IDLE
  COPATH    0          35         32         0          Y         WRITING
  BIOLINK   0          0          0          0          N         SHUTDOWN
  MEDNET    0          0          237        0          N         SHUTDOWN
  LAB       2          1          100        100        Y         READING
  ANSOS     14         14         0          0          N         SHUTDOWN


  Number of incoming filers running => 10
  Number of outgoing filers running => 5

  TYPE: (N) NEXT, (B) BACKUP, (Q) QUIT:
```

Communications Server
  Logical Link Queue Management
    Show Communications Error

New option

Introduction

Use the Show Communications Error option to view the entry in the GROSS
COMMUNICATIONS ERROR field (#18) of the HL LOGICAL LINK file (#870) that
is the most recent LLP error for a particular link.

*When the link (node) name flashes in the Messaging Monitor (accessed via the
Systems Link Monitor option), it means that an LLP error has occurred.*

Example

```
Select Logical Link Queue Management Option:   1  Show Communications Error
Select HL LOGICAL LINK NODE:   HEMOCARE
Error: LLP Exceeded Retry Param
```

Communications Server
   Logical Link Queue Management
      Clear Communications Error

New option

Introduction

Use the Clear Communications Error option to clear the entry in the GROSS
COMMUNICATIONS ERROR field (#18) of the HL LOGICAL LINK file (#870) that
is the most recent LLP error for a particular link.

*When the link name (node) flashes in the Messaging Monitor (accessed via the
Systems Link Monitor option), it means that an LLP error has occurred.*

Example

```
Select Logical Link Queue Management Option:   2  Clear Communications Error
Select HL LOGICAL LINK NODE:   HEMOCARE
```

Communications Server
Logical Link Queue Management
Create/Edit a Queue Test Entry

New option

Introduction

Use the Create/Edit a Queue Test Entry option to create/edit a "test" message in a selected queue for a specified link node. You can then send the message to either a non-DHCP system or a DHCP application in order to test an interface.

The first prompt asks you to select whether you are going to create or edit the message. Next, you enter the name of the link node, then select the queue in which the message is to be created or edited. The "Select IN QUEUE MESSAGE NUMBER:" prompt is next *only* if you chose to edit a message. Whether you are editing an existing message or creating a new one, "Editing entry number:" displays with the number of the message that is being created or edited. The remaining prompts let you make entries to the following fields in the HL LOGICAL LINK file (#870):

- MESSAGE TEXT (#193)
- STATUS (#191)
- ERROR (#192)

Communications Server
Logical Link Queue Management
Create/Edit a Queue Test Entry

Example

```
Select Logical Link Queue Management Option:    3  Create/Edit a Queue Test Entry

     Select one of the following:

          C         CREATE
          E         EDIT
CREATE or EDIT entry: C//  EDIT
Select HL LOGICAL LINK NODE:   HEMOCARE

     Select one of the following:

          I         IN QUEUE
          O         OUT QUEUE

Select queue: I//  <RET> N QUEUE
Select IN QUEUE MESSAGE NUMBER:   12
Editing entry number: 12

MESSAGE TEXT:. . .
        . . .
  8>OBX||ST|VW^WEIGHT^L||120|KG
  9>OBX||ST|VB^BLOOD PRESSURE^L||120/80|MM HG
 10>OBX||ST|VT^TEMPERATURE^L||99|C
 11>OBX||ST|VP^PULSE^L||75|/MIN
 12>OBX||ST|VR^RESPIRATORY^L||12|/MIN
 13>OBX||CE|OR^RETURN VISIT^L||CARDIOLOGY^19930415
 14>OBX||CE|OO^ORDER^L||71010^R
 15>OBX||CE|OO^ORDER^L||81000^L
 16>$$CHK$$^00566110^HLCHK^00566110
EDIT Option:  <RET>
STATUS: DONE PROCESSING//  P   PENDING
ERROR: G  OTHER LLP ERROR
```

Communications Server
   Logical Link Queue Management
      Copy a Queue Entry

New option

Introduction

Use the Copy a Queue Entry option to copy a message into a queue multiple times. This option can be used to "test" interfaces by allowing the same message to be sent multiple times.

Example

```
Select Logical Link Queue Management Option:   4  Copy a Queue Entry
Select HL LOGICAL LINK NODE:   HEMOCARE

     Select one of the following:

          I          IN QUEUE
          O          OUT QUEUE

Select IN queue or OUT queue: I//   <RET> N QUEUE
Select IN QUEUE MESSAGE NUMBER:   6
Number of times to re-queue:  (1-1000): 1//   2
Copied the message 2 times to the queue.
```

Communications Server
    Logical Link Queue Management
        Clear a Queue of all Entries

New option

Introduction

Use the Clear a Queue of all Entries option to reinitialize a queue to zero entries, usually during testing. *It should not be necessary to use this option during normal operations.* You are prompted to enter the name of the logical link node and which queue(s) to clear.

Example

```
Select Logical Link Queue Management Option:   5  Clear a Queue of all Entries
Select HL LOGICAL LINK NODE:   COPATH

     Select one of the following:

          B          BOTH QUEUES
          I          IN QUEUE
          O          OUT QUEUE

Enter which queue to clear: B//   OUT QUEUE
```

Communications Server
  Report

New option

Introduction

Use the Report option to display/print specific messages in a selected queue. *Only messages with entries in both the STATUS field (#019.1) and the ERROR field (#019.2) of the HL LOGICAL LINK file (#870) will be included in the output.*

The first prompt asks you to enter the link node name; the second lets you choose from a list of queues to include in the report. The next two prompts offer numerous types of error codes and statuses from which you can choose. They both also offer two special selections: "ALL" to include all possible codes in the report, and "F" to indicate that you are finished making your selections. The last prompt asks for a device.

The output provides the following information:

- Node
- Queue
- Message number
- Message status
- Message error
- Message text

Communications Server
Report

Screen Example

```
Select Communications Server Option:   8  Report
Select HL LOGICAL LINK NODE:   COPATH

       Select one of the following:


           I           IN QUEUE
           O           OUT QUEUE
           B           BOTH

Select queue for report: B//   <RET> OTH

       Select one of the following:


           A           LLP ACKNOWLEDGED NO ERROR
           C           LLP CHAR COUNT WRONG
           X           LLP XOR WRONG
           B           DATA TOO LONG
           G           OTHER LLP ERROR
           ALL         ALL ERRORS
           F           FINISH SELECTING QUEUES

Select an error code to sort by: ALL//   <RET> ERRORS

       Select one of the following:


           P           PENDING
           D           DONE PROCESSING
           S           STUB RECORD
           ALL         ALL STATUS
           F           FINISH SELECTING QUEUES

Select a status code to sort by: ALL//   <RET> STATUS
DEVICE: HOME//  <RET>  Decnet    RIGHT MARGIN: 80//   <RET>
```

Communications Server
  Report

Output Example

```
NOV 29, 1994              HL7 LOGICAL LINK INFORMATION                    PAGE 1
================================================================================
--------------------------------------------------------------------------------
     Node: COPATH                          Queue: In
     Message number: 1
     Message status: PENDING
     Message error: OTHER LLP ERROR
     Message text:
D21
MSH|^~\&|INFOLIO TEST|LEAVENWORTH VAMC|IB PERIPH TEST|500|19900314130405|CHIS
OX^^PATRIOTS|ORU|RJS101|D|2.1
PID|||7777790^2^M10||SMITH^JOHN|||||||||||||||88888888
OBR||||2930423.08^1^L|||199304230800|||||||||||||DERMATOLOGY||
OBX||CE|10040|OV|1^0^0^0|
OBX||CE|11041|PR||
OBX||CE|216.6|P||
OBX||ST|VW^WEIGHT^L||120|KG
OBX||ST|VB^BLOOD PRESSURE^L||120/80|MM HG
OBX||ST|VT^TEMPERATURE^L||99|C
OBX||ST|VP^PULSE^L||75|/MIN
```

Interface Workbench

New option

Introduction

The Interface Workbench option provides the List Manager screens, tools, and actions that allow you to define the application that you want to send/receive HL7 messages. (For more information about List Manager actions, please refer to Appendix A of this manual.)

When you select this option, the Currently Defined Applications screen is displayed. It contains a list of all of the applications which are currently defined in the HL7 APPLICATION PARAMETER file (#771) and provides the following tools:

- *CA - Create Application* - Lets you create entries in the following fields of the HL7 APPLICATION PARAMETER file (#771):

    – NAME (#.01)
    – FACILITY NAME (#3)
    – COUNTRY CODE (#7)
    – MAIL GROUP (#4)
    – HL7 FIELD SEPARATOR (#100)
    – HL7 ENCODING CHARACTERS (#101)

- *EA - Edit Application* - Lets you edit the fields shown for the Create Application action above, with the exception of NAME (#.01).

- *DA - Delete Application* - After you select the application that you want to delete, this tool asks "Are you sure you want to delete the application (Yes/No) ?"

    – "Yes" response - Reviews all of the client protocols and all of the server protocols, and deletes their associations to the selected application. *This action does not delete the pointer to the HL7 Message Text File (#772).*
    – "No" response - Returns you to the Currently Defined Applications screen.

Interface Workbench

Introduction, cont.

> *NOTE: We recommend that you take the following steps before attempting to delete an application from the list:*
>
> 1. Shut down the applicable logical link by using the Stop LLP option on the Communications Server menu.
> 2. Wait several days.
> 3. Check the message activity in the Systems Link Monitor to make sure that nothing is waiting with the application that you want to delete.

- *AI - Activate/Inactivate* - After you select the application that you want to edit from the list of currently defined applications, this tool lets you toggle the ACTIVE/INACTIVE field (#2) in File #771 between active and inactive.   *An application must be active to send/receive messages.* This action works in the same way as the Activate/Inactivate DHCP Application option on the HL7 Main Menu.

- *SL - Show Logical Links* - Displays the Currently Defined Logical Links screen, which contains a list of all of the logical links that are currently defined in the HL LOGICAL LINK file (#870) and provides the following additional tools:

    - *CL - Create Logical Link* - Lets you create entries in the following fields of the HL LOGICAL LINK file (#870). (You can also create entries in other fields, depending on the LLP Type you select.)

        - NODE (#.01)
        - QUEUE SIZE (#21)
        - LLP PARAMETERS (#22)
        - TYPE (#1)

    - *EL - Edit Logical Link* - Lets you edit various fields in File #870, depending on the LLP type for the selected logical link.

Interface Workbench

Introduction, cont.

– *DL - Delete Logical Link* - After you select the logical link that you want to delete, this tool asks "Are you sure you want to delete the logical link (Yes/No) ?"

- "Yes" response - Looks at the client protocols for every known application and deletes the reference to the logical link being deleted. *This action does not delete the pointer from the HL7 MESSAGE TEXT file (#772).*
- "No" response - Returns you to the Currently Defined Logical Links screen.

¨ *NOTE: The following "Jump" tools are available, and work the same way, on all of the Interface Workbench screens:*

◊ *JN - Jump To Next (Application, Link, Server, Client)* - Jumps down one entry in the list.

◊ *JP - Jump To Previous (Application, Link, Server, Client)* - Jumps up one entry in the list.

◊ *JA, JL, JS, JC - Jump To (Application, Link, Server, Client)* - Jumps to the specified entry in the list.

Interface Workbench

Introduction, cont.

- *SS - Show Srvr Protocols* - Displays the Server Protocols For screen, which contains a list of all known server protocols associated with the user-specified application and provides the following actions. (If no server protocols are listed for the selected application, Create Server Protocol is the default action.)

  - *CS - Create Srvr Protocol* - Lets you create entries in the following fields of the PROTOCOL file (#101). *Please note that while you can change the name of the application at this point, doing so removes it from the list of currently defined applications.*

    - NAME (#.01)
    - ITEM TEXT (#1)
    - PACKAGE (#12)
    - SERVER APPLICATION (#770.1)
    - DESCRIPTION (#3.5)
    - MESSAGE TYPE (#770.3)
    - EVENT TYPE (#770.4)
    - PRIORITY (#770.5)
    - PROCESSING ID (#770.6)
    - VERSION ID (#770.95)
    - ENTRY ACTION (#20)
    - EXIT ACTION (#15)
    - GENERATE/PROCESS ROUTINE (#771, #772)
    - CLIENT (SUBSCRIBERS) (#770.2)
    - ACCEPT ACK CODE (#770.8)
    - APPLICATION ACK TYPE (#770.9)

  - *ES - Edit Server Protocol* - Lets you edit the same fields as shown for the Create Srvr Protocol action above. *Please note that while you can change the name of the application at this point, doing so removes access to the server's subscribers.*

Interface Workbench

Introduction, cont.

- *DS - Delete Srvr Protocol* - After you select the server protocol that you want to delete, this action asks "Are you sure you want to delete the server protocol (Yes/No) ?"

    - "Yes" response - Deletes the user-specified server protocol associated with the application. *This action does not delete the pointer from the HL7 MESSAGE TEXT file (#772).*
    - "No" response - Returns you to the Server Protocols For screen.

- *SC - Show Client Protocols* - Displays the Client Protocols For screen, which contains a list of all known client protocols associated with the user-specified application and provides the following actions. (If no client protocols are listed for the selected application, Create Client Protocol is the default action.)

    - *CC - Create Clnt Protocol* - Lets you create entries in the following fields of the PROTOCOL file (#101):

        - MESSAGE TYPE (#770.3)
        - EVENT TYPE (#770.4)
        - PRIORITY (#770.5)
        - PROCESSING ID (#770.6)
        - VERSION ID (#770.95)
        - ENTRY ACTION (#20)
        - EXIT ACTION (#15)
        - GENERATE/PROCESS ROUTINE (#771, #772)
        - SENDING FACILITY REQUIRED? (#773.1)
        - RECEIVING FACILITY REQUIRED? (#773.2)
        - DATE/TIME OF MESSAGE REQUIRED? (#773.4)
        - SECURITY REQUIRED? (#773.3)
        - LOGICAL LINK (#770.7)

    - *EC - Edit Client Protocol* - Lets you edit the same fields as shown for the Create Clnt Protocol action above.

Interface Workbench

Introduction, cont.

– *DC - Delete Clnt Protocol* - After you select the client protocol that you want to delete, this action asks "Are you sure you want to delete the client protocol (Yes/No) ?"

- "Yes" response - Looks at the known server protocols for all applications and deletes their subscriptions to the client protocol being deleted. *This action does not delete the pointer from the HL7 MESSAGE TEXT file (#772).*
- "No" response - Returns you to the Client Protocols For screen.

– *SUB - Subscribe* - Displays a list of all known server protocols and indicates whether or not the specified client is a subscriber.

- *S2 - Subscribe to Server* - Adds the client as a subscriber to the specified server.
- *RS - Remove Subscriptions* - Removes the client's subscription to the server.

Interface Workbench

Example - Currently Defined Applications Screen

```
HL-7 Interface Workbench     Jul 10, 1995 09:29:35      Page:    1 of    7
                             Currently Defined
                               Applications

(1) AMCH-RADIOLOGY
 Facility Name: AMCH XRAY                          Active/Inactive: ACTIVE
   Country Code:                              HL7 Field Separator: <DEFAULT>
     Mail Group:                      HL7 Encoding Characters: <DEFAULT>


(2) EDR-MAS
 Facility Name: BDC                                Active/Inactive: ACTIVE
   Country Code:                              HL7 Field Separator: <DEFAULT>
     Mail Group:                      HL7 Encoding Characters: <DEFAULT>


(3) EDR-MAS-DHCP
+          Enter ?? for more actions
CA   Create Application    EA   Edit Application
DA   Delete Application    AI   Activate/Inactivate
SL   Show Logical Links    SS   Show Srvr Protocols   SC   Show Client Protocols
JN   Jump To Next App      JP   Jump To Previous App  JA   Jump To Application
Select Tool: Jump To Next App//
```

Interface Workbench

Example - Currently Defined Logical Links Screen

```
HL-7 Interface Workbench      Jul 13, 1995 10:26:59        Page:   12 of   13
                             Currently Defined
                              Logical Links
+
(23) HLZ-SAMPLE
 LLP Parameter: HLZ-MMLLP
      LLP Type: MAILMAN  (M)
    Mail Group: HLZ LOGICAL LINK SAMPLE
    Queue Size: <DEFAULT>




Enter ?? for more actions
CL   Create Logical Link    EL   Edit Logical Link      DL   Delete Logical Link
JN   Jump To Next Link      JP   Jump To Previous Link  JL   Jump To Link
Select Tool: Jump To Next Link//
```

Message Requeuer

New option

Introduction

This option activates the HL7 Message Requeuer, which allows you to requeue selected HL7 messages for transmission through the use of various List Manager screens and actions.

When you select this option, the Known Logical Links screen, which contains the following information, is displayed.

- *Index* - For multiple links, indicates the numerical sequence in which data is read from the links; always "1" for a single link
- *Queue Name* - Logical link name
- *Queue Size* - Steady-state size of the queue as defined in the HL LOGICAL LINK file (#870)
- *Sent Msgs* - Number of messages transmitted from the Outgoing queue
- *Pending* - Number of messages waiting to be transmitted

Use the Expand Entry action to display the Processed Messages in Logical Link screen for the selected logical link, which contains the following information:

- *Number* - The number assigned to the message when it is enqued into the FIFO queue
- *Date Processed* - The date and time the message was actually processed (sent or received).
- *Remote DHCP Application* - The application with which you are exchanging information

The following actions are available on the Processed Messages in Logical Link screen to help you view more detailed information:

- *SE - Select Messages* - Highlights the message for requeue.
- *DE - Deselect Messages* - Turns off the highlight for requeue, and upon exit asks "Do you want to requeue?".
- *VM - View Message* - Displays the contents of the message in HL7 format.

Message Requeuer

Example - Known Logical Links screen

```
HL7 Message Requeuer          Sep 18, 1995 13:28:06        Page:    1 of    1
                            Known Logical Links

  Index   Queue Name            Queue Size           Sent Msgs      Pending
  1       TEST                  11                   2              9




+          Enter ?? for more actions

EP   Expand Entry
Select Action: Quit//  EP
```

Example - Processed Messages in Logical Link screen

```
HL7 Message Requeuer          Sep 18, 1995 13:29:23        Page:    1 of    1
                    Processed Messages in Logical Link TEST

  Number   Date Processed                 Remote DHCP Application
  1        JUN 22, 1995@14:27:08          ZADT RECEIVE




+          Enter ?? for more actions
SE   Select Messages        DE  Deselect Messages      VM  View Message
Select Item(s): Quit//  SE
```

Message Requeuer

Example - **Selected Message from Logical Link screen**

```
HL7 Message Requeuer         Sep 18, 1995 13:29:23       Page:    0 of    4
                    Selected Message from Logical Link TEST


BHS^~|\&^ZADT^500^ZADT RECEIVE^^19950622142708^^~P~ADT|A03~2.1^^14850

MSH^~|\&^ZADT^500^ZADT RECEIVE^^2950622.142708^^ACK~A03^14850-1^P^2.1^^^^^USA

EVN^A03^19950531100217

PV1^^I^11-B MEDICINE XREF~~^^^^123456~SMITH~XJOHN^^^^^^^^^^23452~KUMQUAT~DR^^7

NK1^^^^^^^^^^^^^^^^^^

MSH^~|\&^ZADT^500^ZADT RECEIVE^^2950622.142708^^ACK~A03^14850-2^P^2.1^^^^^USA
+          Enter ?? for more actions
SE   Select Messages        DE   Deselect Messages     VM   View Message
Select Item(s): Quit//
```

HL7 Main Menu Options that Support Both Versions

Activate/Inactivate DHCP Application

Introduction

Use the Activate/Inactivate DHCP Application option to activate or inactivate a specific DHCP application which exists in the HL7 APPLICATION PARAMETER file (#771). Your entry with this option determines if a DHCP application is communicating with a non-DHCP application using the HL7 Protocol.

There are only two prompts used with this option. The first asks for an HL7 application parameter name. Enter a ? to produce a list of the entries in the HL7 APPLICATION PARAMETER file (#771). Your response to the second prompt sets the application to active or inactive within the HL7 Protocol.

Data in the HL7 APPLICATION PARAMETER file (#771) is entered by the package developer and cannot be updated by the site. This file will be updated, and new entries added, where applicable, with each new package release. More than one version of an application might be listed, since different non-DHCP systems might be interfacing with different versions.

Example

```
Select HL7 DHCP APPLICATION PARAMETER NAME:   RADIOLOGY           INACTIVE
ACTIVE/INACTIVE: INACTIVE//   ACTIVE

Select HL7 DHCP APPLICATION PARAMETER NAME:
```

Print/Display Menu
   Application Parameters Print/Display

Introduction

Use the DHCP Application Parameters Print/Display option to print or display a list of the DHCP applications in the HL7 APPLICATION PARAMETER file (#771) with which non-DHCP applications are exchanging information.

Data in this file is entered by the package developer and cannot be updated by the site. More than one version of an application might be listed, since different non-DHCP applications can be interfacing with different versions of a DHCP application.

The output shows the messages, segments, and fields included in each entry in the file, and whether a particular application is active or inactive (running or not running). The report is generated in alphabetical order by application.

The only prompts ask for the DHCP application name(s) and a device.

Screen Example

```
Select Print/Display Menu Option:    DHCP Application Parameters Print/Display
START WITH NAME: FIRST//   <RET>
DEVICE: A700      RIGHT MARGIN: 132//   <RET>
DO YOU WANT YOUR OUTPUT QUEUED? NO//   Y  (YES)

REQUESTED TIME TO PRINT: NOW//   <RET>
REQUEST QUEUED!
Task number: 12630
```

Print/Display Menu
Application Parameters Print/Display

Output Example

```
HL7 DHCP Application Parameters                    NOV 25,1994  10:32    PAGE 1
------------------------------------------------------------------------------


NAME: EDR-MAS                                ACTIVE/INACTIVE: ACTIVE

NAME: IVM                                    ACTIVE/INACTIVE: ACTIVE
  HL7 ENCODING CHARACTERS: ~|\&        HL7 FIELD SEPARATOR: ^
HL7 MESSAGE: ORU                             PROCESSING ROUTINE: ORU^IVMPREC2
HL7 MESSAGE: QRY                             PROCESSING ROUTINE: QRY^IVMPREC
HL7 MESSAGE: ACK                             PROCESSING ROUTINE: ACK^IVMPREC1
HL7 SEGMENT: PID
  FIELDS USED IN THIS SEGMENT: 1,3,5,7,8,11,12,13,14,19
HL7 SEGMENT: ZCT
  FIELDS USED IN THIS SEGMENT: 1,2,3,4,5,6,7
HL7 SEGMENT: ZDP
  FIELDS USED IN THIS SEGMENT: 1,2,3,4,5,6,7,8,9
HL7 SEGMENT: ZEL
  FIELDS USED IN THIS SEGMENT: 1,2,6,7,10,11,13
HL7 SEGMENT: ZEM                          FIELDS USED IN THIS SEGMENT: 1,2,3
HL7 SEGMENT: ZGD
  FIELDS USED IN THIS SEGMENT: 1,2,3,4,5,6,7,8
HL7 SEGMENT: ZIC
  FIELDS USED IN THIS SEGMENT: 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20
HL7 SEGMENT: ZMT
  FIELDS USED IN THIS SEGMENT: 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16
HL7 SEGMENT: ZPD
  FIELDS USED IN THIS SEGMENT: 1,8,9,11,12,13
HL7 SEGMENT: ZTA                          FIELDS USED IN THIS SEGMENT: 1,3,4,5,6,7
HL7 SEGMENT: ZIO                          FIELDS USED IN THIS SEGMENT: 1,2,3,4
HL7 SEGMENT: ZIR
  FIELDS USED IN THIS SEGMENT: 1,2,3,4,5,6,7,8,9,10
HL7 SEGMENT: NTE                          FIELDS USED IN THIS SEGMENT: 1,3
HL7 SEGMENT: FT1
  FIELDS USED IN THIS SEGMENT: 1,4,6,7,9,11
HL7 SEGMENT: IN1
  FIELDS USED IN THIS SEGMENT: 1,4,5,7,8,9,12,13,15,16,17,28,36
HL7 SEGMENT: ZIV                          FIELDS USED IN THIS SEGMENT: 1,2,3,4
```

Print/Display Menu
Non-DHCP Application Parameters Print/Display

Introduction

Use the Non-DHCP Application Parameters Print/Display option to print or display a list of the non-DHCP applications in the HL7 NON-DHCP APPLICATION PARAMETER file (#770) with which the DHCP system is communicating through the HL7 Protocol. Data in this file is entered through the Non-DHCP Application Parameters Enter/Edit option.

The applications in the HL7 NON-DHCP APPLICATION PARAMETER file (#770) are referred to as non-DHCP applications simply as a way of distinguishing them from the DHCP system with which they communicate. These non-DHCP applications could also be other DHCP applications (e.g., Radiology sending/receiving HL7 messages to/from MAS). A non-DHCP application might have more than one entry in this file depending on how many DHCP applications it communicates with and how many versions of the HL7 Protocol it utilizes.

The output is produced in alphabetical order by non-DHCP application name and might include the following information (depending on your parameter entries):

- Non-DHCP facility name
- DHCP station number
- HL7 Protocol version number
- HL7 device
- Maximum block size
- Number of retries
- Lower level protocol time-out
- Mail Group
- HL7 processing ID
- DHCP application
- Purpose
- Start/Stop Transmission Log status

The only prompts ask for the non-DHCP application name(s) and a device.

Print/Display Menu
Non-DHCP Application Parameters Print/Display

Screen Example

```
Select Print/Display Menu Option:    Non-DHCP Application Parameters Print/Display
START WITH NAME: FIRST//   <RET>
DEVICE:  A700         RIGHT MARGIN: 132//   <RET>
DO YOU WANT YOUR OUTPUT QUEUED? NO//   Y  (YES)


REQUESTED TIME TO PRINT: NOW//   <RET>
REQUEST QUEUED!
Task number: 12682
```

Output Example

```
HL7 Non-DHCP Application Parameters            NOV 28,1994  13:45    PAGE 1
--------------------------------------------------------------------------------


NAME: AMCH-RADIOLOGY                       DHCP STATION NUMBER: 500
  NON-DHCP FACILITY NAME: AMCH XRAY        MAXIMUM BLOCK SIZE: 245
  NUMBER OF RETRIES: 3                     HL7 DEVICE: HLLP
  HL7 VERSION NUMBER: 2.1                  DHCP APPLICATION: EDR-MAS
  LOWER LEVEL PROTOCOL TIMEOUT: 30         HL7 PROCESSING ID: PRODUCTION
 PURPOSE:   Data exchange between Albany VAMC and Albany Medical Center
 Hospital
  START/STOP TRANSMISSION LOG: STOP LOG

NAME: EDR-MAS                              DHCP STATION NUMBER: 500
  NON-DHCP FACILITY NAME: BDC              MAXIMUM BLOCK SIZE: 245
  NUMBER OF RETRIES: 3                     HL7 VERSION NUMBER: 2.2
  DHCP APPLICATION: EDR-MAS                LOWER LEVEL PROTOCOL TIMEOUT: 30
  MAIL GROUP: EDR-MAS                      HL7 PROCESSING ID: DEBUG

NAME: IVM CENTER                           DHCP STATION NUMBER: 500
  NON-DHCP FACILITY NAME: 724              MAXIMUM BLOCK SIZE: 245
  HL7 VERSION NUMBER: 2.1                  DHCP APPLICATION: IVM
  MAIL GROUP: IVM TRANSMISSIONS           HL7 PROCESSING ID: PRODUCTION
```

Print/Display Menu
   Awaiting/Pending HL7 Transmissions Print/Display

Introduction

Use the Awaiting/Pending HL7 Transmissions Print/Display option to print or
display a list of entries in the HL7 MESSAGE TEXT file (#772) with a status of
PENDING TRANSMISSION or AWAITING ACKNOWLEDGMENT. This list can
be used to determine if there are any problems with transmissions.

*Entries in the HL7 MESSAGE TEXT file (#772) should only remain in a PENDING
status for a short time (i.e., an hour or less).*

The output might include the following information for the entries listed:

- Message ID
- Message text
- Date/time transmission entered
- DHCP application
- Non-DHCP application
- Transmission type
- Related MailMan message number
- Transmission status
- Error message
- Error type
- Number of characters in message
- Number of events in message

The entries on the output are listed in chronological order by ID (date/time
entered).

The only prompts ask for an ID and a device.

Print/Display Menu
Awaiting/Pending HL7 Transmissions Print/Display

Screen Example

```
Select Print/Display Menu Option:   Awaiting/Pending HL7 Transmissions Print/Display
   START WITH ID: FIRST//   <RET>
DEVICE: <RET>  Decnet     RIGHT MARGIN: 80//   <RET>
```

Output Example

```
Log of HL7 Transmissions in Awaiting or Pending Status
                                           NOV 25,1994  13:03    PAGE 1
----------------------------------------------------------------------------

ID: NOV 18, 1994@16:47:05
 MESSAGE TEXT:
 MSH|^~\&|INFOLIO TEST|LEAVENWORTH VAMC|IB PERIPH
TEST|500|19900314130405|ORU|RJS101|D|2.1|
 PID||7777790^2^M10||SMITH^JOHN||||||||88888888|
 OBR||2930423.08^1^L||199304230800|||||||DERMATOLOGY|
 OBX|CE|10040|OV|1^0^0^0^0|
 OBX|CE|11041|PR|
 OBX|CE|216.6|P|
 OBX|ST|VW^WEIGHT^L||120|KG
 OBX|ST|VB^BLOOD PRESSURE^L||120/80|MM HG
 OBX|ST|VT^TEMPERATURE^L||99|C
 OBX|ST|VP^PULSE^L||75|/MIN
 OBX|ST|VR^RESPIRATORY^L||12|/MIN
 OBX|CE|OR^RETURN VISIT^L||CARDIOLOGY^19930415|
 OBX|CE|OO^ORDER^L||71010^R|
 OBX|CE|OO^ORDER^L||81000^L|
  STATUS: ERROR DURING TRANSMISSION
  DATE/TIME PROCESSED: NOV 18, 1994@16:47:05
  ERROR MESSAGE: Missing Event Type     ERROR TYPE: 13
  NO. OF CHARACTERS IN MESSAGE: 547      NO. OF EVENTS IN MESSAGE: 1
```

Print/Display Menu
Failed HL7 Transmissions Print/Display

Introduction

Use the Failed HL7 Transmissions Print/Display option to print or display a list of entries in the HL7 MESSAGE TEXT file (#772) with a status of ERROR IN TRANSMISSION. It can be used to obtain a list of those transmissions which were unsuccessful and the reason why the transmission failed.

The output might include the following information for the entries listed:

- Message ID
- Message text
- Date/time transmission entered
- DHCP application
- Non-DHCP application
- Transmission type
- Related MailMan message number
- Transmission status
- Error message
- Error type
- Number of characters in message
- Number of events in message

The entries on the output are listed in chronological order by ID (date/time entered).

The only prompts ask for an ID and a device.

Screen Example

```
Select Print/Display Menu Option:   Failed HL7 Transmissions Print/Display
  START WITH ID: FIRST//  <RET>
DEVICE: <RET>  Decnet    RIGHT MARGIN: 80//  <RET>
```

Print/Display Menu
Failed HL7 Transmissions Print/Display

Output Example

```
Log of Failed HL7 Transmissions                    NOV 25,1994  13:16    PAGE 1
--------------------------------------------------------------------------------


ID: NOV 17, 1994@09:34:51
 MESSAGE TEXT:
 MSH|^~\&|INFOLIO TEST|LEAVENWORTH VAMC|IB PERIPH
TEST|500|19900314130405|ORU|RJS101|D|2.1|
 PID||7777790^2^M10||SMITH^JOHN||||||||88888888|
 OBR||2930423.08^1^L||199304230800|||||||DERMATOLOGY|
 OBX|CE|10040|OV|1^0^0^0^0|
 OBX|CE|11041|PR|
 OBX|CE|216.6|P|
 OBX|ST|VW^WEIGHT^L||120|KG
 OBX|ST|VB^BLOOD PRESSURE^L||120/80|MM HG
 OBX|ST|VT^TEMPERATURE^L||99|C
 OBX|ST|VP^PULSE^L||75|/MIN
 OBX|ST|VR^RESPIRATORY^L||12|/MIN
 OBX|CE|OR^RETURN VISIT^L||CARDIOLOGY^19930415|
 OBX|CE|OO^ORDER^L||71010^R|
 OBX|CE|OO^ORDER^L||81000^L|
  STATUS: ERROR DURING TRANSMISSION
  DATE/TIME PROCESSED: NOV 17, 1994@09:34:51
  ERROR MESSAGE: Missing Event Type     ERROR TYPE: 13
  NO. OF CHARACTERS IN MESSAGE: 547     NO. OF EVENTS IN MESSAGE: 1
```

Print/Display Menu
Version Print/Display

Introduction

Use the Version Print/Display option to print or display a list of the HL7 Protocol versions in the HL7 VERSION SUPPORTED file (#771.5) which are supported by the DHCP HL7 interface.

Data in this file is sent with the HL7 package and cannot be updated by the site. New versions of HL7 will be added to this file as they are released.

The output displays the HL7 Protocol version number(s) in the HL7 VERSION SUPPORTED file (#771.5). The only prompt asks for a device.

Screen Example

```
Select Print/Display Menu Option: Version Print/Display
DEVICE: <RET>  Decnet    RIGHT MARGIN: 80// <RET>
```

Output Example

```
HL7 Version Numbers                        NOV 25,1994  13:30    PAGE 1
----------------------------------------------------------------------------


VERSION: 2.1                      STANDARD: HEALTH LEVEL SEVEN

VERSION: 2.2                      STANDARD: HEALTH LEVEL SEVEN

VERSION: 2.0                      STANDARD: HEALTH LEVEL SEVEN

VERSION: 2.0D                     STANDARD: HEALTH LEVEL SEVEN
```

Print/Display Menu
Message Type Print/Display

Introduction

Use the Message Type Print/Display option to print or display entries in the HL7 MESSAGE TYPE file (#771.2) which are used to signal the exchange of data between the non-DHCP system and the DHCP system. These messages are internal and will not be seen by the user.

Data in the HL7 MESSAGE TYPE file (#771.2) is entered by the package developer and cannot be updated by the site. This file will be updated, and new entries added, where applicable, with each new package release.

This output is generated in alphabetical order by abbreviated name and includes the following information for each message:

- Abbreviated name
- Full name
- HL7 Protocol version number

The only prompt asks for a device.

Screen Example

```
Select Print/Display Menu Option:    Message Type Print/Display
DEVICE: A700      RIGHT MARGIN: 132//  <RET>
DO YOU WANT YOUR OUTPUT QUEUED? NO//   Y  (YES)

REQUESTED TIME TO PRINT: NOW//   <RET>
REQUEST QUEUED!
Task number: 12833
```

Print/Display Menu
Message Type Print/Display

Output Example

The following output example is intended to illustrate the format of the output only, and does not provide a complete list of the message types. For a complete list of supported HL7 message types, please refer to Appendix C of this manual.

```
HL7 Message Types                              NOV 25,1994  13:38    PAGE 1
-----------------------------------------------------------------------------

ABBREVIATED NAME: ACK                     FULL NAME: General Acknowledgment
VERSION: 2.1

ABBREVIATED NAME: ADT                     FULL NAME: ADT Message
VERSION: 2.1

ABBREVIATED NAME: ARD                     FULL NAME: Ancillary Report (Display)
VERSION: 2.1

ABBREVIATED NAME: BAR                     FULL NAME: Add/Change Billing Account
VERSION: 2.1

ABBREVIATED NAME: DFT                     FULL NAME: Detail Financial Transaction
VERSION: 2.1

ABBREVIATED NAME: DSR                     FULL NAME: Display Response
VERSION: 2.1

ABBREVIATED NAME: MCF                     FULL NAME: Delayed Acknowledgment
VERSION: 2.1

ABBREVIATED NAME: OCF                     FULL NAME: Order Confirmation
VERSION: 2.1

ABBREVIATED NAME: ORF
  FULL NAME: Observational Result/Record Response
VERSION: 2.1

ABBREVIATED NAME: ORM                     FULL NAME: Order
VERSION: 2.1

ABBREVIATED NAME: ORR                     FULL NAME: Order Response Message
VERSION: 2.1

ABBREVIATED NAME: ORU
  FULL NAME: Observational Results Unsolicited
VERSION: 2.1
VERSION: 2.2

ABBREVIATED NAME: OSQ                     FULL NAME: Order Status Query
VERSION: 2.1
```

Print/Display Menu
Segment Name Print/Display

Introduction

Use the Segment Name Print/Display option to print or display entries in the HL7 SEGMENT TYPE file (#771.3).

Entries in this file are segments contained within each message in the HL7 MESSAGE TYPE file (#771.2).

Data in this file is entered by the package developer and cannot be updated by the site. This file will be updated, and new entries added, where applicable, with each new package release.

The output is generated in alphabetical order by abbreviated name and includes the following information for each segment:

- Abbreviated name
- Full name
- HL7 Protocol version number

The only prompt asks for a device.

Screen Example

```
Select Print/Display Menu Option:    Segment Name Print/Display
DEVICE: A700      RIGHT MARGIN: 132//   <RET>
DO YOU WANT YOUR OUTPUT QUEUED? NO//   Y  (YES)

REQUESTED TIME TO PRINT: NOW//   <RET>
REQUEST QUEUED!
Task number: 12841
```

Print/Display Menu
Segment Name Print/Display

Output Example

The following output example is intended to illustrate the format of the output only, and does not provide a complete list of the segment names. For a complete list of supported HL7 segment types, please refer to Appendix D of this manual.

```
HL7 Segment Names                           NOV 25,1994  14:27    PAGE 1
-----------------------------------------------------------------------------


ABBREVIATED NAME: 2                  FULL NAME: Patient Visit - Additional

ABBREVIATED NAME: ACC                FULL NAME: Accident
VERSION: 2.1

ABBREVIATED NAME: ADD                FULL NAME: Addendum
VERSION: 2.1

ABBREVIATED NAME: BHS                FULL NAME: Batch Header
VERSION: 2.1

ABBREVIATED NAME: BLG                FULL NAME: Billing
VERSION: 2.1

ABBREVIATED NAME: BTS                FULL NAME: Batch Trailer
VERSION: 2.1
ABBREVIATED NAME: DG1                FULL NAME: Diagnosis
VERSION: 2.1

ABBREVIATED NAME: DSC                FULL NAME: Continuation Pointer
VERSION: 2.1

ABBREVIATED NAME: DSP                FULL NAME: Display Data
VERSION: 2.1

ABBREVIATED NAME: ERR                FULL NAME: Error
VERSION: 2.1

ABBREVIATED NAME: EVN                FULL NAME: Event Type
VERSION: 2.1

ABBREVIATED NAME: FHS                FULL NAME: File Header
VERSION: 2.1

ABBREVIATED NAME: FT1                FULL NAME: Financial Transaction
VERSION: 2.1

ABBREVIATED NAME: FTS                FULL NAME: File Trailer
VERSION: 2.1

ABBREVIATED NAME: GT1                FULL NAME: Guarantor
VERSION: 2.1

ABBREVIATED NAME: IN1                FULL NAME: Insurance
VERSION: 2.1

ABBREVIATED NAME: MRG                FULL NAME: Merge Patient Information
VERSION: 2.1
```

Print/Display Menu
Data Type Print/Display

Introduction

Use the Data Type Print/Display option to print or display entries in the HL7 DATA TYPE file (#771.4). Data types are associated with fields. *Only one data type can be associated with a field.*

Data in this file is entered by the package developer and cannot be updated by the site. This file will be updated, and new entries added, where applicable, with each new package release.

The output is generated in alphabetical order by data type abbreviation and includes the following information for each data type:

- Abbreviated name
- Full name
- HL7 Protocol version number

As future HL7 releases are added to the system, the output will be generated alphabetically by data type abbreviation, then by version number within each data type.

The only prompt asks for a device.

Screen Example

```
Select Print/Display Menu Option:   Data Type Print/Display
DEVICE: A700      RIGHT MARGIN: 132//  <RET>
DO YOU WANT YOUR OUTPUT QUEUED? NO//   Y  (YES)

REQUESTED TIME TO PRINT: NOW//   <RET>
REQUEST QUEUED!
Task number: 12951
```

Print/Display Menu
Data Type Print/Display

Output Example

The following output example provides a list of HL7 data types. For a comparison list of HL7 data types with their corresponding VA FileMan data types, please refer to Appendix E of this manual.

```
HL7 Data Types                              NOV 25,1994  16:10    PAGE 1
-------------------------------------------------------------------------------


NAME: AD                             FULL NAME: Address
VERSION: 2.1

NAME: CE                             FULL NAME: Composite Element
VERSION: 2.1

NAME: CK                             FULL NAME: Composite ID with Check Digit
VERSION: 2.1

NAME: CM                             FULL NAME: Composite
VERSION: 2.1

NAME: CN                             FULL NAME: Composite ID and Name
VERSION: 2.1

NAME: CQ                             FULL NAME: Composite Quantity with Units
VERSION: 2.1

NAME: DT                             FULL NAME: Date
VERSION: 2.1

NAME: FT                             FULL NAME: Formatted Text
VERSION: 2.1

NAME: ID                             FULL NAME: Coded Value
VERSION: 2.1

NAME: NM                             FULL NAME: Numeric
VERSION: 2.1

NAME: PN                             FULL NAME: Person Name
VERSION: 2.1

NAME: SI                             FULL NAME: Sequence ID
VERSION: 2.1

NAME: ST                             FULL NAME: String
VERSION: 2.1

NAME: TM                             FULL NAME: Time
VERSION: 2.1

NAME: TN                             FULL NAME: Telephone Number
VERSION: 2.1

NAME: TS                             FULL NAME: Time Stamp
VERSION: 2.1

NAME: TX                             FULL NAME: Text
VERSION: 2.1
```

Print/Display Menu
Fields Print/Display

Introduction

The Fields Print/Display option is used to print or display entries in the HL7 FIELD file (#771.1), which are used to support the exchange of package data for each of the segments within a message.

Data in this file is entered by the package developer and cannot be updated by the site. This file will be updated, and new entries added, where applicable, with each new package release.

The output is generated in alphabetical order by field name and might include the following information:

- Field name
- HL7 Protocol version number
- Abbreviated segment name
- Maximum field length
- Data type associated with the field
- Sequence number (determines where in the segment the field appears)
- Item and table numbers (references to pertinent sections of the Health Level Seven Interface Protocol)
- Repetition (number of times the field can be repeated within a segment)
- Whether the field is required for this particular segment
- Field description (for locally created fields, indicated by a "Z" type segment) (Please refer to the documentation for the Health Level Seven V. 2.2 Final Standard documentation for a complete list of fields.)
- Sample values for DHCP and HL7 values (for locally created fields, indicated by a "Z" type segment) (Please refer to the documentation for the Health Level Seven V. 2.2 Final Standard documentation for a complete list of fields.)

The only prompts ask for a name and a device.

Screen Example

```
Select Print/Display Menu Option:   FIELDS Print/Display
START WITH NAME: FIRST//   <RET>
DEVICE: <RET>  Decnet     RIGHT MARGIN: 80//   <RET>
```

Print/Display Menu
Fields Print/Display

Output Example

The following output example is intended to illustrate the format of the output only, and does not provide a complete list of the HL7 fields. For a complete list of HL7 fields, please refer to the documentation for the Health Level Seven V. 2.2 Final Standard.

```
HL7 Fields                                 NOV 28,1994  16:08    PAGE 1
-----------------------------------------------------------------------------


NAME: ABNORMAL FLAGS                       SEGMENT: OBX
  SEQUENCE: 8                              MAXIMUM LENGTH: 10
  DATA TYPE: ST                            REQUIRED?: NOT REQUIRED
  REPETITION: 5                            TABLE NUMBER: 0078
  ITEM NUMBER: 00564
VERSION: 2.1
VERSION: 2.2


NAME: ACCIDENT CODE                        SEGMENT: ADD
  SEQUENCE: 2                              MAXIMUM LENGTH: 2
  DATA TYPE: ID                            REQUIRED?: NOT REQUIRED
  TABLE NUMBER: 0050                       ITEM NUMBER: 00184
VERSION: 2.1
VERSION: 2.2


NAME: ACCIDENT DATE/TIME                   SEGMENT: ADD
  SEQUENCE: 1                              MAXIMUM LENGTH: 19
  DATA TYPE: TS                            REQUIRED?: NOT REQUIRED
  ITEM NUMBER: 00182
VERSION: 2.1
VERSION: 2.2


NAME: ACCIDENT LOCATION                    SEGMENT: ADD
  SEQUENCE: 3                              MAXIMUM LENGTH: 25
  DATA TYPE: ST                            REQUIRED?: NOT REQUIRED
  ITEM NUMBER: 00185
VERSION: 2.1
VERSION: 2.2


NAME: ACCOUNT ID                           SEGMENT: BTS
  SEQUENCE: 3                              MAXIMUM LENGTH: 100
  DATA TYPE: CM                            REQUIRED?: NOT REQUIRED
  ITEM NUMBER: 00730
```

Purge Message Text File Entries

Introduction

Use the Purge Message Text File Entries option to purge entries that are at least seven days old from the HL7 MESSAGE TEXT file (#772). This file contains a record of all outgoing HL7 transmissions and their statuses. Using this option purges all entries in the file that have been successfully transmitted and, optionally, those entries with a status of ERROR IN TRANSMISSION.

To purge entries with an error status, run this option directly and answer YES at the "Purge entries that were not successfully transmitted?" prompt. *Entries with an error status should be reviewed before purging.*

It is recommended that this option be queued to run once a day as a background task in order to automatically purge entries that were successfully transmitted.

Example

```
Select HL7 Main Menu Option:   Purge HL7 MESSAGE TEXT File Entries

Enter cutoff date for purge of HL7 MESSAGE TEXT file:    T-8  (NOV 20, 1994)

Purge entries that were not successfully transmitted? NO//    Y  YES

Purge queued to run in background.
```

Glossary

Background Filer

Takes messages from the communications server, puts them into the HL7 MESSAGE TEXT file (#772), and calls the application processing routine. Conversely, it takes messages generated by DHCP programs and delivers them to the communications server, which in turn delivers them to other systems.

Communications Error

Evidenced by flashing of the node name in the Messaging Monitor. There are presently three reasons for a communications error to occur:

- The LLP could not enqueue a message into File #870, which caused the LLP to shut itself down. This means that messages cannot be recorded in File #870.

- The LLP tried to send a message enough times that it exceeded the Re-Transmission Attempts parameter in File #870. The transmission was either negatively acknowledged (NAK'd) or not acknowledged (possibly indicating the other system is down).

- The LLP negatively acknowledged (NAK'd) an incoming message.

Communications Server

This module manages communications with other systems. It consists of multiple options which allow system managers to link their HL7 applications to other systems and devices.

DHCP Application

A software package developed by VA to support clinical or administrative functions at VAMCs nationwide. It is written in MUMPS, and, via Kernel, will run on all major MUMPS implementations, regardless of vendor.

Event

A DHCP "movement", such as an admission, discharge or bed transfer, inter-ward transfer, transfer to a new treating specialty, etc.

Glossary

HL7 Component A field can contain multiple components separated by the HL7 component separator.

HL7 Field A field is a specific unit of data. Each field is defined by the following set of characteristics: Position in the Segment, Name, ID Number, Maximum Length, Optionality, Repetition, Table Assignment (optional) and Type.

HL7 Hybrid Lower Layer Protocol (HLLP) A communication protocol that supports layers 1 through 4 of the OSI Protocol.

HL7 Interface The exchange of information between a DHCP application and the DHCP HL7 package.

HL7 Message A message is the atomic unit for transferring data between systems. It is comprised of a group of HL7 segments in a defined sequence. Each message has a message type that defines its purpose. Each message is identified by a unique three character code.

HL7 Protocol Health Level Seven. An application communications standard for text-type patient-specific data. Permits data exchange between diverse computer configurations with a variety of communications protocols. Communications take place by exchange of HL7 "messages".

HL7 Segment A segment is a logical grouping of one or more data fields separated by the HL7 field separator. Segments of a message might be optional or required. They might occur only once or might repeat multiple times. Each segment is identified by a unique three character code.

Logical Link Node An entry in the HL LOGICAL LINK file (#870) that links the HL7 package through the DEVICE file (#3.5) to a device, or to MailMan via the MailMan Protocol.

Lower Level Interface	Refers to layers 1 through 4 of the Open Systems Interconnect (OSI) Protocol for exchanging data between computer systems. Layers 1 through 4 ensure physical connectivity and error-free delivery of data between computer systems and are normally handled by a communication protocol independent of the HL7 Protocol. In the DHCP HL7 package the lower level interface is handled by either the DHCP MailMan package or the HL7 Hybrid Lower Layer Protocol.
Non-DHCP Application	A term used to refer to and distinguish between the two applications (the other is called the DHCP application) that will be exchanging data using the HL7 Protocol.
Systems Link Monitor	A real-time display of the links defined in the HL LOGICAL LINK file (#870).

Glossary

Appendix A. List Manager Actions

The following is a list of generic VA List Manager actions with a brief description of each. The synonym for each action is shown in brackets [ ] following the action name. Entering the synonym is the quickest way to select an action.

Action	Description
Next Screen [+]	Move to the next screen.
Previous Screen [-]	Move to the previous screen.
Up a Line [UP]	Move up one line.
Down a Line [DN]	Move down one line.
Shift View to Right [>]	Move the screen to the right if the screen width is more than 80 characters.
Shift View to Left [<]	Move the screen to the left if the screen width is more than 80 characters.
First Screen [FS]	Move to the first screen.
Last Screen [LS]	Move to the last screen.
Go to Page [GO]	Move to any selected page in the list.
Refresh Screen [RE]	Redisplay the current screen.
Print Screen [PS]	Prints the header and the portion of the list currently displayed.
Print List [PL]	Prints the list of entries currently displayed.
Search List [SL]	Finds selected text in list of entries.
Auto Display(On/Off) [ADPL]	Toggles the menu of actions to be displayed/not displayed automatically.
Quit [QU]	Exits the screen.

Appendix A. List Manager Actions

Appendix B. Sample HL7 Interface Specification

HEALTH LEVEL 7
INTERFACE SPECIFICATIONS
ALBANY INFORMATION SYSTEMS CENTER
DEPARTMENT OF VETERANS AFFAIRS

DECENTRALIZED HOSPITAL COMPUTER PROGRAM
EXCHANGE OF RADIOLOGY HEALTHCARE INFORMATION

MARCH 1993

1. PURPOSE

This document specifies an interface to the DHCP Radiology package based upon
the HL7 Protocol. It is intended that this interface form the basis for the exchange
of healthcare information between the DHCP Radiology package and all non-DHCP
systems, especially those non-DHCP systems that generate radiology results
information.

2. OVERVIEW

2.1 Statement of Intent

The Albany Information Systems Center (ISC) is developing and plans to
implement a generic interface to the HL7 Protocol for use by the DHCP
Radiology package in communicating with non-DHCP systems for the purpose
of exchanging healthcare information. This interface may eventually be used
by all DHCP clinical packages to exchange healthcare information with non-
DHCP systems. The interface will strictly adhere to the HL7 Protocol and will
avoid using "Z" type extensions to the protocol wherever possible.

2.2 Scope

This document describes messages that are exchanged between the DHCP
Radiology package and a non-DHCP system for the purpose of exchanging
information concerning radiology results, specifically reports and impressions.

3. GENERAL SPECIFICATIONS

3.1 Communication Protocol

The HL7 Protocol defines only the seventh level of the Open System Inter-connect (OSI) Protocol. This is the application level. Levels one through six involve primarily communication protocols. The HL7 Protocol provides some guidance in this area. The communication protocols that will be used for interfacing with the DHCP Radiology package will be based on the HL7 Hybrid Lower Level Protocol which is described in the HL7 Interface Standards document.

3.2 Application Processing Rules

The HL7 Protocol itself describes the basic rules for application processing by the sending and receiving systems. Information contained in the protocol will not be repeated here, therefore anyone wishing to interface with the DHCP Radiology package should become familiar with the HL7 Protocol version 2.1.

3.3 Messages

The following HL7 messages will be used to support the exchange of Radiology data:

    ACK   General Acknowledgment
    ORF   Observational Report Response
    ORM   Order
    ORR   Order Response Message
    ORU   Observational Results Unsolicited
    QRY   Query Message

3.4 Segments

The following HL7 segments will be used to support the exchange of Radiology data:

    MSA   Message Acknowledgment
    MSH   Message Header
    OBR   Observational Request
    OBX   Result
    ORC   Common Order
    PID   Patient Identification
    QRD   Query Definition

3.5 Fields

The following HL7 fields will be used to support the exchange of Radiology data for each of the segments listed in paragraph 3.4:

SEGMENT	FIELD SEQUENCE NUMBER	FIELD ELEMENT NAME
MSA	1	Acknowledgment Code
	2	Message Control ID
	3	Text Message
MSH	1	Field Separator
	2	Encoding Characters
	3	Sending Application
	4	Sending Facility
	5	Receiving Application
	6	Receiving Facility
	7	Date/Time of Message
	8	Security
	9	Message Type
	10	Message Control ID
	11	Processing ID
	12	Version ID
OBR	4	Universal Service Ident.
	7	Observation Date/Time
	8	Observation End Date/Time
	9	Collection Volume
	14	Specimen Received Date/Time
	16	Ordering Provider
	18	Placers Field #1 (Ward/Clinic)
	20	Fillers Field #1 (Ward/Clinic)
	22	Results Rpt/Status Chng-Date/Time
OBX	2	Value Type
	3	Observation Identifier
	5	Observation Results
ORC	1	Order Control
	9	Date/Time of Transaction
	14	Call Back Phone Number
PID	3	Patient ID (Internal ID)
	5	Patient Name
	7	Date of Birth
	8	Sex
	19	SSN Number - Patient

3.5 Fields

SEGMENT	FIELD SEQUENCE NUMBER	FIELD ELEMENT NAME
QRD	1	Query Date/Time
	2	Query Format Code
	3	Query Priority
	4	Query ID
	7	Quantity Limited Request
	8	Who Subject Filter
	9	What Subject Filter
	10	What Department Data Code

4. TRANSACTION SPECIFICATIONS

4.1 General

The flow of transactions between the DHCP Radiology package and the non-DHCP system may occur in one of two ways.

A. DHCP will notify the non-DHCP system that an exam has been done and the non-DHCP system will notify the DHCP system of the results of the exam once the report has been entered.

B. The non-DHCP system will query the DHCP system for an exam list for a patient or for a specific exam and the DHCP system will respond with the appropriate exam information. The non-DHCP system will then send the results of the exam(s) to the DHCP system once the report has been entered.

4.2 Specific Transactions

A. Complete Exam Sent to Non-DHCP System

When an exam is completed on the DHCP system, an Order (ORM) message is sent to the non-DHCP system. The ORM message would consist of the following segments:

ORM   ORDER MESSAGE

MSH   Message Header
PID   Patient Identification
ORC   Common Order
OBR   Observational Request
OBX   Result

4.2 Specific Transactions

EXAMPLE:

```
----------------
 MSH^~|\&^RADIOLOGY^608^RADIOLOGY^NON-DHCP^199104301000^^ORM^12345^P^2.1
 PID^^^55555~5~M11^^JONES~JOHN~J^^19300101^M^^^^^^^^^^^987654321
 ORC^NW^^^^^^^199104301000
 OBR^^^^7089898.8453-1~040391-66~L^^^199104301200^""^""^^^^""^^3232~
 HARRIS~JACK^^MEDICINE^^^^199104301000
 OBX^^CE^P~PROCEDURE~L^^100~CHEST PA & LAT~L
 OBX^^TX^M~MODIFIERS~L^^RIGHT, PORTABLE
 OBX^^TX^H~HISTORY~L^^None
 OBX^^TX^A~ALLERGIES~L^^BEE STINGS
```

The non-DHCP system then sends a General Acknowledgment (ACK) message back to the DHCP system.

EXAMPLE:

```
----------------
 MSH^~|\&^RADIOLOGY^NON-DHCP^RADIOLOGY^608^199104301001^^ORR^54322^P^2.1
 MSA^AA^12345
```

B. Results of Exam sent to DHCP System

When the exam results corresponding to the order that was sent by the ORM message in paragraph A are ready, an Observational Results Unsolicited (ORU) message is sent to the DHCP system. The ORU would consist of the following segments:

ORU   OBSERVATIONAL RESULTS UNSOLICITED

MSH   Message Header
PID   Patient Identification
OBR   Observational Request
OBX   Result

EXAMPLE:

```
----------------
 MSH^~|\&^RADIOLOGY^NON-DHCP^RADIOLOGY^608^199104301010^ACCESS CODE~~
 SIGNATURE CODE^ORU^12346^P^2.1
 PID^^^55555~5~M11^^JONES~JOHN~J^^19300101^M^^^^^^^^^^^987654321
 OBR^^^^7089898.8543-1~043091-66~L^^^199104301200^""^""^^^^""^^3232~
 HARRIS~JACK^^^^MEDICINE^^199104301010
 OBX^^TX^I~IMPRESSION~L^^HEART NORMAL SIZE
 OBX^^ST^D~DIAGNOSTIC CODE~L^^NORMAL
 OBX^^TX^R~REPORT~L^^Heart appears to be of normal size.
 OBX^^TX^R~REPORT~L^^No infiltrate or abnormal mass noted.
```

4.2 Specific Transactions

The DHCP system would then send back a General Acknowledgment (ACK) message.

EXAMPLE:
```
----------------
   MSH^~|\&^RADIOLOGY^608^RADIOLOGY^NON-DHCP^199104301011^^ACK^54320^P^2.1
   MSA^AA^12346
```

C. Query for a List of Exams for a Patient

An alternate method for a non-DHCP system to determine which exams have been completed for a patient is to send a Query Message (QRY) to the DHCP system. The QRY would consist of the following segments:

QRY   QUERY MESSAGE
```
-----------------------------------------
   MSH^~|\&^RADIOLOGY^NON-DHCP SITE^RADIOLOGY^608^199104301100^ACCESS
   CODE~~SIGNATURE CODE^QRY^12347^P^2.1
   QRD^199104301100^R^I^Q1^^^5~RD^55555^OTH^PATIENT
```

The DHCP system would respond to the query with a list of up to five exams for patient 55555 in record-oriented format. In the following example, only one complete exam existed for the patient.

EXAMPLE:
```
----------------
   MSH^~|\&^RADIOLOGY^608^RADIOLOGY^NON-DHCP^199104301101^^ORF^54321^P^2.1
   MSA^AA^12347
   QRD^199104301101^R^I^Q1^^^1~RD^55555^OTH^PATIENT
   PID^^^55555~5~M11^^DOE~JOHN~J^^19300101^M^^^^^^^^^^987654321
   OBR^^^^7089898.8453-1~043091-66~L^^^199104301200^""^""^^^^^""^^3232~
   HARRIS~JACK^^^^MEDICINE^^199104301200
   OBX^^CE^P~PROCEDURE~L^^110~CHEST 1 VIEW~L
   OBX^^TX^M~MODIFIERS~L^^RIGHT, PORTABLE
   OBX^^TX^H~HISTORY~L^^A history is not available for this patient.
   OBX^^TX^A~ALLERGIES~L^^BEE STINGS
```

This query can be used to request a list of exams or just the most recent exam. To request the most recent exam, Field #7 of the QRD segment would specify one record as the quantity (1~RD) in Field #7. To receive a list of exams, more than one record would be specified as in the example above. For either of these queries, the full SSN of the patient or the first letter of the last name and the last four digits of the SSN may be passed as the Who Subject Filter. Likewise, this query can be used to request a specific exam. To do so, Field #7 would specify one record (1~RD), Field #8 would specify the exam number (e.g., 042891-666) or case number (e.g., 666), and Field #10 would specify the word EXAM.

Appendix C. Supported HL7 Message Types

ABBREVIATED NAME: ACK   FULL NAME: General Acknowledgment

ABBREVIATED NAME: ADT   FULL NAME: ADT Message

ABBREVIATED NAME: ARD   FULL NAME: Ancillary Report (Display)

ABBREVIATED NAME: BAR   FULL NAME: Add/Change Billing Account

ABBREVIATED NAME: DFT   FULL NAME: Detail Financial Transaction

ABBREVIATED NAME: DSR   FULL NAME: Display Response

ABBREVIATED NAME: MCF   FULL NAME: Delayed Acknowledgment

ABBREVIATED NAME: OCF   FULL NAME: Order Confirmation

ABBREVIATED NAME: ORF   FULL NAME: Observational Result/Record
                                               Response

ABBREVIATED NAME: ORM   FULL NAME: Order

ABBREVIATED NAME: ORR   FULL NAME: Order Response Message

ABBREVIATED NAME: ORU   FULL NAME: Observational Results Unsolicited

ABBREVIATED NAME: OSQ   FULL NAME: Order Status Query

ABBREVIATED NAME: QRY   FULL NAME: Query

ABBREVIATED NAME: UDM   FULL NAME: Unsolicited Display

Appendix C. Supported HL7 Message Types

Appendix D. Supported HL7 Segment Types

ABBREVIATED NAME: ACC   FULL NAME: Accident

ABBREVIATED NAME: ADD   FULL NAME: Addendum

ABBREVIATED NAME: BHS   FULL NAME: Batch Header

ABBREVIATED NAME: BLG   FULL NAME: Billing

ABBREVIATED NAME: BTS   FULL NAME: Batch Trailer

ABBREVIATED NAME: DG1   FULL NAME: Diagnosis

ABBREVIATED NAME: DSC   FULL NAME: Continuation Pointer

ABBREVIATED NAME: DSP   FULL NAME: Display Data

ABBREVIATED NAME: ERR   FULL NAME: Error

ABBREVIATED NAME: EVN   FULL NAME: Event Type

ABBREVIATED NAME: FT1   FULL NAME: Financial Transaction

ABBREVIATED NAME: GT1   FULL NAME: Guarantor

ABBREVIATED NAME: IN1   FULL NAME: Insurance

ABBREVIATED NAME: MRG   FULL NAME: Merge Patient Information

ABBREVIATED NAME: MSA   FULL NAME: Message Acknowledgment

ABBREVIATED NAME: MSH   FULL NAME: Message Header

ABBREVIATED NAME: NCK   FULL NAME: System Clock

ABBREVIATED NAME: NK1   FULL NAME: Next of Kin

ABBREVIATED NAME: NPU   FULL NAME: Non-Patient Update

ABBREVIATED NAME: NSC   FULL NAME: Status Change

ABBREVIATED NAME: NST   FULL NAME: Statistics

ABBREVIATED NAME: NTE   FULL NAME: Notes and Comments

ABBREVIATED NAME: OBR   FULL NAME: Observation Request

Appendix D. Supported HL7 Segment Types

ABBREVIATED NAME: OBX   FULL NAME: Result

ABBREVIATED NAME: ORC   FULL NAME: Common Order

ABBREVIATED NAME: ORO   FULL NAME: Order Other

ABBREVIATED NAME: PID   FULL NAME: Patient Identification

ABBREVIATED NAME: PR1   FULL NAME: Procedures

ABBREVIATED NAME: PV1   FULL NAME: Patient Visit

ABBREVIATED NAME: QRD   FULL NAME: Query Definition

ABBREVIATED NAME: QRF   FULL NAME: Query Filter

ABBREVIATED NAME: RX1   FULL NAME: Pharmacy Order

ABBREVIATED NAME: UB1   FULL NAME: UB82 Data

ABBREVIATED NAME: URD   FULL NAME: Results/Update Definition

ABBREVIATED NAME: URS   FULL NAME: Unsolicited Selection

Appendix E. HL7/VA FileMan Data Types

The following table is a list of HL7 data types and their corresponding VA FileMan data types. Listed under the first column titled "Function Call" are entry points in the HLFNC routine that can be called to convert VA FileMan data to HL7 format. Listed under the second column titled "Function Call" are entry points that can be called to convert HL7 data to VA FileMan format.

HL7 Data Type	Function Call	VA FileMan Data Type	Function Call
(ST) String	None Needed	Free Text	None Needed
(TX) Text	None Needed	Word Processing	None Needed
(FT) Formatted Text (See Note below)	None	No Equivalent	None
(NM) Numeric	None Needed	Numeric	None Needed
(DT) Date	HLDATE	Date Only	FMDATE
(TM) Time	HLDATE	Time Only	FMDATE
(TS) Time Stamp	HLDATE	Date/Time	FMDATE
(PN) Person Name	HLNAME	Free Text	FMNAME
(TN) Telephone No.	HLPHONE	Free Text	None Needed
(AD) Address	HLADDR	Free Text	None Needed
(ID) Coded Value	None Needed	Set of Codes or Pointer	None Needed
(SI) Sequence ID	None Needed	Numeric	None Needed
(CM) Composite	None Needed	No Equivalent	None Needed
(CE) Coded Element	None Needed	No Equivalent	None Needed
(CF) Coded Element with Formatted Value	None Needed	No Equivalent	None Needed
(CK) Composite ID with Check Digit	None Needed	No Equivalent	None Needed
(CN) Composite ID and Name	None Needed	No Equivalent	None Needed
(CQ) Composite Quantity with Units	None Needed	No Equivalent	None Needed
(MO) Money	None Needed	No Equivalent	None Needed
(RP) Reference Pointer	None Needed	No Equivalent	None Needed
(TQ) Timing Quantity	None Needed	No Equivalent	None Needed

NOTE: The formatted text (FT) data type is not required to be used in any HL7 fields at this time. The formatted text data type includes formatting instructions (escape codes) in the data string. It is recommended that locally created fields not be assigned the formatted data type. Use the string (ST) or text (TX) data types instead.

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