

IASW for JEM-X

release note and instructions for compilation+linking.

Document version: 1.5
 Date: 30 Oct. 2001
 CSSW version: 1.9b
 IASW version: 1.64
 Author: Grzegorz Juchnikowski

List of changes in IASW starting from version 1.61

(Search pattern is a text to be used for searching locations of changes in source files).

IASW version	search pattern	file name	Description
1.62	ver.1.62	iasw_common_.ada	Deleted not used constants: K_FAST_MEM_COPY, APID_TM_SC_IDLE
		iasw_dfee.ada	Default anode setting=0000 (it was 1111 before), Default discrim. low level=15 (it was 0 before),
		iasw_dfee_.ada	Deleted not used constant USE_CSSW_17
		iasw_hsl_.ada	Increased size of HSL input buffer. Since now on each HSL readout will be 4096 words in size.
		iasw_state.ada	Variable INTERRUPTED_DFEE_STATE is dropped to STANDBY at reception of ground state-changing command. This is more secure in case of operator intervention during automatic action.
		iasw_state_.ada	Deleted not used variable LV_FAILURE_CNT.
		iasw_tm.ada	In procedure PUT_TM added test for DPE_CSSW.GET_ICB_STATE(CIT.TM_SCI).FREE to minimize exceptions 'ICB full'.
1.63	ver.1.63	iasw_state.ada iasw_state_.ada iasw_dfee.ada iasw_dfee_.ada	Variable DFEE_LIVED_AT_LEAST_ONCE, which was allocated in iasw_state, has been moved to iasw_dfee. Now it is set to TRUE whenever correct answer from DFEE is received via LSL. Previously it was set erroneously in the procedure IASW_STATE.ANALYSE_MRTU_DATA. This bug could be source of shutdown level 70 if DFEE was not on quick enough after DPE on.
1.64	ver.1.64	iasw_dfee.ada	Field#2 of OEM id.191 (wrong CRC after loading of context to DFEE) will contain information specifying which CRC-s does not agree.

Introduction

This text contains instructions on how to compile and link IASW for DPE for both JEM-X#1 and JEM-X#2, using the release contained in file `jemx_iasw_XXX.tar.gz` (where XXX is IASW version number). Result of the whole process are two load modules `jemx.ldm`, for JEM-X#1 and JEM-X#2 separately. The release contains also load modules prepared at PI's site.

The document specifies physical RAM addresses of energy linearization tables and of XY linearization tables. It is specified here because the addresses can vary from version to version.

Preconditions

IASW for DPE compiles and links on a Sun Unix station. There must be installed TLD ADA system and there must exist release of CSSW for DPE ver 1.9b.

WARNING! CSSW should not be fully installed before release of IASW is unpacked. It is so, because IASW contains file `cssw_if_types_ada`, which must be copied to a CSSW directory before compilation of CSSW.

Order of actions

Below a series of actions is shown which finally lead to producing of load modules for JEM-X#1 and #2.

TLD ADA

Install TLD ADA system ver '98sa002'.

Preinstallation of CSSW

Unpack CSSW 1.9b. This should be done twice, on a separate directories. One of them will be used for JEM-X#1, other for JEM-X#2. For use in this document lets call those directories symbolically `CSSW1_HOME` and `CSSW2_HOME`. On the PI's workstation they are:

```
CSSW1_HOME = ~/code/gmv/CSSW_V1.9b
CSSW2_HOME = ~/code/gmv/CSSW_V1.9b_2
```

Those two symbols are used only in this paper, they are not defined as environmental variables in any of the scripts included in the release of IASW.

Preinstallation of IASW

Unpack the file `jemx_iasw_XXX.tar.gz` in a directory, which later gets symbolic name `IASW_HOME`. On the PI's workstation it is:

```
IASW_HOME = ~/code/iasw
```

In contrast to symbols `CSSWn_HOME`, `IASW_HOME` is defined as environmental variable in scripts `jemx1` and `jemx2`.

The following files and subdirectories appears after gunzip and un-tar:

```
drwxr-xr-x  2 jemxiasw staff    512 Oct  1 16:23 _jemx1
drwxr-xr-x  2 jemxiasw staff    512 Oct  1 16:24 _jemx2
```

```

-rw-rw-rw- 1 jemxiasw staff      405 Oct  1 15:57 critsec.asm
-rw-rw-rw- 1 jemxiasw staff    5696 Oct  1 15:57 dpe_iasw.ada
-rw-rw-rw- 1 jemxiasw staff      352 Oct  1 15:57 dpe_iasw_.ada
-rw-rw-rw- 1 jemxiasw staff   10505 Oct  1 15:57 iasw_buffer.ada
-rw-rw-rw- 1 jemxiasw staff    2813 Oct  1 15:57 iasw_buffer_.ada
-rw-rw-rw- 1 jemxiasw staff    4415 Oct  1 15:58 iasw_common.ada
-rw-rw-rw- 1 jemxiasw staff   15495 Oct  1 15:58 iasw_common_.ada
-rw-rw-rw- 1 jemxiasw staff   64544 Oct  1 15:58 iasw_dfee.ada
-rw-rw-rw- 1 jemxiasw staff   22828 Oct  1 16:03 iasw_dfee_.ada
-rw-rw-rw- 1 jemxiasw staff    5384 Oct  1 15:58 iasw_evsort.ada
-rw-rw-rw- 1 jemxiasw staff    1657 Oct  1 15:58 iasw_evsort_.ada
-rw-rw-rw- 1 jemxiasw staff   10873 Oct  1 15:58 iasw_gf.ada
-rw-rw-rw- 1 jemxiasw staff    3752 Oct  1 15:58 iasw_gf_.ada
-rw-rw-rw- 1 jemxiasw staff    7602 Oct  1 15:58 iasw_hk.ada
-rw-rw-rw- 1 jemxiasw staff    2372 Oct  1 15:58 iasw_hk_.ada
-rw-rw-rw- 1 jemxiasw staff   29151 Oct  1 15:58 iasw_hsl.ada
-rw-rw-rw- 1 jemxiasw staff    9886 Oct  1 15:59 iasw_hsl_.ada
-rw-rw-rw- 1 jemxiasw staff   20712 Oct  1 15:59 iasw_main.ada
-rw-rw-rw- 1 jemxiasw staff    3917 Oct  1 15:59 iasw_main_.ada
-rw-rw-rw- 1 jemxiasw staff    3806 Oct  1 15:59 iasw_modes.ada
-rw-rw-rw- 1 jemxiasw staff    1849 Oct  1 15:59 iasw_modes_.ada
-rw-rw-rw- 1 jemxiasw staff    4513 Oct  1 15:59 iasw_mrtu.ada
-rw-rw-rw- 1 jemxiasw staff    1615 Oct  1 15:59 iasw_mrtu_.ada
-rw-rw-rw- 1 jemxiasw staff    3328 Oct  1 15:59 iasw_patches.ada
-rw-rw-rw- 1 jemxiasw staff    1240 Oct  1 15:59 iasw_patches_.ada
-rw-rw-rw- 1 jemxiasw staff   14164 Oct  1 15:59 iasw_req_out.ada
-rw-rw-rw- 1 jemxiasw staff    2807 Oct  1 15:59 iasw_req_out_.ada
-rw-rw-rw- 1 jemxiasw staff   72302 Oct  1 15:59 iasw_sc_out.ada
-rw-rw-rw- 1 jemxiasw staff   18592 Oct  1 15:59 iasw_sc_out_.ada
-rw-rw-rw- 1 jemxiasw staff     120 Oct  1 16:00 iasw_stack1_.ada
-rw-rw-rw- 1 jemxiasw staff     118 Oct  1 16:00 iasw_stack2_.ada
-rw-rw-rw- 1 jemxiasw staff     118 Oct  1 16:00 iasw_stack3_.ada
-rw-rw-rw- 1 jemxiasw staff     121 Oct  1 16:00 iasw_stack4_.ada
-rw-rw-rw- 1 jemxiasw staff     117 Oct  1 16:00 iasw_stack5_.ada
-rw-rw-rw- 1 jemxiasw staff     123 Oct  1 16:00 iasw_stack7_.ada
-rw-rw-rw- 1 jemxiasw staff     120 Oct  1 16:00 iasw_stack8_.ada
-rw-rw-rw- 1 jemxiasw staff   45761 Oct  1 16:00 iasw_state.ada
-rw-rw-rw- 1 jemxiasw staff   12763 Oct  1 16:00 iasw_state_.ada
-rw-rw-rw- 1 jemxiasw staff    2760 Oct  1 16:00 iasw_subbuffer.m4
-rw-rw-rw- 1 jemxiasw staff    5210 Oct  1 16:00 iasw_time.ada
-rw-rw-rw- 1 jemxiasw staff    1933 Oct  1 16:00 iasw_time_.ada
-rw-rw-rw- 1 jemxiasw staff   12783 Oct  1 16:00 iasw_tm.ada
-rw-rw-rw- 1 jemxiasw staff    9390 Oct  1 16:00 iasw_tm_.ada
-rw-rw-rw- 1 jemxiasw staff     268 Oct  1 16:00 iasw_ver_.ada
-rwxr-xr-x 1 jemxiasw staff     308 Sep 20 12:36 jemx1
-rwxr-xr-x 1 jemxiasw staff     310 Sep 20 12:54 jemx2
drwxr-xr-x 2 jemxiasw staff     512 Oct  1 16:15 sub-buffers

```

All *.ada, *.asm and *.m4 files are source files for IASW. Those source files seen in the directory IASW_HOME are common for both JEM-X-es - #1 and #2.

Subdirectory sub-buffers contains files iasw_subbuffer_X.ada and iasw_subbuffer_X_.ada (X=1..10), which are also part of source for IASW. They are kept separately from others because they are created automatically during 'make' in the process of macroexpansion of iasw_subbuffer.m4. Macroexpansion takes place just before compilation. One can safely clear the directory sub-buffers before 'make', the files will be recreated.

Subdirectories _jemx1 and _jemx2 are where compilation takes place. Initially they contain following files:

```

-rw-rw-rw- 1 jemxiasw staff    21967 Oct  1 15:22 Makefile

```

```

-r--r--r--  1 jemxiasw staff      31387 Apr 24 12:35 cssw_if_types_.ada
-rwxr-xr-x  1 jemxiasw staff         95 Aug 20 1999 deflib
-rw-rw-rw-  1 jemxiasw staff    22196 Oct  1 15:22 jemx.lnk

```

The file `cssw_if_types_.ada` is part of CSSW and it should be copied there (see a bit farther how and where). The important is that `cssw_if_types_.ada` contained in `_jemx1` and `_jemx2` are differente, and should be distributed to `CSSW1_HOME` and `CSSW2_HOME` properly.

Files: `Makefile`, `jemx.lnk` and `deflib` are identical in `_jemx1` and `_jemx2`.

Additionally the directories `_jemx1` and `_jemx2` contain all files being result of compilation on the PI's workstation. The files are: `*.lst`, `jemx.ldm`, `jemx.map`, `jemx.dbg`, `jemx.trb`, `main_elab.lst` and `jemx.log`. The last one is result of redirection of standard output of 'make':

```
make >jemx.log
```

These files can be used as a reference result of compilation and linking for comparision with files obtained by the user.

Files: `jemx1`, `jemx2` and `deflib` are Unix shell scripts, used in actions described below.

Compilation of CSSW

Each of the two instances of CSSW should now be compiled, but first they should be supplied with user defined file `cssw_if_types_.ada`. Procedure below shows how to do it with CSSW for JEM-X#1. Procedure for JEM-X#2 is very similar - `CSSW1_HOME` should be changed to `CSSW2_HOME`, and `_jemx1` to `_jemx2`.

```

exec ksh
export CSSW1_HOME=~ /code/gmv/CSSW_V1.9b
export IASW_HOME= ~/code/iasw
cd $CSSW1_HOME/code
chmod a+x Clean_CSSW Install*
cd CSSW/Shared
sccs edit cssw_if_types_.ada
copy -p $IASW_HOME/_jemx1/cssw_if_types_.ada .
sccs delget -y"Modified configurable Constants" cssw_if_types_.ada
cd ../../
Install_CSSW

```

Later, at reception of new release of IASW, CSSW should also be recompiled, but only if `cssw_if_types_.ada` changes.

WARNING! Before recompilation CSSW should be uninstalled.

Library 1750A for IASW

Once CSSW has been compiled it is time to install library 1750A for IASW. It goes the following:

```

exec ksh
. jemx1
deflib
cd ..
. jemx2
deflib

```

If `deflib` is invoked on already existed library, the warning appears with prompt, on which one should answer "y".

Compilation and linking of DPE SW

Use the following commands to invoke compilation and linking for JEM-X#1:

```
exec ksh
. jemx1
make
```

Correct compilation+linking should end up with the message:

```
*** 0 Info Messages, 19 Warnings, 0 Errors, and 0 Fatal Errors
```

All important files created during the process will be placed in directory `$IASW_HOME/_jemx1`, among others `jemx.ldm` as the load module.

Compilation control

Compilation process is controlled by two files: `Makefile` and `jemx.lnk`. The make process is dependent on the following environmental variables defined in the scripts `jemx1` and `jemx2`:

Environmental variable	Description
CODE	Disk directory path of CSSW, eg. <code>~/code/gmv/CSSW_V1.9b/code</code>
IASW_HOME	Disk directory path of IASW source files, eg. <code>~/code/iasw</code>
IASW_WORK	Disk directory of compilation results, eg. <code>~/code/iasw/_jemx1</code>

Scripts `jemx1` and `jemx2` call the GMV script `inittld`, which defines its own set of environmental variables. Script `inittld` defines also the ADA options, which are the following:

```
ADA_DEFAULTS='-no_inf -no_ph -log -no_list -aid -mac -no_ch=s,o,div,elab'
```

In `Makefile` two other ADA options are added to the default list: `'-list -cti'`.

Some physical RAM addresses.

Table	Physical RAM word address (hex)	Table size in words (dec)
Compressed energy table	17396	256
Decompressed energy table	17496	4096
Warning! Addresses given are specific only for IASW ver. 1.62 and 1.64, and for those versions addresses are equal for both JEM-X#1 and #2.		

Tab. 1 Localisation of energy linearization tables in DPE RAM.

Table	Physical RAM word address (hex)	Table size in words (dec)
Compressed X-position table	16996	256
Decompressed X-position table	16B96	1024
Compressed Y-position table	16A96	256
Decompressed Y-position table	16F96	1024
Warning! Addresses given are specific only for IASW ver. 1.62 to 1.64, and for those versions addresses are equal for both JEM-X#1 and #2.		

Tab. 2 Localisation of XY-position linearization tables in DPE RAM.