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Advanced Distributed  
Simulation Technology

# DISTRIBUTED INTERACTIVE SIMULATION INTERFACE LIBRARY VERSION DESCRIPTION DOCUMENT

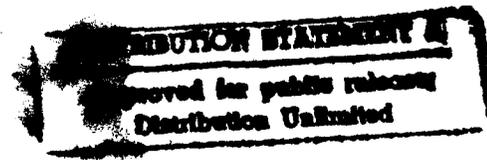
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Revision 2.0



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# **LORAL**

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Orlando, Florida 32826**

**Advanced Distributed  
Simulation Technology**

## **DISTRIBUTED INTERACTIVE SIMULATION INTERFACE LIBRARY VERSION DESCRIPTION DOCUMENT**

**Revision 2.0**

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<b>AUTHOR:</b>	_____	_____
<b>D.O. MANAGER:</b>	_____	_____
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## 1 Scope.

### 1.1 DIL Overview.

The Distributed Interactive Simulation (DIS) Interface Library (DIL) provides source code libraries for use in developing DIS simulation applications. These include:

- a. Simulation Network Interface Package (SNIP). SNIP provides a simulation networking protocol independent and network media independent interface to a simulation network. It currently supports the basic four PDUs in both DIS 2.0.3 and SIMNET 6.6.1. Included with SNIP are several DIS applications:
  - 1) Cell Adapter Unit (cau). The CAU provides a bi-directional interface between a non-DIS simulation cell (SIMNET 6.6.1) and a DIS network. This allows interaction between the DIS and non-DIS entities during an exercise.
  - 2) Selective Cell Adapter Unit (scau). The SCAU provides a bi-directional interface with PDU filtering between a non-DIS simulation cell (SIMNET 6.6.1) and a DIS network. This allows selective interaction between the DIS and non-DIS entities during an exercise.
  - 3) Cell Interface Unit (ciu). The CIU provides a bi-directional interface with PDU filtering between a DIS simulation cell and a low bandwidth (long-haul) DIS network.
- b. Lib Packet Valve (libpktvalve). Libpktvalve provides another simulation network interface that supports DIS 2.0.3 and SIMNET 6.6.1. It provides a "lower" level interface than SNIP and supports more PDUs. It is the networking interface used by ModSAF.
- c. Protocol Translator Cell Adaptor Unit (xcau). The XCAU provides a bi-directional interface between a non-DIS simulation cell (SIMNET 6.6.1) and a DIS network. This allows interaction between the DIS and non-DIS entities during an exercise. The XCAU is based upon the libpktvalve and currently supports 17 PDUs.

## 1.2 Document Overview.

This document provides version descriptions for each component of the DIL and instructions for installing the DIL on a target system.

## 2 Applicable Documents.

The documents referenced here are applicable to the program effort only to the extent defined, and are included for reference purposes. This document takes precedence in the event of conflict with any of the referenced documents.

- a. Cold Start Procedure (CSP) (Version 3.0.0, 6/9/94, TR-93-003214).
- b. Version Description Document (VDD) (Version 3.0.0, 6/9/94, TR-93-003213).
- c. Interface Requirements Specification (IRS) (5/1/93).
- d. Software Maintenance Manual (SMM) (TR-93-003064).
- e. System/Segment Design Document (SSDD) (5/1/93, DI-CMAN-80534).
- f. Software Requirements Specification (SRS) (draft).

### **3 Version Description.**

#### **3.1 DIL Version.**

This version of the DIL is numbered Version 2.2.2. It encompasses several enhancements to components included in previous versions. It also includes several new components as part of the library. The component versions and descriptions of the enhancements and additions are included in the following paragraphs.

#### **3.2 Component Versions**

The components included in this version of the DIL and their component versions are:

- a. Simulation Network Interface Package (SNIP) library -- Version 2.2.2.
  - 1) Cell Adapter Unit (cau) -- Version 2.2.2.
  - 2) Selective Cell Adapter Unit (scau) -- Version 2.2.2.
  - 3) Cell Interface Unit (ciu) -- Version 2.2.2.
- b. Lib Packet Valve (libpktvalve) -- Version 1.34.
- c. Protocol Translator Cell Adaptor Unit (xcau) -- Version 3.1.

#### **3.3 Component Enhancements**

The following components have been enhanced in this release.

- a. Simulation Network Interface Package (SNIP) library:
  - 1) Fixed "mystery 1" bug.
  - 2) Fixed memory leaks.
  - 3) Fixed SIU timestamp error.
- b. Cell Adapter Unit (cau): SNIP Bug Fixes.
- c. Selective Cell Adapter Unit (scau): SNIP Bug Fixes.

- d. Cell Interface Unit (ciu): SNIP Bug Fixes.

### 3.4 Component Additions.

The following components have been added in this release.

- a. Protocol Translator CAU (xcau).
- b. Protocol Translator status (xcau\_stat).

## 4 Resource Requirements.

### 4.1 Hardware Resources.

The DIL components released with this version are supported on the following platforms:

- a. Silicon Graphics workstation, running IRIX 5.2, with 64+ MB memory and 500+ MB disk.
- b. Silicon Graphics workstation, running IRIX 4.0.5, with 64+ MB memory and 500+ MB disk.
- c. SUN Microsystems workstation, running SunOS 4.1.X, with 64+ MB memory and 500+ MB disk.

### 4.2 Software Resources.

The source code libraries are developed in the C language and are available as both K&R and ANSI C. To re-compile the libraries and the applications based upon those libraries, a C language compiler is required.

### 4.3 Release Media.

The DIL is released as a "compressed tar" file. This tar file is available via a Sun format DC6150 QIC tape or via FTP. If the release was obtained via QIC tape, a QIC 24 tape drive will be required to retrieve the file from the tape.

The QIC tape, if supplied, is labeled as shown in Figure 4.3-1:

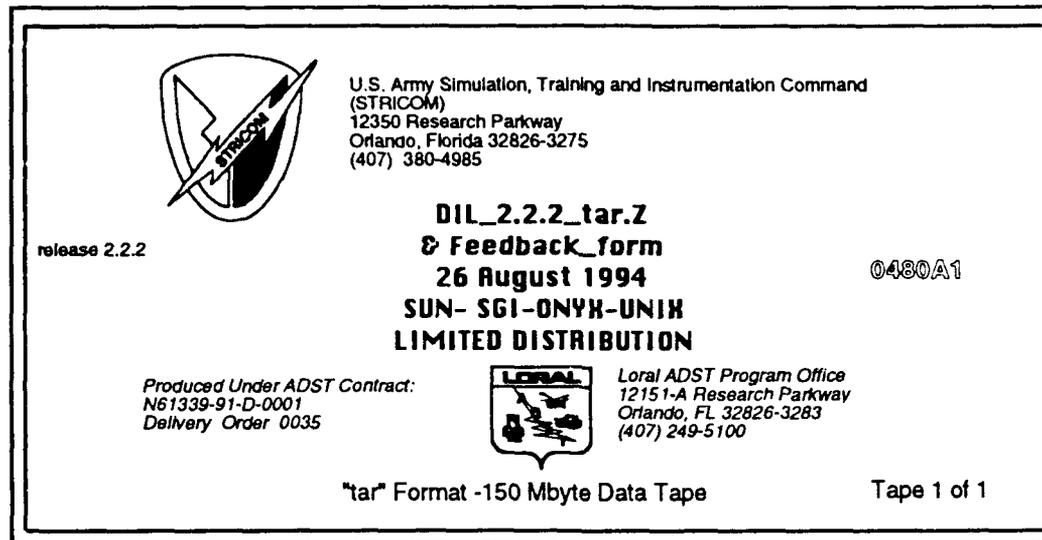


Figure 4.3-1. DIL 2.2.2 Release Tape Label

## 5 Installation Instructions.

This section describes the installation procedure for the DIL version 2.2.2 software. The DIS Interface Library (DIL) distributions are shipped as compressed tar archives. The archives must be loaded on the target machine, decompressed, and unarchived (un-tared). The following procedure illustrates this procedure.

**NOTE:** A complete distribution may require up to 84 megabytes of storage.

- a. First, determine where the software should be installed.

**NOTE:** For these examples, the software is installed in "/usr/local/ddt".

- b. If needed, make a directory using the following command:

```
mkdir /usr/local/ddt
```

- c. Change directories to the directory where the software should be installed using the following command:

```
cd /usr/local/ddt
```

- d. If you received the release via tape, insert the tape into the QIC-150 drive and load the tape using the following command:

```
tar xvof /dev/rmt/0                (Sun Solaris 2.3)
tar xvof /dev/rst8                 (Sun SunOS 4.1.x)
dd if=/dev/tape conv=swab | tar xvof -      (SGI)
```

- e. If you will be retrieving the release via FTP, retrieve it to this location.
- f. Following this, there should be a compressed tar file in the current directory. Uncompress the file using the following command:

```
uncompress *.Z
```

- g. Unarchive the file, using the following command:

```
tar xvof *.tar
```

- h. There should now be a directory named rel\_2.2.2. It contains the DIL version 2.2.2 release.

Under the rel\_2.2.2 directory, there should be several subdirectories and files, including (at least) "bin", "libpktvalve", "snip", and "xcau". There are several README files present in various directories. These contain special notes and information. It is a good practice to examine these README files if you plan on using the applications in that directory tree.

## 6 Release Structure.

The DIL Version 2.2.2 release has been arranged such that each tool within the library is contained within its own tree with all of the binaries contained (via symbolic links) in a single directory.

## 6.1 Directory Structure.

This paragraph provides a short description of each directory within the first two levels. A complete listing for the directory tree is included as Appendix A.

- |                     |  |
|---------------------|--|
| a. bin              | application executables                    |
| onyx                | SGI executables specific to IRIX 5.X       |
| sgi                 | SGI executables specific to IRIX 4.X       |
| sun                 | SUN(SPARC) SunOS 4.1.X executables         |
| <br>                |  |
| c. libpktvalue      | packet value development tree              |
| Components          | packet valve component library listing     |
| Makefile            | packet valve make script                   |
| RCS                 | RCS Configuration Management Directory     |
| Release             | release directory contents and information |
| libpktvalve.h       | packet valve source code                   |
| libpktvalve.texinfo | packet valve source code                   |
| libpv_local.h       | packet valve source code                   |
| pkttee.c            | packet valve source code                   |
| pv_assoc.c          | packet valve source code                   |
| pv_convert.c        | packet valve source code                   |
| pv_event.c          | packet valve source code                   |
| pv_init.c           | packet valve source code                   |
| pv_io.c             | packet valve source code                   |
| pv_null.c           | packet valve source code                   |
| pv_preempt.c        | packet valve source code                   |
| pv_router.c         | packet valve source code                   |
| pv_shm.c            | packet valve source code                   |
| pv_stats.c          | packet valve source code                   |

pv_udp.c	packet valve source code
rec_preempt_test.c	packet valve source code
router.rdr	packet valve data file
snd_preempt_test.c	packet valve source code
test.c	packet valve source code
testshm.c	packet valve source code
d. snip	SNIP libraries and applications
design	design files and documentation for DIL
doc	SNIP documentation
man	this is a link to doc/man3
onyx	SNIP IRIX version 5 source tree
sgi	SNIP IRIX version 4 source tree
sun	SNIP SunOS version 4.1.X source tree
e. xcau	Protocol Translator (XCAU) dvlpt. directory
INSTALL	installation script for the XCAU tree
bin	XCAU binaries
config	XCAU configuration files
data	XCAU data files
doc	XCAU documentation
include	XCAU include libraries and files
info	XCAU component documentation files
lib	XCAU libraries
src	XCAU development trees
tools	XCAU tools

## 6.2 Executables.

### 6.2.1 SGI IRIX 5.X Software.

The software targeted for the SGI IRIX 5.X environment includes the following executables:

- a. cau
- b. ciu
- c. pkttap
- d. scau
- e. xcau
- f. xcau\_stat

### 6.2.2 SGI IRIX 4.X Software.

The software targeted for the SGI IRIX 4.X environment includes the following executables:

- a. cau
- b. ciu
- c. pkttap
- d. scau
- e. xcau
- f. xcau\_stat

### 6.2.3 SUNOS 4.1.X Software.

The software targeted for the SUNOS 4.1.X environment includes the following executables:

- a. cau
- b. ciu
- c. pkttap
- d. scau
- e. xcau
- f. xcau\_stat

## 6.3 Additional Documentation.

### 6.3.1 Protocol Translator Cell Adapter Unit.

The following documentation provides more complete information about the Protocol Translator Cell Adapter Unit (XCAU).

- a. Cold Start Procedure (CSP) (Version 3.0.0, 6/9/94, TR-93-003214).
- b. Version Description Document (VDD) (Version 3.0.0, 6/9/94, TR-93-003213).
- c. Interface Requirements Specification (IRS) (5/1/93).
- d. Software Maintenance Manual (SMM) (TR-93-003064).
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