

LRIT-DCS Receiver Software

User Guide

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1 Theory of Operations

The LRIT DCS Receive Software is free software provided by NESDIS. It was written under contract by ILEX Engineering, Inc. ILEX also provides a several commercial products for archiving, distributing, decoding, and analyzing your DCP data. For more information, visit our web site at <http://www.ilexeng.com>.

This software provides access to the DCP (Data Collection Platform) messages embedded in the LRIT (Low Rate Information Transfer) data stream. The software is intended to run on a variety of off-the-shelf LRIT receivers from different manufacturers.

Figure 1 shows the data flow through the software. DCS (Data Collection System) files are transmitted within LRIT as files. Each file may contain several DCP messages. The manufacturer's LRIT Receive Software must be capable of dropping DCS files into a known directory. As of this writing, all known implementations work this way.

The LRIT RECV background software periodically (once per second) examines this directory. When it sees a complete, new file, it extracts the DCP messages, placing them into the current 'hourly' file. It moves the original file into a "Done" directory where it will stay for 24 hours.

When a new hour is started, the hourly file is closed and a new one is started. After 24 hours, the old files are deleted. A real-time GUI viewer provides a scrolling view of DCP messages as they arrive.

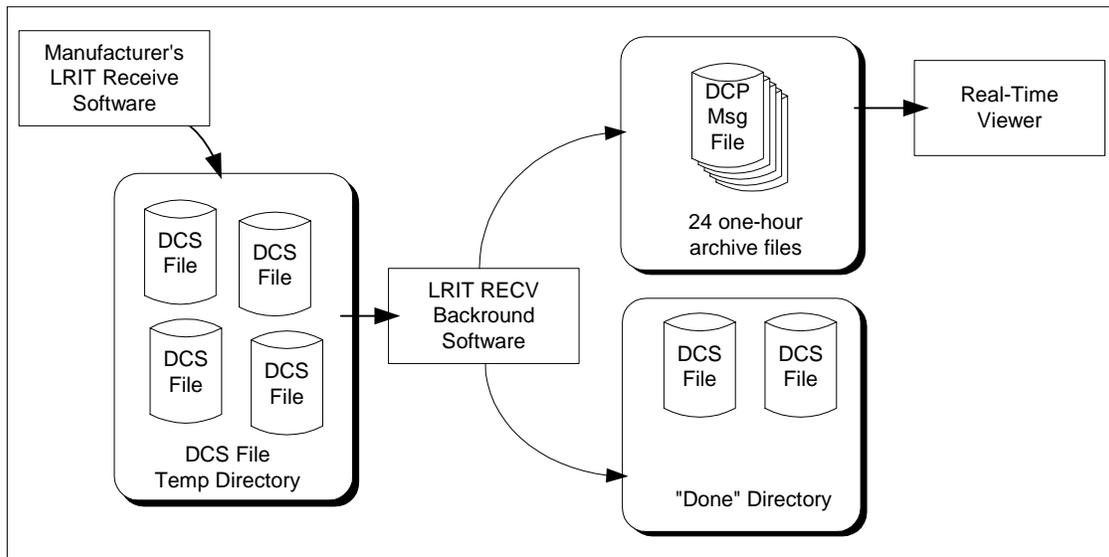


Figure 1: LRIT DCS Receive Software Data Flow Diagram.

1.1 Hourly Message File Structure

Each hourly file is a sequence of messages. When a new message arrives it is placed at the end of the file. The file grows throughout the hour.

Figure 2 shows the structure of each message in the file. The first 5 fields are all 32-bit quantities.

- The “Start Pattern” is a constant 4-byte pattern, with hex value 1F2E3D4C. A program reading the file can search for this value to ensure it is at the start of a new message.
- The “flag bits” field is a 32-bit integer and is reserved for future use.
- The “receive time_t” represents the system-time that the message arrived on this computer. It is a UNIX ‘time_t’ value, meaning the number of seconds since Jan 1, 1970 00:00:00 UTC.
- The “Sequence Number” field is a 32-bit integer and is reserved for future use.
- The “Message Length” field is a 32-bit integer. It represents the number of bytes to follow in the “variable length message bytes” field.

Start Pattern	flag bits	receive time_t	Sequence Number	Message Length	Variable Length Message Bytes
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Figure 2: Structure of a Message in the Hourly File.

2 Installation

The software is written in 100% Java so it will run on any modern computer platform. You will first need to make sure that Java is installed on the machine. We require Sun Microsystems Java Virtual Machine (JVM) version 1.4 or higher. Compatible JVMs from other vendors may also work.

The JVM is available as a free download from <http://java.sun.com>.

The LRIT DCS Receive software is distributed in a file called “ldr-install.jar”. This is a Java Archive (JAR) file which is freely available from NESDIS.

On most operating systems, to run the installer, simply double click the file-icon after downloading. If this does not work, try the following:

- Open a command window.
- CD to the directory containing the file.
- Type the command “java -jar ldr-install.jar”

If you get an error message saying the “java” is not a recognized command, this means that the JVM is not correctly installed. Please review the installation instructions from Sun Microsystems.

The installer is a series of “wizard” dialogs, as shown in Figures 3 through 8.



Figure 3: Installer Welcome Screen.

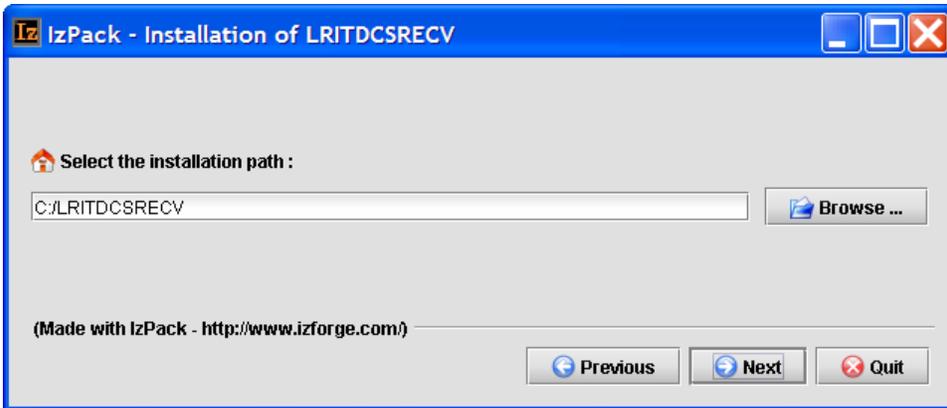


Figure 4: Installer Screen to Select Install Location.



Figure 5: Installer Package Selection Screen.

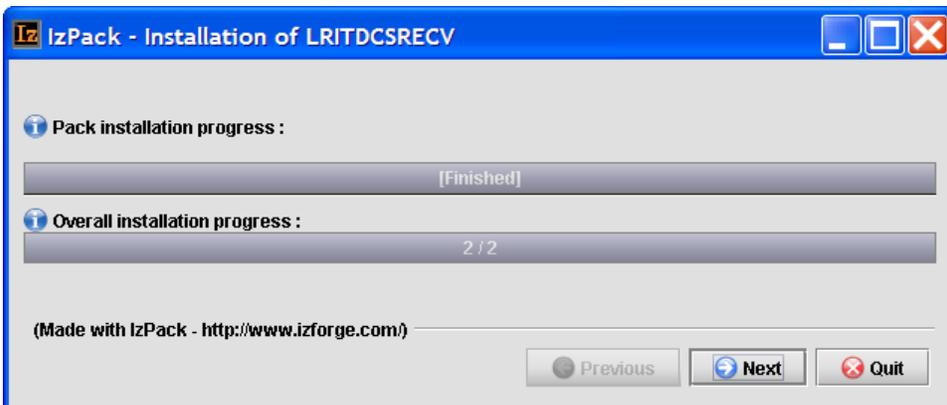


Figure 6: Installer Progress Screen.

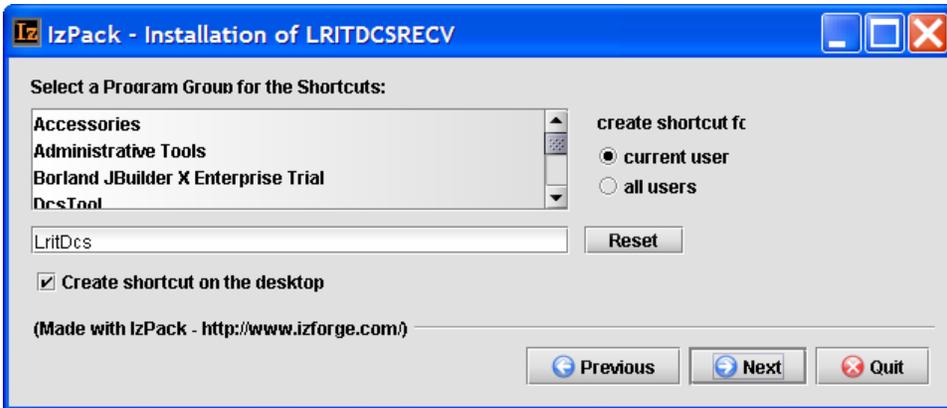


Figure 7: Installer Shortcuts Screen.



Figure 8: Final Installer Screen.

3 Configuration

After installing the software, you configure it by editing a text configuration file. Edit the file 'ldr.conf' which you will find in the installation directory. (This is the directory that you selected in Figure 4). You can edit the file with any plain text editor. Figure 9 shows the file being edited with "notepad" on a windows system.

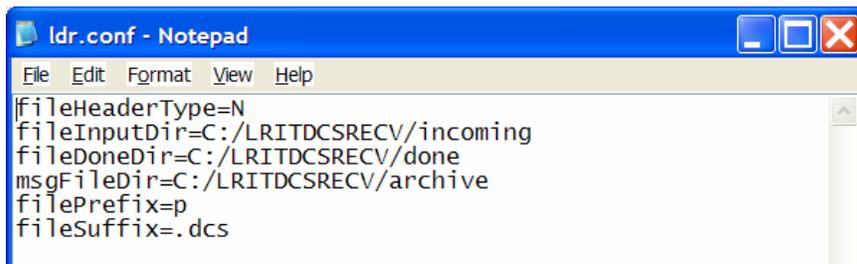


Figure 9: Editing the Configuration File with NotePad.

The file contains several configuration variables, as explained in Table 1.

Important Note: For directories, even on Windows Systems, use forward slash '/' as a separator.

<i>Variable Name</i>	<i>Type</i>	<i>Description</i>
fileHeaderType	Character	Different manufacturers place different file headers on the incoming LRIT DCS files. This variable is a code telling the software which type of header to expect. The allowed values are: <ul style="list-style-type: none"> • N - meaning none • 6 – Meaning DOMAIN-6 software.
fileInputDir	Directory Name	Specifies the directory where your LRIT Receive software will place incoming DCS files.
filePrefix	String	The software will only process files in the input-directory that start with this prefix. Any other file will be ignored.
fileSuffix	String	The software will only process files in the input-directory that end with this suffix. Any other file will be ignored.
fileDoneDir	Directory Name	Specifies the directory where LRIT DCS files will be placed after the DCP messages have been extracted. They will stay here from 24 hours and then be deleted.
msgFileDir	Directory Name	Specifies the directory where hourly message files will be created.

Table 1: Configuration Variables.

4 Starting and Stopping the Background Receiver

The receiver program should be started once. It then runs in the background indefinitely. To start the software, execute the “startldr” script, which you will find in the bin directory under the installation. On windows systems, the installer will have created a short-cut on the desktop for convenience.

The software uses a lock file called “ldr.lock”, which you will find in the installation directory. This file does two things:

- Ensures that only one copy of the software is running at a time.
- Provides an easy way to terminate the software: Simply delete the lock file.

5 Viewing DCP Messages As They Arrive

We provide a simple GUI program for viewing DCP messages as they arrive. To start the GUI, execute the “ldrgui” script which you will find in the bin directory under the installation. On windows systems, the installer will have created a short-cut on the desktop for convenience.

Figure 10 shows a snapshot of the GUI. There are two check-box controls on the bottom:

- “Wrap Long Lines” when checked, causes the message data to be wrapped in the window. That is very long lines of data wrap around to a new line. The horizontal scroll bar disappears when this is selected.
- “Snap to End” when checked, causes the screen to automatically scroll to the bottom as new data arrives. If you want to freeze the screen so that you can manually scroll, uncheck this box.

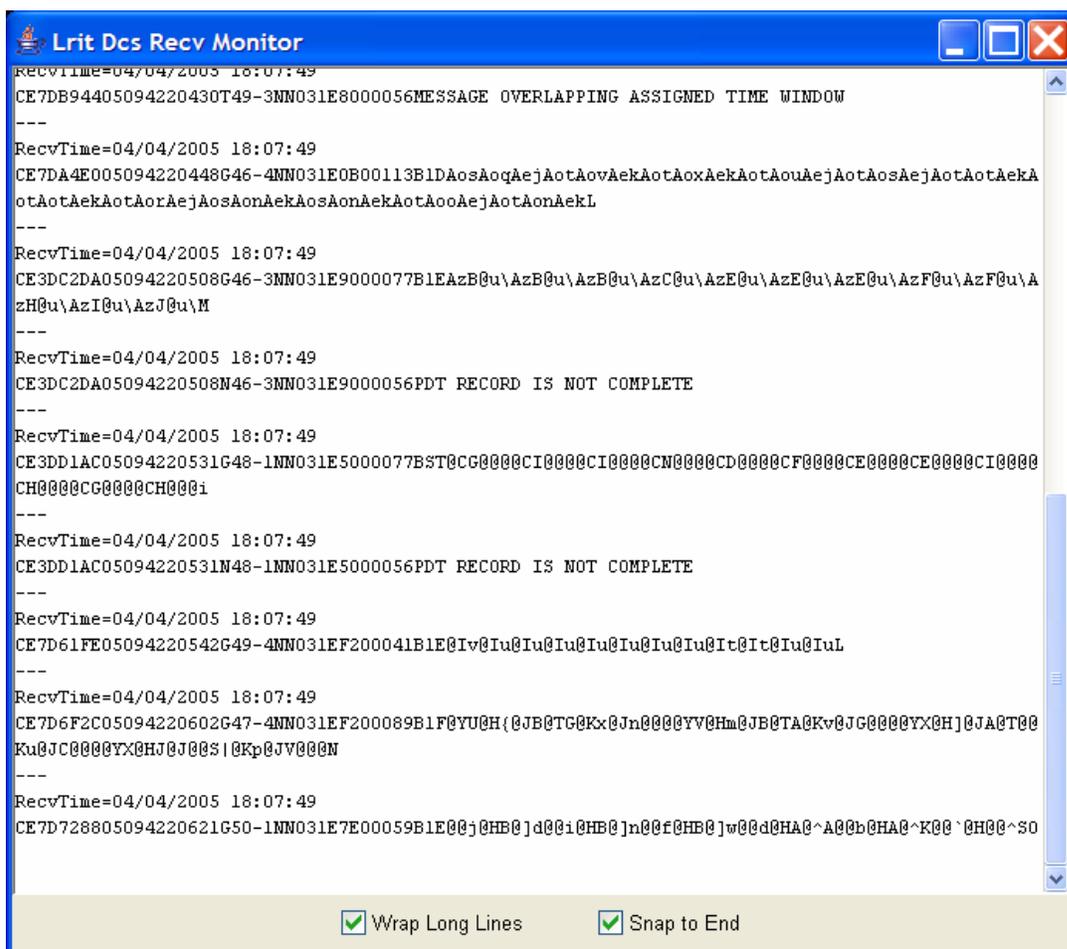


Figure 10: Scrolling GUI Showing Messages as they Arrive.