Variables from setvar.csh

The following environment variables are set by <*context*>/setvar.csh

HOST_MACHINE,TARGET_MACHINE,target_machine,TARGET_CPU,target_cpu
: type of machine

TARGET_OS,target_os
: set to mach

DEFCPATH — Default path to search for include files.

OBJECT_FORMAT — format objects are to be built-in. e.g A_OUT, COFF, MACH_O

ARCHIVE_FORMAT
: format of archive files. e.g. BSDARCH,

Some flags for porting the ODE tools

The following environment variables are set by setvar.csh

PATH — Path to be searched for binaries. This is the local export directory, the release directories and whatever DEFPATH was set for this system.

CPATH — Path to be searched for include files. Used by the C preprocessor.

LPATH — Path to be searched to find crt0.o and migcom.

INCDIRS — a list of -Idirs to be passed to the pre-processor instead of relying on *CPATH*

LIBDIRS — a list of -Ldirs to be passed to the loader instead of relying on *LPATH*

PROJECT_NAME,project_name
: Selects the project specific make rules by causing the inclusion of osf.<project_name>.mk into the makefiles. Set to mach3 for all the Mach 3.0 collections.

RULES_MK — the name of the standard make rules file to start the includes in. It is set to osf.std.mk which is looked for in the MAKESYSPATH directory. This is used instead of the BSD standard sys.mk.

MAKESYSPATH — path to search for standard make rules files.

EXPORTBASE, SOURCEBASE, OBJECTDIR
: bases of the respective trees. SOURCEBASE and OBJECTDIR are used by *genpath*. OBJECTDIR is also used by Makeconf.

SOURCEDIR — Can be set to define a backing directory for the sources. Used by genpath and Makeconf

Variables set Makefiles

These variables are used by the ODE .mk files. For a more complete list see makefiles.5.

SUBDIRS
: This variable lists the sub-directories to descend into and run another make in. Typically, the list would not include machine-dependent directories.

EXPINC_SUBDIRS
: This version of SUBDIRS lists the sub-directories to descend when exporting include files.

EXPBIN_SUBDIRS
: This version of SUBDIRS lists the sub-directories to descend when exporting tools needed during the rest of the build passes.

EXPLIB_SUBDIRS
: This version of SUBDIRS lists the sub-directories to descend when exporting libraries.

VPATH
: This variable provides additional paths in which to search for files. It can be used to locate dependen- cies not found in the current directory. The items in this variable are separated by colons.

PROGRAMS
: This variable lists the files which need to be compiled.

LIBRARIES
: This variable lists the libraries which need to be built.

DEPENDENCIES
: Causes dependencies to be generated.

SAVE_D
: Causes absolute dependencies to be save in tmpd directory.

OFILES
: This variable specifies the object files for programs and libraries. If not specified, the name of the pro- gram or library will be used with cause both object files to get compiled and linked into the hello pro- gram.

OBJECTS
: OBJECTS is used to specify .o files that are to be released as object files, for example crt0.o.

SCRIPTS
: SCRIPTS should be used to list the .sh and .csh scripts to be built.

OTHERS
: This variable lists files to be built which do not fall into another categories. These file are built by make but the common makefiles do not have any rules on how to build OTHERS. To build others, specific make rules will have to be specified in the component makefiles.

MANPAGES
: This variable lists the man pages to be built. It should be set in all Makefiles that define MANSECTION. The list of man pages should not contain the filename suffix: for example, "MANPAGES=bci bcreate" instead of "MANPAGES=bci.1 bcreate.1".

MANSECTION
: This variable should be set in all Makefiles with man page targets. Its value should be a digit describing the man page section for all the files.

INCFLAGS
: This variable specifies which directories should be searched for header files by the c compiler. It format is INCFLAGS = -I<path> -I<path>. This variable is expanded relative to the object directory, the source directory and any master source directories.

LIBFLAGS
: This variable specifies which directories should be searched for libraries by the c compiler. It format is LIBFLAGS = -L<path> -L<path>. This variable is expanded relative to the object directory, the source directory and any master source directories.

INCLUDES
: This variable list the header files which will be exported during the include file export pass.

EXPINC_TARGETS
: This variable is used to override INCLUDES when not all of the files specified in INCLUDES should be exported. Files listed in EXPINC_TARGETS should be specified in their target form ie.. export_filename.

EXPBIN_TARGETS
: This variable defines any programs or scripts that should be exported for use during the rest of the build. Files listed in EXPBIN_TARGETS should be speci- fied in their target form ie.. export_filename.

EXPLIB_TARGETS
: This variable is used to override LIBRARIES when not all of the libraries specified in LIBRARIES should be exported. Files listed in EXPLIB_TARGETS should be specified in their target form ie.. export_libname.a.

EXPDIR
: This variable indicates which directory to export the files into. If it is not set, the value of IDIR is used.

ILIST
: This variable lists the files to install.

IDIR
: This variable indicates which directory to install the files into.

IOWNER
: This variable indicates the owner of the files installed. It defaults to bin.

IGROUP
: This variable indicates the group of the files installed. It defaults to bin.

IMODE
: This variable indicates the modes of the files installed. It defaults to 755.

ILINKS
: This variable indicates any links which should be created to the files installed. If the Makefile installs more than a single file, this variable would have to be used in the <file>_ILINKS format.

OPT_LEVEL
: This variable is used to determine optimization and debugging level. It default to -O. The value of this variable is passed to both the compiler and loader.

CC_OPT_LEVEL
: This variable is used to set the optimization level for the compiler only.

CFLAGS
: This variable sets the flags to be passed to the C compiler.

YFLAGS
: This variable sets the flags to be passed to yacc.

LDFLAGS
: This variable sets the flags to be passed to ld.

MDFLAGS
: This variable sets flags to be passed to md.

MIGFLAGS
: This variable set flags to be passed to mig.

LINTFLAGS
: This variable sets the flags to be passed to lint.

CCTYPE
: This variable is used to change the compiler type from the default ansi. Legal values are writable_strings, host, and traditional.

HFILES
: This variable lists the header files all object files in the Makefile depend upon.

LIBS
: This variable specifies any libraries that programs should be linked with.

GARBAGE
: This variable lists the files which are created during the build process which should be removed after com- pleting the build.

LINTFILES
: This variable lists the files to lint. If not specified, the files listed in OFILES will be used.

CLEANFILES
: This variable lists the files to be removed when the clean rule is invoked. If not specified, the objectfiles, and GARBAGE files will be removed.

The derivation of _CCFLAGS_

From osf.mach3.mk

```
CC_OPT_LEVEL ?= ${${TARGET_MACHINE}_OPT_LEVEL:U-O2 -g}

SUN4_CFLAGS ?= -DBYTE_MSF -Dsun
SUN3_CFLAGS ?=  -Dsun
I860_CFLAGS ?= -DiPSC860
LUNA88K_CFLAGS ?= -DBYTE_MSF -Dm88k -Wcomment
PMAX_CFLAGS ?= -Dmips
DEF_CCFLAGS ?= -MD -DMACH -DCMU -DCMUCS
_CCDEFS_=  -D${target_machine} ${${TARGET_MACHINE}_CFLAGS}
HOST_CFLAGS ?= -D${host_machine} ${${HOST_MACHINE}_HOST_CFLAGS:U\
            ${${HOST_MACHINE}_CFLAGS}}

_host_GENINC_= -I.
_ansi_GENINC_= -I.
_CC_GENINC_?=${_${_CCTYPE_}_GENINC_:\
      !${GENPATH} ${_${_CCTYPE_}_GENINC_}!}
```

From osf.std.mk

```
CCTYPE?=ansi
_CCTYPE_=${${.TARGET}_CCTYPE:U${CCTYPE}}

_host_CFLAGS_=${DEF_CCFLAGS} ${HOST_CFLAGS}
_ansi_CFLAGS_=${DEF_CCFLAGS} ${_O_F_CFLAGS_} ${_CCDEFS_}\
       ${_SHCCDEFS_}
_CC_CFLAGS_=${_${_CCTYPE_}_CFLAGS_}

_host_INCDIRS_= ${HOST_INCDIRS}
_ansi_INCDIRS_=${INCDIRS}
_CC_INCDIRS_=${_${_CCTYPE_}_INCDIRS_}

CC_OPT_LEVEL?=-O
_CC_OL_=${${.TARGET}_OPT_LEVEL:U${${.TARGET}_CC_OPT_LEVEL:U\
      ${CC_OPT_LEVEL}}}

_INCFLAGS_=\
      ${${.TARGET}_INCARGS:U${INCARGS}}\
      ${${.TARGET}_INCFLAGS:U${INCFLAGS}}\
      ${${.TARGET}_INCENV:U${INCENV}}
_GENINC_=\
      ${_CC_GENINC_} ${_INCFLAGS_:!${GENPATH} ${_INCFLAGS_}!}
_CCFLAGS_=\
      ${_CC_CFLAGS_}\
      ${_CC_OL_}\
      ${${.TARGET}_CENV:U${CENV}}\
      ${${.TARGET}_CFLAGS:U${CFLAGS}} ${TARGET_FLAGS}\
      ${${.TARGET}_CARGS:U${CARGS}}\
      ${_CC_NOSTDINC_} ${_GENINC_} ${_CC_INCDIRS_} ${_CC_PICLIB_}
```