

HIT Installation Guide for UNIX Systems

(SunOS 5.5.1 or SunOS 5.6 for Sun/4 Workstations)

and

CIM-SIMULA

Document Version 1.1

Hierarchical Evaluation Tool

HIT

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Abstract:

This guide describes how to install the HIT system on workstations or PCs under some UNIX derivate. An appropriate **CIM SIMULA** system has to be available.

Especially this variant of the Installation Guide is directed to the hardware and software configuration described in chapter 0.

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0. Hardware and Software Requirements

For the installation and the use of the HIT system the following requirements must be met:

Hardware: You need a SUN/4 (SPARC) workstation. For running HIT at least 4 MByte of main memory are required, for big models often more. The installation of the HIT system requires approx.20 MByte for the `installation_directory`.

Software: The HIT system is operational under SunOS 5.5.1 (Solaris 2.5) or SunOS 5.6 (Solaris 2.6). Solaris 7 is not supported yet. A CIM SIMULA 1.92 system (no higher version!), must be operational.

Note that HIT is also available for other configurations, see the HI-SLANG Reference Manual (chapter "Installation Dependent Properties") or <ftp://fbi-news.informatik.uni-dortmund.de/pub/ls04-info/software/HIT/>.

1. Installation of the HIT System

Unpacking the System

The HIT system is simply installed by unpacking the delivered tar.gz-archive within the installation directory, which may be any directory, but should be initially empty. Log in and enter

```
cp <delivered_archive>.tar.gz <installation_directory>

cd <installation_directory>

gunzip <delivered_archive>.tar.gz

tar xvopf <delivered_archive>.tar
```

These commands will create the directory `HIT.sun4` within the chosen `<installation_directory>`. The `p`-option of `tar` should be given when available for your `tar` version, it serves to preserve the access rights from the archive. The `o`-option suppresses owner information.

You are free to move or rename the directory `HIT.sun4`. All the following is relatively to this directory.

Remark: If you ordered Hitgraphic, too, Hitgraphic will probably be included in the same delivered archive. In this case the above commands will also create the directory `Hitgraphic.sun4` within the `<installation_directory>`. This will take another 13 MB of disc-space.

Setting up the system

For your CIM installation (i.e., CIM Library, CIM Include file and the CIM compiler) you have to specify some CIM pathes (called `cimlib`, `ciminc`, `cimdir`) in the script `<installation_directory>/HIT.sun4/hit`:

```
cimlib=      # directory of cim library
              # (form of non empty string: cimlib="-L/....")
ciminc=      # directory of cim include files
              # (form of non empty string: ciminc="-I/....")
cimdir=      # directory of cim installation
              # (form of non empty string: cimdir="/..../" )
```

For CIM to work properly your `PATH` must contain the C-Compiler you wish to use with CIM (the C-Compiler can be specified in `ciminc`). Thus you should also edit the according line within the `hit`-script:

```
PATH=($PATH:<c-compiler>);
export PATH;
          # Ensure that PATH contains the C-Compiler you
          # wish to use with cim. (See $ciminc above).
```

Remark: If you are using Hitgraphic, you *must* add the path to the C-Compiler within the `hit`-script as Hitgraphic overwrites any set `PATH` before calling `hit`.

2. Testing the Installation

Now HIT is completely operational! To verify this please run the installation test examples found in the directory `EXAMPLES` by entering

```
cd EXAMPLES

./test.all
```

If there are problems please refer back to the notes of Section 1.

The shellsript `test.all` runs HIT for all installation test examples, creating the directory `/tmp/HITTEST` to store all intermediate files and the final result-files. Next, `test.all` compares the results automatically with those stored in the `EXAMPLES`-directory. At the end the sentence "Installation test completed correctly !" should appear.

Remark: A lot of compilers use different representations of real numbers and/or different rounding procedures. Therefore it might happen that `test.all` will find some "unexpected differences". As long as these differences are only marginal, this doesn't constitute any problem. (`test.all` will also show the reference values so you can compare these values to the newly generated results.)

The test can alternatively be started manually by entering

```
../hit "*.ctl"
```

If the `installation_directory` has already been added to the path you can omit the `../`. Since the shellsript `hit` has two parameters (see the HIT User's Guide) and the second shall not be set, you have to quote the pattern `"*.ctl"` to perform the experiment series. The five experiments run less than one minute all together (of course this value strongly depends on the characteristics of your concrete hardware).

In the meantime you can read the appendices of this document and then have a look at all produced results by typing `"more *.per"`.

Running `hit` within the `EXAMPLES`-directory will create all needed files in this directory. If you don't want to remove the whole directory `EXAMPLES`, you can remove all generated "temporal" files and the result files by `"rm t.*"`

Appendix A. Delivered HIT Files

After installation of the HIT system the files listed below can be found in the `installation_directory`. The size values given in kByte in front of the file names are only approximate; for directories the size has been determined with the

UNIX command `du` (disc usage). The size values slightly differ for different operating system or SIMULA versions.

All files suffixed with a '*' are executable (mode r-x with additional write access for the system administrator), while the suffix '/' denotes directories (mode dr-x). All other files are only readable (mode r--). The files are written on the medium having those modes.

installation_directory:

```

      84      EXAMPLES/
19388      SYSTEM/
      8      INFOS/
      13      hit*
      2      oma*
```

The files `hit` and `oma` are shellscripts to activate the HIT system (see the "HIT User's Guide for UNIX Systems" for more information). They together with the directory `SYSTEM` form the HIT system.

To test the installation some of the examples within the directory `EXAMPLES` are used:

EXAMPLES:

```

doq4a.hit          doq4a.ct1          doq4a.han
doq4b.hit          doq4b.ct1
lin2.hit           lin2.ct1
mark.hit           mark.ct1
simu.hit           simu.ct1

test.all*          Const.hit
test.doq4b.per     Refman.hit
test.lin2.per      Refman.ins
test.mark.per
test.simu.per
```

Installation test examples

The first five examples are described in the paper "Examples for the Installation of the HIT System" and are used for the installation test. Each of these examples consists of a HI-SLANG source file (suffix* `.hit`) and a small control file (* `.ctl`, size not given).

Moreover a separate component type is provided in `doq4a.han`. It will be aggregated by `doq4actl` and the aggregate is used in `doq4bctl`.

The other examples treat the same model, but with different solvers. Thus each solver is tested. It is ok that the example `lin2.hit` yields 5 warnings at compile time.

The file `test.all` is a script which runs all test examples and compares their results with the tables stored in the files `test.*.per`.

Other examples

The last three examples have the following contents:

<code>Const.hit</code>	simply prints all installation dependant constants of HIT, e.g. <code>MAXREAL</code> .
<code>Refman.hit</code>	contains a slightly modified version of the example described in the last appendix of the HI-SLANG Reference Manual.

The directory `SYSTEM` contains the HIT system itself. It consists of the following files:

SYSTEM:

11492	<code>DATA/</code>
7258	<code>comp*</code>
818	<code>oma*</code>

The files `comp` and `oma` are executables and represent the HI-SLANG compiler and the HIT Object Manager respectively, activated via the shellscripts `hit` and `oma` in the `installation_directory`.

Both and the generated analyzers use the three data files `MOBASE` (the HIT standard `mobase`), `MESSAGE` (the HIT message library) and `STARTUP` (the HIT startup control file).

These files are contained in the directory `DATA`. This provides a uniform way of accessing files via one link instead of absolute path names, valid for workstations as well as PCs under different UNIX systems. During operation of HIT this link called `HITs` is temporarily placed within the current working directory and points to the `DATA` directory of the HIT installation.

The generated analyzers do not only consist of the code generated by the HI-SLANG compiler, but depending on the solution method used a solver module and some basic modules are added. The interfaces of these modules and the corresponding object

modules are contained in the directory DATA (as attribute files read by the SIMULA compiler).

SYSTEM/DATA:

MESSAGE

MOBASE

STARTUP

adoq4.atr	adoq4.o
alin2.atr	alin2.o
amark.atr	amark.o
amark1.atr	amark1.o
analyt.atr	analyt.o
asimul.atr	asimul.o
fan.atr	fan.o
mobase.atr	mobase.o
result.atr	result.o

Appendix B. Special Hints

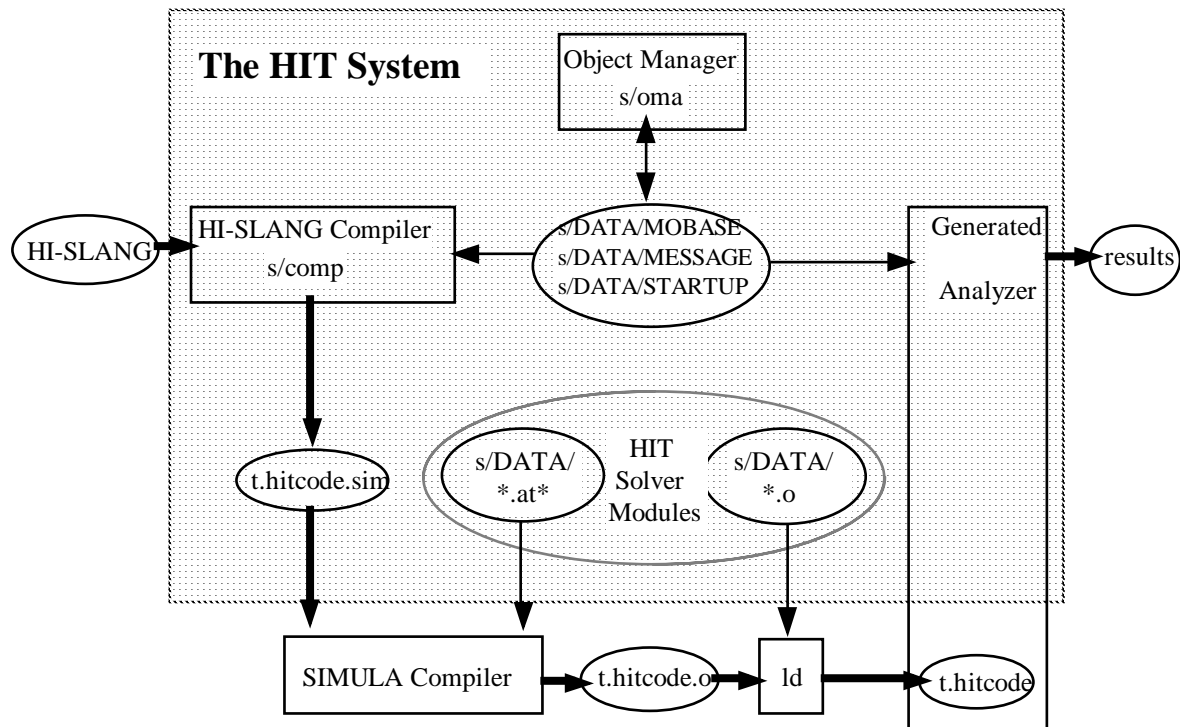
It is advisable to set the installation paths of the HIT system within the `.login` files of all HIT users, if they are not already contained there:

```
set path = ($path:<installation_directory>)
```

The `installation_directory` of HIT and OMA is dynamically determined via "\$0" in the shellscripts `hit` and `oma`, thus HIT can be installed in arbitrary directories without changes. Alternatively the system administrator may assign the actual `installation_directory` to the variable `$hit` in both scripts `hit` and `oma`.

Appendix C. Operation of the HIT System

The HIT system can be depicted as follows:



Here "s " is used as abbreviation for installation_directory/SYSTEM. All files within this directory occur in the figure above.

The bold arrows represent the main flow of information from a HI-SLANG source (model and experiment) to the results produced. This process is controlled by the shellsript hit:

The source code is translated to SIMULA code by the HI-SLANG compiler, which produces a file t.hitcode.sim. It acts as input for the SIMULA compiler, producing the object module t.hitcode.o. In the next step the linker ld adds the solution algorithm and the result representation routines, yielding the executable file t.hitcode, which is the generated analyzer producing the results in the final step.

```

H I T   E r r o r   R e p o r t
=====
.....
.....

+-----+
| Name   :                               Date   :                               |
| Address:                               |
|
| E-mail :                               Computer:                               |
| Tel.   :                               O S      :                               Vers:  |
|                               SIMULA  :                               Vers:  |
+-----+
| Compiler:      Analyzer:      Others:      Documentation:      |
| -----      -----      -----      -----      |
| O PASS1       O SIMUL        O FAN       O Reference Manual  |
| O PASS2       O DOQ4         O OMA       O Introduction      |
| O EXTREF      O LIN2         O Unknown   O Others:           |
| O LINKER      O MARKOV      O Suggested |
| O ACG         |               | Enhancement |
| O SCG         |               |               |
+-----+
| Version of above:      Catchword:      |
+-----+
| Problem Description:  |
|                       |
|                       |
|                       |
|                       |
|                       |
|                       |
|                       |
|                       |
|                       |
|                       |
| Enclosures:          |
+-----+
| Please list all concerned filenames and make sure that all files |
| can be accessed by the HIT crew. Or append all concerned files to |
| your e-mail (use Unix shar if available)                          |
|
| CONTROL/SOURCE:      |
| %COPY Files      :   |
|
| INFILES           :   |
+-----+
| The smaller the example, the better the maintenance!          |
+-----+
| ( t o b e f i l l e d b y t h e H I T c r e w ) | History |
| O Corrected.  O NoError.  Comments/Alternative:      -> |
| - Version   :                                           -> |
| - Module    :                                           -> |
| - Date      :                                           -> |
| - Signature:                                           -> |
+-----+

```

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