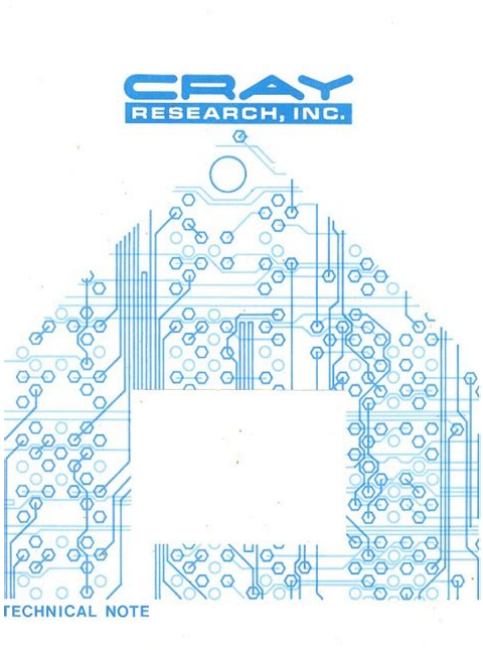
cray compiler manual



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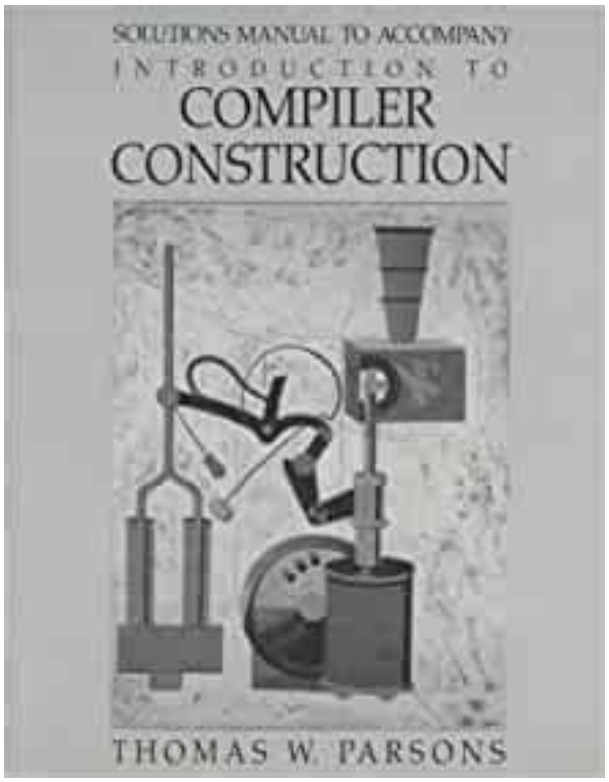

Currently Loaded ModulefilesThus, you need to switch from the Intel Compiler to the Cray Compiler as below To switch the version of Cray Compiler to another, execute the module command with the PrgEnvcray loaded as below For details on the module command, see Modules. The compile options of Clangbased version are much different from the previous versions. Major options are shown in Compile Options. Note that Cray Fortran Compiler 9 continues to be the proprietarybased and its options are same as the previous versions. The compile options of classic version are same as the previous versions.If you want to use the classic version, switch the loaded cce module from Clangbased to classic version. Message body Message body Error The array subscript for dimension %d does not fall within the defined range. An array reference was encountered where a subscript was out of bounds forPlease specify the h pic dynamic option when compiling. Please specify the ev option when compiling. Thus both file formatsbigendian and littleendian cannot be loaded in the same program by Cray Compiler. Encountered during a sequential formatted WRITE to unit 11The following combinations of Cray compiler modules and Cray MPICH modules, and Cray compiler modules and Cray LibSci modules, can be loaded at the same time. For more details please contact Zoomin Library English Register Login Error code 404 Page not found We couldn’t find the page you were looking for.http://foundrygate.com/userfiles/ford-fiesta-mk6-workshop-manual-free-download.xml

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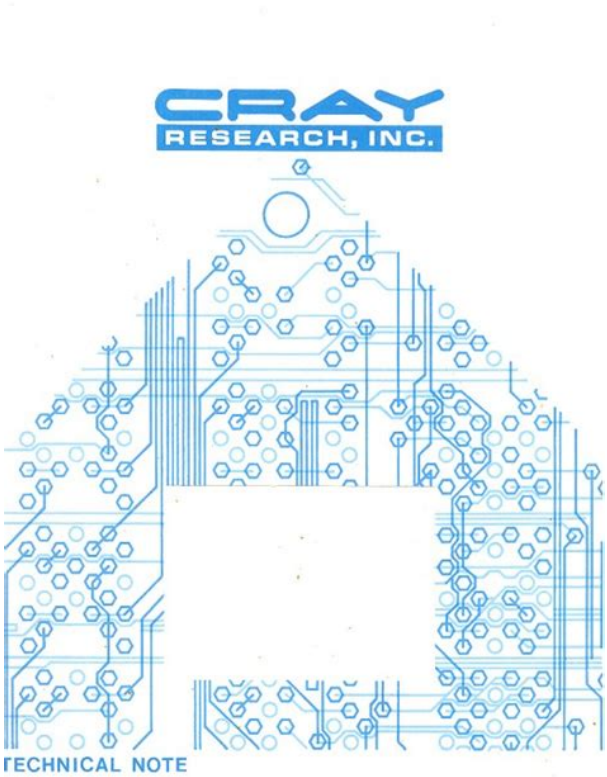

The compiler conforms toInformation contained in this man page mayWhere the information differs, thisExceptions toThe compilerWith h notolerant,For example, a pointer to a longThey can reduce the effectiveness ofYou can use this option toThese options cause only dataWith h nocalchars, this characterYou must preventWhen h nosignedshifts is inThis option can increase theThe default is hThis option has no effect onThis information is used to betterFor information about obtainingWhen compiling using the defaultWhen used with hAny compilation that does notFor example, rm rThe thread0In other words,By default, the compilerGenerally, unrolling loops increasesIt also affectsThis option causes theSince the hwpNormally, this is just aFor example, specifying O 3Implies h fp0.If this option is specified, theThe names of the traceThe compiler inserts calls and dataBy default, someCommon block data is not affected.This level is compatibleCharacteristicsCharacteristicsProcedures that are potentialInlining is attempted forThe call siteThe call site mustThis includes levels 1, 2,The source arguments identify eachThe n argument controlsUse the h fp0 optionAt this level,Type fp0 fp1 default fp3 fp4Complex Accurate Accurate Fast Fast FastExponentiation None None When Always AlwaysStrength None None Fast Fast FastRewrite division None None Yes Aggressive AggressiveFloating point Slow Fast Fast Fast FastThe method argument canThis methodIf more than oneThis amount is scaled atFor arrays, theErrors detected atThe following directives are checked. Violation of a run time checkThe values of argsSpecifying h errorlimit with noThis optionThe optimizer andThis option takesThis option takes precedenceThe relocatable objectNote that a library may be found atThe values of phaseBy default, theMore than one name can be specified.By default,See the cc1 manSee the cc1 man page.Note that the preferredIt uses the first file itA file namedWhen this option is used inThe default is h acc.http://htc-service.ru/imgeditor/ford_fiesta_mk6_haynes_manual_pdf.xml

For details,The option argumentsThere are threeThe targeting modules setOtherwise, the defaultThis name is used as theThis versionUse this option if the sourceThis option is off by default.For details onBy default, noEnabling traps using this optionThis option is processed only atIf the command lineThe value for npesThe compiler commands accept several types of. However, the Cray compilers are not typically installed on hardware from other vendors; this may or may not impact portability of application source code. For complete listings, see the man pages Copyright 2020 Board of Trustees of the University of Illinois. All rights reserved. Web privacy notice. All rights reserved. No matter which vendors compiler module is loaded, always use the ftn, cc and CC commands to invoke the compiler. The Cray driver commands links in the libraries required and they produce code that can be executed on compute nodes. For more information, see man ftn, man cc or man CC. The compiler arguments options to these drivers vary according to which compiler module is loaded. If PrgEnvcray is loaded then Cray compiler options can be given either on the command line or in your makefiles. These drivers have also some general options that are valid for all vendor compilers, see the above mentioned man pages for more information. If you compile and link in separate steps use the Cray driver commands also in the linking step and not the linker ld directly. By swapping the Programming environment module one can change from a compiler suite to another suite. For example module swap PrgEnvcray PrgEnvgnu will change from the Cray compiler to the Gnu compiler collection. Here are the Cray driver commands in a table form. In such a case it is possible to swap the version inside a selected Programming environment. When compiling a code it is a good idea to write down all currently loaded modulefiles, i.e., give the command module list and save the output in a safe file.

This way you can check what was the environment where your code worked well if later it will not work properly for example, after operating system upgrades, or the default version changes of libraries or compilers. If this happens you might load exactly the same modulefiles that you have saved and see that updates might have not so good effects for your runs. In the table below some optimization flags are listed for the installed compilers. It is best to start from the safe level and then move up to intermediate or even aggressive, while making sure that the results are correct and the program has a better performance. Cray Gnu Intel Safe O1 O2 O2 fpmodel precise fpmodel source Use all three options. The compiler options for this architecture are enabled automatically modulefile craypesandybridge is loaded by default. Some Cray compiler options The Cray compiler enables automatically the recognition of OpenMP directives and no specific compiler option is needed. Position independent code is generated by the options h pic or h PIC. To see listings showing which potential optimizations were not performed try h negmsgs. These might be useful when trying to make changes to your source code. By default, no runtime checks are performed. It is

possible to enable various runtime checks, the option is R Fortran compiler only and it has five suboptions, see more information on the man page. The C compiler has an option h bounds that provides checking of pointer and array references at runtime. These checks might be useful for debugging purposes. By giving the option default64 to the ftn Fortran driver it passes i8 and r8 options to the Cray compiler. This option also links in the appropriate 64bit MPI or SHMEM library. So with the Cray compiler MPI and SHMEM libraries have support for 32bit and 64bit integers. This functionality is not available for the Gnu or Intel compiler suites.

Table 3-2. System Console Specifications

Characteristic	Specification
Height	13.50 in. (34 cm)
Width	17.25 in. (44 cm)
Depth	22.00 in. (56 cm)
Weight	20 lbs (9.1 kg)
Power cable	8-ft (2.4-m) plug-compatible drop cord
Power receptacle: North America/Japan International	 NEMA #5-15R or equivalent IEC 309, single phase,16 amp

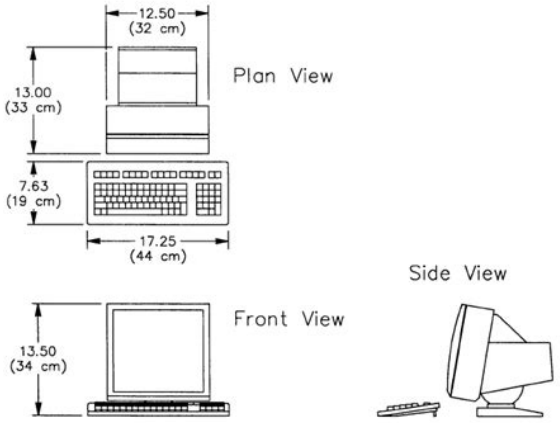

Figure 3-3. System Console

When either Gnu or Intel suite is loaded only 32bit integers are accepted by MPI or SHMEM routines. When the Cray compiler gives messages like error messages, use the explain command to display explanations of the message. The toolchain utilities availableIn normal builds, CMake automaticallyLanguagespecificIf no project commandThis is calculated by theThe choice CMake makes mayCMake runs. The toolchainIt may be used to specifyFor toolchains thatAlthough this can be controlled on a casebycase basis, when crosscompiling, itThis is the purpose ofThe platform will pull its configuration from the current environmentThis can be overridden and shared librariesIf trying to buildThese SDKs are usually installed underWindows CE may look like this Other versions may require one to setWindows 10 Universal Application may look like this Specify a more specific version e.g. 10.0.10240.0 for RTMWindows Phone may look like this Windows Store may look like this Further configurationVisual Studio Edition to be installed. See that section for furtherCMake expects one of these environments NDK will be used. Standalone Toolchain will be used. Toolchain will be used. Standalone Toolchain can be found. If not specified, the default willIf not specified, the default will beIf not specified, a default for this variable will be chosenSee variable documentation for details. See variable documentation for details. The Unix Makefiles orBy default, the latest Device SDK is chosen. As for all Apple platforms,A list of available SDKs can be obtained by running xcodebuild showsdks. This team ID will then be included in the generated Xcode project. By default, CMake avoids the need for code signing during the internalBoth have their own separate SDK, but CMakeWhen using the Xcode generator, this is less of a limitationYou can follow. The brackets are not part of the command. The options are a list of option keywords prefixed by dash .

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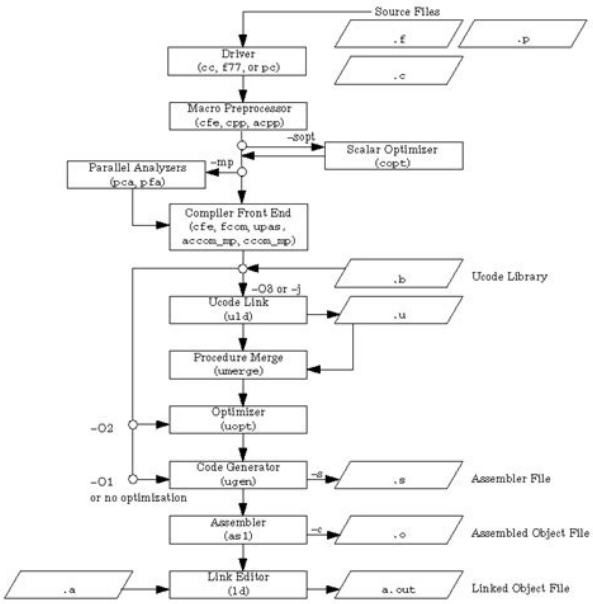

Some keyword options take the next item in the list as an argument. Also, there are some options that must appear after the list of source files, and these could include additional lists of files for example, B, l, and L . This rule does not apply to linker options. However, some options, I, L, and R for example, accumulate values rather than override previous values when repeated on the same command line.The details will be found on the pages in the following sections, as indicated. The table does not include obsolete and legacy option flags. Some flags serve more than one purpose and appear more than once. The short list below of commonly used options is a good place to start.These are provided as a convenient way to specify a number of options that are usually expressed together to select a certain feature. For example, to use fast but with an optimization level of O3, the O3 must come after fast on the command line.They might be removed from later releases of the compiler. Option flags valid only on x86 platforms are marked x86.In many cases they have been superceded by other options or flags that should be used instead.Also see the manual, Program Performance Analysis Tools.Analyzes loops for interiteration data dependencies and loop restructuring. If the optimization level is not specified O3 or higher, it will automatically be raised to O3.See note in Section, mt.If you use autopar and compile and link in separate steps, then you must also link with autopar to insure linking the appropriate libraries.Other parallelization options are parallel and explicitpar. The default, without B specified, is Bdynamic.That is, you can link some libraries statically and some dynamically by specifying Bstatic and Bdynamic any number of times on the command line, as followsCompiling and linking in separate steps with B x on the compile command will require it in the link step as well.These include libm.so and libc.so libm.a and libc.a are not provided.

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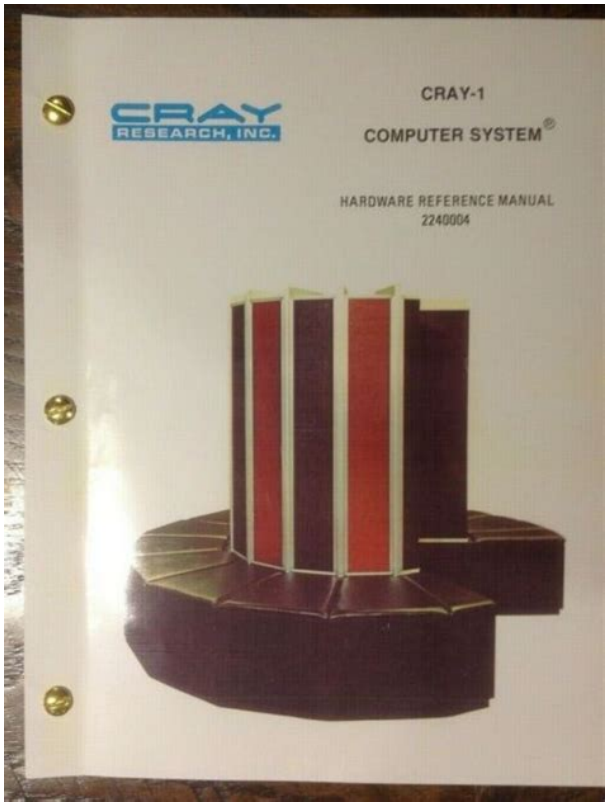

This means that Bstatic and dn may cause linking errors in 64bit Solaris environments. Applications must link with the dynamic libraries in these cases.The C option checks for possible array subscript violations in the source code and during execution. C also adds runtime checks for array conformance in array syntax expressionsIf an array subscript range violation is detected in the source code during compilation, it is treated as a compilation error.This may cause an increase in execution time. As a result, it is appropriate to enable full array subscript checking while developing and debugging a program, then recompiling the final production executable without subscript checking.If only a single source file is being compiled, the o option can be used to specify the name of the.o file written.This option is provided only to allow legacy code to compile and execute without a runtime error.Also, such code is often unpredictable.The Fortran syntax may not support the actual values of these macrosthey should appear only in fpp or cpp preprocessor directives. Note the two leading underscores.Like the C preprocessor cpp 1, fpp expands source code macros and enables conditional compilation of code. Unlike cpp, fpp understands Fortran syntax, and is preferred as a Fortran preprocessor.This option is included in the fast option.If yes, all variables will be aligned on 8byte boundaries.Note also that specifying an optimization level O3 or higher automatically adds depend. See the Fortran Programming Guide.These include libm.so and libc.so libm.a and libc.a are not provided. This means that dn and Bstatic may cause linking errors in 64bit Solaris environments and 32bit x86 Solaris platforms, and all 32bit Solaris platforms starting with the Solaris 10 release. Applications must link with the dynamic libraries in these cases.The compiler pads on the right with trailing blanks to column 132.

If you use continuation lines while compiling with e, then do not split character constants across lines, otherwise, unnecessary blanks may be inserted in the constants. If %all, suppress all warnings, which is equivalent to the w option. If %none, no warnings are suppressed.If %all, treat all warnings as errors. If %none, no warnings are treated as errors.With explicit parallelization, it is the users responsibility to correctly analyze loops for data dependency problems before marking them with parallelization directives. Use openmp instead.If you use explicitpar and compile and link in separate steps, then you must also link with explicitpar.The default is underscores.This option affects both the name of the routines entry point and the name used in calls to it. Use this flag to allow Fortran 95 routines to call and be called by other programming language routines.Use of dalign is preferred

over the older f. See Section, dalign. Because dalign is part of the fast option, so is f.No blank padding will be added to source lines shorter than 72 characters.The Fortran 77 compiler allowed execution to continue after an arithmetic exception occurred.Also, some of the options selected by fast might not be available on all platforms. Compile with the v verbose flag to see the expansion of fast for any release.However, the particular choice of options may or may not be appropriate for your application. Use fast as a good starting point for compiling your application for best performance. But additional tuning may still be required. If your program behaves improperly when compiled with fast, look closely at the individual options that make up fast and invoke only those appropriate to your program that preserve correct behavior.Avoid compiling with fast those programs that depend on particular properties of floatingpoint arithmetic.For exampleWith libmil, exceptions cannot be detected with errno or matherr 3m.

Using this option can generate nonstandard Fortran data alignment in common blocks.Normally, f95 interprets only.f files as fixed format,.f95 as free format.These are converted into SIGFPE signals, and if the program has no SIGFPE handler, it terminates with a dump of memory. It also causes subnormal operands to be silently replaced by zero. On those SPARC systems that do not support gradual underflow and subnormal numbers in hardware, use of this option can significantly improve the performance of some programs.With extended, or by default when the fprecision flag is not specified, the rounding precision mode is initialized to extended precision.Normally, f95 interprets.f files as fixed format,.f95 as free format.Preserve strict IEEE 754 conformance.The resulting code does not strictly conform to IEEE 754, but numeric results of most programs are unchanged.This can cause some programs to produce different numeric results due to changes in the way expressions are evaluated. This could result in numerical rounding differences with programs that depend on this rule.This is the default. However, the fast option includes nofstore to disable this option. Follow fast with fstore to turn this option back on.If you specify more than one value, the list is processed sequentially from left to right. The common exceptions, by definition, are invalid, division by zero, and overflow. Use common instead.Without G, the linker builds an executable file. With G, it builds a dynamic library. Use o with G to specify the name of the file to be written.See the dbx documentation for details.While some performance analysis features do not require g, you must compile with g to view annotated source, some function level information, and compiler commentary messages. See the analyzer 1 man page and the manual Sun Studio Performance Analyzer.You are more likely to see commentary messages when you request high optimization levels, such as with xO4, or fast.

A space between h and name is optional except if the library name is elp, for which the space will be needed. In general, name must be the same as what follows the o. Use of this option is meaningless without also specifying G. With an internal name specified, searching for the library at runtime linking is more flexible. This option can also be used to specify versions of shared libraries.No space is allowed between I and path. Invalid directories are ignored with no warning message. Each adds to the top of the search path list first path searched.Prefixing a routine name with no% disables inlining of that routine. Inlining often provides the optimizer more opportunities to produce efficient code.Automatic inlining at these optimization levels is normally turned off when explicit inlining is specified with inline.With O4, the compilers normally try to inline all appropriate userwritten subroutines and functions. Adding inline with O4 may degrade performance by restricting the optimizers inlining to only those routines in the list. In this case, use the %auto suboption to enable automatic inlining at O4 and O5.A space between L and path is optional. This option is passed to the linker. See also Section, lx. If shared library lib x.so is available and Bstatic or dn are not specified, ld uses it, otherwise, ld uses static library lib x.a. If it uses a shared library, the name is built in to

a.out. No space is allowed between l and x character strings.This option selects those inline templates that produce the fastest executable for the floatingpoint options and platform currently being used. This path is searched in addition to the current directory.The compiler determines the type of the file by examining its contents.The compiler will not search archive files by default.For example, the statement USE ME causes the compiler to look only for the module file me.mod This is controlled by the moddir compiler option, or the MODDIR environment variable.

When neither are specified, the default writedirectory is the current directory. When both are specified, the writedirectory is the path specified by the moddir flag.To emulate the behavior of previous releases, useThe directory path can also be specified with the MODDIR environment variable. If both are specified, this option flag takes precedence.For correctness, also specify stackvarSee the Fortran Programming Guide for details. See also the Solaris Multithreaded Programming Guide.The compilergenerated calls to the threads library and the programs own calls may conflict, causing unexpected results.The normal behavior is to link system libraries into the executables automatically, without the user specifying them on the command line. The system and language libraries are required for final execution. It is your responsibility to link them in manually. This option provides you with complete control.Follow the order shown in the examples.The path is installation dependent. The norunpath option prevents that path from being built in to the executable. Compare with R paths.No space is allowed between O and n. Use of O which sets O3 or Generally, the higher the level of optimization a program is compiled with, the better runtime performance obtained. However, higher optimization levels may result in increased compilation time and larger executable files.Adds depend automatically.Without this option, the default is to write the executable file to a.out. When used with c, o specifies the target.o object file; with G it specifies the target.so library file.DO loops in standard Fortran are not performed at all if the upper limit is smaller than the lower limit, unlike some legacy implementations of Fortran.This is especially important when compiling libraries that contain OpenMP directives. If you compile and link in separate steps, and also compile with the p option, then be sure to link with the p option.

p with prof is provided mostly for compatibility with older systems. pg profiling with gprof is possibly a better alternative. See the Fortran Programming Guide chapter on Performance Profiling for details.The extra padding positions the data to make better use of cache. In either case, the arrays or character variables can not be equivalenced.If one program unit is compiled with the option and another is not, references to what should be the same location within the common block might reference different locations.Compiling with Xlist will report when common blocks with the same name have different lengths in different program units.Optimization level is automatically raised to O3 if it is lower. See also Section, explicitpar.See Section, mt.If you use parallel and compile and link in separate steps, then you must also link with parallel.Generate an execution profile by running gprof. See the gprof 1 man page and the Fortran Programming Guide for details.The Q can be uppercase or lowercase. The list is a commadelimited list of suboptions, with no blanks within the list. Each suboption must be appropriate for that program phase, and can begin with a minus sign.See the chapter on linking and libraries in the Fortran Programming Guide.The blank between R and ls is optional.There is potential for roundoff error with the reduction. For example, summing the elements of a vector is a typical reduction operation. Although these operations violate the criteria for parallelizability, the compiler can recognize them and parallelize them as special cases when reduction is specified.It is ignored otherwise. Explicitly parallelized loops are not analyzed for reduction operations.However, this option inhibits debugging with dbx or other tools, and overrides g.Do not assemble, link, or make object files.This option flag is provided for compatibility with the legacy f77 compiler, and its use is redundant except with the f77 compatibility flag.

Note that explicitly initialized variables are implicitly declared with the SAVE attribute. A structure variable that is not explicitly initialized but some of whose components are initialized is, by default,

not implicitly declared SAVE. Also, variables equivalenced with variables that have the SAVE or STATIC attribute are implicitly SAVE or STATIC.Variables allocated on the stack are not implicitly initialized except that components of structure variables can be initialized by default.Increasing the stack size may be required. The limit command with no parameters shows the current main stack size. If you get a segmentation fault using stackvar, try increasing the main and thread stack sizes.Larger values are truncated and a runtime message issued. Note that No space is allowed within this option string.The default is to treat uppercase as lowercase except within characterstring constants. With this option, the compiler treats Delta, DELTA, and delta as different symbols.See the Fortran Programming Guide chapter on porting programs to Fortran 95. It removes any initial definition of the preprocessor macro name created by D name on the same command line, including those implicitly placed there by the commandline driver, regardless of the order the options appear. It has no effect on any macro definitions in source files. Multiple U name flags can appear on the command line. There must be no space between U and the macro name. This option warns of undeclared variables, and does not override any IMPLICIT statements or explicit type statements.The choices areSee also Section 2.3.1.3, The UNROLL Directive.Note this can cause data misalignments.However, if one option overrides all or part of an option earlier on the command line, you do get a warning.This is equivalent to wThis is the default without w.It invokes an extra compiler pass to check for consistency in subprogram call arguments, common blocks, and parameters, across the global program.

The option also generates a linenumbered listing of the source code, including a cross reference table. The error messages issued by the Xlist options are advisory warnings and do not prevent the program from being compiled and linked.Unpredictable reports may result when run on a source code with syntax errors.These are specified by suffixes to the main Xlist option, as shown in the following tableThe use of overindexing, pointers, and passing global or nonunique variables as subprogram arguments, can introduce ambiguous aliasing situations that could result code that does not work as expected. The keywords list is commaseparated, and each keyword indicates an aliasing situation present in the program.Cray pointers can point at any global variable or a local variable whose address is taken by the LOC function. Also, two Cray pointers might point at the same data. This is a safe assumption that could inhibit some optimizations.Also, no two Cray pointers point at the same data. This assumption enables the compiler to optimize Cray pointer references.Passing an argument to a subprogram might result in aliasing through Cray pointers.If overindexing occurs in these constructs, they should be rewritten as DO loops.Array references do not reference other variables.For exampleThis option does not guarantee use of any targetspecific instructions.An inappropriate choice results in a binary program that is not executable on the intended target platform.This option uses the best instruction set for good performance on most processors without major performance degradation on any of them.The compiler chooses the appropriate setting for the current system processor it is running on.Compiling with this option uses the best instruction set for good performance in a Solaris UltraSPARCIII environment.Use the best instruction set for good performance on most x86 processors.These assertions may be qualified with a probability value.

Those with a probability of 0 or 1 are marked as certain; otherwise they are considered noncertain.Assertions that are invalid cause the program to terminate.It does not guarantee that any particular cache property is used. This is the default.If a stack overflow is detected, a SIGSEGV segment fault will be raised. SPARC onlyMemory allocated by the ALLOCATE statement will also be initialized in this manner.This is the default.But note that compiling with this flag does not guarantee that all stack overflow situations will be detected since they could occur in routines not compiled with this flag.Equivalent to pic.Equivalent to PIC.If the compile is done with pic32, there are two additional instructions per global and static memory reference.For example, O4 s automatic inlining is limited to subprograms defined and referenced within the same source file. If any file in a set of files compiled together with Also, the xcrossfile flag is ignored if compiling with S.There is no

need to use this option unless you maintain software which reads debugger information, or unless a specific tool tells you that it requires debugger information in one of these formats. Some the format of that information is also controlled with this option. So xdebugformat has a an effect even when g is not used.The details of any specific fields or values in either stabs or dwarf are also evolving.If you compile with the xF option, then run the analyzer, you can generate a map file that optimizes the ordering of the functions in memory depending on how they are used together. A subsequent link to build the executable file can be directed to use that map by using the linker Mmapfile option. It places each function from the executable file into a separate section. Otherwise, reordering may not improve the overall performance of the application. See the Program Performance Analysis Tools manual for further information on the analyzer.