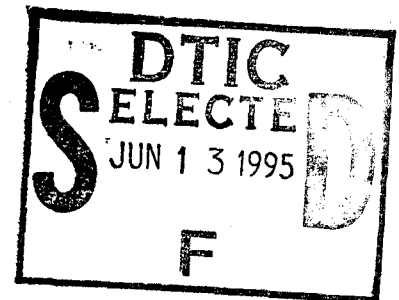




Advanced Distributed
Simulation Technology

DISTRIBUTED INTERACTIVE SIMULATION INTERFACE LIBRARY (DIL) VERSION DESCRIPTION DOCUMENT FOR 2.4.0

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13. ABSTRACT (Maximum 200 words) This document provides version descriptions for each component of the Distributed Interactive Simulation (DIS) Interface Library (DIL) and instructions for installing the DIL on a target system.				
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TABLE OF CONTENTS

1	Scope.....	1
1.1	DIL Overview.....	1
1.2	Document Overview.....	1
2	Applicable Documents.....	1
3	Version Description.....	2
3.1	DIL Version.....	2
3.2	Component Versions.....	2
3.3	Component Enhancements.....	2
3.4	Component Additions.....	4
4	Resource Requirements.....	4
4.1	Hardware Resources.....	4
4.2	Software Resources.....	5
4.3	Release Media.....	5
5	Installation Instructions.....	5
6	Release Structure.....	5
6.1	Directory Structure.....	6
6.2	Executables.....	7
6.2.1	SGI IRIX 5.X Software.....	7
6.2.2	SGI IRIX 4.X Software.....	7
6.2.3	SUNOS 4.1.X Software.....	7

LIST OF ILLUSTRATIONS

4.3-1	DIL 2.4.0 Release Tape Label.....	5
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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 Protocol Data Units (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 Modular Semi-Automated Forces (ModSAF) version 1.4.

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. Simulation Network Interface Package (SNIP) Programmers Manual (Version 1.3.2)

3 Version Description.

3.1 DIL Version.

This version of the DIL encompasses several enhancements to components included in previous versions prior to 2.3.0. 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 2.2.5.
 - 1) Cell Adapter Unit (cau) -- Version 2.2.5.
 - 2) Selective Cell Adapter Unit (scau) -- Version 2.2.2.
 - 3) Cell Interface Unit (ciu) -- Version 2.2.5.
- b. Lib Packet Valve (libpktvalve) -- ModSAF Version 1.4.

3.3 Component Enhancements

The following components have been enhanced in this release.

- a. Simulation Network Interface Package (SNIP) Library.
 - 1) The snip_uninit() function and all SPDM, STDM, NDM, and EAIM uninit functions now work as advertised.
 - 2) The SGAP has several new control/status commands:

```
SNIP_SGAP_SET_DESTROY_ENTITY_ON_EXIT
SNIP_SGAP_CLEAR_DESTROY_ENTITY_ON_EXIT
SNIP_SGAP_GET_DESTROY_ENTITY_ON_EXIT
SNIP_SGAP_EXEC_RESET_SYNC_WITH_SENDERS_CLOCKS
SNIP_SGAP_SET_USE_SENDERS_TIMESTAMP
SNIP_SGAP_CLEAR_USE_SENDERS_TIMESTAMP
SNIP_SGAP_GET_USE_SENDERS_TIMESTAMP
SNIP_SGAP_SET_APPROXIMATE_ENTITY_ON_RECV
SNIP_SGAP_CLEAR_APPROXIMATE_ENTITY_ON_RECV
SNIP_SGAP_GET_APPROXIMATE_ENTITY_ON_RECV
```

- 3) The Entity Approximation library LADSDR has been changed to threshold some articulated parts.
 - 4) The Entity Approximation library LADSDR has been optimized and will perform it's calculations in the "SIMNET style" Level Metrics coordinates when that is the selected output data format.
 - 5) A bug has been fixed in the snip_format_alloc_3d_rotate_info() so that the allocation of a TMATRIX for ZXY Z_UP is now correct.
 - 6.) Bugs were fixed in the SIUMGR so that now allocation/deallocation of velocity and acceleration data structures are correct.
- b. Cell Adapter Units (CAU)
- 1) SNIP bug fixes.
 - 2) The internal modules of the CAU have been changed, rearranged, and simplified.
- c.) Selective Cell Adapter Unit (SCAU)
- 1) SNIP bug fixes.
- d.) Cell Interface Unit (CIU)
- 1) SNIP bug fixes.

3.4 Component Additions.

There have been no component additions to this release.

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:

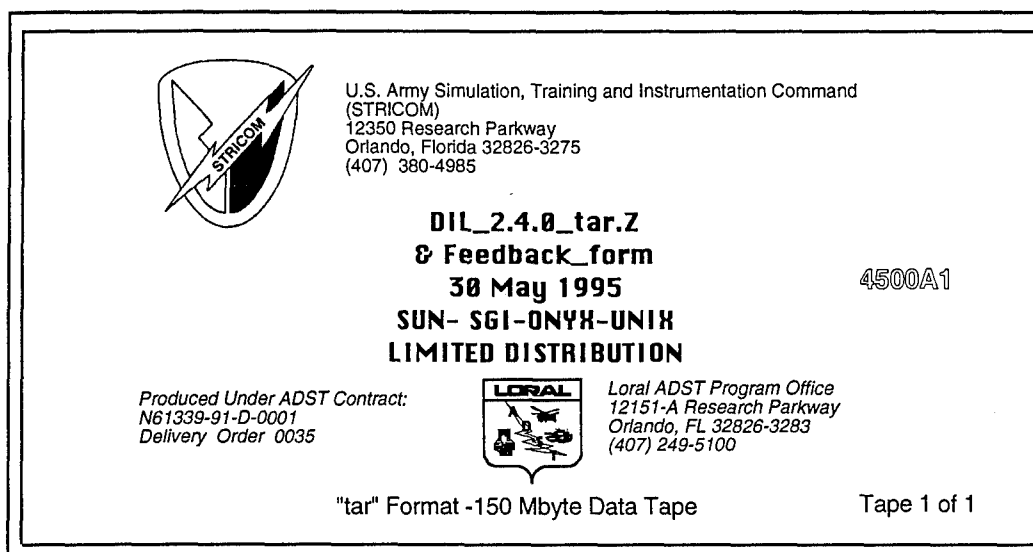


Figure 4.3-1. DIL 2.4.0 Release Tape Label

5 Installation Instructions.

This section describes the installation procedure for the DIL version 2.4.0 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/dil

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

cd /usr/local/dil

- 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_2.4.0`. It contains the DIL version 2.4.0 release.

Under the `rel_2.4.0` directory, there should be several subdirectories and files, including (at least) `"bin"`, `"libpktvalve"`, and `"snip"`. 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 2.4.0 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 |
| b. doc | DIL 2.4.0 release documents |
| dil_2.4.0_vdd.msw | DIL 2.4.0 VDD in MS Word format |
| dil_2.4.0_vdd.ps | DIL 2.4.0 VDD in postscript format |
| c. libpktvalue | packet value development tree |
| Components | packet valve component library |
| Makefile | listing |
| Release | packet valve make file |
| libpktvalve.h | release directory contents and |
| libpktvalve.texinfo | information |
| libpv_local.h | packet valve source code |
| make.apprules | packet valve source code |
| make.config | packet valve source code |
| make.depend | packet valve component make file |
| make.docrules | packet valve component make file |
| make.include | packet valve component make file |
| make.librules | packet valve component make file |
| 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 rel_2.4.0/snip/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 |

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. ctdb_header
- d. scau

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. ctdb_header
- d. scau

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. ctdb_header
- d. scau