

# ARM<sup>®</sup> Compiler toolchain

Version 4.1

## Errors and Warnings Reference

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# ARM Compiler toolchain

## Errors and Warnings Reference

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### Release Information

#### Change history

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# Chapter 1

## Conventions and feedback

The following describes the typographical conventions and how to give feedback:

### Typographical conventions

The following typographical conventions are used:

`monospace` Denotes text that can be entered at the keyboard, such as commands, file and program names, and source code.

`monospace` Denotes a permitted abbreviation for a command or option. The underlined text can be entered instead of the full command or option name.

*monospace italic*

Denotes arguments to commands and functions where the argument is to be replaced by a specific value.

**`monospace bold`**

Denotes language keywords when used outside example code.

*italic* Highlights important notes, introduces special terminology, denotes internal cross-references, and citations.

**bold** Highlights interface elements, such as menu names. Also used for emphasis in descriptive lists, where appropriate, and for ARM® processor signal names.

### Feedback on this product

If you have any comments and suggestions about this product, contact your supplier and give:

- your name and company

- the serial number of the product
- details of the release you are using
- details of the platform you are using, such as the hardware platform, operating system type and version
- a small standalone sample of code that reproduces the problem
- a clear explanation of what you expected to happen, and what actually happened
- the commands you used, including any command-line options
- sample output illustrating the problem
- the version string of the tools, including the version number and build numbers.

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ARM also welcomes general suggestions for additions and improvements.

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### Other information

- ARM Information Center, <http://infocenter.arm.com/help/index.jsp>
- ARM Technical Support Knowledge Articles, <http://infocenter.arm.com/help/topic/com.arm.doc.faqs/index.html>
- Keil Distributors, <http://www.keil.com/distis>.

# Chapter 2

## C and C++ Compiler Errors and Warnings

This chapter contains the error and warning messages for the C and C++ compiler, armcc. It contains the following sections:

- *Internal errors and other unexpected failures* on page 2-2
- *Suppressing armcc error and warning messages* on page 2-3
- *List of the armcc error and warning messages* on page 2-4
- *List of the old-style armcc error and warning messages* on page 2-64.

## 2.1 Internal errors and other unexpected failures

Internal errors in the compiler are typically errors that have occurred but have not yet been documented, or they might point to a potential issue in the compiler itself.

For example:

Internal fault: [0x87ecef:410591]

contains:

- the message description (Internal Fault)
- a six hex digit fault code for the error that occurred (0x87ecef).  
In previous versions this was a 4 digit code.
- the version number (41 is ARM Compiler v4.1)
- the build number (0591 in this example).

If you see an internal fault, contact your supplier.

To facilitate the investigation, try to send only the single source file or function that is causing the error, plus the compiler options used when compiling the code.

It might be necessary to preprocess the file (that is, to take account of files added with `#include`). To do this, pass the file through the preprocessor as follows:

```
armcc <options> -E sourcefile.c > PPsourcefile.c
```

where <options> are your normal compile switches, such as `-O2`, `-g`, `-I`, `-D`, but without `-c`.

Check that the error is still reproducible with the preprocessed file by compiling it with:

```
armcc <options> -c PPsourcefile.c
```

and then provide the PPsourcefile.c file and your compile <options> to your supplier.

## 2.2 Suppressing armcc error and warning messages

The compiler normally warns of potential portability problems and other hazards.

When porting legacy code (for example, in old-style C) to the ARM, many warnings might be reported. It might be tempting to disable all such warnings with `-w`. ARM recommends however that for portability reasons, you change the code to make it ANSI compatible rather than suppressing the warnings.

Some warnings are suppressed by default. To override this, use the `--strict_warnings` switch to enable all suppressed warnings.

By default optimization messages, that is most of the messages between 1593 and 2159, are not warnings. To treat optimization messages as warnings, use the `--diag_warning=optimizations` option.

### 2.2.1 See also

#### Reference

*Compiler Reference:*

- `--diag_warning=tag[,tag,...]` on page 3-59
- `--strict_warnings` on page 3-141
- `-W` on page 3-157.



## 2.3 List of the armcc error and warning messages

This section lists the error and warnings for armcc.

- |           |  |
|-----------|--|
| <b>0</b>  | unknown error  |
| <b>1</b>  | last line of file ends without a new line  |
| <b>2</b>  | last line of file ends with a backslash  |
| <b>3</b>  | #include file <entity> includes itself   |
| <b>4</b>  | out of memory  |
| <b>5</b>  | cannot open <entity> input file <filename>: <reason><br>For example:<br>#include <file.h><br>results in the message:<br>Error: #5: cannot open source input file "file.h": No such file or directory<br>because file.h does not exist in the system include directory. |
| <b>6</b>  | comment unclosed at end of file<br>Comment started with /* but no matching */ to close the comment.  |
| <b>7</b>  | unrecognized token   |
| <b>8</b>  | missing closing quote<br>For example:<br>char foo[] = {"\""};<br>In this example, the backslash causes the following quote " to be treated as a literal character rather than closing the string. To fix this, use:<br>char foo[] = {"\\"};                            |
| <b>9</b>  | nested comment is not allowed<br>For example:<br>/*nested<br>/*comment*/   |
| <b>10</b> | "#" not expected here  |
| <b>11</b> | unrecognized preprocessing directive<br>For example:<br>#foo   |
| <b>12</b> | parsing restarts here after previous syntax error  |
| <b>13</b> | expected a file name<br>For example:<br>#include <stdio.h>   |
| <b>14</b> | extra text after expected end of preprocessing directive<br>For example:<br>#if EMBEDDED foo<br>or:<br>#include <stdio.h> foo  |

or:

```
#ifdef SOMETHING
:
#endif SOMETHING
```

The `#endif` does not expect or require any argument. Enclosing the trailing part of the line in a comment fixes the problem:

```
#endif /* SOMETHING */
```

- 16 <entity> is not a valid source file name
- 17 expected a "]"
- 18 expected a ")"  
For example:  

```
int main(void
{
where there is a missing ).
```
- 19 extra text after expected end of number  
For example:  

```
int a = 37r;
```
- 20 identifier <entity> is undefined  
For example, when compiled for C++, the code:  

```
void foo( arg ) { }
```

  
results in the message:  
Error: #20: identifier <arg> is undefined  
Another example of code that can cause this error is:  

```
int foo(void)
{
    int a = 4;
    a = i;
}
```

  
which results in the message:  
Error: #20: identifier "i" is undefined  
because i has not been declared.
- 21 type qualifiers are meaningless in this declaration
- 22 invalid hexadecimal number
- 23 integer constant is too large
- 24 invalid octal digit  
For example:  

```
int a = 0378;
```
- 25 quoted string should contain at least one character  
For example:  

```
char a = '';
```
- 26 too many characters in character constant  
For example:  

```
char a = 'abcd';
```

results in an error.

---

**Note**

---

Only one character is permitted in a single-quoted string. For more than one character, double quotes must be used. Strings must be assigned to an appropriate variable such as `a[]`.

---

- 27      character value is out of range  
         For example:  
         `char foo[] = {"\xB BBB" };`  
         results in the message:  
         Warning: #27-D: character value is out of range
- 28      expression must have a constant value
- 29      expected an expression
- 30      floating constant is out of range
- 31      expression must have integral type
- 32      expression must have arithmetic type
- 33      expected a line number
- 34      invalid line number
- 35      #error directive: <entity>
- 36      the #if for this directive is missing
- 37      the #endif for this directive is missing  
         An open #if was still active, but was not closed with #endif before the End Of File.
- 38      directive is not allowed -- an #else has already appeared
- 39      division by zero
- 40      expected an identifier  
         This error is raised if preprocessor statements are incorrectly formatted such as for example, if the identifier which must immediately follow a preprocessor command is missing. For example, a missing identifier after #define results in:  
         Error: #40: expected an identifier  
         This error can also occur when C code containing C++ keywords is compiled with the C++ compiler, for example:  
         `int *new(void *p) { return p; }`  
         causes an error because new is a keyword in C++.
- 41      expression must have arithmetic or pointer type
- 42      operand types are incompatible (<type> and <type>)
- 44      expression must have pointer type
- 45      #undef may not be used on this predefined name
- 46      <entity> is predefined; attempted redefinition ignored

- 47 incompatible redefinition of macro <entity>  
 Macro has been defined twice (with different replacement strings).  
 If it is necessary to do this, undefine the macro (#undef) before the second definition.  
 For example:  

```
#define TEST 0
#define TEST 1
```

 causes the compiler to produce:  
 Warning: #47-D: incompatible redefinition of macro "TEST" (declared at line 1)  
 There is no way to control this error directly by a compiler option, but you can use conditional preprocessing. For example:  

```
#ifdef TEST_EQUALS_ZERO
#define TEST 0
#else
#define TEST 1
#endif
```

 Compiling with armcc -c foo.c defines TEST to be 1 (the default).  
 Compiling with armcc -c -DTEST\_EQUALS\_ZERO foo.c defines TEST to be 0.
- 49 duplicate macro parameter name
- 50 "##" may not be first in a macro definition
- 51 "##" may not be last in a macro definition
- 52 expected a macro parameter name
- 53 expected a ":"
- 54 too few arguments in macro invocation
- 55 too many arguments in macro invocation
- 56 operand of sizeof may not be a function
- 57 this operator is not allowed in a constant expression
- 58 this operator is not allowed in a preprocessing expression
- 59 function call is not allowed in a constant expression
- 60 this operator is not allowed in an integral constant expression
- 61 integer operation result is out of range
- 62 shift count is negative
- 63 shift count is too large
- 64 declaration does not declare anything  
 For example:  

```
int;
```
- 65 expected a ";"
- 66 enumeration value is out of "int" range  
 This diagnostic message is generated by the compiler when an enum constant is outside the range of a signed int.

For example:

```
typedef enum
{
    Bit31 = 0x80000000
} Bits;
```

when compiled in C mode generates the above message as a warning.

---

**Note**

---

The behavior of the compiler has changed between past versions and also when using `--enum_is_int` and `--strict` switches.

---

C Mode:

- the warning is produced but the compiler promotes the constants to unsigned
- the switch `--strict` always produces this message as an error.

C++ Mode:

- by default the out-of-range constants are promoted to unsigned without a warning and also when `--strict` is used

As a work around for cases where the message is an error use the following code example:

```
typedef enum
{
    Bit31 = (int)0x80000000
} Bits;
```

An overflow no longer occurs, and so no error is reported.

---

**Note**

---

The value of `Bit31` is now negative because it is a signed int.

---

See *Structures, unions, enumerations, and bitfields* on page 6-7 in the *Compiler Reference*.

**67** expected a "}"

**68** integer conversion resulted in a change of sign

The constant is too large to be represented in a signed long, and therefore has been given unsigned type.

Example:

```
long l = 2147483648;
```

**69** integer conversion resulted in truncation

**70** incomplete type is not allowed

Example:

```
typedef struct {
    unsigned char size;
    char string[];
} F00;
```

By not declaring a size for the array in the structure, the compiler is not able to allocate a size of the structure. Incomplete types are allowed in `--gnu` and `--c99` modes.

**71** operand of `sizeof` may not be a bit field

76	argument to macro is empty
77	this declaration has no storage class or type specifier
78	a parameter declaration may not have an initializer
79	<p>expected a type specifier</p> <p>The ellipses to denote variadic functions, such as, for example, <code>printf()</code>, must follow at least one parameter. Change:</p> <pre>int foo( ... );</pre> <p>to:</p> <pre>int foo( int bar, ... );</pre>
80	a storage class may not be specified here
81	more than one storage class may not be specified
82	storage class is not first
83	type qualifier specified more than once
84	<p>invalid combination of type specifiers</p> <p>The type name or type qualifier cannot be used in the same declaration as the second type name or type qualifier. For example:</p> <pre>typedef int int;</pre>
85	invalid storage class for a parameter
86	invalid storage class for a function
87	a type specifier may not be used here
88	array of functions is not allowed
89	array of void is not allowed
90	function returning function is not allowed
91	function returning array is not allowed
92	identifier-list parameters may only be used in a function definition
93	function type may not come from a typedef
94	<p>the size of an array must be greater than zero</p> <p>Zero-sized arrays are allowed only when in GNU mode, <code>--gnu</code>. For example:</p> <pre>char name[0] = "Hello";</pre> <p>See the following in the <i>Compiler Reference</i>:</p> <ul style="list-style-type: none"> <li>• <code>--gnu</code> on page 3-80</li> <li>• <i>GNU language extensions</i> on page 4-26.</li> </ul>
95	<p>array is too large</p> <p>There is a limit of 4GB on the maximum size of arrays or structures.</p>
96	a translation unit must contain at least one declaration
97	a function may not return a value of this type
98	an array may not have elements of this type

99	a declaration here must declare a parameter
100	duplicate parameter name
101	<entity> has already been declared in the current scope
102	forward declaration of enum type is nonstandard
103	class is too large
104	struct or union is too large
105	invalid size for bit field Bit fields must not be larger than the size of the type. For example, with <code>--strict</code> : <pre>struct X{     int y:5000; };</pre>
106	invalid type for a bit field Bit fields must have integral type. Example: <pre>struct X{     float x:5;     float y:2; };</pre>
107	zero-length bit field must be unnamed
108	signed bit field of length 1
109	expression must have (pointer-to-) function type
110	expected either a definition or a tag name
111	statement is unreachable
112	expected "while"
114	<entity> was referenced but not defined
115	a continue statement may only be used within a loop
116	a break statement may only be used within a loop or switch Example: <pre>void foo(void){     int a=0;     continue; }</pre> or: <pre>void bar(void){     int a=0;     break; }</pre>
117	non-void <entity> should return a value
118	a void function may not return a value
119	cast to type <type> is not allowed

- 120 return value type does not match the function type
- 121 a case label may only be used within a switch
- 122 a default label may only be used within a switch
- 123 case label value has already appeared in this switch
- 124 default label has already appeared in this switch
- 125 expected a "("
- 126 expression must be an lvalue
- 127 expected a statement
- 128 loop is not reachable from preceding code
- 129 a block-scope function may only have extern storage class
- 130 expected a "{"
- 131 expression must have pointer-to-class type
- 132 expression must have pointer-to-struct-or-union type
- 133 expected a member name
- 134 expected a field name
- 135 <entity> has no member <entity>
- 136 <entity> has no field <entity>
- 137 expression must be a modifiable lvalue
- 138 taking the address of a register variable is not allowed
- 139 taking the address of a bit field is not allowed
- 140 too many arguments in function call  
Function declaration does not match the number of parameters in an earlier function prototype.  
Example:  
extern void foo(int x);  
void bar(void)  
{  
    foo(1,2);  
}
- 141 unnamed prototyped parameters not allowed when body is present
- 142 expression must have pointer-to-object type
- 143 program too large or complicated to compile
- 144 a value of type <type> cannot be used to initialize an entity of type <type>  
The initializing string for a fixed size character array is exactly as long as the array size, leaving no room for a terminating \0, for example:  
char name[5] = "Hello";  
The name array can hold up to 5 characters. "Hello" does not fit because C strings are always null-terminated (for example, "Hello\0"). The compiler reports:



Error: #144: a value of type "const char [6]" cannot be used to initialize an entity of type "char [5]"

A similar error is also raised if there is an implicit cast of non-zero int to pointer.

For example:

```
void foo_func( void )
{
    char *foo=1;
}
```

results in the message:

#144: a value of type "int" cannot be used to initialize an entity of type "char \*"

For the cast, this error can be suppressed with the use of the `--loose_implicit_cast` switch.

- 145 <entity> may not be initialized
- 146 too many initializer values
- 147 declaration is incompatible with <entity>  
This incorrect C code:  

```
typedef enum { e } E;
typedef enum { f } F;
E g(void);
F g(void);
```

is a discretionary error in all modes, and can be downgraded from an Error to a Warning with `--diag_warning 147`, or suppressed completely with `--diag_suppress 147`.
- 148 <entity> has already been initialized
- 149 a global-scope declaration may not have this storage class
- 150 a type name may not be redeclared as a parameter
- 151 a typedef name may not be redeclared as a parameter
- 152 conversion of nonzero integer to pointer
- 153 expression must have class type
- 154 expression must have struct or union type
- 155 old-fashioned assignment operator
- 156 old-fashioned initializer
- 157 expression must be an integral constant expression
- 158 expression must be an lvalue or a function designator
- 159 declaration is incompatible with previous <entity>
- 160 external name conflicts with external name of <entity>
- 161 unrecognized #pragma
- 163 could not open temporary file <entity>
- 164 name of directory for temporary files is too long (<entity>)
- 165 too few arguments in function call

Function prototype is defined with a number of parameters that does not match the number of parameters passed in the function call.

For example:

```
extern void foo(int x);
void bar(void)
{
    foo();
}
```

**166** invalid floating constant

**167** argument of type <type> is incompatible with parameter of type <type>

**168** a function type is not allowed here

**169** expected a declaration

This can occur when attempting to compile some C++ header files with the C compiler instead of the C++ compiler. The following message is reported:

Error: #169: expected a declaration

**170** pointer points outside of underlying object

**171** invalid type conversion

**172** external/internal linkage conflict with previous declaration

Errors about linkage disagreements where functions are implicitly declared as extern and then later re-declared as static are suppressed unless compiled with --strict.

Example:

```
extern void foo(void);
static void foo(void){}
```

**173** floating-point value does not fit in required integral type

**174** expression has no effect

**175** subscript out of range

**177** <entity> was declared but never referenced

By default, unused declaration warnings are given for:

- local (within a function) declarations of variables, typedefs, and functions
- labels (always within a function)
- top-level static functions and static variables.

The --diag\_suppress 177 option suppresses these warnings.

**178** "&" applied to an array has no effect

**179** right operand of "%" is zero

**180** argument is incompatible with formal parameter

**181** argument is incompatible with corresponding format string conversion

For example when compiling with --strict, the code:

```
unsigned long foo = 0x1234;
printf("%08X", foo);
```

results in the warning:

Warning: #181-D: argument is incompatible with corresponding format string conversion

To avoid the warning, the code could be rewritten as:

```
unsigned long foo = 0x1234;
printf("%01X", foo);
```

or perhaps:

```
unsigned int foo = 0x1234;
printf("%0X", foo);
```

%0X can be used for char, short or int. Use 1X for a long integer, even though both ints and longs are 32-bits wide on an ARM.

**182** could not open source file <entity> (no directories in search list)

**183** type of cast must be integral

**184** type of cast must be arithmetic or pointer

**185** dynamic initialization in unreachable code

**186** pointless comparison of unsigned integer with zero

For example:

```
unsigned short foo;
if (foo<0) printf("This never happens");
```

gives a warning that the comparison between an unsigned (for example, char or int) value and zero always evaluates to false.

**187** use of "=" where "==" may have been intended

Example:

```
int main(void)
{
    int a;
    const int b =1;
    if (a=b)
}
```

**188** enumerated type mixed with another type

**189** error while writing <entity> file

**190** invalid intermediate language file

**191** type qualifier is meaningless on cast type

The C specification states that a cast does not yield an lvalue, so a cast to a qualified type has the same effect as a cast to the unqualified version of the type. This warning is just to inform the user that the type qualifier has no effect, although the code is still legal. The warning is suppressible with `--diag_suppress 191`.

Example:

"val2 = (const float)val1;" is equivalent to "val2 = (float)val1;"

**192** unrecognized character escape sequence

This error is commonly associated with the attempted use of non-ASCII character sets, such as 16-bit Unicode characters. The compiler supports multibyte character sets, such as Unicode. Source files are compiled according to the selected locale of that machine. It is possible to use *Escape processing* (as recommended by Kernighan and Ritchie, section A2.5.2) to encode specific values instead.

For example:

```
char *p = "\x12\x34\x56\x78"; // 12 34 56 78
```

In character and string escapes, if the character following the \ has no special meaning, the value of the escape is the character itself, for example, \s is the same as s and the warning is given.

- 193** zero used for undefined preprocessing identifier <entity>
- 194** expected an asm string
- 195** an asm function must be prototyped
- 196** an asm function may not have an ellipsis
- 219** error while deleting file <entity>
- 220** integral value does not fit in required floating-point type
- 221** floating-point value does not fit in required floating-point type
- 222** floating-point operation result is out of range
- 223** function <entity> declared implicitly  
This is a common warning that occurs where there is no prototype for a function.  
For example:  

```
void foo(void)
{
    printf("foo");
}
```

 To fix this, add `#include <stdio.h>` that includes the prototype for `printf`.  
 For ANSI C, you can suppress this warning with `--diag_suppress 223`. This is useful when compiling old-style C in ANSI C mode.
- 224** the format string requires additional arguments
- 225** the format string ends before this argument
- 226** invalid format string conversion
- 227** macro recursion
- 228** trailing comma is nonstandard
- 229** bit field cannot contain all values of the enumerated type
- 230** nonstandard type for a bit field  
In strict ANSI C, the only types allowed for a bit field are `int`, `signed int` and `unsigned int`.  
Example:  

```
struct X {
    char y:2;
};
```
- 231** declaration is not visible outside of function
- 232** old-fashioned typedef of "void" ignored
- 233** left operand is not a struct or union containing this field
- 234** pointer does not point to struct or union containing this field

- 235 variable <entity> was declared with a never-completed type
- 236 controlling expression is constant
- 237 selector expression is constant
- 238 invalid specifier on a parameter
- 239 invalid specifier outside a class declaration
- 240 duplicate specifier in declaration
- 241 a union is not allowed to have a base class
- 242 multiple access control specifiers are not allowed
- 243 class or struct definition is missing
- 244 qualified name is not a member of class <type> or its base classes
- 245 a nonstatic member reference must be relative to a specific object
- 246 a nonstatic data member may not be defined outside its class
- 247 <entity> has already been defined
- A typical example of this is where a variable name has been used more than once. This can sometimes occur when compiling legacy code that relies on tentative declarations. Tentative declarations allow a variable to be declared and initialized as separate statements such as:
- ```
int a;
int a = 1;
```
- Tentative declarations are allowed by default for C code, but produce an error with C++ code.
- 248 pointer to reference is not allowed
- 249 reference to reference is not allowed
- 250 reference to void is not allowed
- 251 array of reference is not allowed
- 252 reference <entity> requires an initializer
- 253 expected a ",",
- 254 type name is not allowed
- This occurs when a typedef name is being used directly in an expression:
- ```
typedef int footype;
int x = footype; // reports Error: #254: type name is not allowed
```
- To fix this, first create an instance of that type (for example, a variable of the new type):
- ```
typedef int footype;
footype bar = 1;
int x = bar;
```
- 255 type definition is not allowed
- 256 invalid redeclaration of type name <entity>
- 257 const <entity> requires an initializer

|     |                                                                                                                                                                                                                                                                                                                     |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 258 | "this" may only be used inside a nonstatic member function                                                                                                                                                                                                                                                          |
| 259 | constant value is not known                                                                                                                                                                                                                                                                                         |
| 260 | explicit type is missing ("int" assumed)                                                                                                                                                                                                                                                                            |
| 261 | access control not specified (<entity> by default)                                                                                                                                                                                                                                                                  |
| 262 | not a class or struct name                                                                                                                                                                                                                                                                                          |
| 263 | duplicate base class name                                                                                                                                                                                                                                                                                           |
| 264 | invalid base class                                                                                                                                                                                                                                                                                                  |
| 265 | <entity> is inaccessible<br>For C++ only, the --diag_warning 265 option downgrades access control errors to warnings.<br>For example:<br>class A { void f() {} }; // private member<br>A a;<br>void g() { a.f(); } // erroneous access<br>results in the message:<br>Error: #265-D: function "A::f" is inaccessible |
| 266 | <entity> is ambiguous                                                                                                                                                                                                                                                                                               |
| 267 | old-style parameter list (anachronism)                                                                                                                                                                                                                                                                              |
| 268 | declaration may not appear after executable statement in block                                                                                                                                                                                                                                                      |
| 269 | conversion to inaccessible base class <type> is not allowed                                                                                                                                                                                                                                                         |
| 274 | improperly terminated macro invocation                                                                                                                                                                                                                                                                              |
| 276 | name followed by "::" must be a class or namespace name                                                                                                                                                                                                                                                             |
| 277 | invalid friend declaration                                                                                                                                                                                                                                                                                          |
| 278 | a constructor or destructor may not return a value                                                                                                                                                                                                                                                                  |
| 279 | invalid destructor declaration                                                                                                                                                                                                                                                                                      |
| 280 | declaration of a member with the same name as its class                                                                                                                                                                                                                                                             |
| 281 | global-scope qualifier (leading "::") is not allowed                                                                                                                                                                                                                                                                |
| 282 | the global scope has no <entity>                                                                                                                                                                                                                                                                                    |
| 283 | qualified name is not allowed                                                                                                                                                                                                                                                                                       |
| 284 | NULL reference is not allowed                                                                                                                                                                                                                                                                                       |
| 285 | initialization with "<...>" is not allowed for object of type <type>                                                                                                                                                                                                                                                |
| 286 | base class <type> is ambiguous                                                                                                                                                                                                                                                                                      |
| 287 | derived class <type> contains more than one instance of class <type>                                                                                                                                                                                                                                                |
| 288 | cannot convert pointer to base class <type> to pointer to derived class <type> -- base class is virtual                                                                                                                                                                                                             |
| 289 | no instance of constructor <entity> matches the argument list                                                                                                                                                                                                                                                       |
| 290 | copy constructor for class <type> is ambiguous                                                                                                                                                                                                                                                                      |

|     |                                                                                                               |
|-----|---------------------------------------------------------------------------------------------------------------|
| 291 | no default constructor exists for class <type>                                                                |
| 292 | <entity> is not a nonstatic data member or base class of class <type>                                         |
| 293 | indirect nonvirtual base class is not allowed                                                                 |
| 294 | invalid union member -- class <type> has a disallowed member function                                         |
| 296 | invalid use of non-lvalue array                                                                               |
| 297 | expected an operator                                                                                          |
| 298 | inherited member is not allowed                                                                               |
| 299 | cannot determine which instance of <entity> is intended                                                       |
| 300 | a pointer to a bound function may only be used to call the function                                           |
| 301 | typedef name has already been declared (with same type)                                                       |
| 302 | <entity> has already been defined                                                                             |
| 304 | no instance of <entity> matches the argument list                                                             |
| 305 | type definition is not allowed in function return type declaration                                            |
| 306 | default argument not at end of parameter list                                                                 |
| 307 | redefinition of default argument                                                                              |
| 308 | more than one instance of <entity> matches the argument list:                                                 |
| 309 | more than one instance of constructor <entity> matches the argument list:                                     |
| 310 | default argument of type <type> is incompatible with parameter of type <type>                                 |
| 311 | cannot overload functions distinguished by return type alone                                                  |
| 312 | no suitable user-defined conversion from <type> to <type> exists                                              |
| 313 | type qualifier is not allowed on this function                                                                |
| 314 | only nonstatic member functions may be virtual                                                                |
| 315 | the object has cv-qualifiers that are not compatible with the member function                                 |
| 316 | program too large to compile (too many virtual functions)                                                     |
| 317 | return type is not identical to nor covariant with return type <type> of overridden virtual function <entity> |
| 318 | override of virtual <entity> is ambiguous                                                                     |
| 319 | pure specifier ("= 0") allowed only on virtual functions                                                      |
| 320 | badly-formed pure specifier (only "= 0" is allowed)                                                           |
| 321 | data member initializer is not allowed                                                                        |
| 322 | object of abstract class type <type> is not allowed:                                                          |
| 323 | function returning abstract class <type> is not allowed:                                                      |
| 324 | duplicate friend declaration                                                                                  |
| 325 | inline specifier allowed on function declarations only                                                        |

|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 326 | "inline" is not allowed                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 327 | invalid storage class for an inline function                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 328 | invalid storage class for a class member                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 329 | local class member <entity> requires a definition                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 330 | <entity> is inaccessible                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 332 | class <type> has no copy constructor to copy a const object                                                                                                                                                                                                                                                                                                                                                                                                               |
| 333 | defining an implicitly declared member function is not allowed                                                                                                                                                                                                                                                                                                                                                                                                            |
| 334 | class <type> has no suitable copy constructor                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 335 | linkage specification is not allowed                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 336 | unknown external linkage specification                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 337 | linkage specification is incompatible with previous <entity><br>If the linkage for a function is redeclared with an incompatible specification to a previous declaration this error is produced.<br>For example:<br><pre>int foo(void); int bar(void) {     int x;     x = foo();     return x; } extern "C" int foo(void) {     return 0; }</pre> results in the message:<br>Error: #337: linkage specification is incompatible with previous "foo" (declared at line 1) |
| 338 | more than one instance of overloaded function <entity> has "C" linkage                                                                                                                                                                                                                                                                                                                                                                                                    |
| 339 | class <type> has more than one default constructor                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 340 | value copied to temporary, reference to temporary used                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 341 | "operator<entity>" must be a member function                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 342 | operator may not be a static member function                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 343 | no arguments allowed on user-defined conversion                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 344 | too many parameters for this operator function                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 345 | too few parameters for this operator function                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 346 | nonmember operator requires a parameter with class type                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 347 | default argument is not allowed                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 348 | more than one user-defined conversion from <type> to <type> applies:                                                                                                                                                                                                                                                                                                                                                                                                      |
| 349 | no operator <entity> matches these operands                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 350 | more than one operator <entity> matches these operands:                                                                                                                                                                                                                                                                                                                                                                                                                   |



|     |                                                                                                                                                                                                                                                                                                                       |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 351 | first parameter of allocation function must be of type "size_t"                                                                                                                                                                                                                                                       |
| 352 | allocation function requires "void *" return type                                                                                                                                                                                                                                                                     |
| 353 | deallocation function requires "void" return type                                                                                                                                                                                                                                                                     |
| 354 | first parameter of deallocation function must be of type "void *" type must be an object type                                                                                                                                                                                                                         |
| 356 |                                                                                                                                                                                                                                                                                                                       |
| 357 | base class <type> has already been initialized                                                                                                                                                                                                                                                                        |
| 358 | base class name required -- <type> assumed (anachronism)                                                                                                                                                                                                                                                              |
| 359 | <entity> has already been initialized                                                                                                                                                                                                                                                                                 |
| 360 | name of member or base class is missing                                                                                                                                                                                                                                                                               |
| 361 | assignment to "this" (anachronism)                                                                                                                                                                                                                                                                                    |
| 362 | "overload" keyword used (anachronism)                                                                                                                                                                                                                                                                                 |
| 363 | invalid anonymous union -- nonpublic member is not allowed                                                                                                                                                                                                                                                            |
| 364 | invalid anonymous union -- member function is not allowed                                                                                                                                                                                                                                                             |
| 365 | anonymous union at global or namespace scope must be declared static                                                                                                                                                                                                                                                  |
| 366 | <entity> provides no initializer for:                                                                                                                                                                                                                                                                                 |
| 367 | implicitly generated constructor for class <type> cannot initialize:                                                                                                                                                                                                                                                  |
| 368 | <entity> defines no constructor to initialize the following:<br>This indicates that you have a const structure or structure containing a const. It is issued as a friendly warning to assist with error 369. This can safely be ignored providing that the const members of structures are appropriately initialized. |
| 369 | <entity> has an uninitialized const or reference member<br>This indicates that you have a instance of a const structure or structure containing a const that has not been correctly initialized. You must either initialise it correctly for every instance or provide a constructor to initialise it.                |
| 370 | <entity> has an uninitialized const field                                                                                                                                                                                                                                                                             |
| 371 | class <type> has no assignment operator to copy a const object                                                                                                                                                                                                                                                        |
| 372 | class <type> has no suitable assignment operator                                                                                                                                                                                                                                                                      |
| 373 | ambiguous assignment operator for class <type>                                                                                                                                                                                                                                                                        |
| 375 | declaration requires a typedef name                                                                                                                                                                                                                                                                                   |
| 377 | "virtual" is not allowed                                                                                                                                                                                                                                                                                              |
| 378 | "static" is not allowed                                                                                                                                                                                                                                                                                               |
| 379 | cast of bound function to normal function pointer (anachronism)                                                                                                                                                                                                                                                       |
| 380 | expression must have pointer-to-member type                                                                                                                                                                                                                                                                           |
| 381 | extra ";" ignored<br>In C, this can be caused by an unexpected semicolon at the end of a declaration line, for example:<br>int x;;                                                                                                                                                                                    |

This might occur inadvertently when using macros.

Similarly, in C++, this might be caused by constructions like:

```
class X { ... } ; ;
```

which probably resulted from some macro usage:

```
#define M(c) class c { ... } ;  
M(X);
```

The extra semicolon is illegal because empty declarations are illegal.

- 382 nonstandard member constant declaration (standard form is a static const integral member)
- 384 no instance of overloaded <entity> matches the argument list
- 386 no instance of <entity> matches the required type
- 387 delete array size expression used (anachronism)
- 389 a cast to abstract class <type> is not allowed:
- 390 function "main" may not be called or have its address taken
- 391 a new-initializer may not be specified for an array
- 392 member function <entity> may not be redeclared outside its class
- 393 pointer to incomplete class type is not allowed
- 394 reference to local variable of enclosing function is not allowed
- 395 single-argument function used for postfix <entity> (anachronism)
- 398 cast to array type is nonstandard (treated as cast to <type>)
- 399 <entity> has an operator new<entity>() but no default operator delete<entity>()
- 400 <entity> has a default operator delete<entity>() but no operator new<entity>()
- 401 destructor for base class <entity> is not virtual
- 403 invalid redeclaration of member <entity>
- 404 function "main" may not be declared inline
- 405 member function with the same name as its class must be a constructor
- 406 using nested <entity> (anachronism)
- 407 a destructor may not have parameters
- 408 copy constructor for class <type> may not have a parameter of type <type>
- 409 <entity> returns incomplete type <type>
- 410 protected <entity> is not accessible through a <type> pointer or object
- 411 a parameter is not allowed
- 412 an "asm" declaration is not allowed here
- 413 no suitable conversion function from <type> to <type> exists
- 414 delete of pointer to incomplete class

|     |                                                                                                    |
|-----|----------------------------------------------------------------------------------------------------|
| 415 | no suitable constructor exists to convert from <type> to <type>                                    |
| 416 | more than one constructor applies to convert from <type> to <type>:                                |
| 417 | more than one conversion function from <type> to <type> applies:                                   |
| 418 | more than one conversion function from <type> to a built-in type applies:                          |
| 424 | a constructor or destructor may not have its address taken                                         |
| 427 | qualified name is not allowed in member declaration                                                |
| 428 | enumerated type mixed with another type (anachronism)                                              |
| 429 | the size of an array in "new" must be non-negative                                                 |
| 430 | returning reference to local temporary                                                             |
| 433 | qualifiers dropped in binding reference of type <type> to initializer of type <type>               |
| 434 | a reference of type <type> (not const-qualified) cannot be initialized with a value of type <type> |
| 435 | a pointer to function may not be deleted                                                           |
| 436 | conversion function must be a nonstatic member function                                            |
| 437 | template declaration is not allowed here                                                           |
| 438 | expected a "<"                                                                                     |
| 439 | expected a ">"                                                                                     |
| 440 | template parameter declaration is missing                                                          |
| 441 | argument list for <entity> is missing                                                              |
| 442 | too few arguments for <entity>                                                                     |
| 443 | too many arguments for <entity>                                                                    |
| 450 | the type "long long" is nonstandard                                                                |
| 451 | omission of <entity> is nonstandard                                                                |
| 452 | return type may not be specified on a conversion function                                          |
| 456 | excessive recursion at instantiation of <entity>                                                   |
| 457 | <entity> is not a function or static data member                                                   |
| 458 | argument of type <type> is incompatible with template parameter of type <type>                     |
| 459 | initialization requiring a temporary or conversion is not allowed                                  |
| 460 | declaration of <entity> hides function parameter                                                   |
| 461 | initial value of reference to non-const must be an lvalue                                          |
| 463 | "template" is not allowed                                                                          |
| 464 | <type> is not a class template                                                                     |
| 467 | invalid reference to <entity> (union/nonunion mismatch)                                            |
| 468 | a template argument may not reference a local type                                                 |

|     |                                                                                                                                                                                                                                                                                                                                                                       |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 469 | tag kind of <entity> is incompatible with declaration of <entity>                                                                                                                                                                                                                                                                                                     |
| 470 | the global scope has no tag named <entity>                                                                                                                                                                                                                                                                                                                            |
| 471 | <entity> has no tag member named <entity>                                                                                                                                                                                                                                                                                                                             |
| 473 | <entity> may be used only in pointer-to-member declaration                                                                                                                                                                                                                                                                                                            |
| 476 | name followed by "::~" must be a class name or a type name                                                                                                                                                                                                                                                                                                            |
| 477 | destructor name does not match name of class <type>                                                                                                                                                                                                                                                                                                                   |
| 478 | type used as destructor name does not match type <type>                                                                                                                                                                                                                                                                                                               |
| 479 | <entity> redeclared "inline" after being called                                                                                                                                                                                                                                                                                                                       |
| 485 | <entity> is not an entity that can be instantiated                                                                                                                                                                                                                                                                                                                    |
| 486 | compiler generated <entity> cannot be explicitly instantiated                                                                                                                                                                                                                                                                                                         |
| 487 | inline <entity> cannot be explicitly instantiated                                                                                                                                                                                                                                                                                                                     |
| 490 | <entity> cannot be instantiated -- it has been explicitly specialized                                                                                                                                                                                                                                                                                                 |
| 494 | declaring a void parameter list with a typedef is nonstandard<br>When the compiler is in ANSI C mode, this error might be produced by a function declaration f(V) where V is a void type.<br>In the special syntax f(<void>) that indicates that f is a function taking no arguments, the keyword <void> is required. The name of a void type cannot be used instead. |
| 496 | template parameter <entity> may not be redeclared in this scope                                                                                                                                                                                                                                                                                                       |
| 497 | declaration of <entity> hides template parameter                                                                                                                                                                                                                                                                                                                      |
| 498 | template argument list must match the parameter list                                                                                                                                                                                                                                                                                                                  |
| 501 | an operator name must be declared as a function                                                                                                                                                                                                                                                                                                                       |
| 502 | operator name is not allowed                                                                                                                                                                                                                                                                                                                                          |
| 503 | <entity> cannot be specialized in the current scope                                                                                                                                                                                                                                                                                                                   |
| 504 | nonstandard form for taking the address of a member function<br>The C++ standard requires that a pointer to member be named using a qualified name and a & character such as for &A::f.<br>The front end previously accepted nonstandard forms like &f, or even simply f, as a concession to existing practice. This usage now produces a discretionary error.        |
| 505 | too few template parameters -- does not match previous declaration                                                                                                                                                                                                                                                                                                    |
| 506 | too many template parameters -- does not match previous declaration                                                                                                                                                                                                                                                                                                   |
| 507 | function template for operator delete(void *) is not allowed                                                                                                                                                                                                                                                                                                          |
| 508 | class template and template parameter may not have the same name                                                                                                                                                                                                                                                                                                      |
| 511 | enumerated type is not allowed                                                                                                                                                                                                                                                                                                                                        |
| 512 | type qualifier on a reference type is not allowed                                                                                                                                                                                                                                                                                                                     |
| 513 | a value of type <type> cannot be assigned to an entity of type <type>                                                                                                                                                                                                                                                                                                 |
| 514 | pointless comparison of unsigned integer with a negative constant                                                                                                                                                                                                                                                                                                     |

|     |                                                                                                                                                                                                   |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 515 | cannot convert to incomplete class <type>                                                                                                                                                         |
| 516 | const object requires an initializer                                                                                                                                                              |
| 517 | object has an uninitialized const or reference member                                                                                                                                             |
| 518 | nonstandard preprocessing directive                                                                                                                                                               |
| 519 | <entity> may not have a template argument list                                                                                                                                                    |
| 520 | initialization with "<...>" expected for aggregate object                                                                                                                                         |
| 521 | pointer-to-member selection class types are incompatible (<type> and <type>)                                                                                                                      |
| 522 | pointless friend declaration                                                                                                                                                                      |
| 524 | non-const function called for const object (anachronism)                                                                                                                                          |
| 525 | a dependent statement may not be a declaration                                                                                                                                                    |
| 526 | a parameter may not have void type<br>For example:<br>void foo(void a) { }                                                                                                                        |
| 529 | this operator is not allowed in a template argument expression                                                                                                                                    |
| 530 | try block requires at least one handler                                                                                                                                                           |
| 531 | handler requires an exception declaration                                                                                                                                                         |
| 532 | handler is masked by default handler                                                                                                                                                              |
| 533 | handler is potentially masked by previous handler for type <type>                                                                                                                                 |
| 534 | use of a local type to specify an exception                                                                                                                                                       |
| 535 | redundant type in exception specification                                                                                                                                                         |
| 536 | exception specification is incompatible with that of previous <entity>                                                                                                                            |
| 540 | support for exception handling is disabled                                                                                                                                                        |
| 541 | omission of exception specification is incompatible with previous <entity>                                                                                                                        |
| 542 | could not create instantiation request file <entity>                                                                                                                                              |
| 543 | non-arithmetic operation not allowed in nontype template argument                                                                                                                                 |
| 544 | use of a local type to declare a nonlocal variable                                                                                                                                                |
| 545 | use of a local type to declare a function                                                                                                                                                         |
| 546 | transfer of control bypasses initialization of:<br>Example:<br>int main(void){<br>int choice = 1;<br>int z =1;<br>switch(choice)<br>{<br>case 1:<br>int y = 1;<br>z = y + z;<br>break;<br>case 2: |

```

    break;
}
return 0;

```

In the example, `y` is an initialized variable that is in scope (but unused) in the other cases.

The C++ Standard says in section 6.7:

"It is possible to transfer into a block, but not in a way that bypasses declarations with initialization. A program that jumps from a point where a local variable with automatic storage duration is not in scope to a point where it is in scope is ill-formed unless the variable has POD type (3.9) and is declared without an initializer (8.5)."

#### ————— **Note** —————

The transfer from the condition of a switch statement to a case label is considered a jump in this respect.

The usual way to fix this is to enclose the case that declares `y` in braces:

```

case 1: {
    int y = 1;
    z = y + z;
}
break;

```

Because `y` is a POD (Plain Old Data) type, so an alternative is to not use initialization:

```

case 1:
    int y;
    y = 1;
    z = y + z;
    break;

```

|     |                                                                             |
|-----|-----------------------------------------------------------------------------|
| 548 | transfer of control into an exception handler                               |
| 549 | <entity> is used before its value is set                                    |
| 550 | <entity> was set but never used                                             |
| 551 | <entity> cannot be defined in the current scope                             |
| 552 | exception specification is not allowed                                      |
| 553 | external/internal linkage conflict for <entity>                             |
| 554 | <entity> will not be called for implicit or explicit conversions            |
| 555 | tag kind of <entity> is incompatible with template parameter of type <type> |
| 556 | function template for operator <code>new(size_t)</code> is not allowed      |
| 558 | pointer to member of type <type> is not allowed                             |
| 559 | ellipsis is not allowed in operator function parameter list                 |
| 560 | <entity> is reserved for future use as a keyword                            |
| 561 | invalid macro definition:                                                   |
| 562 | invalid macro undefinition:                                                 |
| 563 | invalid <entity> output file <filename>                                     |

|     |                                                                               |
|-----|-------------------------------------------------------------------------------|
| 564 | cannot open <entity> output file <filename>: <reason>                         |
| 570 | error in debug option argument                                                |
| 571 | invalid option:                                                               |
| 574 | invalid number:                                                               |
| 576 | invalid instantiation mode:                                                   |
| 578 | invalid error limit:                                                          |
| 585 | virtual function tables can only be suppressed when compiling C++             |
| 586 | anachronism option can be used only when compiling C++                        |
| 587 | instantiation mode option can be used only when compiling C++                 |
| 588 | automatic instantiation mode can be used only when compiling C++              |
| 589 | implicit template inclusion mode can be used only when compiling C++          |
| 590 | exception handling option can be used only when compiling C++                 |
| 593 | missing source file name                                                      |
| 594 | output files may not be specified when compiling several input files          |
| 595 | too many arguments on command line                                            |
| 596 | an output file was specified, but none is needed                              |
| 598 | a template parameter may not have void type                                   |
| 600 | strict mode is incompatible with allowing anachronisms                        |
| 601 | a throw expression may not have void type                                     |
| 602 | local instantiation mode is incompatible with automatic instantiation         |
| 603 | parameter of abstract class type <type> is not allowed:                       |
| 604 | array of abstract class <type> is not allowed:                                |
| 605 | floating-point template parameter is nonstandard                              |
| 606 | this pragma must immediately precede a declaration                            |
| 607 | this pragma must immediately precede a statement                              |
| 608 | this pragma must immediately precede a declaration or statement               |
| 609 | this kind of pragma may not be used here                                      |
| 611 | overloaded virtual function <entity> is only partially overridden in <entity> |
| 612 | specific definition of inline template function must precede its first use    |
| 613 | invalid error tag in diagnostic control option:                               |
| 614 | invalid error number in diagnostic control option:                            |
| 615 | parameter type involves pointer to array of unknown bound                     |
| 616 | parameter type involves reference to array of unknown bound                   |
| 617 | pointer-to-member-function cast to pointer to function                        |

|     |                                                                                                                   |
|-----|-------------------------------------------------------------------------------------------------------------------|
| 618 | struct or union declares no named members                                                                         |
| 619 | nonstandard unnamed field                                                                                         |
| 620 | nonstandard unnamed member                                                                                        |
| 624 | <entity> is not a type name                                                                                       |
| 625 | cannot open precompiled header input file <entity>: <reason>                                                      |
| 626 | precompiled header file <entity> is either invalid or not generated by this version of the compiler               |
| 627 | precompiled header file <entity> was not generated in this directory                                              |
| 628 | header files used to generate precompiled header file <entity> have changed                                       |
| 629 | the command line options do not match those used when precompiled header file <entity> was created                |
| 630 | the initial sequence of preprocessing directives is not compatible with those of precompiled header file <entity> |
| 631 | unable to obtain mapped memory for <entity>: <reason>                                                             |
| 632 | "<entity>": using precompiled header file "<entity>"                                                              |
| 633 | "<entity>": creating precompiled header file "<entity>"                                                           |
| 634 | memory usage conflict with precompiled header file <entity>                                                       |
| 635 | invalid PCH memory size                                                                                           |
| 636 | PCH options must appear first in the command line                                                                 |
| 637 | insufficient memory for PCH memory allocation                                                                     |
| 638 | precompiled header files may not be used when compiling several input files                                       |
| 639 | insufficient preallocated memory for generation of precompiled header file (<entity> bytes required)              |
| 640 | very large entity in program prevents generation of precompiled header file                                       |
| 641 | <entity> is not a valid directory                                                                                 |
| 642 | cannot build temporary file name                                                                                  |
| 643 | "restrict" is not allowed                                                                                         |
| 644 | a pointer or reference to function type may not be qualified by "restrict"                                        |
| 645 | <entity> is an unrecognized __declspec attribute                                                                  |
| 646 | a calling convention modifier may not be specified here                                                           |
| 647 | conflicting calling convention modifiers                                                                          |
| 650 | calling convention specified here is ignored                                                                      |
| 651 | a calling convention may not be followed by a nested declarator                                                   |
| 652 | calling convention is ignored for this type                                                                       |



|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 654 | declaration modifiers are incompatible with previous declaration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 655 | the modifier <entity> is not allowed on this declaration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 656 | transfer of control into a try block                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 657 | inline specification is incompatible with previous <entity>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 658 | closing brace of template definition not found                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 659 | wchar_t keyword option can be used only when compiling C++                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 660 | invalid packing alignment value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 661 | expected an integer constant                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 662 | call of pure virtual function<br>A pure virtual function pvfn is being called, for example:<br><pre>struct T { T(); virtual void pvfn() = 0; };            // a pure virtual function T::T() { pvfn(); } // warning given here</pre> By default, calling a pure virtual function results in: <ol style="list-style-type: none"> <li>1. a call to the library function __cxa_pure_virtual()</li> <li>2. the __cxa_pure_virtual() function raising the signal SIGPVFN</li> <li>3. the signal being trapped by the default_signal_handler</li> <li>4. the handler displaying Pure virtual fn called on the console using semihosting.</li> </ol> See the following in the <i>Compiler Reference</i> : <ul style="list-style-type: none"> <li>• <i>Calling a pure virtual function</i> on page D-3.</li> </ul> |
| 663 | invalid source file identifier string                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 664 | a class template cannot be defined in a friend declaration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 665 | "asm" is not allowed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 666 | "asm" must be used with a function definition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 667 | "asm" function is nonstandard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 668 | ellipsis with no explicit parameters is nonstandard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 669 | "&..." is nonstandard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 670 | invalid use of "&..."                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 672 | temporary used for initial value of reference to const volatile (anachronism)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 673 | a reference of type <type> cannot be initialized with a value of type <type>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 674 | initial value of reference to const volatile must be an lvalue                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 676 | using out-of-scope declaration of <entity>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 678 | call of <entity> cannot be inlined                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 679 | <entity> cannot be inlined                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 680 | invalid PCH directory:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

|     |                                                                                                                        |
|-----|------------------------------------------------------------------------------------------------------------------------|
| 688 | <entity> not found on pack alignment stack                                                                             |
| 689 | empty pack alignment stack                                                                                             |
| 690 | RTTI option can be used only when compiling C++                                                                        |
| 691 | <entity>, required for copy that was eliminated, is inaccessible                                                       |
| 692 | <entity>, required for copy that was eliminated, is not callable because reference parameter cannot be bound to rvalue |
| 693 | <typeinfo> must be included before typeid is used                                                                      |
| 694 | <entity> cannot cast away const or other type qualifiers                                                               |
| 695 | the type in a dynamic_cast must be a pointer or reference to a complete class type, or void *                          |
| 696 | the operand of a pointer dynamic_cast must be a pointer to a complete class type                                       |
| 697 | the operand of a reference dynamic_cast must be an lvalue of a complete class type                                     |
| 698 | the operand of a runtime dynamic_cast must have a polymorphic class type                                               |
| 699 | bool option can be used only when compiling C++                                                                        |
| 702 | expected an "="                                                                                                        |
| 703 | expected a declarator in condition declaration                                                                         |
| 704 | <entity>, declared in condition, may not be redeclared in this scope                                                   |
| 705 | default template arguments are not allowed for function templates                                                      |
| 706 | expected a ",", or ">"                                                                                                 |
| 707 | expected a template parameter list                                                                                     |
| 708 | incrementing a bool value is deprecated                                                                                |
| 709 | bool type is not allowed                                                                                               |
| 710 | offset of base class <entity> within class <entity> is too large                                                       |
| 711 | expression must have bool type (or be convertible to bool)                                                             |
| 712 | array new and delete option can be used only when compiling C++                                                        |
| 713 | <entity> is not a variable name                                                                                        |
| 717 | the type in a const_cast must be a pointer, reference, or pointer to member to an object type                          |
| 718 | a const_cast can only adjust type qualifiers; it cannot change the underlying type                                     |
| 719 | mutable is not allowed                                                                                                 |
| 720 | redeclaration of <entity> is not allowed to alter its access                                                           |
| 722 | use of alternative token "<:" appears to be unintended                                                                 |
| 723 | use of alternative token "%:" appears to be unintended                                                                 |
| 724 | namespace definition is not allowed                                                                                    |

|     |                                                                                      |
|-----|--------------------------------------------------------------------------------------|
| 725 | name must be a namespace name                                                        |
| 726 | namespace alias definition is not allowed                                            |
| 727 | namespace-qualified name is required                                                 |
| 728 | a namespace name is not allowed                                                      |
| 730 | <entity> is not a class template                                                     |
| 731 | array with incomplete element type is nonstandard                                    |
| 732 | allocation operator may not be declared in a namespace                               |
| 733 | deallocation operator may not be declared in a namespace                             |
| 734 | <entity> conflicts with using-declaration of <entity>                                |
| 735 | using-declaration of <entity> conflicts with <entity>                                |
| 736 | namespaces option can be used only when compiling C++                                |
| 737 | using-declaration ignored -- it refers to the current namespace                      |
| 738 | a class-qualified name is required                                                   |
| 744 | incompatible memory attributes specified                                             |
| 745 | memory attribute ignored                                                             |
| 746 | memory attribute may not be followed by a nested declarator                          |
| 747 | memory attribute specified more than once                                            |
| 748 | calling convention specified more than once                                          |
| 749 | a type qualifier is not allowed                                                      |
| 750 | <entity> was used before its template was declared                                   |
| 751 | static and nonstatic member functions with same parameter types cannot be overloaded |
| 752 | no prior declaration of <entity>                                                     |
| 753 | a template-id is not allowed                                                         |
| 754 | a class-qualified name is not allowed                                                |
| 755 | <entity> may not be redeclared in the current scope                                  |
| 756 | qualified name is not allowed in namespace member declaration                        |
| 757 | <entity> is not a type name                                                          |
| 758 | explicit instantiation is not allowed in the current scope                           |
| 759 | <entity> cannot be explicitly instantiated in the current scope                      |
| 760 | <entity> explicitly instantiated more than once                                      |
| 761 | typename may only be used within a template                                          |
| 763 | typename option can be used only when compiling C++                                  |
| 764 | implicit typename option can be used only when compiling C++                         |
| 765 | nonstandard character at start of object-like macro definition                       |

|     |                                                                                                                           |
|-----|---------------------------------------------------------------------------------------------------------------------------|
| 766 | exception specification for virtual <entity> is incompatible with that of overridden <entity>                             |
| 767 | conversion from pointer to smaller integer                                                                                |
| 768 | exception specification for implicitly declared virtual <entity> is incompatible with that of overridden <entity>         |
| 769 | <entity>, implicitly called from <entity>, is ambiguous                                                                   |
| 770 | option "explicit" can be used only when compiling C++                                                                     |
| 771 | "explicit" is not allowed                                                                                                 |
| 772 | declaration conflicts with <entity> (reserved class name)                                                                 |
| 773 | only "()" is allowed as initializer for array <entity>                                                                    |
| 774 | "virtual" is not allowed in a function template declaration                                                               |
| 775 | invalid anonymous union -- class member template is not allowed                                                           |
| 776 | template nesting depth does not match the previous declaration of <entity>                                                |
| 777 | this declaration cannot have multiple "template <...>" clauses                                                            |
| 778 | option to control the for-init scope can be used only when compiling C++                                                  |
| 779 | <entity>, declared in for-loop initialization, may not be redeclared in this scope                                        |
| 780 | reference is to <entity> -- under old for-init scoping rules it would have been <entity>                                  |
| 781 | option to control warnings on for-init differences can be used only when compiling C++                                    |
| 782 | definition of virtual <entity> is required here                                                                           |
| 783 | empty comment interpreted as token-pasting operator "##"                                                                  |
| 784 | a storage class is not allowed in a friend declaration                                                                    |
| 785 | template parameter list for <entity> is not allowed in this declaration                                                   |
| 786 | <entity> is not a valid member class or function template                                                                 |
| 787 | not a valid member class or function template declaration                                                                 |
| 788 | a template declaration containing a template parameter list may not be followed by an explicit specialization declaration |
| 789 | explicit specialization of <entity> must precede the first use of <entity>                                                |
| 790 | explicit specialization is not allowed in the current scope                                                               |
| 791 | partial specialization of <entity> is not allowed                                                                         |
| 792 | <entity> is not an entity that can be explicitly specialized                                                              |
| 793 | explicit specialization of <entity> must precede its first use                                                            |
| 794 | template parameter <entity> may not be used in an elaborated type specifier                                               |
| 795 | specializing <entity> requires "template<>" syntax                                                                        |

|     |                                                                                                                                                                                                                        |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 798 | option <code>old_specializations</code> can be used only when compiling C++                                                                                                                                            |
| 799 | specializing <code>&lt;entity&gt;</code> without <code>"template&lt;&gt;"</code> syntax is nonstandard                                                                                                                 |
| 800 | this declaration may not have extern <code>"C"</code> linkage                                                                                                                                                          |
| 801 | <code>&lt;entity&gt;</code> is not a class or function template name in the current scope                                                                                                                              |
| 802 | specifying a default argument when redeclaring an unreferenced function template is nonstandard                                                                                                                        |
| 803 | specifying a default argument when redeclaring an already referenced function template is not allowed                                                                                                                  |
| 804 | cannot convert pointer to member of base class <code>&lt;type&gt;</code> to pointer to member of derived class <code>&lt;type&gt;</code> -- base class is virtual                                                      |
| 805 | exception specification is incompatible with that of <code>&lt;entity&gt;&lt;entity&gt;</code>                                                                                                                         |
| 806 | omission of exception specification is incompatible with <code>&lt;entity&gt;</code>                                                                                                                                   |
| 807 | unexpected end of default argument expression                                                                                                                                                                          |
| 808 | default-initialization of reference is not allowed                                                                                                                                                                     |
| 809 | uninitialized <code>&lt;entity&gt;</code> has a <code>const</code> member                                                                                                                                              |
| 810 | uninitialized base class <code>&lt;type&gt;</code> has a <code>const</code> member                                                                                                                                     |
| 811 | <code>const &lt;entity&gt;</code> requires an initializer -- class <code>&lt;type&gt;</code> has no explicitly declared default constructor                                                                            |
| 812 | <code>const</code> object requires an initializer -- class <code>&lt;type&gt;</code> has no explicitly declared default constructor                                                                                    |
| 814 | strict mode is incompatible with long preserving rules                                                                                                                                                                 |
| 815 | type qualifier on return type is meaningless<br>For example:<br><code>__packed void foo( void ) { }</code><br>The <code>__packed</code> qualifier is ignored because the return type cannot be <code>__packed</code> . |
| 816 | in a function definition a type qualifier on a <code>"void"</code> return type is not allowed                                                                                                                          |
| 817 | static data member declaration is not allowed in this class                                                                                                                                                            |
| 818 | template instantiation resulted in an invalid function declaration                                                                                                                                                     |
| 819 | <code>"..."</code> is not allowed                                                                                                                                                                                      |
| 821 | extern inline <code>&lt;entity&gt;</code> was referenced but not defined                                                                                                                                               |
| 822 | invalid destructor name for type <code>&lt;type&gt;</code>                                                                                                                                                             |
| 824 | destructor reference is ambiguous -- both <code>&lt;entity&gt;</code> and <code>&lt;entity&gt;</code> could be used                                                                                                    |
| 825 | <code>&lt;entity&gt;</code> could be used                                                                                                                                                                              |
| 826 | <code>&lt;entity&gt;</code> was never referenced                                                                                                                                                                       |
| 827 | only one member of a union may be specified in a constructor initializer list                                                                                                                                          |

- 828 support for "new[]" and "delete[]" is disabled
- 829 "double" used for "long double" in generated C code
- 830 <entity> has no corresponding operator delete<entity> (to be called if an exception is thrown during initialization of an allocated object)
- 831 support for placement delete is disabled
- 832 no appropriate operator delete is visible
- 833 pointer or reference to incomplete type is not allowed
- 834 invalid partial specialization -- <entity> is already fully specialized
- 835 incompatible exception specifications
- 836 returning reference to local variable
- 837 omission of explicit type is nonstandard ("int" assumed)  
 A function has been declared or defined with no return type.  
 Example, with the code:  

```
foo(void){
    int a;
}
```

 an int result is assumed.  
 If you want it to return no result, use void as the return type. This is widespread in old-style C.  
 The --diag\_suppress 837 option suppresses this warning.  
 See also message number 938, that is a special case of this message for main().
- 838 more than one partial specialization matches the template argument list of <entity>
- 840 a template argument list is not allowed in a declaration of a primary template
- 841 partial specializations may not have default template arguments
- 842 <entity> is not used in template argument list of <entity>
- 844 the template argument list of the partial specialization includes a nontype argument whose type depends on a template parameter
- 845 this partial specialization would have been used to instantiate <entity>
- 846 this partial specialization would have been made the instantiation of <entity> ambiguous
- 847 expression must have integral or enum type
- 848 expression must have arithmetic or enum type
- 849 expression must have arithmetic, enum, or pointer type
- 850 type of cast must be integral or enum
- 851 type of cast must be arithmetic, enum, or pointer
- 852 expression must be a pointer to a complete object type

|     |                                                                                                                                                                                     |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 854 | a partial specialization nontype argument must be the name of a nontype parameter or a constant                                                                                     |
| 855 | return type is not identical to return type <type> of overridden virtual function <entity>                                                                                          |
| 856 | option "guiding_decls" can be used only when compiling C++                                                                                                                          |
| 857 | a partial specialization of a class template must be declared in the namespace of which it is a member                                                                              |
| 858 | <entity> is a pure virtual function                                                                                                                                                 |
| 859 | pure virtual <entity> has no overrider                                                                                                                                              |
| 860 | __declspec attributes ignored                                                                                                                                                       |
| 861 | invalid character in input line                                                                                                                                                     |
| 862 | function returns incomplete type <type>                                                                                                                                             |
| 863 | effect of this "#pragma pack" directive is local to <entity>                                                                                                                        |
| 864 | <entity> is not a template                                                                                                                                                          |
| 865 | a friend declaration may not declare a partial specialization                                                                                                                       |
| 866 | exception specification ignored                                                                                                                                                     |
| 867 | declaration of "size_t" does not match the expected type <type>                                                                                                                     |
| 868 | space required between adjacent ">" delimiters of nested template argument lists (">>" is the right shift operator)                                                                 |
| 869 | could not set locale <entity> to allow processing of multibyte characters                                                                                                           |
| 870 | invalid multibyte character sequence                                                                                                                                                |
| 871 | template instantiation resulted in unexpected function type of <type> (the meaning of a name may have changed since the template declaration -- the type of the template is <type>) |
| 872 | ambiguous guiding declaration -- more than one function template <entity> matches type <type>                                                                                       |
| 873 | non-integral operation not allowed in nontype template argument                                                                                                                     |
| 884 | pointer-to-member representation <entity> has already been set for <entity>                                                                                                         |
| 885 | <type> cannot be used to designate constructor for <type>                                                                                                                           |
| 886 | invalid suffix on integral constant                                                                                                                                                 |
| 890 | variable length array with unspecified bound is not allowed                                                                                                                         |
| 891 | an explicit template argument list is not allowed on this declaration                                                                                                               |
| 892 | an entity with linkage cannot have a type involving a variable length array                                                                                                         |
| 893 | a variable length array cannot have static storage duration                                                                                                                         |
| 894 | <entity> is not a template                                                                                                                                                          |
| 895 | variable length array dimension (declared <entity>)                                                                                                                                 |

- 896 expected a template argument
- 902 type qualifier ignored
- 912 ambiguous class member reference -- <entity> used in preference to <entity>
- 915 a segment name has already been specified
- 916 cannot convert pointer to member of derived class <type> to pointer to member of base class <type> -- base class is virtual
- 917 invalid directory for instantiation files:
- 921 an instantiation information file name may not be specified when compiling several input files
- 923 more than one command line option matches the abbreviation "--<entity>":
- 925 type qualifiers on function types are ignored
- 926 cannot open definition list file: <entity>
- 928 incorrect use of va\_start
- 929 incorrect use of va\_arg
- 930 incorrect use of va\_end
- 931 pending instantiations option can be used only when compiling C++
- 932 invalid directory for #import files:
- 934 a member with reference type is not allowed in a union
- 935 "typedef" may not be specified here
- 936 redeclaration of <entity> alters its access
- 937 a class or namespace qualified name is required
- 938 return type "int" omitted in declaration of function "main"  
main() has been declared or defined with no return type.  
For example:  

```
main(void){
    int a;
}
```

is reported as an error by the compiler if compiled with --strict.  
If you want it to return no result, use void as the return type. This is widespread in old-style C.  
For ANSI C, the --diag\_suppress 938 option suppresses this warning.  
For C++, this always results in an error.  
See also message number 837 for more general cases.
- 939 pointer-to-member representation <entity> is too restrictive for <entity>
- 940 missing return statement at end of non-void <entity>  
A return type has been defined for a function, but no value is returned.  
Example:



```
int foo(int a)
{
    printf("Hello %d", a);
}
```

- 941 duplicate using-declaration of <entity> ignored
- 942 enum bit-fields are always unsigned, but enum <type> includes negative enumerator
- 943 option "class\_name\_injection" can be used only when compiling C++
- 944 option "arg\_dep\_lookup" can be used only when compiling C++
- 945 option "friend\_injection" can be used only when compiling C++
- 946 name following "template" must be a template
- 949 specifying a default argument on this declaration is nonstandard
- 951 return type of function "main" must be "int"
- 952 a nontype template parameter may not have class type
- 953 a default template argument cannot be specified on the declaration of a member of a class template outside of its class
- 954 a return statement is not allowed in a handler of a function try block of a constructor
- 955 ordinary and extended designators cannot be combined in an initializer designation
- 956 the second subscript must not be smaller than the first
- 959 declared size for bit field is larger than the size of the bit field type; truncated to <entity> bits
- 960 type used as constructor name does not match type <type>
- 961 use of a type with no linkage to declare a variable with linkage
- 962 use of a type with no linkage to declare a function
- 963 return type may not be specified on a constructor
- 964 return type may not be specified on a destructor
- 965 incorrectly formed universal character name
- 966 universal character name specifies an invalid character
- 967 a universal character name cannot designate a character in the basic character set
- 968 this universal character is not allowed in an identifier
- 969 the identifier `__VA_ARGS__` can only appear in the replacement lists of variadic macros
- 970 the qualifier on this friend declaration is ignored
- 971 array range designators cannot be applied to dynamic initializers
- 972 property name cannot appear here
- 975 a variable-length array type is not allowed

|      |                                                                                                                      |
|------|----------------------------------------------------------------------------------------------------------------------|
| 976  | a compound literal is not allowed in an integral constant expression                                                 |
| 977  | a compound literal of type <type> is not allowed                                                                     |
| 978  | a template friend declaration cannot be declared in a local class                                                    |
| 979  | ambiguous "?" operation: second operand of type <type> can be converted to third operand type <type>, and vice versa |
| 980  | call of an object of a class type without appropriate operator() or conversion functions to pointer-to-function type |
| 982  | there is more than one way an object of type <type> can be called for the argument list:                             |
| 983  | typedef name has already been declared (with similar type)                                                           |
| 984  | operator new and operator delete cannot be given internal linkage                                                    |
| 985  | storage class "mutable" is not allowed for anonymous unions                                                          |
| 986  | invalid precompiled header file                                                                                      |
| 987  | abstract class type <type> is not allowed as catch type:                                                             |
| 988  | a qualified function type cannot be used to declare a nonmember function or a static member function                 |
| 989  | a qualified function type cannot be used to declare a parameter                                                      |
| 990  | cannot create a pointer or reference to qualified function type                                                      |
| 991  | extra braces are nonstandard                                                                                         |
| 992  | invalid macro definition:<br>Incorrect use of -D on the compile line, for example, "-D###"                           |
| 993  | subtraction of pointer types <type> and <type> is nonstandard                                                        |
| 994  | an empty template parameter list is not allowed in a template template parameter declaration                         |
| 995  | expected "class"                                                                                                     |
| 996  | the "class" keyword must be used when declaring a template template parameter                                        |
| 997  | <entity> is hidden by <entity> -- virtual function override intended?                                                |
| 998  | a qualified name is not allowed for a friend declaration that is a function definition                               |
| 999  | <entity> is not compatible with <entity>                                                                             |
| 1000 | a storage class may not be specified here                                                                            |
| 1001 | class member designated by a using-declaration must be visible in a direct base class                                |
| 1006 | a template template parameter cannot have the same name as one of its template parameters                            |
| 1007 | recursive instantiation of default argument                                                                          |
| 1009 | <entity> is not an entity that can be defined                                                                        |

- 1010** destructor name must be qualified
- 1011** friend class name may not be introduced with "typename"
- 1012** a using-declaration may not name a constructor or destructor
- 1013** a qualified friend template declaration must refer to a specific previously declared template
- 1014** invalid specifier in class template declaration
- 1015** argument is incompatible with formal parameter
- 1016** prefix form of ARM function qualifier not permitted in this position
- 1017** Duplicate ARM function qualifiers not permitted
- 1018** ARM function qualifiers not permitted on this declaration/definition  
*ARM function qualifiers* include qualifiers such as `__svc`, `__pure` and `__irq` amongst others.  
 See *Keywords and operators* on page 5-2 in the *Compiler Reference*.
- 1019** function qualifier <entity> not permitted on a non-static member function
- 1020** `__irq` functions must take no arguments
- 1021** `__irq` functions must return no result
- 1022** cannot have pointer nor reference to <entity> function
- 1023** `__global_reg` not allowed on this declaration
- 1024** invalid global register number; 1 to 8 allowed  
 An invalid register is being used in `__global_reg`.  
 Example:  
`__global_reg(786) int x;`
- 1025** `__svc` parameter <entity> is not within permitted range (0 to 0xffffffff) for ARM SVC instruction  
 SVC numbers are limited to the range 0 to 0xffffffff for the ARM compilers, and 0 to 0xFF for the Thumb compilers.  
 For standard semihosting SVCs, 0x123456 is used for ARM, 0xAB is used for Thumb.
- 1026** taking the address of a global register variable is not allowed
- 1027** `__svc_indirect` function must have arguments
- 1028** conflicting global register declaration with <entity>
- 1029** `__packed` ignored for non-pointer parameter
- 1030** <entity> <type> previously declared without `__packed`
- 1031** Definition of <type> in packed <type> must be `__packed`  
 The *Compiler Reference* states:  
 "All substructures of a packed structure must be declared using `__packed`."  
 The compiler faults a non-packed child structure contained in a packed parent structure. This includes the case where the substructure is an array.  
 For example:

```
typedef struct ChildStruct {
    int a;
} ChildStruct;
typedef __packed struct ParentStruct {
    ChildStruct child[1];
} ParentStruct;
```

correctly results in the message:

Error: #1031: Definition of "ChildStruct" in packed "ParentStruct" must be \_\_packed

See *\_\_packed* on page 5-11 in the *Compiler Reference*.

- 1032** Definition of nested anonymous <entity> in packed <type> must be \_\_packed
- 1033** <entity> incompatible with function definition
- 1034** \_\_irq functions must not be the target of a function call
- 1038** invalid alignment specified; only integer powers of 2 allowed
- 1039** conflicting alignment declaration with <entity>
- 1040** under-alignment not allowed
- 1041** alignment for an auto object may not be larger than 8  
For example:  

```
int main(void){
    __align(16) int foo = 10;
}
```

\_\_align is not allowed for a local variable foo, so the error is given.  
See *\_\_align* on page 5-2 in the *Compiler Reference*.
- 1042** <entity> cannot be dynamically initialized when compiled position independent
- 1043** <entity> cannot be const because it contains a mutable member
- 1044** option "dep\_name" can be used only when compiling C++
- 1045** loop in sequence of "operator->" functions starting at class <type>
- 1046** <entity> has no member class <entity>
- 1047** the global scope has no class named <entity>
- 1048** recursive instantiation of template default argument
- 1049** access declarations and using-declarations cannot appear in unions
- 1050** <entity> is not a class member
- 1051** nonstandard member constant declaration is not allowed
- 1053** option "parse\_templates" can be used only when compiling C++
- 1054** option "dep\_name" cannot be used with "no\_parse\_templates"
- 1055** language modes specified are incompatible
- 1056** invalid redeclaration of nested class
- 1057** type containing an unknown-size array is not allowed

|      |                                                                                                      |
|------|------------------------------------------------------------------------------------------------------|
| 1058 | a variable with static storage duration cannot be defined within an inline function                  |
| 1059 | an entity with internal linkage cannot be referenced within an inline function with external linkage |
| 1060 | argument type <type> does not match this type-generic function macro                                 |
| 1062 | friend declaration cannot add default arguments to previous declaration                              |
| 1063 | <entity> cannot be declared in this scope                                                            |
| 1064 | the reserved identifier <entity> may only be used inside a function                                  |
| 1065 | this universal character cannot begin an identifier                                                  |
| 1066 | expected a string literal                                                                            |
| 1070 | incorrect use of va_copy                                                                             |
| 1071 | <entity> can only be used with floating-point types                                                  |
| 1072 | complex type is not allowed                                                                          |
| 1073 | invalid designator kind                                                                              |
| 1074 | floating-point value cannot be represented exactly                                                   |
| 1075 | complex floating-point operation result is out of range                                              |
| 1077 | an initializer cannot be specified for a flexible array member                                       |
| 1079 | standard requires that <entity> be given a type by a subsequent declaration ("int" assumed)          |
| 1080 | a definition is required for inline <entity>                                                         |
| 1081 | conversion from integer to smaller pointer                                                           |
| 1082 | a floating-point type must be included in the type specifier for a _Complex or _Imaginary type       |
| 1083 | Inline assembler syntax error                                                                        |
| 1084 | This instruction not permitted in inline assembler                                                   |
| 1085 | Missing operand                                                                                      |
| 1086 | Operand is wrong type                                                                                |
| 1087 | Operand should be constant                                                                           |
| 1088 | Wrong number of operands                                                                             |
| 1089 | Invalid PSR operand                                                                                  |
| 1090 | Expected PSR operand                                                                                 |
| 1091 | Invalid shift specified                                                                              |
| 1092 | Should be acc0                                                                                       |
| 1093 | Must be a modifiable lvalue                                                                          |
| 1094 | Expected a register expression                                                                       |
| 1095 | Expected a label or function name                                                                    |

|             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1096</b> | Instruction cannot be conditional                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>1097</b> | Expected a [ or ]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>1098</b> | Expected a shift operation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>1099</b> | Unexpected ]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>1100</b> | Register specified shift not allowed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>1101</b> | Pre-Indexed addressing not allowed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>1102</b> | Post-Indexed addressing not allowed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>1103</b> | Writeback not allowed in the addressing mode                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>1104</b> | Expected {                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>1105</b> | Expected }                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>1106</b> | Too many registers in register list                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>1107</b> | Only ^ valid here                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>1108</b> | Cannot mix virtual register and C/C++ expressions in register list                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>1109</b> | Only virtual registers can be specified in a register range                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>1110</b> | User mode register selection/CPSR update not supported in inline assembler. Use embedded assembler or out-of-line assembler                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>1111</b> | Expected a coprocessor name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>1112</b> | Expected a coprocessor register name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|             | These errors are given by the inline assembler if either:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|             | <ul style="list-style-type: none"> <li>the coprocessor number is accidentally omitted from an MCR or MRC instruction</li> <li>an invalid coprocessor number/coprocessor register number has been given.</li> </ul>                                                                                                                                                                                                                                                                                                                                        |
|             | An example of correct use is shown below:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|             | <pre>void foo() {     int reg0;     __asm     {         MRC p15, 0, reg0, c1, c0, 0     } }</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>1113</b> | <p>Inline assembler not permitted when generating Thumb code</p> <p>The Thumb inline assembler is deprecated when compiling for <i>ARM architecture v7</i> (ARMv7) or later, that is, most processors in the Cortex™ series. The inline assembler does not support Thumb(-1) or Thumb-2, or all the ARMv6 instructions. However, the inline assembler does still support the (ARM-only) ARMv4T, ARMv5TE, and a subset of the new ARMv6 instructions (only the ARMv6 media instructions), so legacy inline assembly code continues to build correctly.</p> |

This warning is intended as a reminder to consider using the embedded assembler or built-in intrinsics instead of inline assembler. If you cannot change your code but require elimination of the warning, suppress the warning or compile the module for an earlier cpu such as ARMv6.

- 1114** this feature not supported on target architecture/processor  
 Example when compiled with armcc --cpu 4T:  

```
int main(void) {
    int a,b,c;
    __asm {
        QADD a,b,c
    }
    return(a);
}
```

 results in an error message because the saturated add instruction is only supported in ARMv5TE and later.
- 1115** Cannot assign to const operand
- 1116** Register list cannot be empty
- 1117** Unqualified virtual function not allowed
- 1118** Expected a newline
- 1119** Reference to static variable not allowed in \_\_asm function
- 1120** Reference to static function not allowed in \_\_asm function
- 1121** Pointer to data member not allowed in \_\_asm function
- 1122** \_\_asm function cannot have static qualifier
- 1123** base class <type> is a virtual base class of <type>
- 1124** base class <type> is not virtual base class of <type>
- 1125** <entity> has no member function <entity>
- 1126** "\_\_asm" is not allowed in this declaration
- 1127** Member initializer list not permitted for \_\_asm constructors
- 1128** try block not permitted for \_\_asm constructors
- 1129** Order of operands not compatible with previous compiler versions
- 1130** \_\_align not permitted in typedef
- 1131** Non portable instruction (LDM with writeback and base in reg. list, final value of base unpredictable)
- 1132** Non portable instruction (STM with writeback and base not first in reg. list, stored value of base unpredictable)
- 1133** Expression operands not permitted with virtual base register
- 1134** literal treated as "long long"  
 The constant is too large to be represented in a signed long, and therefore has been treated as a (signed) long long.  
 For example:

```
int foo(unsigned int bar)
{   return (bar == 2147483648);
}
```

gives a warning because 2147483648 is one greater than the maximum value allowed for a signed long. The ll suffix means that the constant is treated as a (64-bit) long long type rather than a signed long.

To eliminate the warning, explicitly add the ll or LL suffix to your constants. For example:

```
int foo(unsigned int bar)
{
    return (bar == 2147483648LL);
}
```

See *long long* on page 4-8 in the *Compiler Reference*.

- 1135** literal treated as "unsigned long long"  
The constant is too large to be represented in a signed long long, and therefore has been given type unsigned long long. See error number 1134.
- 1137** Expected a comma
- 1138** Unexpected comma after this expression
- 1139** MRRC operation opcode must lie in range 0-15
- 1140** MCRR operation opcode must lie in range 0-15
- 1141** CDP operation opcode must lie in range 0-15
- 1142** MRC operation opcode must lie in range 0-7
- 1143** MCR operation opcode must lie in range 0-7
- 1144** opcode\_2 must lie in range 0-7
- 1145** LDC/STC extra opcode must lie in range 0-255
- 1146** LDC/STC offset must lie in range -1020 to 1020 and be word aligned
- 1147** Constant operand out of range
- 1148** floating-point operator is not permitted with --fpu=none
- 1149** floating-point return type in function definition is not permitted with -fpu=none
- 1150** floating-point parameter type in function definition is not permitted with -fpu=none
- 1151** floating-point variable definition with initialiser is not permitted with -fpu=none
- 1152** polymorphic base classes need to be exported as well
- 1153** Cannot assign physical registers in this register list
- 1154** Can only specify an even-numbered physical register here
- 1155** Can only specify an assignment to a physical register here
- 1156** Can only specify an assignment from a physical register here
- 1157** Can only specify physical registers in a corrupted register list



|      |                                                                                                               |
|------|---------------------------------------------------------------------------------------------------------------|
| 1158 | PSR operand not valid here                                                                                    |
| 1159 | Expected an unambiguous label or function name                                                                |
| 1160 | Calls to destructors for temporaries will overwrite the condition flags updated by this instruction           |
| 1161 | Cannot directly modify the stack pointer SP (r13)                                                             |
| 1162 | Cannot directly modify the link register LR (r14)                                                             |
| 1163 | Cannot directly modify the program counter PC (r15)                                                           |
| 1164 | Offset must be word-aligned                                                                                   |
| 1165 | types cannot be declared in anonymous unions                                                                  |
| 1166 | returning pointer to local variable                                                                           |
| 1167 | returning pointer to local temporary                                                                          |
| 1168 | option "export" can be used only when compiling C++                                                           |
| 1169 | option "export" cannot be used with "no_dep_name"                                                             |
| 1170 | option "export" cannot be used with "implicit_include"                                                        |
| 1171 | declaration of <entity> is incompatible with a declaration in another translation unit                        |
| 1172 | the other declaration is <entity>                                                                             |
| 1175 | a field declaration cannot have a type involving a variable length array                                      |
| 1176 | declaration of <entity> had a different meaning during compilation of <entity>                                |
| 1177 | expected "template"                                                                                           |
| 1178 | "export" cannot be used on an explicit instantiation                                                          |
| 1179 | "export" cannot be used on this declaration                                                                   |
| 1180 | a member of an unnamed namespace cannot be declared "export"                                                  |
| 1181 | a template cannot be declared "export" after it has been defined                                              |
| 1182 | a declaration cannot have a label                                                                             |
| 1183 | support for exported templates is disabled                                                                    |
| 1184 | cannot open exported template file: <entity>                                                                  |
| 1185 | <entity> already defined during compilation of <entity>                                                       |
| 1186 | <entity> already defined in another translation unit                                                          |
| 1188 | the option to list makefile dependencies may not be specified when compiling more than one translation unit   |
| 1190 | the option to generate preprocessed output may not be specified when compiling more than one translation unit |
| 1191 | a field with the same name as its class cannot be declared in a class with a user-declared constructor        |

|      |                                                                                                                                  |
|------|----------------------------------------------------------------------------------------------------------------------------------|
| 1192 | "implicit_include" cannot be used when compiling more than one translation unit                                                  |
| 1193 | exported template file <entity> is corrupted                                                                                     |
| 1194 | <entity> cannot be instantiated -- it has been explicitly specialized in the translation unit containing the exported definition |
| 1196 | the object has cv-qualifiers that are not compatible with the member <entity>                                                    |
| 1197 | no instance of <entity> matches the argument list and object (the object has cv-qualifiers that prevent a match)                 |
| 1198 | an attribute specifies a mode incompatible with <type>                                                                           |
| 1199 | there is no type with the width specified                                                                                        |
| 1200 | invalid alignment value specified by attribute                                                                                   |
| 1201 | invalid attribute for <type>                                                                                                     |
| 1202 | invalid attribute for <entity>                                                                                                   |
| 1203 | invalid attribute for parameter                                                                                                  |
| 1204 | attribute <entity> does not take arguments                                                                                       |
| 1207 | attribute <entity> ignored                                                                                                       |
| 1208 | attributes may not appear here                                                                                                   |
| 1209 | invalid argument to attribute <entity>                                                                                           |
| 1210 | the "packed" attribute is ignored in a typedef                                                                                   |
| 1211 | in "goto *expr" expr must have type "void *"                                                                                     |
| 1212 | "goto *expr" is nonstandard                                                                                                      |
| 1213 | taking the address of a label is nonstandard                                                                                     |
| 1214 | file name specified more than once:                                                                                              |
| 1215 | #warning directive: <entity>                                                                                                     |
| 1216 | attribute <entity> is only allowed in a function definition                                                                      |
| 1217 | the "transparent_union" attribute only applies to unions, and <type> is not a union                                              |
| 1218 | the "transparent_union" attribute is ignored on incomplete types                                                                 |
| 1219 | <type> cannot be transparent because <entity> does not have the same size as the union                                           |
| 1220 | <type> cannot be transparent because it has a field of type <type> which is not the same size as the union                       |
| 1221 | only parameters can be transparent                                                                                               |
| 1222 | the <entity> attribute does not apply to local variables                                                                         |
| 1224 | attributes are not permitted in a function definition                                                                            |
| 1225 | declarations of local labels should only appear at the start of statement expressions                                            |

|      |                                                                                                                   |
|------|-------------------------------------------------------------------------------------------------------------------|
| 1226 | the second constant in a case range must be larger than the first                                                 |
| 1227 | an asm name is not permitted in a function definition                                                             |
| 1228 | an asm name is ignored in a typedef                                                                               |
| 1229 | unknown register name "<entity>"                                                                                  |
| 1230 | modifier letter '<entity>' ignored in asm operand                                                                 |
| 1231 | unknown asm constraint modifier '<entity>'                                                                        |
| 1232 | unknown asm constraint letter '<entity>'                                                                          |
| 1233 | asm operand has no constraint letter                                                                              |
| 1234 | an asm output operand must have one of the '=' or '+' modifiers                                                   |
| 1235 | an asm input operand may not have the '=' or '+' modifiers                                                        |
| 1236 | too many operands to asm statement (maximum is 30; '+' modifier adds an implicit operand)                         |
| 1237 | too many colons in asm statement                                                                                  |
| 1238 | register "<entity>" used more than once                                                                           |
| 1239 | register "<entity>" is both used and clobbered                                                                    |
| 1240 | register "<entity>" clobbered more than once                                                                      |
| 1241 | register "<entity>" has a fixed purpose and may not be used in an asm statement                                   |
| 1242 | register "<entity>" has a fixed purpose and may not be clobbered in an asm statement                              |
| 1243 | an empty clobbers list must be omitted entirely                                                                   |
| 1244 | expected an asm operand                                                                                           |
| 1245 | expected a register to clobber                                                                                    |
| 1246 | "format" attribute applied to <entity> which does not have variable arguments                                     |
| 1247 | first substitution argument is not the first variable argument                                                    |
| 1248 | format argument index is greater than number of parameters                                                        |
| 1249 | format argument does not have string type                                                                         |
| 1250 | the "template" keyword used for syntactic disambiguation may only be used within a template                       |
| 1253 | attribute does not apply to non-function type <type>                                                              |
| 1254 | arithmetic on pointer to void or function type                                                                    |
| 1255 | storage class must be auto or register                                                                            |
| 1256 | <type> would have been promoted to <type> when passed through the ellipsis parameter; use the latter type instead |
| 1257 | <entity> is not a base class member                                                                               |
| 1262 | mangled name is too long                                                                                          |

|      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1263 | Offset must be half-word aligned                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 1264 | Offset must be double-word aligned                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 1265 | converting to and from floating-point type is not permitted with<br>--fpu=none                                                                                                                                                                                                                                                                                                                                                                                   |
| 1266 | Operand should be a constant expression                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 1267 | Implicit physical register <entity> should be defined as a variable                                                                                                                                                                                                                                                                                                                                                                                              |
| 1268 | declaration aliased to unknown entity <entity>                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 1269 | declaration does not match its alias <entity>                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 1270 | entity declared as alias cannot have definition                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 1271 | variable-length array field type will be treated as zero-length array<br>field type                                                                                                                                                                                                                                                                                                                                                                              |
| 1272 | nonstandard cast on lvalue not supported                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 1273 | unrecognized flag name                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 1274 | void return type cannot be qualified                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 1275 | the auto specifier is ignored here (invalid in standard C/C++)                                                                                                                                                                                                                                                                                                                                                                                                   |
| 1276 | a reduction in alignment without the "packed" attribute is ignored                                                                                                                                                                                                                                                                                                                                                                                               |
| 1277 | a member template corresponding to <entity> is declared as a template of a<br>different kind in another translation unit                                                                                                                                                                                                                                                                                                                                         |
| 1278 | excess initializers are ignored                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 1279 | va_start should only appear in a function with an ellipsis parameter                                                                                                                                                                                                                                                                                                                                                                                             |
| 1282 | variable <entity> cannot be used in a register range                                                                                                                                                                                                                                                                                                                                                                                                             |
| 1283 | A physical register name is required here                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 1284 | A register range cannot be specified here                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 1285 | Implicit physical register <entity> has not been defined                                                                                                                                                                                                                                                                                                                                                                                                         |
| 1286 | LDRD/STRD instruction will be expanded<br><br>When LDRD and STRD instructions are used in inline assembler the compiler<br>expands these into two LDR or STR instructions before being passed through the<br>compiler optimization stage.<br><br>The optimization stage normally combines the two LDR or STR instruction back<br>into a single LDRD or STRD instruction, however it is possible in some cases that<br>a LDRD or STRD is not used.                |
| 1287 | LDM/STM instruction may be expanded<br><br>When LDM and STM instructions are used in inline assembler the compiler<br>expands these into a number of LDR or STR instructions before being passed<br>through the compiler optimization stage.<br><br>The optimization stage normally combines the two LDR or STR instruction back<br>into LDM or STM instructions, however it is possible that in some cases that a<br>single LDM or STM instruction is not used. |
| 1288 | Implicit ARM register <entity> was not defined due to name clash                                                                                                                                                                                                                                                                                                                                                                                                 |

- 1289** statement expressions are only allowed in block scope
- 1291** an asm name is ignored on a non-register automatic variable
- 1292** inline function also declared as an alias; definition ignored
- 1293** assignment in condition
- In a context where a boolean value is required (the controlling expression for if, while, for or the first operand of a conditional expression, an expression contains one of:
- A bitwise not operator (~). It is likely that a logical not operator (!) was intended.
  - An assignment operator (=). This could be a mis-typed equality operator (==).
- In either case if the operator is intended adding an explicit comparison against 0 might suppress the warning.
- This warning can be suppressed with the `--diag_suppress 1293` option.
- Example:
- ```
int main(void)
{
    int a,b;
    if (a=b)
}
```
- 1294** Old-style function <entity>
- The compilers accept both old-style and new-style function declarations.
- The difference between an old-style and a new-style function declaration is as follows.
- ```
// new style
int add2(int a, int b)
{
    return a+b;
}
// old style
int oldadd2(a,b)
int a;
int b;
{
    return a+b;
}
```
- When compiling old style functions in C mode the compiler reports:
- Warning: #1294-D: Old-style function oldadd2
- 1295** Deprecated declaration <entity> - give arg types
- This warning is normally given when a declaration without argument types is encountered in ANSI C mode. In ANSI C, declarations like this are deprecated. However, it is sometimes useful to suppress this warning with the `--diag_suppress 1295` option when porting old code.
- In C++:
- ```
void foo();
```
- means:
- ```
void foo(void);
```
- and no warning is generated.

- 1296** extended constant initialiser used  
 The expression used as a constant initialiser might not be portable.  
 This warns that there is a constant that does not follow the strict rules of ANSI C even though there is a clause to allow it in the ANSI C specification.  
 Example compiled with `--c90` switch:  

```
const int foo_table[] = { (int)"foo", 0, 1, 2};
```

  
 This is not ANSI C standard compliant. Compiling with `--diag_suppress 1296` suppresses the warning.
- 1297** Header file not guarded against multiple inclusion  
 This warning is given when an unguarded header file is `#included`.  
 An unguarded header file is a header file not wrapped in a declaration such as:  

```
#ifndef foo_h
#define foo_h
/* body of include file */
#endif
```

  
 This warning is off by default. It can be enabled with:  
`--diag_warning 1297`
- 1298** Header file is guarded by '`<entity>`', but does not `#define` it  
 Example:  

```
#ifndef MYHEADER_H
// #define MYHEADER_H
#endif
```

  
 To correct the code, remove the comment slashes (`//`). This warning is off by default. It can be enabled with:  
`--diag_warning 1298`
- 1299** members and base-classes will be initialized in declaration order, not in member initialisation list order
- 1300** `<entity>` inherits implicit virtual  
 This warning is issued when a non-virtual member function of a derived class hides a virtual member of a parent class. For example:  

```
struct Base { virtual void f(); };
struct Derived : Base { void f(); };
```

  
 results in the message:  

```
Warning: #1300-D: f inherits implicit virtual
struct Derived : Base { void f(); };
                        ^
```

  
 Adding the `virtual` keyword in the derived class prevents the warning. For C++, the `--diag_suppress 1300` option suppresses the implicit virtual warning.
- 1301** padding inserted in struct `<entity>`  
 For the members of the structure to be correctly aligned, some padding has been inserted between members. This warning is off by default and can be enabled with `--diag_warning 1301` or `--remarks`.  
 For example:  

```
struct X {
    char x;
    int y;
}
```

results in the message:

Warning: #1301-D: padding inserted in struct X

The compiler can also warn of padding added at the end of a struct or between structs, see 2530.

|             |                                                                                                 |
|-------------|-------------------------------------------------------------------------------------------------|
| <b>1302</b> | type too large to be returned in registers - __value_in_regs ignored                            |
| <b>1303</b> | using --force_new_nothrow: added "throw()"                                                      |
| <b>1304</b> | operator new missing exception specification                                                    |
| <b>1305</b> | using --force_new_nothrow: added "(::std::nothrow)"                                             |
| <b>1307</b> | floating point argument not permitted with -fpu=none                                            |
| <b>1308</b> | Base class <type> of __packed class <type> must be __packed                                     |
| <b>1310</b> | shared block size does not match one previously specified                                       |
| <b>1311</b> | bracketed expression is assumed to be a block size specification rather than an array dimension |
| <b>1312</b> | the block size of a shared array must be greater than zero                                      |
| <b>1313</b> | multiple block sizes not allowed                                                                |
| <b>1314</b> | strict or relaxed requires shared                                                               |
| <b>1316</b> | block size specified exceeds the maximum value of <entity>                                      |
| <b>1317</b> | function returning shared is not allowed                                                        |
| <b>1320</b> | shared type inside a struct or union is not allowed                                             |
| <b>1321</b> | parameters may not have shared types                                                            |
| <b>1323</b> | shared variables must be static or extern                                                       |
| <b>1327</b> | affinity expression must have a shared type or point to a shared type                           |
| <b>1328</b> | affinity has shared type (not pointer to shared)                                                |
| <b>1329</b> | shared void* types can only be compared for equality                                            |
| <b>1331</b> | null (zero) character in input line ignored                                                     |
| <b>1332</b> | null (zero) character in string or character constant                                           |
| <b>1333</b> | null (zero) character in header name                                                            |
| <b>1334</b> | declaration in for-initializer hides a declaration in the surrounding scope                     |
| <b>1335</b> | the hidden declaration is <entity>                                                              |
| <b>1336</b> | the prototype declaration of <entity> is ignored after this unprototyped redeclaration          |
| <b>1338</b> | <entity> must have external C linkage                                                           |
| <b>1339</b> | variable declaration hides declaration in for-initializer                                       |
| <b>1340</b> | typedef <entity> may not be used in an elaborated type specifier                                |
| <b>1341</b> | call of zero constant ignored                                                                   |

- 1342** parameter <entity> may not be redeclared in a catch clause of function try block
- 1343** the initial explicit specialization of <entity> must be declared in the namespace containing the template
- 1345** "template" must be followed by an identifier
- 1347** layout qualifier cannot qualify pointer to shared
- 1348** layout qualifier cannot qualify an incomplete array
- 1349** declaration of <entity> hides handler parameter
- 1350** nonstandard cast to array type ignored
- 1351** this pragma cannot be used in a \_Pragma operator (a #pragma directive must be used)
- 1352** field uses tail padding of a base class
- 1353** GNU C++ compilers may use bit field padding
- 1354** memory mapping conflict with precompiled header file <entity>
- 1355** abstract class <type> has a non-virtual destructor, calling delete on a pointer to this class is undefined behaviour
- 1356** an asm name is not allowed on a nonstatic member declaration
- 1357** static initialisation of <entity> using address of <entity> may cause link failure <option>  
See error number 1359.
- 1358** static initialisation of extern const <entity> using address of <entity> cannot be lowered for ROPI
- 1359** static initialisation of <entity> using address of <entity> may cause link failure <option>  
Warnings 1357 and 1359 warn against the use of non-PI code constructs and that a subsequent link step might fail.  
For example, when compiled with --apcs /ropi:  
char \*str = "test"; /\* global pointer \*/  
results in the message:  
Warning: #1357-D: static initialisation of variable "str" using address of string literal may cause link failure --ropi  
because the global pointer str must be initialized to the address of the char string test in the .constdata section, but absolute addresses cannot be used in a PI system.  
For example, when compiled with --apcs /rwpi:  
int bar;  
int \*foo = &bar; /\* global pointer \*/  
results in the message:  
Warning: #1359-D: static initialisation of variable "foo" using address of bar may cause link failure --rwpi  
because the global pointer foo must be initialized to the address of bar in the .data section, but absolute addresses cannot be used in a PI system.



The following workarounds are possible:

- Change your code to avoid use of a global pointer. You can, for example, use a global array or local pointer instead.
- Do the initialization at run-time, for example:  

```
int bar;
int *foo;
```

Then write code inside a function that sets `foo = &bar`; This is because when generating code as opposed to statically initializing data, the compiler has scope to work around the ROPI/RWPI constraints.

See also the FAQ *What does Error: L6248E: cannot have address type relocation mean?*, <http://infocenter.arm.com/help/topic/com.arm.doc.faqs/ka3554.html>.

|             |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1360</b> | static initialisation of extern const <entity> using address of <entity> cannot be lowered for RWPI<br><br>For example, when compiled with <code>--apcs /rwpi</code> :<br><pre>extern int y; int* const x = &amp;y; int* foo() {     return(x); }</pre> produces a warning because prefixing <code>y</code> by <code>extern</code> prevents the compiler defining a direct address offset between the variables <code>x</code> and <code>y</code> . |
| <b>1361</b> | <entity> was declared "deprecated"                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>1362</b> | unrecognized format function type <entity> ignored                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>1363</b> | base class <entity> uses tail padding of base class <entity>                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>1366</b> | this anonymous union/struct field is hidden by <entity>                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>1367</b> | invalid error number                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>1368</b> | invalid error tag                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>1369</b> | expected an error number or error tag                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>1370</b> | size of class is affected by tail padding                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>1371</b> | labels can be referenced only in function definitions                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>1372</b> | transfer of control into a statement expression is not allowed                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>1374</b> | transfer of control out of a statement expression is not allowed                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>1375</b> | a non-POD class definition is not allowed inside of a statement expression                                                                                                                                                                                                                                                                                                                                                                          |
| <b>1376</b> | destructible entities are not allowed inside of a statement expression                                                                                                                                                                                                                                                                                                                                                                              |
| <b>1377</b> | a dynamically-initialized local static variable is not allowed inside of a statement expression                                                                                                                                                                                                                                                                                                                                                     |
| <b>1378</b> | a variable-length array is not allowed inside of a statement expression                                                                                                                                                                                                                                                                                                                                                                             |
| <b>1379</b> | a statement expression is not allowed inside of a default argument                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>1382</b> | nonstandard conversion between pointer to function and pointer to data                                                                                                                                                                                                                                                                                                                                                                              |
| <b>1383</b> | interface types cannot have virtual base classes                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>1384</b> | interface types cannot specify "private" or "protected"                                                                                                                                                                                                                                                                                                                                                                                             |

|      |                                                                                                                                                 |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| 1385 | interface types can only derive from other interface types                                                                                      |
| 1386 | <type> is an interface type                                                                                                                     |
| 1387 | interface types cannot have typedef members                                                                                                     |
| 1388 | interface types cannot have user-declared constructors or destructors                                                                           |
| 1389 | interface types cannot have user-declared member operators                                                                                      |
| 1390 | interface types cannot be declared in functions                                                                                                 |
| 1391 | cannot declare interface templates                                                                                                              |
| 1392 | interface types cannot have data members                                                                                                        |
| 1393 | interface types cannot contain friend declarations                                                                                              |
| 1394 | interface types cannot have nested classes                                                                                                      |
| 1395 | interface types cannot be nested class types                                                                                                    |
| 1396 | interface types cannot have member templates                                                                                                    |
| 1397 | interface types cannot have static member functions                                                                                             |
| 1398 | this pragma cannot be used in a <code>__pragma</code> operator (a <code>#pragma</code> directive must be used)                                  |
| 1399 | qualifier must be base class of <type>                                                                                                          |
| 1400 | declaration must correspond to a pure virtual member function in the indicated base class                                                       |
| 1401 | integer overflow in internal computation due to size or complexity of <type>                                                                    |
| 1402 | integer overflow in internal computation                                                                                                        |
| 1404 | potentially narrowing conversion when compiled in an environment where <code>int</code> , <code>long</code> , or pointer types are 64 bits wide |
| 1405 | current value of <code>pragma pack</code> is <entity>                                                                                           |
| 1406 | arguments for <code>pragma pack(show)</code> are ignored                                                                                        |
| 1407 | invalid alignment specifier value                                                                                                               |
| 1408 | expected an integer literal                                                                                                                     |
| 1409 | earlier <code>__declspec(align(...))</code> ignored                                                                                             |
| 1410 | expected an argument value for the <entity> attribute parameter                                                                                 |
| 1411 | invalid argument value for the <entity> attribute parameter                                                                                     |
| 1412 | expected a boolean value for the <entity> attribute parameter                                                                                   |
| 1413 | a positional argument cannot follow a named argument in an attribute                                                                            |
| 1414 | attribute <filename> has no parameter named <filename>                                                                                          |
| 1415 | expected an argument list for the <entity> attribute                                                                                            |
| 1416 | expected a <code>"</code> , <code>,</code> or <code>]"</code>                                                                                   |
| 1417 | attribute argument <entity> has already been given a value                                                                                      |

|      |                                                                                                                                                                                                                                          |
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| 1418 | a value cannot be assigned to the <entity> attribute                                                                                                                                                                                     |
| 1419 | a throw expression may not have pointer-to-incomplete type                                                                                                                                                                               |
| 1420 | alignment-of operator applied to incomplete type                                                                                                                                                                                         |
| 1421 | <entity> may only be used as a standalone attribute                                                                                                                                                                                      |
| 1422 | <entity> attribute cannot be used here                                                                                                                                                                                                   |
| 1423 | unrecognized attribute <entity>                                                                                                                                                                                                          |
| 1424 | attributes are not allowed here                                                                                                                                                                                                          |
| 1425 | invalid argument value for the <entity> attribute parameter                                                                                                                                                                              |
| 1426 | too many attribute arguments                                                                                                                                                                                                             |
| 1427 | conversion from inaccessible base class <type> is not allowed                                                                                                                                                                            |
| 1428 | option "export" requires distinct template signatures                                                                                                                                                                                    |
| 1429 | string literals with different character kinds cannot be concatenated                                                                                                                                                                    |
| 1430 | GNU layout bug not emulated because it places virtual base <entity> outside <entity> object boundaries                                                                                                                                   |
| 1431 | virtual base <entity> placed outside <entity> object boundaries                                                                                                                                                                          |
| 1432 | nonstandard qualified name in namespace member declaration                                                                                                                                                                               |
| 1433 | reduction in alignment ignored                                                                                                                                                                                                           |
| 1434 | const qualifier ignored                                                                                                                                                                                                                  |
| 1436 | __breakpoint argument must be an integral compile-time constant                                                                                                                                                                          |
| 1437 | __breakpoint argument must be within 0-65535 when compiling for ARM                                                                                                                                                                      |
| 1438 | __breakpoint argument must be within 0-255 when compiling for Thumb                                                                                                                                                                      |
| 1439 | BKPT instruction is not supported on target architecture/processor                                                                                                                                                                       |
| 1440 | oversize bitfield layout will change -- consider preceeding with "<entity>;0;"                                                                                                                                                           |
| 1441 | nonstandard cast on lvalue<br>The C specification states "An assignment operator shall have a modifiable lvalue as its left operand" and "a cast does not yield an lvalue".                                                              |
| 1442 | polymorphic base classes need to be exported if they are to be used for exported derivation                                                                                                                                              |
| 1443 | polymorphic base classes inherited via virtual derivation need to be exported                                                                                                                                                            |
| 1444 | polymorphic base classes inherited via virtual derivation need all virtual functions to be exported                                                                                                                                      |
| 1446 | non-POD class type passed through ellipsis                                                                                                                                                                                               |
| 1447 | a non-POD class type cannot be fetched by va_arg<br>The C++ ISO Specification defines that the non-required arguments of a variadic function must be of type POD (plain-old-data), such as an int or a char, but not structs or classes. |

To avoid the error or warning the address of a class or struct could be given instead.

|      |                                                                                         |
|------|-----------------------------------------------------------------------------------------|
| 1448 | the 'u' or 'U' suffix must appear before the 'l' or 'L' suffix in a fixed-point literal |
| 1450 | integer operand may cause fixed-point overflow                                          |
| 1451 | fixed-point constant is out of range                                                    |
| 1452 | fixed-point value cannot be represented exactly                                         |
| 1453 | constant is too large for long long; given unsigned long long type (nonstandard)        |
| 1454 | layout qualifier cannot qualify pointer to shared void                                  |
| 1456 | a strong using-directive may only appear in a namespace scope                           |
| 1457 | <entity> declares a non-template function -- add <> to refer to a template instance     |
| 1458 | operation may cause fixed-point overflow                                                |
| 1459 | expression must have integral, enum, or fixed-point type                                |
| 1460 | expression must have integral or fixed-point type                                       |
| 1461 | function declared with "noreturn" does return                                           |
| 1462 | asm name ignored because it conflicts with a previous declaration                       |
| 1463 | class member typedef may not be redeclared                                              |
| 1464 | taking the address of a temporary                                                       |
| 1465 | attributes are ignored on a class declaration that is not also a definition             |
| 1466 | fixed-point value implicitly converted to floating-point type                           |
| 1467 | fixed-point types have no classification                                                |
| 1468 | a template parameter may not have fixed-point type                                      |
| 1469 | hexadecimal floating-point constants are not allowed                                    |
| 1471 | floating-point value does not fit in required fixed-point type                          |
| 1472 | value cannot be converted to fixed-point value exactly                                  |
| 1473 | fixed-point conversion resulted in a change of sign                                     |
| 1474 | integer value does not fit in required fixed-point type                                 |
| 1475 | fixed-point operation result is out of range                                            |
| 1481 | fixed-point value does not fit in required floating-point type                          |
| 1482 | fixed-point value does not fit in required integer type                                 |
| 1483 | value does not fit in required fixed-point type                                         |
| 1485 | a named-register storage class is not allowed here                                      |
| 1486 | <entity> redeclared with incompatible named-register storage class                      |

|      |                                                                                                                                                    |
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| 1487 | named-register storage class cannot be specified for aliased variable                                                                              |
| 1488 | named-register storage specifier is already in use                                                                                                 |
| 1492 | invalid predefined macro entry at line <entity>: <reason>                                                                                          |
| 1493 | invalid macro mode name <entity>                                                                                                                   |
| 1494 | incompatible redefinition of predefined macro <entity>                                                                                             |
| 1495 | redeclaration of <entity> is missing a named-register storage class                                                                                |
| 1496 | named register is too small for the type of the variable                                                                                           |
| 1497 | arrays cannot be declared with named-register storage class                                                                                        |
| 1498 | const_cast to enum type is nonstandard                                                                                                             |
| 1500 | __svc parameter <entity> is not within permitted range (0 to 0xff) for Thumb SVC instruction                                                       |
| 1501 | too many arguments for __svc or __svc_indirect function                                                                                            |
| 1502 | arguments for __svc or __svc_indirect function must have integral type                                                                             |
| 1503 | __svc_indirect function must have arguments                                                                                                        |
| 1504 | first argument for __svc_indirect function must have integral type                                                                                 |
| 1505 | result of __svc or __svc_indirect function must be returned in integer registers                                                                   |
| 1506 | source file <entity> has bad format                                                                                                                |
| 1507 | error while writing <entity> file: <reason>                                                                                                        |
| 1508 | cannot overload functions distinguished by function qualifier alone                                                                                |
| 1509 | function qualifier <entity> not permitted on a virtual member function                                                                             |
| 1510 | function "__attribute__((__<entity>__))" present on overridden virtual function <entity> must be present on overriding function                    |
| 1511 | function qualifier <entity> is not identical on overridden virtual function <entity>                                                               |
| 1512 | function qualifier <entity> present on overridden virtual function <entity> must be present on overriding function                                 |
| 1514 | an empty initializer is invalid for an array with unspecified bound                                                                                |
| 1515 | function returns incomplete class type <type>                                                                                                      |
| 1516 | <entity> has already been initialized; the out-of-class initializer will be ignored                                                                |
| 1517 | declaration hides <entity>                                                                                                                         |
| 1519 | invalid suffix on fixed-point or floating-point constant                                                                                           |
| 1522 | <entity> has no corresponding member operator delete<entity> (to be called if an exception is thrown during initialization of an allocated object) |
| 1523 | a thread-local variable cannot be declared with "dllimport" or "dllexport"                                                                         |
| 1525 | an initializer cannot be specified for a flexible array member whose elements have a nontrivial destructor                                         |

|      |                                                                                                                   |
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| 1526 | an initializer cannot be specified for an indirect flexible array member                                          |
| 1528 | variable attributes appearing after a parenthesized initializer are ignored                                       |
| 1529 | the result of this cast cannot be used as an lvalue                                                               |
| 1530 | negation of an unsigned fixed-point value                                                                         |
| 1531 | this operator is not allowed at this point; use parentheses                                                       |
| 1532 | flexible array member initializer must be constant                                                                |
| 1533 | register names can only be used for register variables                                                            |
| 1534 | named-register variables cannot have void type                                                                    |
| 1535 | __declspec modifiers not valid for this declaration                                                               |
| 1536 | parameters cannot have link scope specifiers                                                                      |
| 1537 | multiple link scope specifiers                                                                                    |
| 1538 | link scope specifiers can only appear on functions and variables with external linkage                            |
| 1539 | a redeclaration cannot weaken a link scope                                                                        |
| 1540 | link scope specifier not allowed on this declaration                                                              |
| 1541 | nonstandard qualified name in global scope declaration                                                            |
| 1542 | implicit conversion of a 64-bit integral type to a smaller integral type (potential portability problem)          |
| 1543 | explicit conversion of a 64-bit integral type to a smaller integral type (potential portability problem)          |
| 1544 | conversion from pointer to same-sized integral type (potential portability problem)                               |
| 1547 | only static and extern variables can use thread-local storage                                                     |
| 1548 | multiple thread-local storage specifiers                                                                          |
| 1549 | virtual <entity> was not defined (and cannot be defined elsewhere because it is a member of an unnamed namespace) |
| 1550 | carriage return character in source line outside of comment or character/string literal                           |
| 1551 | expression must have fixed-point type                                                                             |
| 1552 | invalid use of access specifier is ignored                                                                        |
| 1553 | pointer converted to bool                                                                                         |
| 1554 | pointer-to-member converted to bool                                                                               |
| 1555 | storage specifier ignored                                                                                         |
| 1556 | dllexport and dllimport are ignored on class templates                                                            |
| 1557 | base class dllexport/dllimport specification differs from that of the derived class                               |
| 1558 | redeclaration cannot add dllexport/dllimport to <entity>                                                          |

|      |                                                                                                                                            |
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| 1559 | dllexport/dllimport conflict with <entity>; dllexport assumed                                                                              |
| 1560 | cannot define dllimport entity                                                                                                             |
| 1561 | dllexport/dllimport requires external linkage                                                                                              |
| 1562 | a member of a class declared with dllexport/dllimport cannot itself be declared with such a specifier                                      |
| 1563 | field of class type without a DLL interface used in a class with a DLL interface                                                           |
| 1564 | parenthesized member declaration is nonstandard                                                                                            |
| 1565 | white space between backslash and newline in line splice ignored                                                                           |
| 1566 | dllexport/dllimport conflict with <entity>; dllimport/dllexport dropped                                                                    |
| 1567 | invalid member for anonymous member class -- class <type> has a disallowed member function                                                 |
| 1568 | nonstandard reinterpret_cast                                                                                                               |
| 1569 | positional format specifier cannot be zero                                                                                                 |
| 1570 | a local class cannot reference a variable-length array type from an enclosing function                                                     |
| 1571 | member <entity> already has an explicit dllexport/dllimport specifier                                                                      |
| 1572 | a variable-length array is not allowed in a function return type                                                                           |
| 1573 | variable-length array type is not allowed in pointer to member of type <type>                                                              |
| 1574 | the result of a statement expression cannot have a type involving a variable-length array                                                  |
| 1575 | Load/Store with translation not supported in inline assembler. Use embedded assembler or out-of-line assembler                             |
| 1576 | Flag-setting multiply instructions not supported in inline assembler. Use embedded assembler or out-of-line assembler                      |
| 1577 | Flag-setting MOV/MVN instructions with constant operand not supported in inline assembler. Use embedded assembler or out-of-line assembler |
| 1578 | an asm name is ignored on an automatic variable                                                                                            |
| 1593 | Could not optimize: Use of unsigned index prevents optimization                                                                            |
| 1594 | Could not optimize: Loop parameters must be integer for full optimization                                                                  |
| 1604 | Could not optimize: Reference to this function inhibits optimization                                                                       |
| 1613 | Could not optimize: Multiple store conflict                                                                                                |
| 1617 | Could not optimize: Loop too complex                                                                                                       |
| 1621 | Optimization: Dead code eliminated                                                                                                         |
| 1624 | Could not optimize: Too many overlapping conditions for efficient translation                                                              |
| 1629 | Could not optimize: Iteration count too short for array optimization                                                                       |
| 1636 | Could not optimize: Complicated use of variable                                                                                            |

|      |                                                                                      |
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| 1637 | Unknown pragma - ignored                                                             |
| 1638 | Unable to determine last value of scalar temporary                                   |
| 1639 | Use <code>nostrictaliasing</code> directive if possible                              |
| 1641 | Could not optimize: Too many data dependency problems                                |
| 1656 | Problem in pragma syntax                                                             |
| 1661 | Could not optimize: Backward transfers cannot be optimized                           |
| 1662 | Could not optimize: Last value of promoted scalar required                           |
| 1663 | Could not optimize: Branches out of the loop prevent translation                     |
| 1670 | Optimization: If loop converted to for loop                                          |
| 1676 | Could not optimize: This statement prevents loop optimization                        |
| 1679 | Optimization: Loop vectorized                                                        |
| 1687 | Could not optimize: Reduction function suppressed - needs associative transformation |
| 1690 | Could not optimize: Unsupported data type for explicit vector operations             |
| 1691 | Optimization: Loop fused with previous loop                                          |
| 1714 | Could not optimize: Outer loop conditionally executes inner loop                     |
| 1730 | No indexing done along this loop                                                     |
| 1742 | Could not optimize: Feedback of array elements (equivalenced arrays)                 |
| 1750 | Optimization: Loop re-rolled                                                         |
| 1759 | Could not optimize: Non-unit stride interferes with vector optimization              |
| 1771 | Could not optimize: Volatile items prevent analysis                                  |
| 1801 | Optimization: Function expanded                                                      |
| 1824 | Could not optimize: Not enough vector operations to justify translation              |
| 1885 | Could not optimize: Loop bounds exceed array dimensions                              |
| 1861 | Could not optimize: This store into array prevents optimization of outer loop        |
| 1866 | Could not optimize: Non-integer subscript                                            |
| 1894 | Optimization: Iterations peeled from loop in order to avoid dependence               |
| 1896 | Optimization: Logical clause simplified                                              |
| 1947 | Could not optimize: Cannot transform this combination of data types and operations   |
| 1978 | Could not optimize: Unable to optimize user-selected loop                            |
| 1979 | Could not optimize: This operation inhibits loop transformation                      |
| 1987 | Optimization: Loop switched                                                          |
| 1988 | Optimization: Alternate code generated                                               |
| 1997 | Optimization: Constant-length loop unrolled                                          |



|             |                                                                                                                                                                   |
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| <b>2091</b> | Optimization: Loop unrolled                                                                                                                                       |
| <b>2168</b> | Optimization: Outer loop moved inside inner loop(s)                                                                                                               |
| <b>2170</b> | Optimization: Invariant expression moved outside of outer loop                                                                                                    |
| <b>2189</b> | Optimization: Loop unrolled and rotated                                                                                                                           |
| <b>2190</b> | Optimization: Loop unrolled and optimized                                                                                                                         |
| <b>2191</b> | Optimization: Some loads lifted to top of loop                                                                                                                    |
| <b>2218</b> | Idiom detected and optimized                                                                                                                                      |
| <b>2300</b> | Might not be able to optimize: Feedback of scalar value from one loop pass to another. Conflict on line <entity>. Loop index is <entity> (<filename>,<entity>)"   |
| <b>2301</b> | Might not be able to optimize: Feedback of scalar value from one loop pass to another. Conflict on line <entity>. Loop index is <entity> (<filename>)             |
| <b>2302</b> | Might not be able to optimize: Feedback of scalar value from one loop pass to another. Conflict on line <entity>. (<entity>,<filename>)                           |
| <b>2303</b> | Might not be able to optimize: Feedback of scalar value from one loop pass to another. Conflict on line <entity>. (<entity>)                                      |
| <b>2304</b> | Might not be able to optimize: Potential multiple store conflict between loop iterations. Conflict on line <entity>. Loop index is <entity> (<filename>,<entity>) |
| <b>2305</b> | Might not be able to optimize: Potential multiple store conflict between loop iterations. Conflict on line <entity>. Loop index is <entity> (<filename>)          |
| <b>2306</b> | Might not be able to optimize: Potential multiple store conflict between loop iterations. Conflict on line <entity>. (<entity>,<filename>)                        |
| <b>2307</b> | Might not be able to optimize: Potential multiple store conflict between loop iterations. Conflict on line <entity>. (<entity>)                                   |
| <b>2308</b> | Might not be able to optimize: Potential feedback between loop iterations. Conflict on line <entity>. Loop index is <entity> (<filename>,<entity>)                |
| <b>2309</b> | Might not be able to optimize: Potential feedback between loop iterations. Conflict on line <entity>. Loop index is <entity> (<filename>)                         |
| <b>2310</b> | Might not be able to optimize: Potential feedback between loop iterations. Conflict on line <entity>. (<entity>,<filename>)                                       |
| <b>2311</b> | Might not be able to optimize: Potential feedback between loop iterations. Conflict on line <entity>. (<entity>)                                                  |
| <b>2312</b> | Could not optimize: Potential pointer aliasing - use restrict qualifier if ok. Conflict on line <entity>. Loop index is <entity> (<filename>,<entity>)            |
| <b>2313</b> | Could not optimize: Potential pointer aliasing - use restrict qualifier if ok. Conflict on line <entity>. Loop index is <entity> (<filename>)                     |
| <b>2314</b> | Could not optimize: Potential pointer aliasing - use restrict qualifier if ok. Conflict on line <entity>. (<entity>,<filename>)                                   |
| <b>2315</b> | Could not optimize: Potential pointer aliasing - use restrict qualifier if ok. Conflict on line <entity>. (<entity>)                                              |

- 2351** Loop nest fused with following nest(s)
- 2438** Could not inline: Void function used in expression
- 2439** Could not inline: Identifier declaration
- 2442** Could not inline: Cannot remove function from expression
- 2516** High Level Optimization halted: assembly code in routine
- 2519** Unable to determine constant iteration count for this loop
- 2523** use of inline assembler is deprecated
- The inline assembler is deprecated when compiling for ARMv7 or later, that is, most processors in the Cortex™ series.
- The inline assembler does not support Thumb(-1) or Thumb-2, or all the ARMv6 instructions. However, the inline assembler does still support the (ARM-only) ARMv4T, ARMv5TE, and a subset of the new ARMv6 instructions (only the ARMv6 media instructions), so legacy inline assembly code continues to build correctly.
- This warning is intended as a reminder to consider using the embedded assembler or built-in intrinsics instead of inline assembler. If you cannot change your code but require elimination of the warning, suppress the warning or compile the module for an earlier CPU such as ARMv6.
- **Caution** ————
- Attempting to compile some inline assembler for Thumb (armcc --thumb) might result in ARM instructions being generated in some cases.
- 
- 2524** #pragma pop with no matching #pragma push
- 2525** #pragma push with no matching #pragma pop
- 2529** expression must be an integral constant in range <entity> to <entity>
- 2530** padding added to end of struct <entity>
- The compiler can warn of padding added at the end of a struct or between structs. This warning is off by default and can be enabled with --diag\_warning 2530 or --remarks.
- For example:
- ```
typedef struct {
    int x;
    char y;
} A;
typedef struct {
    int p;
    int q;
} B;
```
- results in the message:
- Warning: #2530-D: padding added to end of struct 'anonymous'
- The compiler can also warn of padding inserted within a structs, see 1301.
- 2531** dllimport/dllexport applied to a member of an unnamed namespace
- 2533** the <entity> attribute can only appear on functions and variables with external linkage

2534	strict mode is incompatible with treating namespace std as an alias for the global namespace
2535	in expansion of macro "<entity>" <entity>,
2537	in expansion of macro "<entity>" <entity><entity>
2540	invalid symbolic operand name <entity>
2541	a symbolic match constraint must refer to one of the first ten operands
2544	thread-local variable cannot be dynamically initialized
2546	some enumerator values cannot be represented by the integral type underlying the enum type
2547	default argument is not allowed on a friend class template declaration
2548	multicharacter character literal (potential portability problem)
2549	expected a class, struct, or union type
2550	second operand of offsetof must be a field
2551	second operand of offsetof may not be a bit field
2552	cannot apply offsetof to a member of a virtual base
2553	offsetof applied to non-POD types is nonstandard
2554	default arguments are not allowed on a friend declaration of a member function
2555	default arguments are not allowed on friend declarations that are not definitions
2556	redeclaration of <entity> previously declared as a friend with default arguments is not allowed
2557	invalid qualifier for <type> (a derived class is not allowed here)
2558	invalid qualifier for definition of class <type>
2560	wide string literal not allowed
2565	template argument list of <entity> must match the parameter list
2566	an incomplete class type is not allowed
2567	complex integral types are not supported
2570	<entity> was declared "deprecated (<entity>)"
2571	invalid redefinition of <entity>
2574	explicit specialization of <entity> must precede its first use (<entity>)
2575	a sealed class type cannot be used as a base class
2576	duplicate class modifier
2577	a member function cannot have both the "abstract" and "sealed" modifiers
2578	a sealed member cannot be pure virtual
2579	nonvirtual function cannot be declared with "abstract" or "sealed" modifier

2580	member function declared with "override" modifier does not override a base class member
2581	cannot override sealed <entity>
2582	<entity> was declared with the class modifier "abstract"
2662	unrecognized calling convention <entity>, must be one of:
2665	attribute <entity> not allowed on parameter declarations
2666	underlying type of enum type must be an integral type other than bool
2667	some enumerator constants cannot be represented by <type>
2668	<entity> not allowed in current mode
2676	no #pragma start_map_region is currently active: pragma ignored
2677	<entity> cannot be used to name a destructor (a type name is required)
2678	nonstandard empty wide character literal treated as L'\\0'
2679	"typename" may not be specified here
2680	a non-placement operator delete must be visible in a class with a virtual destructor
2681	name linkage conflicts with previous declaration of <entity>
2682	alias creates cycle of aliased entities
2683	subscript must be constant
2684	a variable with static storage duration allocated in a specific register cannot be declared with an initializer
2685	a variable allocated in a specific register must have POD type
2686	predefined meaning of <entity> discarded
2687	declaration hides built-in <entity>
2688	declaration overloads built-in <entity>
2689	static member function not permitted here
2690	the <entity> attribute can only appear on functions and variables with internal linkage

## 2.4 List of the old-style armcc error and warning messages

The following old-style error and warning messages can still be given:

- C3000E** SWI number 0x<num> too large
- C3002W** illegal unaligned load or store access - use \_\_packed instead
- C3008W** splitting LDM/STM has no benefit  
Inappropriate use of the switch "--split\_ldm". This option has no significant benefit for cached systems, or for processors with a write buffer.
- C3009E** unsupported CPU <entity>
- C3015E** Unbalanced pragma pop, ignored  
#pragma push and #pragma pop save and restore the current pragma state.  
A pop must be paired with a push. An error is given for:  
#pragma push  
:  
#pragma pop  
:  
#pragma pop
- C3016W** unknown option '-<entity><entity>': ignored
- C3017W** <entity> may be used before being set  
The data flow analysis feature in the compiler is on by default.

---

**Note**

---

Be aware that data flow analysis is always disabled at -O0 .

---

The compiler performs data flow analysis as part of its optimization process, and this information can be used to identify potential problems in the code such as variables being used before being set. However, this is really a by-product of optimization rather than a feature in its own right. The data flow analysis that detects *used before being set* only analyses hardware register use, that is, variables that are held in processor registers. It does not analyze variables or structures that are allocated on the stack, that is, stored in memory rather than in processor registers.

As code (and also register memory usage) generated by the compiler varies with the level of optimization, the warning might appear for code compiled at one level of optimization but not others. You might see it, for example, at -O2, but not -O1.

---

**Note**

---

The data flow analysis is not intended to be a fully complete feature. You must only treat the warnings of the form *CnnnnW* given by the compiler as a guide, and not rely on these warnings to identify faulty code reliably. The compiler never provides as much information as a special purpose tool such as Lint.

---

- C3018W** division by zero: <entity>  
Constant propagation shows that a divide or remainder operator has a second operand with value 0. It is an error if execution reaches this expression. The compiler returns a result of 0 for a divide by constant 0.
- C3038E** Function too large or complicated to compile (0x<num>)
- C3041U** I/O error writing '<entity>': <entity>

<b>C3047U</b>	Too many errors
<b>C3048U</b>	out of store while compiling with -g. Allocation size was <entity>, system size is <entity>
<b>C3049U</b>	out of store. Allocation size was <entity>, system size is <entity> A storage allocation request by the compiler failed. Compilation of the debugging tables requested with the -g option might require a large amount of memory. Recompiling without -g, or with the program split into smaller pieces, might help.
<b>C3050U</b>	Compilation aborted.
<b>C3051E</b>	couldn't write file '<entity>': <entity>
<b>C3052E</b>	couldn't read file '<entity>': <entity>
<b>C3053W</b>	couldn't read profile '<file>': Permission denied The compiler cannot access the file you specified when performing Profiler-guided optimizations. You might see this if you have specified the profiler data directory instead of the data file. For example, you specified <i>image_001.apd</i> instead of the data file <i>image_001.apd\filename.apa</i> . See the following in <i>Using the Compiler</i> : <ul style="list-style-type: none"> <li>• <i>About Profiler-guided optimization</i> on page 5-3.</li> </ul>
<b>C3055U</b>	internal fault in inferFileName
<b>C3056E</b>	bad option '<s>'
<b>C3057E</b>	bad option '<s1> <s2>'
<b>C3064E</b>	Overlong filename: <entity>
<b>C3065E</b>	type of input file '<entity>' unknown
<b>C3066E</b>	The code space needed for this object is too large for this version of the compiler Split the source file into smaller pieces.
<b>C3075E</b>	Can't open <entity> for output
<b>C3078E</b>	stdin ('-') combined with other files
<b>C3079E</b>	<entity> command with no effect
<b>C3301W</b>	configuration file appears to be from a newer version of the compiler The configuration file is one of the XML files supplied to the compiler with the --arm_linux_config_file switches when using --arm_linux_paths or GCC command-line translation. For example: armcc --arm_linux_paths --arm_linux_config_file=arm_linux_config.xml This warning indicates the file is from a newer compiler so might contain unsupported features. To avoid incompatibilities, either use the newer version of the compiler that was used to generate the configuration file, or re-generate the configuration file using your current compiler version. See the following in the <i>Compiler Reference</i> : <ul style="list-style-type: none"> <li>• --arm_linux_config_file=path on page 3-17</li> <li>• --arm_linux_paths on page 3-20.</li> </ul>
<b>C3302E</b>	configuration file has an invalid version string

This represents an error reading from or writing to an ARM Linux configuration file.

Do the following:

1. Check that the file can be read from and written to and has valid permissions.
2. Try re-generating the configuration file using `--arm_linux_configure`.

See the following in the *Compiler Reference*:

- `--arm_linux_configure` on page 3-18.

- C3303E** configuration file was not specified  
See the description for error C3302E.
- C3304E** I/O error reading configuration file <file>  
See the description for error C3302E.
- C3305E** I/O error writing configuration file <file>  
See the description for error C3302E.
- C3306E** could not parse configuration file <file>  
See the description for error C3302E.
- C3307E** unable to read configuration file  
See the description for error C3302E.
- C3308W** cannot find system include directory  
When using an ARM Linux mode, `--arm_linux`, `--arm_linux_paths`, or GCC command-line translation, the `ARMCC41INC` environment variable must be set so the compiler can find the `arm_linux` header subdirectory. Check that this environment variable is set correctly.  
See the following in the *Compiler Reference*:
- `--arm_linux` on page 3-15
  - `--arm_linux_paths` on page 3-20.
- C3309E** automatic configuration failed - cannot find GCC  
This error is produced when you try to automatically configure the tools with `--arm_linux_configure`, but GCC cannot be found. Use the `--configure_gcc=path_to_gcc` command-line option to specify the path to the GCC executable, such as `arm-none-linux-gnueabi-gcc`.  
See the following in the *Compiler Reference*:
- `--arm_linux_configure` on page 3-18
  - `--configure_gcc=path` on page 3-36.
- C3310W** automatic configuration is incomplete - cannot determine sysroot path from GCC  
The GCC that was used for the ARM Linux configuration process did not provide a valid sysroot path. Use `--configure_sysroot=sysroot_path` to set the path.  
See the following in the *Compiler Reference*:
- `--configure_sysroot=path` on page 3-39.
- C3311E** automatic configuration failed - cannot find GLD

This error is produced when you try to automatically configure the tools with `--arm_linux_configure`, but the GNU linker (`ld`) could not be found. Use the `--configure_gkd=path_to_gcc` command-line option to specify the path to the GNU `ld` executable, such as `arm-none-linux-gnueabi-ld`.

See the following in the *Compiler Reference*:

- `--arm_linux_configure` on page 3-18
- `--configure_gcc=path` on page 3-36.

- C3312E** automatic configuration failed - could not execute GCC  
This error indicates that, when using automatic configuration for ARM Linux with `--arm_linux_configure`, the respective tools (GCC or GNU `ld`) could not be executed or failed when invoked. Check that they have execute permissions, and your GNU toolchain installation is working correctly.  
See the following in the *Compiler Reference*:
- `--arm_linux_configure` on page 3-18.
- C3313E** automatic configuration failed - could not execute GLD  
See the description of error C3312E.
- C3314W** gcc command line translation - ignoring option with no translation: `<option>`
- C3315W** gcc command line translation - translation for this command is not fully supported: `<option>`
- C3316W** option is not supported under arm linux: `<option>`
- C3317W** translated cpu or architecture option `<option>` is not valid
- C3318W** unable to read file `<file>`
- C3319W** cannot recognise type of file `<file>` - file will be ignored
- C3320W** cannot find file `<file>` - file will be ignored
- C3321E** automatic configuration failed - could not determine configuration from GCC  
When configuring automatically for ARM Linux with `--arm_linux_configure`, the compiler could not determine sufficient information from GCC to produce the configuration. Try a manual configuration by specifying a `sysroot` path with `--configure_sysroot` and a path to the GNU C++ header files with `--configure_cpp_headers`.  
See the following in the *Compiler Reference*:
- `--arm_linux_configure` on page 3-18
  - `--configure_cpp_headers=path` on page 3-32
  - `--configure_sysroot=path` on page 3-39.
- C3322W** could not accurately determine library configuration from GCC - configuration might be incomplete
- C3323E** automatic configuration failed - GCC internal specs configuration report error: `<text>`
- C3324W** could not determine `libstdc++` header file path - specify this manually to ensure that C++ code will compile correctly  
The path to the `libstdc++` header files could not be determined from GCC. Specify this path with `--configure_cpp_headers=path`



See the following in the *Compiler Reference*:

- `--configure_cpp_headers=path` on page 3-32.

- C3327W** cannot determine application entry point function - using <value> as default
- C3328W** cannot determine library paths from GNU linker - trying to use defaults
- C3329W** option is missing an argument : <option>
- C3330E** GCC configuration is invalid
- C3331W** script file <file> will be treated as a scatter file
- C3332E** I/O error reading via file <file>
- C3333E** I/O error closing via file <file>
- C3334W** invalid GCC version in configuration file - using default
- C3339W** ambiguous translation mode options specified - using <option>  
Multiple translation mode options `--translate_gcc`, `--translate_g++`, and `--translate_gld` were specified. You must specify only one of these options to select a particular translation mode.  
See the following in the *Compiler Reference*:
- `--translate_g++` on page 3-143
  - `--translate_gcc` on page 3-145
  - `--translate_gld` on page 3-146.
- C3340W** could not obtain license for vectorization (implied by `-O3`) - defaulting to `-fno-tree-vectorize`  
With GCC command-line translation, `-O3` implies vectorization. However, this requires a license to use the NEON vectorization feature of the compiler. Where a NEON vectorization license is not available, the compiler emits warning C3340W and disables vectorization.  
See the following in *Introducing the ARM Compiler toolchain*:
- *Licensed features of the toolchain* on page 2-8.
- See the following in the *Compiler Reference*:
- `-Onum` on page 3-114.
- C3403E** `__alloca_state` not defined
- C3419W** dynamic stack alignment veneer inserted in <entity>  
This warning is given when compiling `__irq` functions for `--cpu=Cortex-M3-rev0` to force the stack to be 8-byte aligned on entry into the interrupt.
- C3421W** write to string literal  
There is a write through a pointer that has been assigned to point at a literal string. The behavior is undefined by to the ANSI standard. A subsequent read from the location written might not reflect the write.
- C3435E** reference to <entity> not allowed
- C3447E** option '-E' and input file '<filename>' type conflict
- C3484E** Minimum toplevel array alignment must be 1, 2, 4 or 8
- C3486W** option '-<optionchar>' causes input file '<filename>' to be ignored

**C3487E** read from variable '<var>' with offset out of bounds

For example :

```
void foo(void) {
    unsigned int ptr;
    ptr = (unsigned int)&ptr;
    ptr -= 4;
    ptr = *(unsigned int*)ptr;
}
```

**C3488E** write to variable '<var>' with offset out of bounds

**C3489E** \_\_vfp\_status() intrinsic not supported for targets without VFP

**C3490W** instruction set switching using file extension is deprecated

**C3493E** Function alignment must be a power of 2 and greater than 1

**C3494E** invalid global register number <num>; 1 to <num> allowed

**C3497E** invalid syntax for retention constraint: <text>

**C3498E** option conflicts with an arm linux targeting option: <option>

Certain options are expected to be used when targeting ARM Linux, for example to select the correct ABI variant options. This message is given to indicate when an incompatible option is specified.

See the following in the *Compiler Reference*:

- `--arm_linux` on page 3-15.

## Chapter 3

# Assembler Errors and Warnings

The error and warning messages for the assembler, `armasm`, are listed in the following topic:

- *List of the `armasm` error and warning messages* on page 3-2.

### 3.1 List of the armasm error and warning messages

The error and warning messages for armasm are:

- A1017E** :INDEX: cannot be used on a pc-relative expression  
 The :INDEX: expression operator has been applied to a PC-relative expression, most likely a program label. :INDEX: returns the offset from the base register in a register-relative expression.  
 If you require the offset of a label called <label> within an area called <areaname>, use <label> - <areaname>.  
 See the following in *Using the Assembler*:
- *Unary operators* on page 8-27.
- A1020E** Bad predefine: <directive>  
 The operand to the --predefine (-pd) command line option was not recognized. The directive must be enclosed in quotes if it contains spaces, for example on Windows:  
 --predefine "versionnum SETA 5"  
 If the SETS directive is used, the argument to the directive must also be enclosed in quotes, which might require escaping depending upon operating system and shell. For example:  
 --predefine "versionstr SETS \"5A\""
- A1021U** No input file  
 No input file was specified on the command line. This might be because there was no terminating quote on a quoted argument.
- A1023E** File "<filename>" could not be opened: <reason>
- A1024E** File "<filename>" could not all be loaded: <reason>
- A1042E** Unrecognized APCS qualifier '<qualifier>'  
 There is an error in the argument given to the --apcs command line option. Check the spelling of <qualifier>.
- A1051E** Cannot open --depend file '<filename>': <reason>
- A1055E** Cannot open --errors file '<filename>': <reason>
- A1056E** Target cpu '<cpu>' not recognized  
 The name given in the --cpu command line option is not a recognized processor name. Check the spelling of the argument.  
 Use --cpu=list to list the supported processors and architectures.
- A1067E** Output file specified as '<filename1>', but it has already been specified as '<filename2>'  
 More than one output file, -o filename, has been specified on the command line. Misspelling a command line option can cause this.
- A1071E** Cannot open listing file '<filename>': <reason>  
 The file given in the --list <filename> command line option could not be opened. This could be because the given name is not valid, there is no space, a read-only file with the same name already exists, or the file is in use by another process. Check that the correct path for the file is specified.
- A1072E** The specified listing file '<filename>' must not be a .s or .o file

The filename argument to the --list command line option has an extension that indicates it is a source or object file. This might be because the filename argument was accidentally omitted from the command line. Check that the correct argument is given to the --list command line option.

- A1073E** The specified output file '<filename>' must not be a source file  
The object file specified on the command line has a filename extension that indicates it is a source file. This might be because the object filename was accidentally omitted from the command line.
- A1074E** The specified depend file '<filename>' must not be a source file  
The filename argument to the --depend command line option has an extension that indicates it is a source (.s) file. This might be because the filename argument was accidentally omitted from the command line. Check that the correct arguments are given.
- A1075E** The specified errors file '<filename>' must not be a source file  
The filename argument to the --errors command line option has an extension that indicates it is a source (.s) file. This might be because the filename argument was accidentally omitted from the command line. Check that the correct arguments are given.
- A1085E** Forced user-mode LDM/STM must not be followed by use of banked R8-R14  
The ARM architecture does not allow you to access the banked registers on the instruction following a USER registers LDM or STM. The ARM Architecture Reference Manual says this form of LDM must not be followed by an instruction, which accesses banked registers (a following NOP is a good way to ensure this).  
Example:  
stmib sp, {r0-r14}^ ; Return a pointer to the frame in a1.  
mov r0, sp  
change to:  
stmib sp, {r0-r14}^ ; Return a pointer to the frame in a1.  
nop  
mov r0, sp
- A1088W** Faking declaration of area AREA |\$\$\$\$\$|  
This is given when no AREA is given (see A1105E).
- A1099E** Structure stack overflow max stack size <max>
- A1100E** Structure stack underflow
- A1105E** Area directive missing  
This is given when no AREA is given (see also A1088W).
- A1106E** Missing comma
- A1107E** Bad symbol type, expect label
- A1108E** Multiply defined symbol '<name>'
- A1109E** Bad expression type
- A1110E** Expected constant expression  
A constant expression was expected after, for example, SETA.

See the following in *Using the Assembler*:

- *Numeric expressions* on page 8-20.

<b>A1111E</b>	Expected constant or address expression
<b>A1112E</b>	Expected address expression
<b>A1113E</b>	Expected string expression A string expression was expected after, for example, SETS. See the following in <i>Using the Assembler</i> : <ul style="list-style-type: none"> <li>• <i>String expressions</i> on page 8-18.</li> </ul>
<b>A1114E</b>	Expected register relative expression
<b>A1116E</b>	String operands can only be specified for DCB
<b>A1117E</b>	Register symbol '<name>' already defined
<b>A1118E</b>	No current macro expansion
<b>A1119E</b>	MEND not allowed within conditionals MEND means <i>END of Macro</i> (not the English word <i>mend</i> ). See the following in <i>Using the Assembler</i> : <ul style="list-style-type: none"> <li>• <i>Use of macros</i> on page 5-35.</li> </ul>
<b>A1120E</b>	Bad global name
<b>A1121E</b>	Global name '<name>' already exists
<b>A1122E</b>	Locals not allowed outside macros
<b>A1123E</b>	Bad local name
<b>A1125E</b>	Unknown or wrong type of global/local symbol '<name>'
<b>A1126E</b>	Bad alignment boundary, must be a multiple of 2
<b>A1127E</b>	Bad IMPORT/EXTERN name
<b>A1128E</b>	Common name '<sym>' already exists
<b>A1129E</b>	Imported name '<sym>' already exists
<b>A1130E</b>	Bad exported name
<b>A1131E</b>	Bad symbol type for exported symbol '<sym>'
<b>A1132E</b>	REQUIRE directive not supported for <entity> format output
<b>A1133E</b>	Bad required symbol name
<b>A1134E</b>	Bad required symbol type, expect (symbol is either external or label) and (symbol is relocatable and absolute)
<b>A1135E</b>	Area name missing AREA names starting with any non-alphabetic character must be enclosed in bars, for example change: AREA 1_DataArea, CODE, READONLY to: AREA  1_DataArea , CODE, READONLY

<b>A1136E</b>	Entry address already set
<b>A1137E</b>	<p>Unexpected characters at end of line</p> <p>This is given when extra characters that are not part of an instruction are found on an instruction line.</p> <p>For example:</p> <pre>ADD r0, r0, r1 comment</pre> <p>Can be changed to:</p> <pre>ADD r0, r0, r1 ; comment</pre>
<b>A1138E</b>	String "<string>" too short for operation, length must be > <oplength>
<b>A1139E</b>	String overflow, string exceeds <max> characters
<b>A1140E</b>	Bad operand type
<b>A1141E</b>	Relocated expressions may only be added or subtracted
<b>A1142E</b>	<p>Subtractive relocations not supported for &lt;entity&gt; format output</p> <p>This can occur when subtracting symbols that are in different areas, for example:</p> <pre>IMPORT sym1 IMPORT sym2 DCD (sym2 - sym1)</pre>
<b>A1143E</b>	COMMON directive not supported for %s format output
<b>A1144E</b>	DCDO directive not supported for %s format output
<b>A1145E</b>	Undefined exported symbol '<sym>'
<b>A1146E</b>	Unable to open output file <codeFileName>: <reason>
<b>A1147E</b>	Bad shift name
<b>A1148E</b>	Unknown shift name <name>, expected one of LSL, LSR, ASR, ROR, RRX
<b>A1150E</b>	<p>Bad symbol, not defined or external</p> <p>This typically occurs in the following cases:</p> <ul style="list-style-type: none"> <li>when the current file requires an INCLUDE of another file to define some symbols, for example:  <pre>"init.s", line 2: Error: A1150E: Bad symbol 2 00000000 DCD EBI_CSR_0</pre>           typically requires a definitions file to be included, for example:  <pre>INCLUDE targets/eb40.inc</pre> </li> <li>when the current file requires IMPORT for some symbols, for example:  <pre>"init.s", line 4: Error: A1150E: Bad symbol 4 00000000 LDR r0, =  Image\$\$RAM\$\$ZI\$\$Limit  </pre>           typically requires the symbol to be imported, for example:  <pre>IMPORT   Image\$\$RAM\$\$ZI\$\$Limit  </pre> </li> </ul>
<b>A1151E</b>	<p>Bad register name symbol</p> <p>Example:</p> <pre>MCR p14, 3, R0, Cr1, Cr2</pre> <p>The coprocessor registers CR must be labelled as a lowercase c for the code to build. The ARM register can be r or R:</p> <pre>MCR p14, 3, r0, c1, c2</pre>

	or MCR p14, 3, R0, c1, c2
<b>A1152E</b>	Unexpected operator
<b>A1153E</b>	Undefined symbol
<b>A1154E</b>	Unexpected operand, operator expected
<b>A1155E</b>	Unexpected unary operator equal to or equivalent to <operator>
<b>A1156E</b>	Missing open bracket
<b>A1157E</b>	Syntax error following directive
<b>A1158E</b>	Illegal line start, should be blank Some directives, for example, ENTRY, IMPORT, EXPORT, and GET must be on a line without a label at the start of the line. This error is given if a label is present.
<b>A1159E</b>	Label missing from line start Some directives, for example, FUNCTION or SETS, require a label at the start of the line, for example: my_func FUNCTION or label SETS This error is given if the label is missing.
<b>A1160E</b>	Bad local label number A local label is a number in the range 0-99, optionally followed by a name. See the following in <i>Using the Assembler</i> : <ul style="list-style-type: none"> <li>• <i>Local labels</i> on page 8-15.</li> </ul>
<b>A1161E</b>	Syntax error following local label definition
<b>A1162E</b>	Incorrect routine name '<name>'
<b>A1163E</b>	Unknown opcode <name> , expecting opcode or Macro The most common reasons for this are: <ul style="list-style-type: none"> <li>• Forgetting to put some white space on the left hand side margin, before the instruction, for example change: MOV PC,LR to MOV PC, LR</li> <li>• Use of a hardware floating point instruction without using the --fpu switch, for example: FMXR FPEXC, r1 ; must be assembled with <code>armasm --fpu vfp</code></li> <li>• Mis-typing the opcode: ADDD instead of ADD</li> </ul>
<b>A1164E</b>	Opcode not supported on selected processor



The processor selected on the `armasm` command line does not support this instruction. See the ARM Architecture Reference Manuals, <http://infocenter.arm.com/help/topic/com.arm.doc.subset.arch.reference/index.html#reference>.

<b>A1165E</b>	Too many actual parameters, expecting <actual> parameters
<b>A1166E</b>	Syntax error following label
<b>A1167E</b>	Invalid line start
<b>A1168E</b>	Translate not allowed in pre-indexed form
<b>A1169E</b>	Missing close square bracket
<b>A1170E</b>	<p>Immediate <code>0x&lt;adr&gt;</code> out of range for this operation, must be below <code>(0x&lt;adr&gt;)</code></p> <p>This error is given when <code>DCB</code>, <code>DCW</code> or <code>DCWU</code> directives are used with immediates that are too large.</p> <p>See the following in the <i>Assembler Reference</i>:</p> <ul style="list-style-type: none"> <li>• <i>DCB</i> on page 6-25</li> <li>• <i>DCW and DCWU</i> on page 6-36.</li> </ul>
<b>A1171E</b>	Missing close bracket
<b>A1172E</b>	Bad rotator <rotator>, must be even and between 0 and 30
<b>A1173E</b>	<p>ADR/L cannot be used on external symbols</p> <p>The ADR and ADRL pseudo-instructions can only be used with labels within the same code area. To load an out-of-area address into a register, use LDR instead.</p>
<b>A1174E</b>	Data transfer offset <code>0x&lt;val&gt;</code> out of range. Permitted values are <code>0x&lt;mini&gt;</code> to <code>0x&lt;maxi&gt;</code>
<b>A1175E</b>	Bad register range
<b>A1176E</b>	<p>Branch offset <code>0x&lt;val&gt;</code> out of range. Permitted values are <code>0x&lt;mini&gt;</code> to <code>0x&lt;maxi&gt;</code></p> <p>Branches are PC relative, and have a limited range. If you are using "local labels", you can use the <code>ROUT</code> directive to limit the scope of local labels, to help avoid referring to a wrong label by accident.</p> <p>See the following in <i>Using the Assembler</i>:</p> <ul style="list-style-type: none"> <li>• <i>Local labels</i> on page 8-15.</li> </ul>
<b>A1179E</b>	Bad hexadecimal number
<b>A1180E</b>	Missing close quote
<b>A1181E</b>	Bad operator
<b>A1182E</b>	Bad based <base> number
<b>A1183E</b>	Numeric overflow
<b>A1184E</b>	Externals not valid in expressions
<b>A1185E</b>	Symbol missing
<b>A1186E</b>	<p>Code generated in data area</p> <p>An instruction has been assembled into a data area. This can happen if you have omitted the <code>CODE</code> attribute on the <code>AREA</code> directive.</p>

See the following in the *Assembler Reference*:

- *AREA* on page 6-81.

<b>A1187E</b>	Error in macro parameters
<b>A1188E</b>	Register value <val> out of range. Permitted values are <mini> to <maxi>
<b>A1189E</b>	Missing '#'
<b>A1190E</b>	Unexpected '<entity>'
<b>A1191E</b>	Floating point register number out of range 0 to <maxi>
<b>A1192E</b>	Coprocessor register number out of range 0 to 15
<b>A1193E</b>	Coprocessor number out of range 0 to 15
<b>A1194E</b>	Bad floating-point number
<b>A1195W</b>	Small floating point value converted to 0.0
<b>A1196E</b>	Too late to ban floating point
<b>A1198E</b>	Unknown operand  This can occur when an operand is accidentally miss-typed. For example: armasm init.s -g -PD "ROM_RAM_REMAP SETL {FALS}" must be: armasm init.s -g -PD "ROM_RAM_REMAP SETL {FALSE}" See the following in <i>Using the Assembler</i> : • <i>Assembly time substitution of variables</i> on page 8-7.
<b>A1199E</b>	Coprocessor operation out of range 0 to <maxi>
<b>A1200E</b>	Structure mismatch expect While/Wend
<b>A1201E</b>	Substituted line too long, maximum length <max>
<b>A1202E</b>	No pre-declaration of substituted symbol '<name>' See the following in <i>Using the Assembler</i> : • <i>Assembly time substitution of variables</i> on page 8-7.
<b>A1203E</b>	Illegal label parameter start in macro prototype
<b>A1204E</b>	Bad macro parameter default value
<b>A1205E</b>	Register <reg> occurs multiply in list
<b>A1206E</b>	Registers should be listed in increasing register number order  This warning is given if registers in, for example, LDM or STM instructions are not specified in increasing order and the --checkreglist option is used.
<b>A1207E</b>	Bad or unknown attribute  This error is given when an invalid attribute is given in the AREA directive. For example: AREA test, CODE, READONLY, HALFWORD HALFWORD is invalid, so remove it.

See the following in the *Assembler Reference*:

- *AREA* on page 6-81.

<b>A1209E</b>	ADRL cannot be used with PC as destination
<b>A1210E</b>	Non-zero data within uninitialized area '<name>'
<b>A1211E</b>	Missing open square bracket
<b>A1212E</b>	Division by zero
<b>A1213E</b>	Attribute <entity> cannot be used with attribute <entity>
<b>A1214E</b>	Too late to define symbol '<sym>' as register list
<b>A1215E</b>	Bad register list symbol
<b>A1216E</b>	Bad string escape sequence
<b>A1217E</b>	Error writing to code file <codeFileName>: <reason>
<b>A1219E</b>	Bad APSR, CPSR or SPSR designator For example: MRS r0, PSR It is necessary to specify which status register to use (CPSR or SPSR), such as, for example: MRS r0, CPSR
<b>A1220E</b>	BLX <address> must be unconditional
<b>A1221E</b>	Area attribute '<entity>' not supported for <entity> object file format
<b>A1223E</b>	Comdat Symbol '<name>' is not defined
<b>A1224E</b>	<entity> format does not allow PC-relative data transfers between areas
<b>A1225E</b>	ASSOC attribute is not allowed in non-comdat areas
<b>A1226E</b>	SELECTION attribute is not allowed in non-comdat areas
<b>A1227E</b>	Comdat Associated area '<name>' undefined at this point in the file
<b>A1228E</b>	Comdat Associated area '<name>' is not an area name
<b>A1229E</b>	Missing COMDAT symbol
<b>A1230E</b>	Missing '}' after COMDAT symbol
<b>A1234E</b>	Undefined or Unexported Weak Alias for symbol '<sym>'
<b>A1237E</b>	Invalid register or register combination for this operation
<b>A1238E</b>	Immediate value must be word aligned when used in this operation
<b>A1240E</b>	Immediate value cannot be used with this operation
<b>A1241E</b>	Must have immediate value with this operation
<b>A1242E</b>	Offset must be word aligned when used with this operation
<b>A1243E</b>	Offset must be halfword aligned with this operation
<b>A1244E</b>	Missing '!'
<b>A1245E</b>	B or BL from Thumb code to ARM code

<b>A1247E</b>	BLX from ARM code to ARM code, use BL  This occurs when there is a BLX <label> branch from ARM code to ARM code within this assembler file. This is not allowed because BLX <label> always results in a state change. The usual solution is to use BL instead.
<b>A1248E</b>	BLX from Thumb code to Thumb code, use BL  This occurs when there is a BLX <label> branch from Thumb code to Thumb code within this assembler file. This is not allowed because BLX <label> always results in a state change. The usual solution is to use BL instead.
<b>A1249E</b>	Post indexed addressing mode not available
<b>A1250E</b>	Pre indexed addressing mode not available for this instruction, use [Rn, Rm]
<b>A1253E</b>	Thumb branch to external symbol cannot be relocated: not representable in <fmt>
<b>A1254E</b>	Halfword literal values not supported  Example: LDRH R3, =constant  Change the LDRH into LDR, which is the standard way of loading constants into registers.
<b>A1256E</b>	DATA directive can only be used in CODE areas
<b>A1259E</b>	Invalid PSR field specifier, syntax is <PSR>_ where <PSR> is either CPSR or SPSR
<b>A1260E</b>	PSR field '<entity>' specified more than once
<b>A1261E</b>	MRS cannot select fields, use APSR, CPSR or SPSR directly  This is caused by an attempt to use fields for CPSR or SPSR with an MRS instruction, such as: MRS r0, CPSR_c
<b>A1262U</b>	Expression storage allocator failed
<b>A1265U</b>	Structure mismatch: IF or WHILE unmatched at end of INCLUDE file
<b>A1267E</b>	Bad GET or INCLUDE for file <filename>
<b>A1268E</b>	Unmatched conditional or macro
<b>A1269U</b>	unexpected GET on structure stack
<b>A1270E</b>	File "<entity>" not found
<b>A1271E</b>	Line too long, maximum line length is <MaxLineLength>
<b>A1272E</b>	End of input file
<b>A1273E</b>	'\\' should not be used to split strings
<b>A1274W</b>	'\\' at end of comment
<b>A1283E</b>	Literal pool too distant, use LTOrg to assemble it within 1KB  For Thumb code, the literal pool must be within 1KB of the LDR instruction to access it. See A1284E and A1471W.
<b>A1284E</b>	Literal pool too distant, use LTOrg to assemble it within 4KB

For ARM code, the literal pool must be within 4KB of the LDR instruction to access it. To solve this, add an LTORG directive into your assembler source file at a convenient place.

See the following in *Using the Assembler*:

- *Load addresses to a register using LDR Rd, =label* on page 5-20.

See the following in the *Assembler Reference*:

- *LTORG* on page 6-20.

<b>A1285E</b>	Bad macro name
<b>A1286E</b>	Macro already exists
<b>A1287E</b>	Illegal parameter start in macro prototype
<b>A1288E</b>	Illegal parameter in macro prototype
<b>A1289E</b>	Invalid parameter separator in macro prototype
<b>A1290E</b>	Macro definition too big, maximum length <max>
<b>A1291E</b>	Macro definitions cannot be nested
<b>A1310W</b>	Symbol attribute not recognized
<b>A1311U</b>	macro definition attempted within expansion
<b>A1312E</b>	Assertion failed
<b>A1313W</b>	Missing END directive at end of file The assembler requires an END directive to know when the code in the file terminates. You can add comments or other such information in free format after this directive.
<b>A1314W</b>	Reserved instruction (using NV condition)
<b>A1315E</b>	NV condition not supported on targeted CPU
<b>A1316E</b>	Shifted register operand to MSR has undefined effect
<b>A1319E</b>	Undefined effect (using PC as Rs)
<b>A1320E</b>	Undefined effect (using PC as Rn or Rm in register specified shift)
<b>A1321E</b>	Undefined effect (using PC as offset register)
<b>A1322E</b>	Unaligned transfer of PC, destination address must be 4 byte aligned
<b>A1323E</b>	Reserved instruction (Rm = Rn with post-indexing)
<b>A1324E</b>	Undefined effect (PC + writeback)
<b>A1327W</b>	Non portable instruction (LDM with writeback and base in register list, final value of base unpredictable) LDM Operand restriction: <ul style="list-style-type: none"> <li>• If the base register &lt;Rn&gt; is specified in &lt;registers&gt;, and base register writeback is specified, the final value of &lt;Rn&gt; is UNPREDICTABLE.</li> </ul>
<b>A1328W</b>	Non portable instruction (STM with writeback and base not first in register list, stored value of base unpredictable)

STM Operand restrictions if <Rn> is specified as <registers> and base register writeback is specified:

- If <Rn> is the lowest-numbered register specified in <register\_list>, the original value of <Rn> is stored.
- Otherwise, the stored value of <Rn> is UNPREDICTABLE.

**A1329W** Unpredictable instruction (forced user mode transfer with write-back to base)  
This is caused by an instruction such as `PUSH {r0}^` where the ^ indicates access to user registers. The *ARM Architectural Reference Manual* specifies that writeback to the base register is not available with this instruction.

Instead, the base register must be updated separately. For example:

```
SUB sp, sp, #4
STMID sp, {r0}^
```

Another example is replacing `STMFD R0!, {r13, r14}^` with:

```
SUB r0, r0, #8
STM r0, {r13, r14}^
```

See also A1085W

**A1331W** Unpredictable instruction (PC as source or destination)

**A1332W** Unpredictable effect (PC-relative SWP)

**A1334E** Undefined effect (use of PC/PSR)

**A1335W** Useless instruction (PC cannot be written back)

**A1337W** Useless instruction (PC is destination)

**A1338W** Dubious instruction (PC used as an operand)

**A1339W** Unpredictable if RdLo and RdHi are the same register

**A1341E** Branch to unaligned destination, expect destination to be <max> byte aligned

**A1342W** <name> of symbol in another AREA will cause link-time failure if symbol is not close enough to this instruction

**A1344I** host error: out of memory

**A1355U** A Label was found which was in no AREA

Example:

This can occur where no white-space precedes an assembler directive.

Assembler directives must be indented with white-space, for example use:

```
IF :DEF: F00
; code
ENDIF
```

instead of:

```
IF :DEF: F00
; code
ENDIF
```

Symbols in the left-hand column are assumed to be labels.

**A1356W** Instruction not supported on targeted CPU

This occurs if you try to use an instruction that is not supported by the default architecture or processor for armasm.

For example:

```
SMULBB r0,r0,r1 ;
```

can be assembled with:

```
armasm --cpu 5TE
```

The processor selected on the armasm command line does not support this instruction. See the ARM Architecture Reference Manuals, <http://infocenter.arm.com/help/topic/com.arm.doc.subset.arch.reference/index.html#reference>.

<b>A1406E</b>	Bad decimal number
<b>A1407E</b>	Overlarge floating point value
<b>A1408E</b>	Overlarge (single precision) floating point value
<b>A1409W</b>	Small (single precision) floating value converted to 0.0
<b>A1411E</b>	Closing '>' missing from vector specifier
<b>A1412E</b>	Bad vector length, should be between <min> and <max>
<b>A1413E</b>	Bad vector stride, should be between <min> and <max>
<b>A1414E</b>	Vector wraps round over itself, length * stride should not be greater than <max>
<b>A1415E</b>	VFPASSERT must be followed by 'VECTOR' or 'SCALAR'
<b>A1416E</b>	Vector length does not match current vector length <len>
<b>A1417E</b>	Vector stride does not match current vector stride
<b>A1418E</b>	Register has incorrect type '<type>' for instruction, expect floating point/double register type
<b>A1419E</b>	Scalar operand not in a scalar bank
<b>A1420E</b>	Lengths of vector operands are different
<b>A1421E</b>	Strides of vector operands are different
<b>A1422E</b>	This combination of vector and scalar operands is not allowed
<b>A1423E</b>	This operation is not vectorizable
<b>A1424E</b>	Vector specifiers not allowed in operands to this instruction
<b>A1425E</b>	Destination vector must not be in a scalar bank
<b>A1426E</b>	Source vector must not be in a scalar bank
<b>A1427E</b>	Operands have a partial overlap
<b>A1428E</b>	Register list contains registers of varying types
<b>A1429E</b>	Expected register list

The assembler reports this when FRAME SAVE and FRAME RESTORE directives are not given register lists.

See the following in the *Assembler Reference*:

- *FRAME RESTORE* on page 6-58

- *FRAME SAVE* on page 6-60.
- A1430E** Unknown frame directive
- A1431E** Frame directives are not accepted outside of PROCs/FUNCTIONs  
See the following in *Using the Assembler*:
- *Frame directives* on page 5-40.
- A1432E** Floating-point register type not consistent with selected floating-point architecture
- A1433E** Only the writeback form of this instruction exists  
The addressing mode specified for the instruction did not include the writeback specifier (that is, a '!' after the base register), but the instruction set only supports the writeback form of the instruction. Either use the writeback form, or replace with instructions that have the desired behavior.
- A1435E** {PCSTOREOFFSET} is not defined when assembling for an architecture  
{PCSTOREOFFSET} is only defined when assembling for a processor, not for an architecture.
- A1437E** {ARCHITECTURE} is undefined  
{ARCHITECTURE} is only defined when assembling for an architecture, not for a processor.
- A1446E** Bad or unknown attribute '<attr>'. Use --apcs /interwork instead  
Example:  

```
AREA test1, CODE, READONLY
AREA test, CODE, READONLY, INTERWORK
```

This code might have originally been intended to work with SDT. The INTERWORK area attribute is now obsolete. To eliminate the warning:
- remove the ", INTERWORK" from the AREA line.
  - assemble with 'armasm --apcs /interwork foo.s' instead
- A1447W** Missing END directive at end of file, but found a label named END  
This is caused by the END directive not being indented.
- A1448W** Deprecated form of PSR field specifier used (use \_f)
- A1449W** Deprecated form of PSR field specifier used (use \_c)
- A1450W** Deprecated form of PSR field specifier used (use \_cxsx for future compatibility)  
The assembler, armasm, supports the full range of MRS and MSR instructions, in the form:
- ```
MRS(cond) Rd, CPSR
MRS(cond) Rd, SPSR
MSR(cond) CPSR_fields, Rm
MSR(cond) SPSR_fields, Rm
MSR(cond) CPSR_fields, #immediate
MSR(cond) SPSR_fields, #immediate
```
- where fields can be any combination of cxsx.
- Earlier releases of the assembler allowed other forms of the MSR instruction to modify the control field and flags field:
- cpsr or cpsr\_all, control and flags field



- `cpsr_flg`, flags field only
- `cpsr_ctl`, control field only.

Similar control and flag settings apply for SPSR.

These forms are now deprecated and must not be used. If your legacy code contains them, the assembler reports:

Deprecated form of PSR field specifier used (use `_cxsf`)

To avoid the warning, in most cases you can simply modify your code to use `_c`, `_f`, `_cf` or `_cxsf` instead.

See also:

- *Using the Assembler:*
  - *Conditional execution in ARM state* on page 6-3
  - *Conditional execution in Thumb state* on page 6-4
  - *General-purpose registers* on page 3-14
  - *Access to the inline barrel shifter* on page 3-28.
- the FAQ *armasm: use of MRS and MSR instructions ('Deprecated form of PSR field specifier')*, <http://infocenter.arm.com/help/topic/com.arm.doc.faqs/ka3724.html>.

**A1454E** FRAME STATE RESTORE directive without a corresponding FRAME STATE REMEMBER  
See the following in *Using the Assembler*:

- *Frame directives* on page 5-40.

See the following in the *Assembler Reference*:

- *FRAME STATE REMEMBER* on page 6-61
- *FRAME STATE RESTORE* on page 6-62.

**A1456W** INTERWORK area directive is obsolete. Continuing as if `--apcs /inter` selected

Example:

```
AREA test, CODE, READONLY, INTERWORK
```

This code might have originally been intended to work with SDT. The INTERWORK area attribute is now obsolete. To eliminate the warning:

1. Remove the ", INTERWORK" from the AREA line.
2. Assemble with `armasm --apcs /interwork foo.s` instead.

**A1457E** Cannot mix INTERWORK and NOINTERWORK code areas in same file  
INTERWORK and (default) NOINTERWORK code areas cannot be mixed in the same file. This code might have originally been intended to work with SDT. The INTERWORK area attribute is obsolete in the ARM Compiler toolchain.

Example:

```
AREA test1, CODE, READONLY
...
AREA test2, CODE, READONLY, INTERWORK
```

To eliminate the error:

1. move the two AREAs into separate assembler files such as, for example, `test1.s` and `test2.s`
2. remove the ", INTERWORK" from the AREA line in `test2.s`
3. assemble `test1.s` with `armasm --apcs /nointerwork`
4. assemble `test2.s` with `armasm --apcs /interwor`

5. at link time, the linker adds any necessary interworking veneers.

- A1458E** DCFD or DCFDU not allowed when fpu is None
- A1459E** Cannot B or BL to a register  
This form of the instruction is not allowed. See the *ARM Architecture Reference Manual* for the allowed forms.
- A1461E** Specified processor or architecture does not support Thumb instructions  
It is likely that you are specifying a specific architecture or cpu using the `--cpu` option and then incorporating some Thumb code in the AREA that is generating this error.  
For example:  
`armasm --cpu 4 code.s`  
StrongARM is an architecture 4 (not 4T) processor and does not support Thumb code.
- A1462E** Specified memory attributes do not support this instruction
- A1463E** SPACE directive too big to fit in area, area size limit 2^32
- A1464W** ENDP/ENDFUNC without corresponding PROC/FUNC
- A1466W** Operator precedence means that expression would evaluate differently in C  
armasm has always evaluated certain expressions in a different order to C. This warning might help C programmers from being caught out when writing in assembler.  
To avoid the warning, either:
- modify the code to make the evaluation order explicit (that is, add more brackets)
  - suppress the warning with `--unsafe` switch.
- See the following in *Using the Assembler*:
- *Operator precedence* on page 8-36.
- A1467W** FRAME ADDRESS with negative offset <offset> is not recommended
- A1468W** FRAME SAVE saving registers above the canonical frame address is not recommended
- A1469E** FRAME STATE REMEMBER directive without a corresponding FRAME STATE RESTORE  
See the following in *Using the Assembler*:
- *Frame directives* on page 5-40.
- See the following in the *Assembler Reference*:
- *FRAME STATE REMEMBER* on page 6-61
  - *FRAME STATE RESTORE* on page 6-62.
- A1471W** Directive <directive> may be in an executable position  
This can occur with, for example, the LTORG directive (see A1283E & A1284E). LTORG instructs the assembler to dump literal pool DCD data at this position.  
To prevent this warning from occurring, the data must be placed where the processor cannot execute them as instructions. A good place for an LTORG is immediately after an unconditional branch, or after the return instruction at the end of a subroutine.

As a last resort, you could add a branch over the LTORG, to avoid the data being executed, for example:

```
B unique_label
LTORG
unique_label
```

- A1475W** At least one register must be transferred, otherwise result is UNPREDICTABLE
- A1476W** BX r15 at non word-aligned address is UNPREDICTABLE
- A1477W** This register combination results in UNPREDICTABLE behavior
- A1479W** Requested alignment <alignreq> is greater than area alignment <align>, which has been increased
- This is warning about an ALIGN directive that has a coarser alignment boundary than its containing AREA. This is not allowed. To compensate, the assembler automatically increases the alignment of the containing AREA for you. A simple test case that gives the warning is:
- ```
AREA test, CODE, ALIGN=3
ALIGN 16
mov pc, lr
END
```
- In this example, the alignment of the AREA (ALIGN=3) is  $2^3=8$  byte boundary, but the mov pc,lr instruction is on a 16-byte boundary, hence the error.

---

**Note**

---

The two alignment types are specified in different ways.

---

This warning can also occur when using AREA ... ALIGN=0 to align a code section on a byte boundary. This is not possible. Code sections can only be aligned on:

- a four-byte boundary for ARM code, so use "ALIGN=2"
- a two-byte boundary for Thumb code, so use "ALIGN=1".

See the following in the *Assembler Reference*:

- *ALIGN* on page 6-78
- *AREA* on page 6-81.

- A1480W** Macro cannot have same name as a directive or instruction
- A1482E** Shift option out of range, allowable values are from <min> to <max>
- A1484E** Obsolete shift name 'ASL', use LSL instead
- The ARM architecture does not have an ASL shift operation. The ARM barrel shifter only has the following shift types: ROR, ASR, LSR, and LSL.
- An arithmetic (that is, signed) shift left is the same as a logical shift left, because the sign bit always gets shifted out.
- Earlier versions of the assembler would silently convert ASL to LSL. This error can be downgraded to a warning by using the --unsafe switch.
- A1485E** LDM/STM instruction exceeds maximum register count <max> allowed with --split\_ldm
- A1486E** ADR/ADRL of a symbol in another AREA is not supported in ELF
- The ADR and ADRL pseudo-instructions can only be used with labels within the same code section. To load an out-of-area address into a register, use LDR instead.

<b>A1487E</b>	<p>Obsolete instruction name 'ASL', use LSL instead</p> <p>The Thumb instruction ASL is now faulted. See the corresponding ARM ASL message A1484E.</p>
<b>A1488W</b>	PROC/FUNC at line <lineno> in '<filename>' without matching ENDP/ENDFUNC
<b>A1489E</b>	<FPU> is undefined
<b>A1490E</b>	<p>&lt;CPU&gt; is undefined</p> <p>{CPU} is only defined by assembling for a processor and not an architecture.</p>
<b>A1491W</b>	<p>Internal error: Found relocation at offset &lt;offset&gt; with incorrect alignment</p> <p>This might indicate an assembler fault. Contact your supplier.</p>
<b>A1492E</b>	Immediate 0x<val> out of range for this operation. Permitted values are 0x<mini> to 0x<maxi>
<b>A1493E</b>	REQUIRE must be in an AREA
<b>A1495E</b>	<p>Target of branch is a data address</p> <p>armasm determines the type of a symbol and detects branches to data. Specify --diag-suppress 1495 to suppress this warning.</p>
<b>A1496E</b>	<p>Absolute relocation of ROPi address with respect to symbol '&lt;symbol&gt;' at offset &lt;offset&gt; may cause link failure</p> <p>For example, when assembling with --apcs /ropi:</p> <pre> AREA code, CODE codeaddr DCD codeaddr END </pre> <p>because this generates an absolute relocation (R_ARM_ABS32) to a PI code symbol.</p>
<b>A1497E</b>	<p>Absolute relocation of RWPI address with respect to symbol '&lt;symbol&gt;' at offset &lt;offset&gt; may cause link failure</p> <p>For example, when assembling with --apcs /rwpi:</p> <pre> AREA data, DATA dataaddr DCD dataaddr END </pre> <p>because this generates an absolute relocation (R_ARM_ABS32) to a PI data symbol.</p>
<b>A1498E</b>	<p>Unexpected characters following Thumb instruction</p> <p>For example:</p> <pre> ADD r0, r0, r1 </pre> <p>is accepted as a valid instruction, for both ARM and Thumb, but:</p> <pre> ADD r0, r0, r1, ASR #1 </pre> <p>is a valid instruction for ARM, but not for Thumb, so the unexpected characters are ", ASR #1".</p>
<b>A1499E</b>	Register pair is not a valid contiguous pair
<b>A1500E</b>	Unexpected characters when expecting '<eword>'
<b>A1501E</b>	Shift option out of range, allowable values are 0, 8, 16 or 24
<b>A1502W</b>	Register <reg> is a caller-save register, not valid for this operation
<b>A1505E</b>	Bad expression type, expect logical expression

<b>A1506E</b>	Accumulator should be in form accx where x ranges from 0 to <max>
<b>A1507E</b>	Second parameter of register list must be greater than or equal to the first
<b>A1508E</b>	Structure mismatch expect Conditional
<b>A1509E</b>	Bad symbol type, expect label, or weak external symbol
<b>A1510E</b>	Immediate 0x<imm> cannot be represented by 0-255 and a rotation
<b>A1511E</b>	Immediate cannot be represented by combination of two data processing instructions
<b>A1512E</b>	Immediate 0x<val> out of range for this operation. Permitted values are <mini> to <maxi>
<b>A1513E</b>	Symbol not found or incompatible Symbol type for '<name>'
<b>A1514E</b>	Bad global name '<name>'
<b>A1515E</b>	Bad local name '<name>'
<b>A1516E</b>	Bad symbol '<name>', not defined or external
<b>A1517E</b>	Unexpected operator equal to or equivalent to <operator>
<b>A1539E</b>	Link Order dependency '<name>' not an area
<b>A1540E</b>	Cannot have a link order dependency on self
<b>A1541E</b>	<code> is not a valid condition code
<b>A1542E</b>	Macro names <name1> and <name2>[parameter] conflict
<b>A1543W</b>	Empty macro parameter default value
<b>A1544W</b>	Invalid empty PSR field specifier, field must contain at least one of c,x,s,f
<b>A1545E</b>	Too many sections for one <objfmt> file
<b>A1546W</b>	Stack pointer update potentially breaks 8 byte stack alignment Example: PUSH {r0}  The stack must be eight-byte aligned on an external boundary so pushing an odd number of registers causes this warning to be given. This warning is suppressed by default. To enable this warning use --diag_warning 1546. See the following in the <i>Assembler Reference</i> : <ul style="list-style-type: none"> <li>• --diag_warning=tag{, tag} on page 2-14.</li> </ul>
<b>A1547W</b>	PRESERVE8 directive has automatically been set Example: PUSH {r0,r1}  This warning has been given because the PRESERVE8 directive has not been explicitly set by the user, but the assembler has set this itself automatically. This warning is suppressed by default. To enable this warning use --diag_warning 1547. See the following in the <i>Assembler Reference</i> : <ul style="list-style-type: none"> <li>• --diag_warning=tag{, tag} on page 2-14</li> </ul>

- *REQUIRE8 and PRESERVE8* on page 6-101.

**A1548W** Code contains LDRD/STRD indexed/offset from SP but REQUIRE8 is not set

Example:

```
PRESERVE8
STRD r0,[sp,#8]
```

This warning is given when the REQUIRE8 directive is not set when required.

See the following in the *Assembler Reference*:

- *REQUIRE8 and PRESERVE8* on page 6-101.

**A1549W** Setting of REQUIRE8 but not PRESERVE8 is unusual

Example:

```
PRESERVE8 {FALSE}
REQUIRE8
STRD r0,[sp,#8]
```

**A1550E** Input and output filenames are the same

**A1551E** Cannot add Comdef area <name> to non-comdat group

**A1560E** Non-constant byte literal values not supported

**A1561E** MERGE and STRING sections must be data sections

**A1562E** Entry size for Merge section must be greater than 0

**A1563W** Instruction stalls CPU for <stalls> cycle(s)

The assembler can give information about possible interlocks in your code caused by the pipeline of the processor chosen by the --cpu option.

This can be enabled with `armasm --diag_warning 1563`

#### ————— Note —————

If the --cpu option specifies a multi-issue processor such as Cortex-A8, the interlock warnings are unreliable.

**A1572E** Operator SB\_OFFSET\_11\_0 only allowed on LDR/STR instructions

**A1573E** Operator SB\_OFFSET\_19\_12 only allowed on Data Processing instructions

**A1574E** Expected one or more flag characters from "<str>"

**A1575E** BLX with bit[0] equal to 1 is architecturally UNDEFINED

**A1576E** Bad coprocessor register name symbol

**A1577E** Bad coprocessor name symbol

**A1578E** Bad floating point register name symbol '<sym>'

**A1581W** Added <no\_padbytes> bytes of padding at address <address>

The assembler warns by default when padding bytes are added to the generated code. This occurs whenever an instruction/directive is used at an address that requires a higher alignment, for example, to ensure ARM instructions start on a four-byte boundary after some Thumb instructions, or where there is a DCB followed by DCD.

For example:

```

AREA Test, CODE, READONLY
THUMB
ThumbCode
    MOVS r0, #1
    ADR r1, ARMProg
    BX r1
; ALIGN ; <<< add to avoid the first warning
ARM
ARMProg
    ADD r0,r0,#1
    BX LR
    DCB 0xFF
    DCD 0x1234
END

```

Results in the warnings:

A1581W: Added 2 bytes of padding at address 0x6  
 8 00000008 ARM

A1581W: Added 3 bytes of padding at address 0x11  
 13 00000014 DCD 0x1234

The warning can also occur when using ADR in Thumb-only code. The ADR Thumb pseudo-instruction can only load addresses that are word aligned, but a label within Thumb code might not be word aligned. Use ALIGN to ensure four-byte alignment of an address within Thumb code.

<b>A1582E</b>	Link Order area '<name>' undefined
<b>A1583E</b>	Group symbol '<name>' undefined
<b>A1584W</b>	Mode <mode> not allowed for this instruction
<b>A1585E</b>	Bad operand type (<typ1>) for operator <op>
<b>A1586E</b>	Bad operand types (<typ1>, <typ2>) for operator <op>
<b>A1587E</b>	Too many registers <count> in register list, maximum of <max>
<b>A1588E</b>	Align only available on VLD and VST instructions
<b>A1589E</b>	Element index must remain constant across all registers
<b>A1590E</b>	Mix of subscript and non-subscript elements not allowed
<b>A1593E</b>	Bad Alignment, must match transfer size UIMM * <dt>
<b>A1595E</b>	Bad Alignment, must match <st> * <dt>, or 64 when <st> is 4
<b>A1596E</b>	Invalid alignment <align> for dt st combination
<b>A1597E</b>	Register increment of 2 not allowed when dt is 8
<b>A1598E</b>	Bad Register list length
<b>A1599E</b>	Out of range subscript, must be between 0 and <max_index>
<b>A1600E</b>	Section type must be within range SHT_LOOS and SHT_HIUSER
<b>A1601E</b>	Immediate cannot be represented
<b>A1603W</b>	This instruction inside IT block has UNPREDICTABLE results
<b>A1604W</b>	Thumb Branch to destination without alignment to <max> bytes
<b>A1606E</b>	Symbol attribute <attr1> cannot be used with attribute <attr2>

<b>A1607E</b>	Thumb-2 wide branch instruction used, but offset could fit in Thumb-1 narrow branch instruction
<b>A1608W</b>	MOV pc,<rn> instruction used, but BX <rn> is preferred
<b>A1609W</b>	<p>MOV &lt;rd&gt;,pc instruction does not set bit zero, so does not create a return address</p> <p>This warning is caused when the current value of the PC is copied into a register while executing in Thumb state. An attempt to create a return address in this fashion fails as bit0 is not set. Attempting to BX to this instruction causes a state change (to ARM).</p> <p>To create a return address, you can use:</p> <pre>MOV r0, pc ADDS r0, #1</pre> <p>This warning can then be safely suppressed with:</p> <pre>--diag-suppress 1609</pre>
<b>A1611E</b>	Register list increment of 2 not allowed for this instruction
<b>A1612E</b>	<type> addressing not allowed for <instr>
<b>A1613E</b>	Invalid register or register combination for this operation, <rcvd>, expected one of <expect>
<b>A1614E</b>	Scalar access not allowed when dt is 64
<b>A1615E</b>	Store of a single element or structure to all lanes is UNDEFINED
<b>A1616E</b>	<p>Instruction, offset, immediate or register combination is not supported by the current instruction set</p> <p>This can be caused by attempting to use an invalid combination of operands. For example, in Thumb:</p> <pre>MOV r0, #1 ; /* Not permitted */ MOVS r0, #1 ; /* Ok */</pre> <p>See the following in the <i>Assembler Reference</i>:</p> <ul style="list-style-type: none"> <li>Chapter 3 <i>ARM and Thumb Instructions</i>.</li> </ul>
<b>A1617E</b>	Specified width is not supported by the current instruction set
<b>A1618E</b>	Specified instruction is not supported by the current instruction set
<b>A1619E</b>	Specified condition is not consistent with previous IT
<b>A1620E</b>	Error writing to file '<filename>': <reason>
<b>A1621E</b>	CBZ or CBNZ from Thumb code to ARM code
<b>A1622E</b>	Negative register offsets are not supported by the current instruction set
<b>A1623E</b>	Offset not supported by the current instruction set
<b>A1624E</b>	Branch from Thumb code to ARM code
<b>A1625E</b>	Branch from ARM code to Thumb code
<b>A1626E</b>	BL from Thumb code to ARM code
<b>A1627E</b>	BL from ARM code to Thumb code



This occurs when there is a branch from ARM code to Thumb code (or vice-versa) within this file. The usual solution is to move the Thumb code into a separate assembler file. Then, at link-time, the linker adds any necessary interworking veneers.

- A1630E** Specified processor or architecture does not support ARM instructions  
Certain processors such as Cortex-M3 or Cortex-M1 implement only the Thumb instruction set, not the ARM instruction set. It is likely that the assembly file contains some ARM-specific instructions and is being built for one of these processors.
- A1631E** Only left shifts of 1, 2 and 3 are allowed on load/stores
- A1632E** Else forbidden in IT AL blocks
- A1633E** LDR rx,= pseudo instruction only allowed in load word form
- A1634E** LDRD/STRD has no register offset addressing mode in Thumb
- A1635E** CBZ/CBNZ can not be made conditional
- A1636E** Flag setting MLA is not supported in Thumb
- A1637E** Error reading line: <reason>
- A1638E** Writeback not allowed on register offset loads or stores in Thumb
- A1639E** Conditional DCI only allowed in Thumb mode
- A1640E** Offset must be a multiple of four
- A1641E** Forced user-mode LDM/STM not supported in Thumb
- A1642W** Relocated narrow branch is not recommended
- A1643E** Cannot determine whether instruction is working on single or double precision values.
- A1644E** Cannot use single precision registers with FLDMX/LSTMX
- A1645W** Substituted <old> with <new>

armasm can warn when it substitutes an instruction when assembling.

For example:

- ADD *negative\_number* is the same as SUB *positive\_number*
- MOV *negative\_number* is the same as MVN *positive\_number*
- CMP *negative\_number* is the same as CMN *positive\_number*.

For Thumb-2, unpredictable single register LDMs are transformed into LDRs.

This warning is suppressed by default, but can be enabled with `--diag_warning 1645`

For example:

```
AREA foo, CODE
ADD r0, #-1
MOV r0, #-1
CMP r0, #-1
```

When assembled with:

```
armasm --diag_warning 1645
```

the assembler reports:

```
Warning: A1645W: Substituted ADD with SUB
3 00000000 ADD r0, #-1
Warning: A1645W: Substituted MOV with MVN
4 00000004 MOV r0, #-1
Warning: A1645W: Substituted CMP with CMN
5 00000008 CMP r0, #-1
```

and the resulting code generated is:

```
foo
0x00000000: e2400001 ..@. SUB r0,r0,#1
0x00000004: e3e00000 .... MVN r0,#0
0x00000008: e3700001 ..p. CMN r0,#1
```

- A1646W** VMOV pseudo-instruction for a register to register move is deprecated. Please use a VORR instruction instead
- A1647E** Bad register name symbol, expected Integer register  
An integer (core) register is expected at this point in the syntax.
- A1648E** Bad register name symbol, expected Wireless MMX SIMD register  
This message relates to Wireless MMX.
- A1649E** Bad register name symbol, expected Wireless MMX Status/Control or General Purpose register  
This message relates to Wireless MMX.
- A1650E** Bad register name symbol, expected any Wireless MMX register  
This message relates to Wireless MMX.
- A1651E** TANDC, TEXTRC and TORC instructions with destination register other than R15 is undefined  
This message relates to Wireless MMX.
- A1652W** FLDMMX/FSTMX instructions are deprecated in ARMv6. Please use FLDMD/FSTMD instructions to save and restore unknown precision values.
- A1653E** Shift instruction using a status or control register is undefined
- A1654E** Cannot access external symbols when loading/storing bytes or halfwords
- A1655W** Instruction is UNPREDICTABLE if halfword/word/doubleword is unaligned
- A1656E** Target must be at least word-aligned when used with this instruction
- A1657E** Cannot load a byte/halfword literal using WLDLB/WLDRH =constant
- A1658W** Support for <opt> is deprecated  
The option passed to `armasm` is now deprecated. Use `armasm --help` to view the currently available options.  
See the following in the *Assembler Reference*:
- Chapter 3 *ARM and Thumb Instructions*.
- A1659E** Cannot B/BL/BLX between ARM/Thumb and Thumb-2EE
- A1660E** Cannot specify scalar index on this register type
- A1661E** Cannot specify alignment on this register
- A1662E** Cannot specify a data type on this register type
- A1663E** A data type has already been specified on this register

<b>A1664E</b>	Data type specifier not recognized
<b>A1665E</b>	Data type size must be one of 8, 16, 32 or 64
<b>A1666E</b>	Data type size for floating-point must be 32 or 64
<b>A1667E</b>	Data type size for polynomial must be 8 or 16
<b>A1668E</b>	Too many data types specified on instruction
<b>A1669E</b>	Data type specifier not allowed on this instruction
<b>A1670E</b>	Expected 64-bit doubleword register expression
<b>A1671E</b>	Expected 128-bit quadword register expression
<b>A1672E</b>	Expected either 64-bit or 128-bit register expression
<b>A1673E</b>	Both source data types must be same type and size
<b>A1674E</b>	Source operand 1 should have integer type and be double the size of source operand 2
<b>A1675E</b>	Data types and sizes for destination must be same as source
<b>A1676E</b>	Destination type must be integer and be double the size of source
<b>A1677E</b>	Destination type must be same as source, but half the size
<b>A1678E</b>	Destination must be untyped and same size as source
<b>A1679E</b>	Destination type must be same as source, but double the size
<b>A1680E</b>	Destination must be unsigned and half the size of signed source
<b>A1681E</b>	Destination must be unsigned and have same size as signed source
<b>A1682E</b>	Destination must be un/signed and source floating, or destination floating and source un/signed, and size of both must be 32-bits
<b>A1683E</b>	Data type specifiers do not match a valid encoding of this instruction
<b>A1684E</b>	Source operand type should be signed or unsigned with size between <min> and <max>
<b>A1685E</b>	Source operand type should be signed, unsigned or floating point with size between <min> and <max>
<b>A1686E</b>	Source operand type should be signed or floating point with size between <min> and <max>
<b>A1687E</b>	Source operand type should be integer or floating point with size between <min> and <max>
<b>A1688E</b>	Source operand type should be untyped with size between <min> and <max>
<b>A1689E</b>	Source operand type should be <n>-bit floating point
<b>A1690E</b>	Source operand type should be signed with size between <min> and <max>
<b>A1691E</b>	Source operand type should be integer, floating point or polynomial with size between <min> and <max>
<b>A1692E</b>	Source operand type should be signed, unsigned or polynomial with size between <min> and <max>

<b>A1693E</b>	Source operand type should be unsigned or floating point with size between <min> and <max>
<b>A1694E</b>	Instruction cannot be conditional in the current instruction set Conditional instructions are not allowed in the specified instruction set. The instruction MOVEQ, for example, is only allowed in ARM and Thumb-2 assembler, but not Thumb-1.
<b>A1695E</b>	Scalar index not allowed on this instruction
<b>A1696E</b>	Expected either 32-bit, 64-bit or 128-bit register expression
<b>A1697E</b>	Expected either 32-bit or 64-bit VFP register expression
<b>A1698E</b>	Expected 32-bit VFP register expression
<b>A1699E</b>	64-bit data type cannot be used with these registers
<b>A1700E</b>	Source operand type should be integer with size between <min> and <max>
<b>A1701E</b>	16-bit polynomial type cannot be used for source operand
<b>A1702E</b>	Register Dm can not be scalar for this instruction
<b>A1704E</b>	Register Dm must be in the range D0-D<upper> for this data type
<b>A1705E</b>	Assembler converted Qm register to D<rnum>[<idx>]
<b>A1706E</b>	Register Dm must be scalar
<b>A1708E</b>	3rd operand to this instruction must be a constant expression
<b>A1709E</b>	Expected ARM or scalar register expression
<b>A1710E</b>	Difference between current and previous register should be <diff>
<b>A1711E</b>	Scalar registers cannot be used in register list for this instruction
<b>A1712W</b>	This combination of LSB and WIDTH results in UNPREDICTABLE behavior
<b>A1713E</b>	Invalid field specifiers for APSR: must be APSR_ followed by at least one of n, z, c, v, q or g
<b>A1714E</b>	Invalid combination of field specifiers for APSR
<b>A1715E</b>	PSR not defined on target architecture
<b>A1716E</b>	Destination for VMOV instruction must be ARM integer, 32-bit single-precision, 64-bit doubleword register or 64-bit doubleword scalar register
<b>A1717E</b>	Source register must be an ARM integer, 32-bit single-precision or 64-bit doubleword scalar register
<b>A1718E</b>	Source register must be an ARM integer register or same as the destination register
<b>A1719W</b>	This PSR name is deprecated and may be removed in a future release
<b>A1720E</b>	Source register must be a 64-bit doubleword scalar register
<b>A1721E</b>	Destination register may not have all-lanes specifier
<b>A1722E</b>	Labels not allowed inside IT blocks
<b>A1723E</b>	__RELOC is deprecated, please use the new RELOC directive

<b>A1724E</b>	RELOC may only be used immediately after an instruction or data generating directive
<b>A1725W</b>	'armasm inputfile outputfile' form of command-line is deprecated
<b>A1726E</b>	Decreasing --max_cache below 8MB is not recommended
<b>A1727W</b>	Immediate could have been generated using the 16-bit Thumb MOV <sub>S</sub> instruction
<b>A1728E</b>	Source register must be same type as destination register
<b>A1729E</b>	Register list may only contain 32-bit single-precision or 64-bit doubleword registers
<b>A1730E</b>	Only IA or DB addressing modes may be used with these instructions
<b>A1731E</b>	Register list increment of 2 or more is not allowed for quadword registers
<b>A1732E</b>	Register list must contain between 1 and 4 contiguous doubleword registers
<b>A1733E</b>	Register list must contain 2 or 4 doubleword registers, and increment 2 is only allowed for 2 registers
<b>A1734E</b>	Register list must contain <n> doubleword registers with increment 1 or 2
<b>A1735E</b>	Post-indexed offset must equal the number of bytes loaded/stored (<n>)
<b>A1736E</b>	Number of registers in list must equal number of elements
<b>A1737E</b>	PC or SP can not be used as the offset register
<b>A1738E</b>	Immediate too large for this operation
<b>A1739W</b>	Constant generated using single VMOV instruction; second instruction is a NOP
<b>A1740E</b>	Number of bytes in FRAME PUSH or FRAME POP directive must not be less than zero
<b>A1741E</b>	Instruction cannot be conditional
<b>A1742E</b>	Expected LSL #Imm
<b>A1744E</b>	Alignment on register must be a multiple of 2 in the range 16 to 256
<b>A1745W</b>	This register combination is DEPRECATED
<b>A1746W</b>	Instruction stall diagnostics may be unreliable for this CPU
<b>A1753E</b>	Unrecognized memory barrier option
<b>A1754E</b>	Cannot change the type of a scalar register
<b>A1755E</b>	Scalar index has already been specified on this register
<b>A1756E</b>	Data type must be specified on all registers
<b>A1757W</b>	Symbol attributes must be within square brackets; Any other syntax is deprecated
<b>A1758W</b>	Exporting multiple symbols with this directive is deprecated
<b>A1759E</b>	Specified processor or architecture does not support Thumb-2EE instructions
<b>A1760W</b>	Build Attribute <from> is '<attr>'

<b>A1761W</b>	Difference in build attribute from '<diff>' in <from>
<b>A1762E</b>	Branch offset 0x<val> out of range of 16-bit Thumb branch, but offset encodable in 32-bit Thumb branch  This is caused when assembling for Thumb-2 if an offset to a branch instruction is too large to fit in a 16-bit branch. The .W suffix can be added to the instruction to instruct the assembler to generate a 32-bit branch.
<b>A1763W</b>	Inserted an IT block for this instruction  This indicates that the assembler has inserted a IT block to allow a number of conditional instructions in Thumb-2. For example: MOVEQ r0,r1  This warning is off by default. It can be enabled using --diag_warning A1763.
<b>A1764W</b>	<name> instructions are deprecated in architecture <arch> and above
<b>A1765E</b>	Size of padding value on ALIGN must be 1, 2 or 4 bytes  This is caused when the optional padsize attribute is used with an ALIGN directive, but has an incorrect size. It does not refer to the parameter to align to. The parameter can be any power of 2 from 2^0 to 2^31
<b>A1766W</b>	Size of padding value for code must be a minimum of <size> bytes; treating as data
<b>A1767E</b>	Unexpected characters following attribute
<b>A1768E</b>	Missing '='
<b>A1769E</b>	Bad NEON or VFP system register name symbol
<b>A1771E</b>	Bad floating-point bitpattern when expecting <exp>-bit bitpattern
<b>A1772E</b>	Destination type must be signed or unsigned integer, and source type must be 32-bit or 64-bit floating-point
<b>A1773E</b>	Floating-point conversion only possible between 32-bit single-precision and 64-bit double-precision types
<b>A1774E</b>	Fixed-point conversion only possible for 16-bit or 32-bit signed or unsigned types
<b>A1775E</b>	Conversion between these types is not possible
<b>A1776E</b>	This operation is not available for 32-bit single-precision floating point types
<b>A1777E</b>	<n> is out of range for symbol type; value must be between <min> and <max>
<b>A1778E</b>	<n> is out of range for symbol binding; value must be between <min> and <max>
<b>A1779W</b>	DCDO cannot be used on READONLY symbol '<key>'
<b>A1780E</b>	Unknown ATTR directive
<b>A1781E</b>	Tag #<id> cannot be set by using ATTR
<b>A1782E</b>	Tag #<id> should be set with ATTR <cmd>
<b>A1783E</b>	Attribute scope must be a label or section name
<b>A1784W</b>	Reference to weak definition '<sym>' not relocated

<b>A1785E</b>	Macro '<macuse>' not found, but '<macdef>' exists
<b>A1786W</b>	This instruction using SP is deprecated in ARMv7 This is caused by statements like: ADD sp, r0, #imm This can be replaced with a sequence like: ADD r1,r0,#imm MOV sp, r1 For more information, see <i>Diagnostic messages A1745W, A1477W and A1786W</i> , <a href="http://infocenter.arm.com/help/topic/com.arm.doc.faqs/ka4235.html">http://infocenter.arm.com/help/topic/com.arm.doc.faqs/ka4235.html</a> .
<b>A1787W</b>	Use of VFP Vector Mode is deprecated in ARMv7
<b>A1788W</b>	Explicit use of PC in this instruction is deprecated
<b>A1789W</b>	Explicit use of PC in this instruction is deprecated, except as destination register
<b>A1790W</b>	Writeback ignored in Thumb LDM loading the base register This is caused by incorrectly adding an exclamation mark to indicate base register writeback. For example: LDM r0!, {r0-r4} is not a legal instruction because r0 is the base register and is also in the destination register list. In this case, the assembler ignores the writeback and generates: LDM r0, {r0-r4}
<b>A1791W</b>	Previous value of tag #<id> will be overridden
<b>A1792E</b>	Undefined build attributes tag
<b>A1793E</b>	Conversion only possible between 16-bit and 32-bit floating point
<b>A1794E</b>	Conversion operations require two data types
<b>A1795E</b>	Source and destination vector must contain <n> elements
<b>A1796E</b>	Register type not consistent with data type
<b>A1797E</b>	Specified FPU is not compatible with CPU architecture
<b>A1798W</b>	Output is not WYSIWYG (<output>)
<b>A1799W</b>	Output has not been checked for WYSIWYG property
<b>A1800W</b>	No output for line
<b>A1801W</b>	Instruction is UNPREDICTABLE in current instruction set
<b>A1803E</b>	Bad system instruction name
<b>A1804E</b>	Bad CP14 or CP15 register name for instruction
<b>A1805W</b>	Register is Read-Only
<b>A1806W</b>	Register is Write-Only
<b>A1807W</b>	Instruction executes as NOP on target CPU
<b>A1808E</b>	Generated object file may be corrupt (<reason>)

<b>A1809W</b>	Instruction aligns PC before using it; section ought to be at least 4 byte aligned
<b>A1810E</b>	Base register writeback value unclear; use '[rn,#n]!' or '[rn],#n' syntax
<b>A1811E</b>	Size of fill value must be 1, 2 or 4 bytes and a factor of fill size
<b>A1812W</b>	Instruction cannot be assembled in the opposite instruction set
<b>A1813W</b>	32-bit instruction used where 16-bit could have been used
<b>A1814E</b>	No output file
<b>A1815E</b>	SHT_ARM_EXIDX sections require a link order dependency to be set
<b>A1816E</b>	Unknown opcode '<name>' in CODE16, but exists in THUMB
<b>A1817W</b>	ATTR tag #<id> setting ignored in <scope>
<b>A1818W</b>	ATTR COMPAT flag <flag> and vendor '<vendor>' setting ignored in <scope>
<b>A1819W</b>	ATTR compatible with tag #<id> setting ignored in <scope>
<b>A1847E</b>	<p>Expression requiring more than one relocation not allowed</p> <p>This can occur during the assembly of ARM instructions when trying to access data in another area. For example, using:</p> <pre>LDR r0, [pc, #label - . - 8]</pre> <p>or its equivalent:</p> <pre>LDR r0, [pc, #label-{PC}-8]</pre> <p>where label is defined in a different AREA.</p> <p>Change your code to use the simpler, equivalent syntax:</p> <pre>LDR r0, label</pre> <p>This works if label is either in the same area or in a different area.</p>
<b>A1993E</b>	This operator requires a relocation that is not supported in <objfmt>
<b>A1994E</b>	This directive is not supported in <objfmt>
<b>A1995E</b>	Weak definitions are not supported in <objfmt>
<b>A1996E</b>	TYPE must only be used after WEAK on IMPORT
<b>A1997E</b>	Expected alias for weak extern symbol
<b>A1998E</b>	Comdat Associated area must have Comdat Associative selection type
<b>A1999E</b>	Comdat Associated area cannot be another Comdat Associated area



# Chapter 4

## Linker Errors and Warnings

This chapter contains the error and warning messages for the linker, `arm1ink`. It contains the following section:

- *Suppressing armlink error and warning messages* on page 4-2
- *List of the armlink error and warning messages* on page 4-3.

## 4.1 Suppressing armlink error and warning messages

All linker warnings are suppressible with `--diag_suppress` in the same way as for compiler warnings. For example:

```
--diag_suppress 6306
```

Some errors such as L6220E, L6238E and L6784E can be downgraded to a warning by using:

```
--diag_warning
```

## 4.2 List of the armlink error and warning messages

This section lists the error and warnings for armlink.

- L6000U** Out of memory.
- L6001U** Could not read from file <filename>.
- L6002U** Could not open file <filename>: <reason>  
 This indicates that the linker was unable to open a file specified on the linker command line. This can indicate a problem accessing the file or a fault with the command line specified. Some common occurrences of this message are:
- **L6002U:** Could not open file /armlib/{libname}: No such file or directory  
 If your ARM product requires environment variables to be set for the toolchain, then make sure the ARMCC4LIB environment variable is set. See *Toolchain environment variables* on page 2-12 in *Introducing the ARM Compiler toolchain* for details.
  - **Error :** armlink : L6002: Could not open file errors=ver.txt  
 Caused by the double-dash (--) missing from in front of errors=ver.txt. If you do not prefix options with -- or - the linker treats them as input files and fails the link step as it is unable to load all the specified files. The correct switch is --errors=ver.txt
- L6003U** Could not write to file <filename>.  
 An file I/O error occurred while reading, opening, or writing to the specified file.
- L6004U** Incomplete library member list <list> for <library>.  
 This can occur where there is whitespace in the list of library objects.  
 The example below fails:  
 armlink x.lib(foo.o, bar.o)  
 Fatal error: L6004U: Missing library member in member list for x.lib.  
 The example below succeeds:  
 armlink x.lib(foo.o,bar.o)  
 Another less common occurrence is caused by a corrupt library, or possibly a library in an unsupported format.
- L6005U** Extra characters on end of member list for <library>.
- L6006U** Overalignment value not specified with OVERALIGN attribute for execution region <regionname>.  
 See the following in the *Linker Reference*:
- *Syntax of an input section description* on page 4-19
- See the following in *Using the Linker*:
- *Overalignment of execution regions and input sections* on page 8-41.
- L6007U** Could not recognize the format of file <filename>.  
 The linker can recognize object files in the ELF format, and library files in AR formats. The specified file is either corrupt, or is in a file format that the linker cannot recognize.
- L6008U** Could not recognize the format of member <mem> from <lib>.

The linker can recognize library member objects in the ELF file format. The specified library member is either corrupt, or is in a file format that the linker cannot recognize.

- L6009U** File <filename> : Endianness mismatch.  
The endianness of the specified file or object did not match the endianness of the other input files. The linker can handle input of either big endian or little endian objects in a single link step, but not a mixed input of some big and some little endian objects.
- L6010U** Could not reopen stderr to file <filename>: <reason>  
An file I/O error occurred while reading, opening, or writing to the specified file.
- L6011U** Invalid integer constant : <number>.  
Specifying an illegal integer constant causes this. An integer can be entered in hexadecimal format by prefixing &, 0x, or 0X. A suffix of k or m can be used to specify a multiple of 1024 or 1024\*1024.
- L6015U** Could not find any input files to link.  
The linker must be provided with at least one object file to link.  
For example, If you try to link with:  
`armlink lib.a -o foo.axf`  
you get the above error.  
You must instead use, for example:  
`armlink foo_1.o foo_2.o lib.a -o foo.axf`
- L6016U** Symbol table missing/corrupt in object/library <object>.  
This can occur when linking with libraries built with the GNU tools. This is because GNU ar can generate incompatible information.  
The workaround is to replace ar with armar and use the same command line arguments. Alternatively, the error is recoverable by using armar -s to rebuild the symbol table.
- L6017U** Library <library> symbol table contains an invalid entry, no member at offset 0x<offset>.  
The library might be corrupted. Try rebuilding it.
- L6018U** <filename> is not a valid ELF file.
- L6019U** <filename> is not a valid 64 bit ELF file.
- L6020U** <filename> is not a valid 32 bit ELF file.
- L6022U** Object <objname> has multiple <table>.  
The object file is faulty or corrupted. This might indicate a compiler fault. Contact your supplier.
- L6024U** Library <library> contains an invalid member name.  
The file specified is not a valid library file, is faulty or corrupted. Try rebuilding it.
- L6025U** Cannot extract members from a non-library file <library>.  
The file specified is not a valid library file, is faulty or corrupted. Try rebuilding it.
- L6026U** ELF file <filename> has neither little or big endian encoding  
The ELF file is invalid. Try rebuilding it.

- L6027U** Relocation #<rel\_class>:<rel\_number> in <objname>(<secname>) has invalid/unknown type.  
This might indicate a compiler fault. Contact your supplier.
- L6028U** Relocation #<rel\_class>:<rel\_number> in <objname>(<secname>) has invalid offset.  
This might indicate a compiler fault. Contact your supplier.
- L6029U** Relocation #<rel\_class>:<rel\_number> in <objname>(<secname>) is wrt invalid/missing symbol.  
The relocation is with respect to a symbol that is either:
- invalid or missing from the object symbol table
  - a symbol that is not suited to be used by a relocation.
- This might indicate a compiler fault. Contact your supplier.
- L6030U** Overalignment <overalignment> for region <regname> must be at least 4 and a power of 2  
See the following in the *Linker Reference*:
- *Execution region attributes* on page 4-11
  - *Syntax of an input section description* on page 4-19
- See the following in *Using the Linker*:
- *Overalignment of execution regions and input sections* on page 8-41.
- L6031U** Could not open scatter description file <filename>: <reason>  
An I/O error occurred while trying to open the specified file. This could be due to an invalid filename.
- L6032U** Invalid <text> <value> (maximum <max\_value>) found in <object>
- L6033U** Symbol <symbolname> in <objname> is defined relative to an invalid section.
- L6034U** Symbol <symbolname> in <objname> has invalid value.  
This is most often caused by a section-relative symbol having a value that exceeds the section boundaries.
- L6035U** Relocation #<rel\_class>:<rel\_number> in ZI Section <objname>(<secname>) has invalid type.  
ZI Sections cannot have relocations other than of type R\_ARM\_NONE.
- L6036U** Could not close file <filename>: <reason>  
An I/O error occurred while closing the specified file.
- L6037U** '<arg>' is not a valid argument for option '<option>'.  
The argument is not valid for this option. This could be due to a spelling error, or due to the use of an unsupported abbreviation of an argument.
- L6038U** Could not create a temporary file to write updated SYMDEFS.  
An I/O error occurred while creating the temporary file required for storing the SYMDEFS output.
- L6039W** Relocation from #<rel\_class>:<rel\_number> in <objname>(<secname>) with respect to <symname>. Skipping creation of R-type relocation. No corresponding R-type relocation exists for type <rel\_type>.

--reloc is used with objects containing relocations that do not have a corresponding R-type relocation.

- L6041U** An internal error has occurred (<clue>).  
Contact your supplier.
- L6042U** Relocation #<rel\_class>:<rel\_number> in <objname>(<secname>) is wrt a mapping symbol(#<idx>, Last Map Symbol = #<last>).  
Relocations with respect to mapping symbols are not allowed. This might indicate a compiler fault. Contact your supplier.
- L6043U** Relocation #<rel\_class>:<rel\_number> in <objname>(<secname>) is with respect to an out of range symbol(#<val>, Range = 1-<max>).  
Relocations can only be made wrt symbols in the range (1-n), where n is the number of symbols.
- L6047U** The size of this image (<actual\_size> bytes) exceeds the maximum allowed for this version of the linker
- L6048U** The linker is unable to continue the link step (<id>). This version of the linker will not create this image.
- L6049U** The linker is unable to continue the link step (<id>). This version of the linker will not link with one or more given libraries.
- L6050U** The code size of this image (<actual\_size> bytes) exceeds the maximum allowed for this version of the linker.
- L6175E** EMPTY region <regname> cannot have any section selectors.
- L6176E** A negative max\_size cannot be used for region <regname> without the EMPTY attribute.  
Only regions with the EMPTY attribute are allowed to have a negative max-size.
- L6177E** A negative max\_size cannot be used for region <regname> which uses the +offset form of base address.  
Regions using the +offset form of base address are not allowed to have a negative max-size.
- L6188E** Special section <sec1> multiply defined by <obj1> and <obj2>.  
A *special* section is one that can only be used once, such as "Veneer\$\$Code".
- L6195E** Cannot specify both '<attr1>' and '<attr2>' for region <regname>
- L6200E** Symbol <symbolname> multiply defined by <object1> and <object2>.  
A common example where this occurs:  
Symbol \_\_stdout multiply defined (by retarget.o and stdio.o).  
means that there are two conflicting definitions of \_\_stdout present in retarget.o and stdio.o. The one in retarget.o is your own definition. The one in stdio.o is the default implementation, which was probably linked-in inadvertently.  
stdio.o contains a number symbol definitions and implementations of file functions like fopen, fclose, and fflush.  
stdio.o is being linked-in because it satisfies some unresolved references.  
To identify why stdio.o is being linked-in, you must use the verbose link option switch. For example:  
armlink [... your normal options...] --verbose --list err.txt

Then study `err.txt` to see exactly what the linker is linking in, from where, and why.

You might have to either:

- eliminate the calls like `fopen`, `fclose`, and `fflush`
- re-implement the `_sys_xxxx` family of functions.

See *Tailoring input/output functions in the C and C++ libraries* on page 2-108 in *Using ARM® C and C++ Libraries and Floating-Point Support*.

**L6201E** Object `<objname>` contains multiple entry sections.

**L6202E** `<objname>(<secname>)` cannot be assigned to non-root region '`<regionname>`'  
A root region is a region that has an execution address the same as its load address. The region does not therefore require moving or copying by the scatter load initialization code.

Certain sections must be placed in root region in the image. `__main.o` and the linker-generated table (`Region$$Table`) must be in a root region. If not, the linker reports, for example:

`Region$$Table` cannot be assigned to a non-root region.

Scatterloading (`__scatter*.o`) and decompressor (`__dc*.o`) objects from the library must be placed in a root region. These can all be placed together using `InRoot$$Sections`:

```
ROM_LOAD 0x0000 0x4000
{
  ROM_EXEC 0x0000 0x4000 ; root region
  {
    vectors.o (Vect, +FIRST) ; Vector table
    * (InRoot$$Sections) ; All library sections
                        ; that must be in a root region
                        ; for example, __main.o, __scatter*.o,
                        ; dc*.o and * Region$$Table
  }
  RAM 0x10000 0x8000
  {
    * (+RO, +RW, +ZI) ; all other sections
  }
}
```

See also *Placing root region library objects*,  
<http://infocenter.arm.com/help/topic/com.arm.doc.faqs/ka3946.html>.

**L6203E** Entry point (`<address>`) lies within non-root region `<regionname>`.

The image entry point must correspond to a valid instruction in a root-region of the image.

**L6204E** Entry point (`<address>`) does not point to an instruction.

The image entry point you specified with the `--entry` command-line option must correspond to a valid instruction in the root-region of the image.

See the following in the *Linker Reference*:

- `--entry=location` on page 2-48.

**L6205E** Entry point (`<address>`) must be word aligned for ARM instructions.

This message is displayed because the image entry point you specified with the `--entry` command-line option is not word aligned. For example, you specified `--entry=0x8001` instead of `--entry=0x8000`.

See the following in the *Linker Reference*:

- `--entry=location` on page 2-48.

**L6206E** Entry point (<address>) lies outside the image.

The image entry point you specified with the `--entry` command-line option is outside the image. For example, you might have specified an entry address of `0x80000` instead of `0x8000`, as follows:

```
armmlink --entry=0x80000 test.o -o test.axf
```

See the following in the *Linker Reference*:

- `--entry=location` on page 2-48.

**L6208E** Invalid argument for `--entry` command: '<arg>'

See the following in the *Linker Reference*:

- `--entry=location` on page 2-48.

**L6209E** Invalid offset constant specified for `--entry` (<arg>)

See the following in the *Linker Reference*:

- `--entry=location` on page 2-48.

**L6210E** Image cannot have multiple entry points. (<address1>,<address2>)

One or more input objects specifies more than one entry point for the image. Use the `--entry` command-line option to select the entry point to use.

See the following in the *Linker Reference*:

- `--entry=location` on page 2-48.

**L6211E** Ambiguous section selection. Object <objname> contains more than one section.

This can occur when using the linker option `--keep` on an assembler object that contains more than one AREA. The linker must know which AREA you want to keep.

To solve this, use more than one `--keep` option to specify the names of the AREAs to keep, such as:

```
--keep boot.o(vectors) --keep boot.o(resethandler) ...
```

#### ———— **Note** ————

Using assembler files with more than one AREA might give other problems elsewhere, so this is best avoided.

**L6213E** Multiple First section <object2>(<section2>) not allowed.  
<object1>(<section1>) already exists.

Only one FIRST section is allowed.

**L6214E** Multiple Last section <object2>(<section2>) not allowed.  
<object1>(<section1>) already exists.

Only one LAST section is allowed.

**L6215E** Ambiguous symbol selection for `--First/--Last`. Symbol <symbol> has more than one definition.

See the following in the *Linker Reference*:

- `--first=section_id` on page 2-61
- `--last=section_id` on page 2-82.

**L6216E** Cannot use base/limit symbols for non-contiguous section <secname>



The exception-handling index tables generated by the compiler are given the section name `.ARM.exidx`. For more information, see *Exception Handling ABI for the ARM Architecture*, <http://infocenter.arm.com/help/topic/com.arm.doc.ih0038-/index.html>.

At link time these tables must be placed in the same execution region and be contiguous. If you explicitly place these sections non-contiguously using specific selector patterns in your scatter-loading description file, then this error message is likely to occur. For example:

```
LOAD_ROM 0x00000000
{
  ER1 0x00000000
  {
    file1.o (+R0) ; from a C++ source
    * (+R0)
  }
  ER2 0x01000000
  {
    file2.o (+R0) ; from a C++ source
  }
  ER3 +0
  {
    * (+RW, +ZI)
  }
}
```

This produces the following error because the base and limit symbols for `file1.o` and `file2.o` are in separate regions:

Error: L6216E: Cannot use base/limit symbols for non-contiguous section `.init_array`

The `.init_array` sections must be placed contiguously within the same region for their base and limit symbols to be accessible.

The corrected example is:

```
LOAD_ROM 0x00000000
{
  ER1 0x00000000
  {
    file1.o (+R0) ; from a C++ source
    * (.init_array)
    * (+R0)
  }
  ER2 0x01000000
  {
    file2.o (+R0) ; from a C++ source
  }
  ER3 +0
  {
    * (+RW, +ZI)
  }
}
```

In the corrected example, the base and limit symbols are contained in `.init_array` in a single region.

For more information, see the following in *Using ARM® C and C++ Libraries and Floating-Point Support*:

- *How C and C++ programs use the library functions* on page 2-64
- *C++ initialization, construction and destruction* on page 2-67.

- L6217E** Relocation #<rel\_class>:<rel\_number> in <objname>(<secname>) with respect to <symbol>. R\_ARM\_SBREL32 relocation to imported symbol
- L6218E** Undefined symbol <symbol> (referred from <objname>).  
Some common examples where this can occur are:
- User Error. Somebody has referenced a symbol and has either forgotten to define it or has incorrectly defined it.
  - Undefined symbol \_\_ARM\_switch8 or \_\_ARM\_11\_<xxxx> functions  
The helper functions are automatically generated into the object file by the compiler.
- **Note** ————
- An undefined reference error can, however, still be generated if linking objects from legacy projects where the helper functions are in the h\_<xxx> libraries (h indicates that these are compiler helper libraries, rather than standard C library code).  
Re-compile the object or ensure that these libraries can be found by the linker.
- 
- When attempting to refer to a function/entity in C from a function/entity in C++. This is caused by C++ name mangling, and can be avoided by marking C functions extern "C".
  - Undefined symbol thunk{v:0,-44} to Foo\_i::~~Foo\_i() (referred from Bar\_i.o)  
The symbol thunk{v:0,-44} to Foo\_i::~~Foo\_i() is a wrapper function round the regular Foo\_i::~~Foo\_i().  
Foo\_i is a derived class of some other base class, therefore:
    - it has a base-class vtable for when it is referred to by a pointer to that base class
    - the base-class vtable has an entry for the thunk
    - the destructor thunk is output when the actual (derived class) destructor is output.
 Therefore, to avoid the error, ensure this destructor is defined.
- L6219E** <type> section <object1>(<section1>) attributes {<attributes>} incompatible with neighboring section <object2>(<section2>).  
This error occurs when the default ordering rules used by the linker (RO followed by RW followed by ZI) are violated. This typically happens when one uses +FIRST or +LAST, for example in a scatter file, attempting to force RW before RO.
- L6220E** <type> region <regionname> size (<size> bytes) exceeds limit (<limit> bytes).  
Example:  
Execution region ROM\_EXEC size (4208184 bytes) exceeds limit (4194304 bytes).  
This can occur where a region has been given an (optional) maximum length in the scatter-file, but this size of the code/data being placed in that region has exceeded the given limit. This error is suppressible with --diag\_suppress 6220.
- L6221E** <type1> region <regionname1> with <addrtype1> range [<base1>,<limit1>) overlaps with <type2> region <regionname2> with <addrtype2> range [<base2>,<limit2>).  
This represents an incorrect scatter-file. A non-ZI section must have a unique load address and in most cases must have a unique execution address.

- L6222E** Partial object cannot have multiple ENTRY sections, <e\_>(<e\_sname>) and <oname>(<sname>).  
Where objects are being linked together into a partially-linked object, only one of the sections in the objects can have an entry point.  
  
———— **Note** ————  
It is not possible in this case to use the linker option --entry to select one of the entry points.  
————
- L6223E** Ambiguous selectors found for <objname>(<secname>) from Exec regions <region1> and <region2>.  
This occurs if the scatter-file specifies <objname>(<secname>) to be placed in more than one execution region. This can occur accidentally when using wildcards (\*). The solution is to make the selections more specific in the scatter-file.
- L6224E** Could not place <objname>(<secname>) in any Execution region.  
This occurs if the linker can not match an input section to any of the selectors in your scatterfile. You must correct your scatterfile by adding an appropriate selector.
- L6225E** Number <str...> is too long.
- L6226E** Missing base address for region <regname>.
- L6227E** Using --reloc with --rw-base without --split is not allowed.
- L6228E** Expected '<str1>', found '<str2>'.
- L6229E** Scatter description <file> is empty.
- L6230E** Multiple execution regions (<region1>,<region2>) cannot select <secname>.
- L6231E** Missing module selector.
- L6232E** Missing section selector.
- L6233E** Unknown section selector '+<selector>'.
- L6234E** <ss> must follow a single selector.  
For example, in a scatter file:  
:  
\* (+FIRST, +R0)  
:  
+FIRST means place this (single) section first. Selectors that can match multiple sections (for example, +R0 or +ENTRY) are not allowed to be used with +FIRST (or +LAST). If used together, the error message is generated.
- L6235E** More than one section matches selector - cannot all be FIRST/LAST.
- L6236E** No section matches selector - no section to be FIRST/LAST.  
The scatter-file specifies a section to be +FIRST or +LAST, but that section does not exist, or has been removed by the linker because it believes it to be unused. Use the linker option --info unused to reveal which objects are removed from your project. Example:  
ROM\_LOAD 0x00000000 0x4000  
{  
  ROM\_EXEC 0x00000000  
  {

```

    vectors.o (Vect, +First) << error here
    * (+R0)
}
RAM_EXEC 0x40000000
{
    * (+RW, +ZI)
}
}

```

Some possible solutions are:

- ensure `vectors.o` is specified on the linker command-line
- link with `--keep vectors.o` to force the linker not to remove this, or switch off this optimization entirely, with `--noremove` [not recommended]
- [Recommended] Add the `ENTRY` directive to `vectors.s`, to tell the linker that it is a possible entry point of your application such as, for example:  

```

AREA Vect, CODE
ENTRY ; define this as an entry point
Vector_table
...

```

and then link with `--entry Vector_table` to define the real start of your code.

**L6237E** <objname>(<secname>) contains relocation(s) to unaligned data.

**L6238E** <objname>(<secname>) contains invalid call from '<attr1>' function to '<attr2>' function <sym>.

This linker error is given where a stack alignment conflict is detected in object code. The *ABI for the ARM Architecture* suggests that code maintains eight-byte stack alignment at its interfaces. This permits efficient use of `LDRD` and `STRD` instructions (in ARM Architecture 5TE and later) to access eight-byte aligned double and long long data types.

Symbols such as `~PRES8` and `REQ8` are *Build Attributes* of the objects:

- `PRES8` means the object `PRE`Serves eight-byte alignment of the stack
- `~PRES8` means the object does NOT preserve eight-byte alignment of the stack (`~` meaning NOT)
- `REQ8` means the object `RE`QUIRES eight-byte alignment of the stack.

This link error typically occurs in two cases:

- Where assembler code (that does not preserve eight-byte stack alignment) calls compiled C/C++ code (that requires eight-byte stack alignment).
- Where attempting to link legacy objects that were compiled with older tools with objects compiled with recent tools. Legacy objects that do not have these attributes are treated as `~PRES8`, even if they do actually happen to preserve eight-byte alignment.

For example:

Error: L6238E: `foo.o(.text)` contains invalid call from '`~PRES8`' function to '`REQ8`' function `foobar`

This means that there is a function in the object `foo.o` (in the section named `.text`) that does not preserve eight-byte stack alignment, but which is trying to call function `foobar` that requires eight-byte stack alignment.

A similar warning that might be encountered is:

Warning: L6306W: '`~PRES8`' section `foo.o(.text)` should not use the address of '`REQ8`' function `foobar`

where the address of an external symbol is being referred to.

There are two possible solutions to work-around this issue:

- Rebuild all your objects/libraries.  
If you have any assembler files, you must check that all instructions preserve eight-byte stack alignment, and if necessary, correct them.  
For example, change:  
STMFD sp!, {r0-r3, lr} ; push an odd number of registers  
to  
STMFD sp!, {r0-r3, r12, lr} ; push even number of registers  
The assembler automatically marks the object with the PRES8 attribute if all instructions preserve eight-byte stack alignment, so it is no longer necessary to add the PRESERVE8 directive to the top of each assembler file.
- If you have any legacy objects/libraries that cannot be rebuilt, either because you do not have the source code, or because the old objects must not be rebuilt (for example, for qualification/certification reasons), then you must inspect the legacy objects to check whether they preserve eight-byte alignment or not.  
Use fromelf -c to disassemble the object code. C/C++ code compiled with ADS 1.1 or later normally preserves eight-byte alignment, but assembled code does not.  
If your objects do indeed preserve eight-byte alignment, then the linker error L6238E can be suppressed with the use of --diag\_suppress 6238 on the linker command line.  
By using this, you are effectively guaranteeing that these objects are PRES8.  
The linker warning L6306W is suppressible with --diag\_suppress 6306.

See also Linker Error: *L6238E: foo.o(.text) contains invalid call from '~PRES8' function to 'REQ8' function foobar*,  
<http://infocenter.arm.com/help/topic/com.arm.doc.faqs/ka3556.html>.

- L6239E** Cannot call non-interworking <t2> symbol '<sym>' in <obj2> from <t1> code in <obj1>(<sec1>)  
Example:  
Cannot call non-interworking ARM symbol 'ArmFunc' in object foo.o from THUMB code in bar.o(.text)  
This problem can be caused by foo.c not being compiled with the option --apcs /interwork, to enable ARM code to call Thumb code (and Thumb to ARM) by linker-generated interworking veneers.
- L6241E** <objname>(<secname>) cannot use the address of '<attr1>' function <sym> as the image contains '<attr2>' functions.  
When linking with '--strict', the linker reports conditions that might fail as errors, for example:  
Error: L6241E: foo.o(.text) cannot use the address of '~IW' function main as the image contains 'IW' functions.  
IW means *interworking*, and ~IW means *non-interworking*.
- L6242E** Cannot link object <objname> as its attributes are incompatible with the image attributes.  
In most cases the error message you receive is similar to:  
Error: L6242E: Cannot link object foo.o as its attributes are incompatible with the image attributes.  
require four-byte alignment of eight-byte datatypes clashes with require eight-byte alignment of eight-byte data types.

This occurs when you try to link object files built for the ADS ABI (ADS objects or compiled with `--apcs=/adsabi`).

To avoid this error message you must re-compile the offending object files that use the ADS ABI.

- L6243E** Selector only matches removed unused sections - no section to be FIRST/LAST.
- All sections matching this selector have been removed from the image because they were unused. For more information, use `--info unused`.
- L6244E** <type> region <regionname> address (<addr>) not aligned on a <align> byte boundary.
- L6245E** Failed to create requested ZI section '<name>'.
- L6248E** <objname>(<secname>) in <attr1> region '<r1>' cannot have <rtype> relocation to <symname> in <attr2> region '<r2>'.
- Example: L6248E: foo.o(areaname) in ABSOLUTE region 'ER\_R0' cannot have address/offset type relocation to symbol in PI region 'ER\_ZI'.
- See compiler error number 1359.
- See also *What does "Error: L6248E: cannot have address type relocation" mean?*, <http://infocenter.arm.com/help/topic/com.arm.doc.faqs/ka3554.html>.
- L6249E** Entry point (<address>) lies within multiple sections.
- L6250E** Object <objname> contains illegal definition of special symbol <symbol>.
- L6251E** Object <objname> contains illegal reference to special symbol <symbol>.
- L6252E** Invalid argument for `--xreffrom/--xref to` command: '<arg>'
- L6253E** Invalid SYMDEF address: <number>.
- L6254E** Invalid SYMDEF type : <type>.
- The content of the symdefs file is invalid.
- See the following in *Using the Linker*:
- *Symdefs file format* on page 7-19.
- L6255E** Could not delete file <filename>: <reason>
- An I/O error occurred while trying to delete the specified file. The file was either read-only, or was not found.
- L6257E** <object>(<secname>) cannot be assigned to overlaid Execution region '<ername>'.
- This message indicates a problem with the scatter file.
- See the following in the *Linker Reference*:
- Chapter 4 *Formal syntax of the scatter-loading description file*.
- L6258E** Entry point (<address>) lies in an overlaid Execution region.
- This message indicates a problem with the scatter file.
- See the following in the *Linker Reference*:
- Chapter 4 *Formal syntax of the scatter-loading description file*.
- L6259E** Reserved Word '<name>' cannot be used as a <type> region name.
- <name> is a reserved word, so choose a different name for your region.
- L6260E** Multiple load regions with the same name (<regionname>) are not allowed.

This message indicates a problem with the scatter file.

See the following in the *Linker Reference*:

- Chapter 4 *Formal syntax of the scatter-loading description file*.

**L6261E** Multiple execution regions with the same name (<regionname>) are not allowed.

This message indicates a problem with the scatter file.

See the following in the *Linker Reference*:

- Chapter 4 *Formal syntax of the scatter-loading description file*.

**L6263E** <addr> address of <regionname> cannot be addressed from <pi\_or\_abs> Region Table in <regtabregionname>

The Region Table contains information used by the C-library initialization code to copy, decompress, or create ZI. This error message is given when the scatter file specifies an image structure that cannot be described by the Region Table.

The error message is most common when PI and non-PI Load Regions are mixed in the same image.

**L6265E** Non-PI Section <obj>(<sec>) cannot be assigned to PI Exec region <er>.

This might be caused by explicitly specifying the (wrong) ARM-supplied library on the linker command-line. Remove the explicit specification of the ARM library or replace the library, for example, `c_t.l`, with the correct library.

**L6266E** RWPI Section <obj>(<sec>) cannot be assigned to non-PI Exec region <er>.

A file compiled with `--apcs=/rwp` is placed in an Execution Region that does not have the PI attribute.

**L6271E** Two or more mutually exclusive attributes specified for Load region <regname>

This message indicates a problem with the scatter file.

**L6272E** Two or more mutually exclusive attributes specified for Execution region <regname>

This message indicates a problem with the scatter file.

**L6273E** Section <objname>(<secname>) has mutually exclusive attributes (READONLY and ZI)

This message indicates a problem with the object file.

**L6275E** COMMON section <obj1>(<sec1>) does not define <sym> (defined in <obj2>(<sec2>))

Given a set of COMMON sections with the same name, the linker selects one of them to be added to the image and discards all others. The selected COMMON section must define all the symbols defined by any rejected COMMON section, otherwise, a symbol which was defined by the rejected section now becomes undefined again. The linker generates an error if the selected copy does not define a symbol that a rejected copy does. This error is normally be caused by a compiler fault. Contact your supplier.

**L6276E** Address <addr> marked both as <s1>(from <sp1>(<obj1>) via <src1>) and <s2>(from <sp2>(<obj2>) via <src2>).

The image cannot contain contradictory mapping symbols for a given address, because the contents of each word in the image are uniquely typed as ARM (\$a) or THUMB (\$t) code, DATA (\$d), or NUMBER. It is not possible for a word to be both ARM code and DATA. This might indicate a compiler fault. Contact your supplier.

- L6277E** Unknown command '<cmd>'.
- L6278E** Missing expected <str>.
- L6279E** Ambiguous selectors found for <sym> ('<sel1>' and '<sel2>').
- L6280E** Cannot rename <sym> using the given patterns.  
See the following in the *Linker Reference*:
- *RENAME* on page 3-5.
- L6281E** Cannot rename both <sym1> and <sym2> to <newname>.  
See the following in the *Linker Reference*:
- *RENAME* on page 3-5.
- L6282E** Cannot rename <sym> to <newname> as a global symbol of that name exists (defined) in <obj>).  
See the following in the *Linker Reference*:
- *RENAME* on page 3-5.
- L6283E** Object <objname> contains illegal local reference to symbol <symbolname>.  
An object cannot contain a reference to a local symbol, since local symbols are always defined within the object itself.
- L6285E** Non-relocatable Load region <lr\_name> contains R-Type dynamic relocations. First R-Type dynamic relocation found in <object>(<secname>) at offset 0x<offset>.  
  
This error occurs where there is a PI reference between two separate segments, if the two segments can be moved apart at runtime. When the linker sees that the two sections can be moved apart at runtime it generates a relocation (an R-Type relocation) that can be resolved if the sections are moved from their statically linked address. However the linker faults this relocation (giving error L6285E) because PI regions must not have relocations with respect to other sections as this invalidates the criteria for being position independent.
- L6286E** Relocation #<rel\_class>:<rel\_number> in <objname>(<secname>) with respect to {<symname>|<s>}. Value(<val>) out of range(<range>) for (<rtype>)  
  
This can typically occur in handwritten assembler code, where the limited number of bits for a field within the instruction opcode is too small to refer to a symbol so far away. For example, for an LDR or STR where the offset is too large for the instruction (+/-4095 for ARM state LDR/STR instruction). In other cases, please make sure you have the latest patch installed from:  
<http://www.arm.com/support/downloads>.  
  
For more information see *Value out of range for relocation*,  
<http://infocenter.arm.com/help/topic/com.arm.doc.faq/ka3553.html>.
- L6287E** Illegal alignment constraint (<align>) specified for <objname>(<secname>).  
An illegal alignment was specified for an ELF object.



- L6291E** Cannot assign Fixed Execution Region <ername> Load Address:<addr>. Load Address must be greater than or equal to next available Load Address:<load\_addr>.
- See the following in the *Linker Reference*:
- *Execution region attributes* on page 4-11.
- L6292E** Ignoring unknown attribute '<attr>' specified for region <regname>.
- This error message is specific to execution regions with the FIXED attribute. FIXED means make the load address the same as the execution address. The linker can only do this if the execution address is greater than or equal to the next available load address within the load region.
- L6294E** <type> region <regionname> spans beyond 32 bit address space (base <base>, size <size> bytes).
- The above error message relates to a problem with the scatter file.
- L6295E** Relocation #<rel\_class>:<rel\_number> in <objname>(<secname>) with respect to <symname> SBREL relocation requires image to be RWPI
- L6296E** Definition of special symbol <sym1> is illegal as symbol <sym2> is absolute.
- See L6188E.
- L6300W** Common section <object1>(<section1>) is larger than its definition <object2>(<section2>).
- This might indicate a compiler fault. Contact your supplier.
- L6301W** Could not find file <filename>: <reason>
- The specified file was not found in the default directories.
- L6302W** Ignoring multiple SHLNAME entry.
- There can be only one SHLNAME entry in an edit file. Only the first such entry is accepted by the linker. All subsequent SHLNAME entries are ignored.
- L6304W** Duplicate input file <filename> ignored.
- The specified filename occurred more than once in the list of input files.
- L6305W** Image does not have an entry point. (Not specified or not set due to multiple choices.)
- The entry point for the ELF image was either not specified, or was not set because there was more than one section with an entry point linked-in. You must use linker option --entry to specify the single, unique entry, for example:
- ```
--entry 0x0
```
- or
- ```
--entry <label>
```
- The label form is typical for an embedded system.
- L6306W** '<attr1>' section <objname>(<secname>) should not use the address of '<attr2>' function <sym>.
- See L6238E.
- L6307W** Relocation #<rel\_class>:<rel\_num> in <objname>(<secname>) with respect to <sym>. Branch to unaligned destination.
- L6308W** Could not find any object matching <membername> in library <libraryname>.

The name of an object in a library is specified on the link-line, but the library does not contain an object with that name.

- L6309W** Library <libraryname> does not contain any members.  
A library is specified on the linker command-line, but the library does not contain any members.
- L6310W** Unable to find ARM libraries.  
This is most often caused by a missing or invalid value of the environment variable ARMCC41LIB or by incorrect arguments to --libpath.  
If your ARM product requires environment variables to be set for the toolchain, then make sure the ARMCC41LIB environment variable is set. See *Toolchain environment variables* on page 2-12 in *Introducing the ARM Compiler toolchain* for details.  
Alternatively, try specifying the path explicitly using --libpath switch. The default for a normal Windows installation is:  
`install_directory\...\lib`  
Ensure this path does not include:
- \armlib
  - \cpplib
  - any trailing slashes (\) at the end. These are added by the linker automatically.
- Use --verbose or --info libraries to display where the linker is attempting to locate the libraries.
- L6311W** Undefined symbol <symbol> (referred from <objname>).  
See L6218E.
- L6312W** Empty <type> region description for region <region>
- L6313W** Using <oldname> as a section selector is obsolete. Please use <newname> instead.  
For example, use of IwV\$\$Code within the scatterfile is now obsolete and can be replaced with Veneer\$\$Code.
- L6314W** No section matches pattern <module>(<section>).  
Example:  
No section matches pattern foo.\*o(ZI).  
This can occur for two possible reasons:
- The file foo.o is mentioned in your scatter-file, but it is not listed on the linker command-line. To resolve this, add foo.o to the link-line.
  - You are trying to place the ZI data of foo.o using a scatter-file, but foo.o does not contain any ZI data. To resolve this, remove the +ZI attribute from the foo.o line in your scatter-file.
- L6315W** Ignoring multiple Build Attribute symbols in Object <objname>.  
An object can contain at most one absolute BuildAttribute\$\$... symbol. Only the first such symbol from the object symbol table is accepted by the linker. All subsequent ones are ignored.
- L6316W** Ignoring multiple Build Attribute symbols in Object <objname> for section <sec\_no>

An object can contain at most one BuildAttribute\$\$... symbol applicable to a given section. Only the first such symbol from the object symbol table is accepted by the linker. All subsequent ones are ignored.

**L6317W** <objname>(<secname>) should not use the address of '<attr1>' function <sym> as the image contains '<attr2>' functions.

**L6318W** <objname>(<secname>) contains branch to a non-code symbol <sym>.

This warning means that in the (usually assembler) file, there is a branch to a non-code symbol (in another AREA) in the same file. This is most likely a branch to a label or address where there is data, not code.

For example:

```
AREA foo, CODE
B bar
AREA bar, DATA
DCD 0
END
```

results in the message:

init.o(foo) contains branch to a non-code symbol bar.

If the destination has no name:

BL 0x200 ; Branch with link to 0x200 bytes ahead of PC

the following message is displayed:

bootsys.o(BOOTSYS\_IVT) contains branch to a non-code symbol <Anonymous Symbol>.

This warning can also appear when linking objects generated by GCC. GCC uses linker relocations for references internal to each object. The targets of these relocations might not have appropriate mapping symbols that allow the linker to determine whether the target is code or data, so a warning is generated. By contrast, armcc resolves all such references at compile-time.

**L6319W** Ignoring <cmd> command. Cannot find section <objname>(<secname>).

For example, when building a Linux application, you might have:

```
--keep *(.init_array)
```

on the linker command-line in your makefile, but this section might not be present when building with no C++, in which case this warning is reported:

Ignoring --keep command. Cannot find section \*(.init\_array)

You can often ignore this warning, or suppress it with --diag\_suppress 6319

**L6320W** Ignoring <cmd> command. Cannot find argument '<argname>'.

**L6323W** Relocation #<rel\_class>:<rel\_number> in <objname>(<secname>) with respect to <sym>. Multiple variants exist. Using the <type> variant to resolve ambiguity

**L6324W** Ignoring <attr> attribute specified for Load region <regname>.

This attribute is applicable to execution regions only. If specified for a Load region, the linker ignores it.

**L6325W** Ignoring <attr> attribute for region <regname> which uses the +offset form of base address.

This attribute is not applicable to regions using the +offset form of base address. If specified for a region, which uses the +offset form, the linker ignores it.

A region that uses the +offset form of base address inherits the PI, RELOC, or OVERLAY attributes from either:

- the previous region in the description
- the parent load region if it is the first execution region in the load region.

See the following in the *Linker Reference*:

- *Inheritance rules for load region address attributes* on page 4-15
- *Inheritance rules for execution region address attributes* on page 4-16
- *Inheritance rules for the RELOC address attribute* on page 4-17.

**L6326W** Ignoring ZEROPAD attribute for non-root execution region <ername>. ZEROPAD only applies to root execution regions. A root region is a region whose execution address is the same as its load address, and so does not require moving or copying at run-time.

See the following in the *Linker Reference*:

- *Execution region attributes* on page 4-11.

**L6329W** Pattern <module>(<section>) only matches removed unused sections. All sections matching this pattern have been removed from the image because they were unused. For more information, use --info unused.

See the following in *Using the Linker*:

- *Elimination of unused sections* on page 5-4.

See the following in the *Linker Reference*:

- *--info=topic[,topic,...]* on page 2-70.

**L6330W** Undefined symbol <symbol> (referred from <objname>). Unused section has been removed.

This means that an unused section has had its base and limit symbols referenced. For more information, use --info unused.

See the following in *Using the Linker*:

- *Elimination of unused sections* on page 5-4.

See the following in the *Linker Reference*:

- *--info=topic[,topic,...]* on page 2-70.

**L6331W** No eligible global symbol matches pattern <pat>.

**L6332W** Undefined symbol <sym1> (referred from <obj1>). Resolved to symbol <sym2>.

**L6334W** Overalignment <overalignment> for region <regname> cannot be negative.

See the following in *Using the Linker*:

- *Overalignment of execution regions and input sections* on page 8-41.

**L6335W** ARM interworking code in <objname>(<secname>) may contain invalid tailcalls to ARM non-interworking code.

The compiler is able to perform tailcall optimization for improved code size and performance. However, there is a problematic sequence for Architecture 4T code where a Thumb IW function calls (by a veneer) an ARM IW function, which tailcalls an ARM not-IW function. The return from the ARM not-IW function can pop the return address off the stack into the PC instead of using the correct BX instruction. The linker can warn of this situation and report the above warning.

Thumb IW tailcalls to Thumb not-IW do not occur because Thumb tailcalls with B are so short ranged that they can only be generated to functions in the same ELF section which must also be Thumb.

The warning is pessimistic in that an object *might* contain invalid tailcalls, but the linker cannot be sure because it only looks at the attributes of the objects, not at the contents of their sections.

To avoid the warning, either recompile your entire code base, including any user libraries, with `--apcs /interwork`, or manually inspect the ARM IW function to check for tailcalls (that is, where function calls are made using an ordinary branch B instruction), to check whether this is a real problem. This warning can be suppressed with `--diag_suppress L6335W`.

- L6337W** Common code sections <o1>(<s1>) and <o2>(<s2>) have incompatible floating-point linkage
- L6339W** Ignoring RELOC attribute for execution region <er\_name>.  
Execution regions cannot explicitly be given RELOC attribute. They can only gain this attribute by inheriting from the parent load region or the previous execution region if using the +offset form of addressing.  
See the following in the *Linker Reference*:
- *Execution region attributes* on page 4-11.
- L6340W** options first and last are ignored for link type of <linktype>  
The --first and --last options are meaningless when creating a partially-linked object.
- L6366E** <object> attributes<attr> are not compatible with the provided cpu and fpu attributes<cli> <diff>.
- L6367E** <object>(<section>) attributes<attr> are not compatible with the provided cpu and fpu attributes<cli> <diff>
- L6368E** <symbol> defined in <object>(<section>) attributes<attr> are not compatible with the provided cpu and fpu attributes<cli> <diff>
- L6369E** <symbol> defined in <object>(ABSOLUTE) are not compatible with the provided cpu and fpu Attributes<cli> <diff>
- L6370E** cpu <cpu> is not compatible with fpu <fpu>  
See the following in the *Linker Reference*:
- `--cpu=name` on page 2-30
  - `--fpu=name` on page 2-66.
- L6371E** Adding attributes from cpu and fpu: <attrs>
- L6372E** Image needs at least one load region.
- L6373E** libattrs.map file not found in System Library directory <dir>. Library selection may be impaired.
- L6384E** No Load Execution Region of name <region> seen yet at line <line>.
- L6385W** Addition overflow on line <line>
- L6386E** Exec Region Expressions can only be used in base address calculations on line <line>
- L6387E** Load Region Expressions can only be used in ScatterAssert expressions on line <line>

See the following in the *Linker Reference*:

- *ScatterAssert function and load address related functions* on page 4-32.

**L6388E** ScatterAssert expression <expr> failed on line <line>

See the following in the *Linker Reference*:

- *ScatterAssert function and load address related functions* on page 4-32.

**L6389E** Load Region <name> on line <line> not yet complete, cannot use operations that depend on length of region

**L6390E** Conditional operator (expr) ? (expr) : (expr) on line <line> has no : (expr).

**L6404W** FILL value preferred to combination of EMPTY, ZEROPAD and PADVALUE for Execution Region <name>.

See the following in the *Linker Reference*:

- *Execution region attributes* on page 4-11.

**L6405W** No .ANY selector matches Section <name>(<objname>).

**L6406W** No space in execution regions with .ANY selector matching Section <name>(<objname>).

This occurs if there is not sufficient space in the scatterfile regions containing .ANY to place the section listed. You must modify your scatterfile to ensure there is sufficient space for the section.

**L6407W** Sections of aggregate size 0x<size> bytes could not fit into .ANY selector(s).

This warning identifies the total amount of image data that cannot be placed in any .ANY selectors.

For example, .ANY(+ZI) is placed in an execution region that is too small for the amount of ZI data:

```
ROM_LOAD 0x8000
{
    ROM_EXEC 0x8000
    {
        .ANY(+RO,+RW)
    }
    RAM +0 0x{...} <<< region max length is too small
    {
        .ANY(+ZI)
    }
}
```

**L6408W** Output is --fpic yet section <sec> from <obj> has no FPIC attribute.

**L6409W** Output is --fpic yet object <obj> has no FPIC attribute.

**L6410W** Symbol <sym> with non STV\_DEFAULT visibility <vis> should be resolved statically, cannot use definition in <lib>.

**L6411W** No compatible library exists with a definition of startup symbol <name>.

**L6412W** Disabling merging for section <sec> from object <obj>, non R\_ARM\_ABS32 relocation from section <srcsec> from object <srcobj>

**L6413W** Disabling merging for section <sec> from object <obj>, Section contains misaligned string(s).

**L6414E** --ropi used without --rwp or --rw-base.

See the following in the *Linker Reference*:

- `--ropi` on page 2-124
- `--rw_base=address` on page 2-127
- `--rwp` on page 2-128.

- L6415E** Could not find a unique set of libraries compatible with this image. Suggest using the `--cpu` option to select a specific library.  
See the following in the *Linker Reference*:
- `--cpu=name` on page 2-30.
- L6416E** Relocation <type> at <relclass>:<idx> <objname>(<secname>) cannot be veneered as it has an offset <offset> from its target.
- L6417W** Relocation #<rel\_class>:<rel\_number> in <objname>(<secname>) is with respect to a reserved tagging symbol(<idx>).
- L6418W** Tagging symbol <symname> defined in <objname>(<secname>) is not recognized.
- L6419W** Undefined symbol <symbol> (referred from <objname>) imported.
- L6420E** Ignoring <oepname>(<secname>:<secnum>) as it is not of a recognized type.
- L6422U** PLT generation requires an architecture with ARM instruction support.  
For the linker to generate PLT, you must be using a target that supports the ARM instruction set. For example, the linker cannot generate PLT for a Cortex-M3 target.
- L6423E** Within the same collection, section <secname> cannot have different sort attributes.
- L6424E** Within the same collection, section <secname1> and section <secname2> cannot be separated into different execution regions.
- L6425E** Within the same collection, section <secname> cannot have their section names with different length.
- L6426E** Within the same collection, section <secname> cannot have its name duplicated.
- L6427E** Cannot rename <sym> to <newname> as it has already been renamed to <name>).
- L6429U** Attempt to set maximum number of open files to <val> failed with error code <error>.  
An attempt to increase the number of file handles armlink can keep open at any one time has failed.
- L6431W** Ignoring incompatible enum size attribute on Symbol <symbol> defined in <object>(<section>).
- L6432W** Ignoring incompatible enum size attribute on Object <object>(<section>).
- L6433W** Ignoring incompatible enum size attribute on object <object>.
- L6434W** Ignoring incompatible wchar\_t size attribute on Symbol <symbol> defined in <object>(<section>).
- L6435W** Ignoring incompatible wchar\_t size attribute on Section <object>(<section>).
- L6436W** Ignoring incompatible wchar\_t size attribute on object <object>.

<b>L6437W</b>	Relocation #<rel_class>:<idx> in <objname>(<secname>) with respect to <armsym>. Branch relocation to untyped symbol in object <armobjname>, target state unknown.
<b>L6438E</b>	__AT section <objname>(<secname>) address <address> must be at least 4 byte aligned.
<b>L6439W</b>	Multiply defined Global Symbol <sym> defined in <objname>(<secname>) rejected in favour of Symbol defined in <selobj>(<selsec>).
<b>L6440E</b>	Unexpected failure in link-time code generation
<b>L6441U</b>	System call to get maximum number of open files failed <error>.
<b>L6442U</b>	Linker requires a minimum of <min> open files, current system limit is <max> files.
<b>L6443W</b>	Data Compression for region <region> turned off. Region contains reference to symbol <symname> which depends on a compressed address. The linker requires the contents of a region to be fixed before it can be compressed and cannot modify it after it has been compressed. Therefore a compressible region cannot refer to a memory location that depends on the compression process.
<b>L6444I</b>	symbol visibility : <symname> set to <visibility>.
<b>L6445I</b>	symbol visibility : <symname> merged to <set_vis> from existing <old_vis> and new <new_vis>.
<b>L6447E</b>	SHT_PREINIT_ARRAY sections are not permitted in shared objects.
<b>L6448W</b>	While processing <filename>: <message>
<b>L6449E</b>	While processing <filename>: <message>
<b>L6450U</b>	Cannot find library <libname>.
<b>L6451E</b>	<object> built permitting Thumb is forbidden in an ARM-only link.
<b>L6452E</b>	<object>(<section>) built permitting Thumb is forbidden in an ARM-only link.
<b>L6453E</b>	<symbol> defined in <object>(<section>) built permitting Thumb is forbidden in an ARM-only link.
<b>L6454E</b>	<symbol> defined in <object>(ABSOLUTE) built permitting Thumb is forbidden in an ARM-only link.
<b>L6455E</b>	Symbol <symbolname> has deprecated ARM/Thumb Synonym definitions (by <object1> and <object2>).
<b>L6459U</b>	Could not create temporary file.
<b>L6462E</b>	Reference to <sym> from a shared library only matches a definition with Hidden or Protected Visibility in Object <obj>.
<b>L6463U</b>	Input Objects contain <archtype> instructions but could not find valid target for <archtype> architecture based on object attributes. Suggest using --cpu option to select a specific cpu. See the following in the <i>Linker Reference</i> : <ul style="list-style-type: none"> <li>• --cpu=name on page 2-30.</li> </ul>
<b>L6464E</b>	Only one of --dynamic_debug, --emit-relocs and --emit-debug-overlay-relocs can be selected.



See the following in the *Linker Reference*:

- `--dynamic_debug` on page 2-41
- `--emit_debug_overlay_relocs` on page 2-45
- `--emit_relocs` on page 2-47.

- L6467W** Library reports remark: <msg>
- L6468U** Only `--pltgot=direct` or `--pltgot=none` supported for `--base_platform` with multiple Load Regions containing code.  
See the following in the *Linker Reference*:
- `--base_platform` on page 2-12
  - `--pltgot=type` on page 2-109.
- L6469E** `--base_platform` does not support RELOC Load Regions containing non RELOC Execution Regions. Please use +0 for the Base Address of Execution Region <ername> in Load Region <lname>.
- L6470E** PLT section <secname> cannot be moved outside Load Region <lname>.
- L6471E** Branch Relocation <rel\_class>:<idx> in section <secname> from object <objname> refers to ARM Absolute <armsym> symbol from object <armobjname>, Suppress error to treat as a Thumb address.  
Relocation #<rel\_class>:<idx> in <objname>(<secname>) with respect to <armsym>. Branch refers to ARM Absolute Symbol defined in <armobjname>, Suppress error to treat as a Thumb address.
- L6475W** IMPORT/EXPORT commands ignored when `--override_visibility` is not specified  
The symbol you are trying to export, either with an EXPORT command in a steering file or with the `--undefined_and_export` command-line option, is not exported because of low visibility.  
See the following in the *Linker Reference*:
- `--override_visibility` on page 2-103
  - `--undefined_and_export=symbol` on page 2-156
  - `EXPORT` on page 3-2.
- L6616E** Cannot increase size of RegionTable <sec\_name> from <obj\_name>
- L6617E** Cannot increase size of ZISectionTable <sec\_name> from <obj\_name>
- L6629E** Unmatched parentheses expecting ) but found <character> at position <col> on line <line>  
This message indicates a parsing error in the scatter file.
- L6630E** Invalid token start expected number or ( but found <character> at position <col> on line <line>  
This message indicates a parsing error in the scatter file.
- L6631E** Division by zero on line <line>  
This message indicates an expression evaluation error in the scatter file.
- L6632W** Subtraction underflow on line <line>  
This message indicates an expression evaluation error in the scatter file.
- L6634E** Pre-processor command in '<filename>' too long, maximum length of <max\_size>  
This message indicates a problem with pre-processing the scatter file.

- L6635E** Could not open intermediate file '<filename>' produced by pre-processor:  
<reason>  
This message indicates a problem with pre-processing the scatter file.
- L6636E** Pre-processor step failed for '<filename>'  
This message indicates a problem with pre-processing the scatter file.
- L6637W** No input objects specified. At least one input object or library(object)  
must be specified.  
At least one input object or library(object) must be specified.
- L6638U** Object <objname> has a link order dependency cycle, check sections with  
SHF\_LINK\_ORDER
- L6640E** PDTTable section not least static data address, least static data section  
is <secname>  
Systems that implement shared libraries with RWPI use a *process data table*  
(PDT). It is created at static link time by the linker and must be placed first in the  
data area of the image.  
This message indicates that the scatterfile does not permit placing the PDT Table  
first in the data area of the image.  
To avoid the message, adjust your scatterfile so that the PDT Table is placed  
correctly. This message can also be triggered if you accidentally build object files  
with --apcs=/rwpi.
- L6642W** Unused virtual function elimination might not work correctly, because  
<obj\_name> has not been compiled with --vfe
- L6643E** The virtual function elimination information in section <sectionname>  
refers to the wrong section.  
This message might indicate a compiler fault. Contact your supplier.
- L6644E** Unexpectedly reached the end of the buffer when reading the virtual  
function elimination information in section <oepname>(<sectionname>).  
This message might indicate a compiler fault. Contact your supplier.
- L6645E** The virtual function elimination information in section  
<oepname>(<sectionname>) is incorrect: there should be a relocation at  
offset <offset>.  
This message might indicate a compiler fault. Contact your supplier.
- L6646W** The virtual function elimination information in section  
<oepname>(<sectionname>) contains garbage from offset <offset> onwards.  
This message might indicate a compiler fault. Contact your supplier.
- L6647E** The virtual function elimination information for  
<vcall\_objectname>(<vcall\_sectionname>) incorrectly indicates that section  
<curr\_sectionname>(object <curr\_objectname>), offset <offset> is a  
relocation (to a virtual function or RTTI), but there is no relocation at  
that offset.  
This message might indicate a compiler fault. Contact your supplier.
- L6649E** EMPTY region <regname> must have a maximum size.  
See the following in the *Linker Reference*:  
  - *Execution region attributes* on page 4-11.

- L6650E** Object <objname> Group section <sectionidx> contains invalid symbol index <symidx>.
- L6651E** Section <secname> from object <objname> has SHF\_GROUP flag but is not member of any group.
- L6652E** Cannot reverse Byte Order of Data Sections, input objects are <inputendian> requested data byte order is <dataendian>.
- L6654E** Rejected Local symbol <symname> referred to from a non group member <objname>(<nongrpname>)  
This message might indicate a compiler fault. Contact your supplier.
- L6656E** Internal error: the vfe section list contains a non-vfe section called <oepname>(<secname>).  
This message might indicate a compiler fault. Contact your supplier.
- L6664W** Relocation #<rel\_class>:<rel\_number> in <objname>(<secname>) is with respect to a symbol(<idx> before last Map Symbol #<last>).
- L6665W** Neither Lib\$\$Request\$\$armlib Lib\$\$Request\$\$cpplib defined, not searching ARM libraries.  
This reproduces the warning:  

```

AREA Block, CODE, READONLY
EXPORT func1
;IMPORT || Lib$$Request$$armlib||
IMPORT printf
func1
LDR r0,=string
BL printf
BX lr
AREA BlockData, DATA
string DCB "mystring"
END

```

The linker has not been told to look in the libraries and so cannot find the symbol printf.  
This also causes an error:  
L6218E: Undefined symbol printf (referred from L6665W.o).  
If you do not want the libraries, then ignore this message. Otherwise, to fix both the error and the warning uncomment the line:  

```

IMPORT || Lib$$Request$$armlib||

```
- L6679W** Data in output ELF section #<sec> '<secname>' was not suitable for compression (<data\_size> bytes to <compressed\_size> bytes).
- L6682E** Merge Section <oepname>(<sname>) is a code section
- L6683E** Merge Section <oepname>(<sname>) has an element size of zero
- L6684E** Section <sname> from object <oepname> has SHF\_STRINGS flag but not SHF\_MERGE flag
- L6685E** Section <sname> from object <oepname> has a branch reloc <rel\_idx> to a SHF\_MERGE section
- L6688U** Relocation #<rel\_class>:<rel\_idx> in <oepname>(<sname>) references a negative element
- L6689U** Relocation #<rel\_class>:<rel\_idx> in <oepname>(<sname>). Destination is in the middle of a multibyte character

- L6690U** Merge Section <spname> from object <oepname> has no symbols
- L6703W** Section <er> implicitly marked as non-compressible.
- L6707E** Padding value not specified with PADVALUE attribute for execution region <regionname>.
- See the following in the *Linker Reference*:
- *Execution region attributes* on page 4-11.
- L6708E** Could not process debug frame from <secname> from object <oepname>.
- L6709E** Could not associate fde from <secname> from object <oepname>.
- L6713W** Function at offset <offset> in <oepname>(<secname>) has no symbol.
- L6714W** Exception index table section .ARM.exidx from object <oepname> has no data.
- L6720U** Exception table <spname> from object <oepname> present in image, --noexceptions specified.
- See the following in the *Linker Reference*:
- *--exceptions, --no\_exceptions* on page 2-51.
- L6721E** Section #<secnum> '<secname>' in <oepname> is not recognized and cannot be processed generically.
- L6725W** Unused virtual function elimination might not work correctly, because there are dynamic relocations.
- L6728U** Link order dependency on invalid section number <to> from section number <from>.
- L6730W** Relocation #<rel\_class>:<index> in <objname>(<secname>) with respect to <name>. Symbol has ABI type <type>, legacy type <legacy\_type>.
- A change in the linker behavior gives warnings about strict compliance with the ABI.

---

**Note**

---

The following example produces a warning only if linking with a toolchain that is compliant with an earlier version of the *Application Binary Interface* (ABI). The ARM Compiler v4.1 toolchain does not give this warning.

---

Example:

```

AREA foo, CODE, READONLY
CODE32
ENTRY
KEEP
func proc
NOP
ENDP
DCD foo
END

```

The warning is related to how the assembler marks sections for interworking. Previously, the section symbol foo would be marked as ARM or Thumb code in the ELF file. The DCD foo above would therefore also be marked as subject to interworking.

However, the ABI specifies that only functions are be subject to interworking and marked as ARM or Thumb. The linker therefore warns that it is expecting DCD <number>, which does not match the symbol type (ARM, or Thumb if you use CODE16) of the area section.

The simplest solution is to move the data into a separate data area in the assembly source file.

Alternatively, you can use `--diag_suppress 6730` to suppress this warning.

- L6731W** Unused virtual function elimination might not work correctly, because the section referred to from <secname> does not exist.
- L6733W** <objname>(<secname>) contains offset relocation from <lr1name> to <lr2name>, load regions must be rigidly relative.
- L6738E** Relocation #<rel\_class>:<relocnum> in <oepname>(<secname>) with respect to <wrtsym> is a GOT-relative relocation, but \_GLOBAL\_OFFSET\_TABLE\_ is undefined.  
  
Some GNU produced images can refer to the symbol named \_GLOBAL\_OFFSET\_TABLE\_. If there are no GOT Slot generating relocations and the linker is unable to pick a suitable address for the GOT base the linker issues this error message.
- L6739E** Version '<vername>' has a dependency to undefined version '<depname>'.
- L6740W** Symbol '<symname>' versioned '<vername>' defined in '<symverscr>' but not found in any input object.
- L6741E** Versioned symbol binding should be 'local:' or 'global:'.
- L6742E** Symbol '<symname>' defined by '<oepname>'. Cannot not match to default version symbol '<defversym>'
- L6743E** Relocation #<rel\_class>:<index> in <oepname>(<sname>) with respect to <symname> that has an alternate def. Internal consistency check failed
- L6744E** Relocation #<rel\_class>:<index> <oepname>(<sname>) with respect to undefined symbol <symname>. Internal consistency check:
- L6745E** Target CPU <cpuname> does not Support ARM, <objname>(<secname>) contains ARM code
- L6747W** Raising target architecture from <oldversion> to <newversion>.  
If the linker detects objects that specify the obsolete ARMv3, it upgrades these to ARMv4 to be usable with ARM libraries.
- L6748U** Missing dynamic array, symbol table or string table in file <oepname>.
- L6751E** No such sorting algorithm <str> available.
- L6753E** CallTree sorting needs Entry Point to lie within a CallTree Sort ER.
- L6761E** Removing symbol <symname>.
- L6762E** Cannot build '<type>' PLT entries when building a <imgtype>.
- L6763W** '<optname>' cannot be used when building a shared object or DLL.  
Switching it off
- L6764E** Cannot create a PLT entry for target architecture 4T that calls Thumb symbol <symname>

- L6765W** Shared object entry points must be ARM-state when linking architecture 4T objects.
- This can occur when linking with GNU C libraries. The GNU startup code crt1.o does not have any build attributes for the entry point, so the linker cannot determine which execution state (ARM or Thumb) the code runs in. Because the GNU C library startup code is ARM code, you can safely ignore this warning, or suppress it with `--diag_suppress 6765`.
- L6766W** PLT entries for architecture 4T do not support incremental linking.
- L6769E** Relocation #<rel\_class>:<relocnum> in <oepname>(<secname>) with respect to <wrtsym>. No GOTSL0Texists for symbol.
- L6770E** The size and content of the dynamic array changed too late to be fixed.
- L6771W** <oepname>(<secname>) contains one or more address-type relocations in R0 data. Making section RW to be dynamically relocated at run-time.
- L6772W** `IMPORT <symname>` command ignored when building `--sysv`.
- See the following in the *Linker Reference*:
- `--sysv` on page 2-153
  - *IMPORT* on page 3-4.
- L6774W** <objname>(<secname>) has debug frame entries of a bad length.
- L6775W** <objname>(<secname>) has FDEs which use CIEs which are not in this section.
- L6776W** The debug frame in <objname>(<secname>) does not describe an executable section.
- L6777W** The debug frame in <objname>(<secname>) has <actual> relocations (expected <expected>)
- L6778W** The debug frame in <objname>(<secname>) uses 64-bit DWARF.
- L6780W** <origvis> visibility removed from symbol '<symname>' through <impexp>.
- L6781E** Value(<val>) Cannot be represented by partition number <part> for relocation #<rel\_class>:<rel\_number> (<rtype>, wrt symbol <symname>) in <objname>(<secname>)
- Relocation #<rel\_class>:<rel\_number> in <objname>(<secname>) with respect to <symname>. Value(<val>) Cannot be represented by partition number <part> for relocation type >rtype>
- L6782W** Relocation #<rel\_class>:<relnum> '<rtype>' in <oepname> may not access data correctly alongside <pltgot\_type> PLT entries
- L6783E** Mapping symbol #<symnum> '<msym>' in <oepname>(<secnum>:<secname>) defined at the end of, or beyond, the section size (symbol offset=0x<moffset>, section size=0x<seclsize>)
- This indicates that the address for a section points to a location at the end of or outside of the ELF section. This can be caused by an empty inlined data section and indicates there might be a problem with the object file. You can use `--diag_warning 6783` to suppress this error.
- L6784E** Symbol #<symnum> '<symname>' in <oepname>(<secnum>:<secname>) with value <value> has size 0x<size> that extends to outside the section.

The linker encountered a symbol with a size that extends outside of its containing section. This message is only a warning by default in the RVCT 2.2 SP1 and later toolchains. Use `--diag_warning 6784` to suppress this error.

- L6785U** Symbol '<symname>' marked for import from '<libname>' already defined by '<oepname>'
- L6786W** Mapping symbol #<symnum> '<msym>' in <oepname>(<secnum>:<secname>) defined at unaligned offset=0x<moffset>
- L6787U** Region table handler '<handlername>' needed by entry for <regionname> was not found.
- L6788E** Scatter-loading of execution region <er1name> to [<base1>,<limit1>) will cause the contents of execution region <er2name> at [<base2>,<limit2>) to be corrupted at run-time.

This occurs when scatter-loading takes place and an execution region is put in a position where it overwrites partially or wholly another execution region (which can be itself or another region).

For example, this works:

```
LOAD_ROM 0x0000 0x4000
{
    EXEC1 0x0000 0x4000
    {
        * (+R0)
    }
    EXEC2 0x4000 0x4000
    {
        * (+RW,+ZI)
    }
}
```

This generates the error:

```
LOAD_ROM 0x0000 0x4000
{
    EXEC1 0x4000 0x4000
    {
        * (+RW,+ZI)
    }
    EXEC2 0x0000 0x4000
    {
        * (+R0)
    }
}
```

and reports

Error: L6788E: Scatter-loading of execution region EXEC2 will cause the contents of execution region EXEC2 to be corrupted at run-time.

See the following in *Using the Linker*:

- Chapter 8 *Using scatter-loading description files*.

- L6789U** Library <library> member <filename> : Endianness mismatch.
- L6790E** Relocation #<rel\_class>:<relnum> in <objname>(<secname>) with respect to <symname>. May not IMPORT weak reference through GOT-generating relocation
- L6791E** Unknown personality routine <pr> at 0x<offset> <oepname>(<secname>).
- L6792E** Descriptor at offset 0x<offset> <oepname>(<secname>).

<b>L6793E</b>	Expecting Landing pad reference at offset 0x<offset> in cleanup descriptor <oepname>(<secname>).
<b>L6794E</b>	Expecting Landing pad reference at offset 0x<offset> in catch descriptor <oepname>(<secname>).
<b>L6795E</b>	Expecting RTTI reference at offset 0x<offset> in catch descriptor <oepname>(<secname>).
<b>L6796E</b>	Descriptor at offset 0x<offset> <oepname>(<secname>) overruns end of section.
<b>L6797E</b>	Data at Offset 0x<offset> in exception table <oepname>(<secname>) overruns end of section
<b>L6798E</b>	Expecting RTTI reference at offset 0x<offset> in Function Specification descriptor <oepname>(<secname>).
<b>L6799E</b>	<p>Expecting Landing Pad reference at offset 0x&lt;offset&gt; in Function Specification descriptor &lt;oepname&gt;(&lt;secname&gt;).</p> <p>A landing pad is code that cleans up after an exception has been raised. If the linker detects old-format exception tables, it automatically converts them to the new format.</p> <p>This message does not appear unless you are using a later version of the linker with an earlier version of the compiler.</p>
<b>L6800W</b>	<p>Cannot convert generic model personality routine at 0x&lt;offset&gt; &lt;oepname&gt;(&lt;secname&gt;).</p> <p>A personality routine is used to unwind the exception handling stack. If the linker detects old-format exception tables then it automatically converts them to the new format. This message indicates a fault in the compiler. Contact your supplier.</p>
<b>L6801E</b>	<p>&lt;objname&gt;(&lt;secname&gt;) containing &lt;secarmthumb&gt; code cannot use the address of '~IW (The user intended not all code should interwork)' &lt;funarmthumb&gt; function &lt;sym&gt;.</p> <p>The linker can diagnose where a non-interworking (~IW) function has its address taken by code in the other state. This error is disabled by default, but can be enabled by linking with --strict. The error can be downgraded to just a warning with --diag_warning 6801 and subsequently suppressed completely if required with --diag_suppress 6801</p> <p>Where code, for example, in a.c uses the address of a non-interworking function in t.c:</p> <pre>armcc -c a.c armcc --thumb -c t.c armlink t.o a.o --strict</pre> <p>reports:</p> <p>Error: L6801E: a.o(.text) containing ARM code cannot use the address of '~IW' Thumb function foo.</p>
<b>L6802E</b>	Relocation #<rel_class>:<idx> in <objname>(<secname>) with respect to <armsym>. Thumb Branch to non-Thumb symbol in <armobjname>(<armsecname>).
<b>L6803W</b>	Relocation #<rel_class>:<idx> in <objname>(<secname>) with respect to <armsym>. Thumb Branch is unlikely to reach target in<armobjname>(<armsym>).
<b>L6804W</b>	Legacy use of symbol type STT_FUNC detected



<b>L6805E</b>	Relocation #<rel_class>:<idx> in <objname>(<secname>) with respect to <armsym>. Branch to untyped Absolute symbol in <armobjname>, target state unknown
<b>L6806W</b>	Relocation #<rel_class>:<idx> in <objname>(<secname>) with respect to <othersym>. Branch to untyped symbol in <otherobjname>(<othersecname>), ABI requires external code symbols to be of type STT_FUNC.
<b>L6807E</b>	Relocation #<rel_class>:<idx> in <objname>(<secname>) with respect to <othersym>. Branch to untyped symbol in same section. State change is required.
<b>L6809W</b>	Relocation <rel_class>:<idx> in <objname>(<secname>) is of deprecated type <rtype>, please see ARMELF for ABI compliant alternative
<b>L6810E</b>	Relocation <rel_class>:<idx> in <objname>(<secname>) is of obsolete type <rtype>  Relocation errors and warnings are most likely to occur if you are linking object files built with previous versions of the ARM tools.  To show relocation errors and warnings use the --strict_relocations switch. This option enables you to ensure ABI compliance of objects. It is off by default, and deprecated and obsolete relocations are handled silently by the linker.
<b>L6812U</b>	Unknown symbol action type, please contact your supplier.
<b>L6813U</b>	Could not find Symbol <symname> to rename to <newname>.
<b>L6898E</b>	Relocation #<rel_class>:<idx> in <objname>(<secname>) with respect to <armsym>. ARM branch to non-ARM/Thumb symbol in <armobjname>(<armsecname>).
<b>L6899E</b>	Existing SYMDEFS file '<filename>' is read-only.
<b>L6900E</b>	Expected parentheses to specify priority between AND and OR operators.
<b>L6901E</b>	Expected symbol name.
<b>L6902E</b>	Expected a string.
<b>L6903E</b>	Cannot execute '<text>' in '<clause>' clause of script.
<b>L6904E</b>	Destination symbol of rename operation clashes with another rename.
<b>L6905E</b>	Source symbol of rename operation clashes with another rename.
<b>L6906E</b>	(This is the rename operation which it clashes with.)
<b>L6907E</b>	Expected an expression.
<b>L6910E</b>	Expected a phase name.
<b>L6912W</b>	Symbol <symname> defined at index <idx> in <oepname>(<secname>), has ABI symbol type <symtype> which is inconsistent with mapping symbol type <maptype>.
<b>L6913E</b>	Expected execution region name.
<b>L6914W</b>	option <spurious> ignored when using --<memoption>.
<b>L6915E</b>	Library reports error: <msg>  The message is typically one of the following: 1. Error: L6915E: Library reports error: scatter-load file declares no heap or stack regions and __user_initial_stackheap is not defined.

It is most likely that you have not re-implemented `__user_initial_stackheap()` or defined `ARM_LIB_STACK` or `ARM_LIB_HEAP` in the respective Scatter file.

See the following in *Developing Software for ARM® Processors*:

- *Placing the stack and heap* on page 3-18.

See the following in *C and C++ Libraries and Floating-Point Support Reference*:

- `__user_initial_stackheap()` on page 2-68.

2. Error: L6915E: Library reports error: `__use_no_semihosting` was requested but `<function>` was referenced.

Where `<function>` represents `__user_initial_stackheap`, `_sys_exit`, `_sys_open`, `_sys_tmpnam`, `_ttywrch`, `system`, `remove`, `rename`, `_sys_command_string`, `time`, or `clock`

This error can appear when retargeting semihosting-using functions, in order to avoid any SVC/BKPT instructions being linked-in from the C libraries. Ensure that no semihosting-using functions are linked in from the C library by using:

```
#pragma import(__use_no_semihosting)
```

See the following in *Using C and C++ Libraries and Floating-Point Support*:

- *Using the libraries in a nonsemihosting environment* on page 2-41.

If there are still semihosting-using functions being linked in, the linker reports this error.

To resolve this, you must provide your own implementations of these C library functions.

The `emb_sw_dev` directory contains examples of how to re-implement some of the more common semihosting-using functions. See the file `retarget.c`. See *Using C and C++ Libraries and Floating-Point Support* for more information on using semihosting-using C library functions.

#### ———— Note —————

The linker does not report any semihosting-using functions such as, for example, `__semihost()`, in your own application code.

To identify which semihosting-using functions are still being linked-in from the C libraries:

- Link with `armlink --verbose --list err.txt`
- Search `err.txt` for occurrences of `__I_use_semihosting`

For example:

```
...
Loading member sys_exit.o from c_4.1.
reference : __I_use_semihosting
definition: _sys_exit
...
```

This shows that the semihosting-using function `_sys_exit` is linked-in from the C library. To prevent this, you must provide your own implementation of this function.

3. Error: L6915E: Library reports error: `__use_no_heap` was requested, but `<reason>` was referenced

If `<reason>` represents `malloc`, `free`, `__heapstats`, or `__heapvalid`, the use of `__use_no_heap` conflicts with these functions.

4. Error: L6915E: Library reports error: \_\_use\_no\_heap\_region was requested, but <reason> was referenced  
If <reason> represents malloc, free, \_\_heapstats, \_\_heapvalid, or \_\_argv\_alloc, the use of \_\_use\_no\_heap\_region conflicts with these functions.
- L6916E** Relocation #<rel\_class>:<idx> in <oepname>(<sname>). R\_ARM\_CALL for conditional BL instruction).
- L6917E** Relocation #<rel\_class>:<idx> in <oepname>(<sname>). R\_ARM\_JUMP24 for BLX instruction.
- L6918W** Execution region <ername> placed at 0x<eraddr> needs padding to ensure alignment <spalign> of <oepname>(<sname>).
- L6922E** Section <objname>(<secname>) has mutually exclusive attributes (READONLY and TLS)
- L6923E** Relocation #<rel\_class>:<idx> in <oepname>(<sname>) with respect to <symname>. TLS relocation <type> to non-TLS symbol in <symobjname>(<symsecname>).
- L6924E** Relocation #<rel\_class>:<idx> in <oepname>(<sname>) with respect to <symname>. Non-TLS relocation <type> to STT\_TLS symbol in <symobjname>(<symsecname>).
- L6925E** Ignoring <token> attribute for region <region>. MemAccess support has been removed.
- L6926E** Relocation #<rel\_class>:<idx> in <oepname>(<sname>) has incorrect relocation type <rtype> for instruction encoding 0x<b1>.
- L6927E** Relocation #<rel\_class>:<idx> in <oepname>(<sname>) has incorrect relocation type <rtype> for instruction encoding 0x<b11><b12>.
- L6932W** Library reports warning: <msg>
- L6935E** Debug Group contents are not identical, <name> with signature sym <sig> from objects (<new>) and (<old>)
- L6936E** Multiple RESOLVE clauses in library script for symbol '<sym>'.
- L6937E** Multiple definitions of library script function '<func>'.
- L6939E** Missing alignment for region <regname>.
- L6940E** Alignment <alignment> for region <regname> must be at least 4 and a power of 2 or MAX.
- L6941W** chmod system call failed for file <filename> error <perr>
- L6942E** Execution Region <ername> contains multiple <type>, sections:
- L6966E** Alignment <alignment> for region <regname> cannot be negative.
- L6967E** Entry point (<address>) points to a THUMB instruction but is not a valid THUMB code pointer.
- L6968E** Could not parse Linux Kernel version \"<kernel>\".
- L6969W** Changing AT Section <name> type from RW to RO in <ername>.
- L6971E** <objname>(<secname>) type <type> incompatible with <prevobj>(<prevname>) type <prevtype> in er <ername>.

- L6972E** <objname>(<secname>) with required base 0x<required> has been assigned base address 0x<actual>.
- L6973E** Error placing AT section at address 0x<addr> in overlay ER <ername>.
- L6974E** AT section <name> does not have a base address.
- L6975E** <objname>(<secname>) cannot have a required base and SHF\_MERGE.
- L6976E** <objname>(<secname>) cannot have a required base and SHF\_LINK\_ORDER.
- L6977E** <objname>(<secname>) cannot be part of a contiguous block of sections
- L6978W** <objname>(<secname>) has a user defined section type and a required base address.
- L6979E** <objname>(<secname>) with required base address cannot be placed in Position Independent ER <ername>.
- L6980W** FIRST and LAST ignored for <objname>(<secname>) with required base address.
- L6981E** \_\_AT incompatible with BPABI and SystemV Image types
- L6982E** AT section <objname>(<spname>) with base <base> limit <limit> overlaps address range with AT section <obj2name>(<sp2name>) with base <base2> limit <limit2>.
- L6983E** AT section <objname>(<spname>) with required base address <base> out of range for ER <ername> with base <erbase> and limit <erlimit>.
- L6984E** AT section <objname>(<spname>) has required base address <base> which is not aligned to section alignment <alignment>.
- L6985E** Unable to automatically place AT section <objname>(<spname>) with required base address <base>. Please manually place in the scatter file using the --no\_autoat option.
- See the following in *Linker Reference*:
- --autoat, --no\_autoat on page 2-11.

# Chapter 5

## ELF Image Converter Errors and Warnings

This chapter contains the error and warning messages for the ELF image converter, `fromelf`. It contains the following section:

- *List of the `fromelf` error and warning messages* on page 5-2.

## 5.1 List of the fromelf error and warning messages

<b>Q0105E</b>	Base and/or size too big for this format, max = 0x<maxval>.
<b>Q0106E</b>	Out of Memory.
<b>Q0107E</b>	Failed writing output file.
<b>Q0108E</b>	Could not create output file '<filename>': <reason>
<b>Q0119E</b>	No output file specified.
<b>Q0120E</b>	No input file specified.
<b>Q0122E</b>	Could not open file '<filename>': <reason>
<b>Q0128E</b>	File i/o failure.
<b>Q0129E</b>	Not a 32 bit ELF file.
<b>Q0130E</b>	Not a 64 bit ELF file.
<b>Q0131E</b>	Invalid ELF identification number found.  This error is given if you attempt to use fromelf on a file which is not in ELF format, or which is corrupted. Object (.o) files and executable (.axf) files are in ELF format.
<b>Q0132E</b>	Invalid ELF section index found <idx>.
<b>Q0133E</b>	Invalid ELF segment index found <idx>.
<b>Q0134E</b>	Invalid ELF string table index found <idx>.
<b>Q0135E</b>	Invalid ELF section entry size found.
<b>Q0136E</b>	ELF Header contains invalid file type.
<b>Q0137E</b>	ELF Header contains invalid machine name.
<b>Q0138E</b>	ELF Header contains invalid version number. See Q0131E.
<b>Q0147E</b>	Failed to create Directory <dir>: <reason>
<b>Q0171E</b>	Invalid st_name index into string table <idx>. See Q0131E.
<b>Q0172E</b>	Invalid index into symbol table <idx>. See Q0131E.
<b>Q0186E</b>	This option requires debugging information to be present The --fieldoffsets option requires the image to be built with dwarf debug tables.
<b>Q0425W</b>	Incorrectly formed virtual function elimination header in file This might indicate a compiler fault, please contact your supplier.
<b>Q0426E</b>	Error reading vtable information from file This might indicate a compiler fault, please contact your supplier.
<b>Q0427E</b>	Error getting string for symbol in a vtable This might indicate a compiler fault, please contact your supplier.

<b>Q0433E</b>	Diagnostic style <style> not recognised
<b>Q0440E</b>	No relocation sections for <secname>
<b>Q0447W</b>	Unknown Diagnostic number (<num>)
<b>Q0448W</b>	Read past the end of the compressed data while decompressing section '<secname>' #<secnum> in <file>  This might indicate an internal fault. Contact your supplier.
<b>Q0449W</b>	Write past the end of the uncompressed data buffer of size <bufsize> while decompressing section '<secname>' #<secnum> in <file>  This might indicate an internal fault. Contact your supplier.
<b>Q0450W</b>	Section '<secname>' #<secnum> in file <file> uses a mixture of legacy and current ABI relocation types.
<b>Q0451W</b>	Option '--strip symbols' used without '--strip debug' on an ELF file that has debug information.
<b>Q0452W</b>	Option '--strip filesymbols' used without '--strip debug' on an ELF file that has debug information.
<b>Q0453W</b>	Stripping path names from '<path1>' and '<path2>' produces a duplicate file name '<filename>'.
<b>Q0454E</b>	The ELF file '<filename>' is corrupt

# Chapter 6

## Librarian Errors and Warnings

This chapter contains the error and warning messages for the ARM Librarian, armar. It contains the following section:

- *List of the armar error and warning messages on page 6-2.*



## 6.1 List of the armar error and warning messages

<b>L6800U</b>	Out of memory
<b>L6825E</b>	Reading archive '<archive>' : <reason>
<b>L6826E</b>	'<archive>' not in archive format
<b>L6827E</b>	'<archive>': malformed symbol table
<b>L6828E</b>	'<archive>': malformed string table
<b>L6829E</b>	'<archive>': malformed archive (at offset <offset>)
<b>L6830E</b>	Writing archive '<archive>' : <reason>
<b>L6831E</b>	'<member>' not present in archive '<archive>'
<b>L6832E</b>	Archive '<archive>' not found : <reason>
<b>L6833E</b>	File '<filename>' does not exist
<b>L6835E</b>	Reading file '<filename>' : <reason>
<b>L6836E</b>	'<filename>' already exists, so will not be extracted
<b>L6838E</b>	No archive specified
<b>L6839E</b>	One of the actions -[<actions>] must be specified
<b>L6840E</b>	Only one action option may be specified
<b>L6841E</b>	Position '<position>' not found
<b>L6842E</b>	Filename '<filename>' too long for file system
<b>L6843E</b>	Writing file '<filename>' : <reason>
<b>L6874W</b>	Minor variants of archive member '<member>' include no base variant Minor variants of the same function exist within a library. Find the two equivalent objects and remove one of them.
<b>L6875W</b>	Adding non-ELF object '<filename>' to archive '<name>'

# Chapter 7

## Other Errors and Warnings

The following topic contains other error and warning messages that might be displayed by the tools:

- *List of other error and warning messages* on page 7-2.

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**Note**

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These error messages can be produced by any of the tools.

When the message is displayed, the *X* prefixing the message number is replaced by the appropriate letter relating to the application. For example, the code `X3900U`, is displayed as `L3900U` by the linker when you have specified an unrecognized option.

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## 7.1 List of other error and warning messages

<b>X3900U</b>	Unrecognized option '<dashes><option>'. <option> is not recognized by the tool. This could be because of a spelling error or the use of an unsupported abbreviation of an option.
<b>X3901U</b>	Missing argument for option '<option>'.
<b>X3902U</b>	Recursive via file inclusion depth of <limit> reached in file '<file>'.
<b>X3903U</b>	Argument '<argument>' not permitted for option '<option>'. Possible reasons include malformed integers or unknown arguments.
<b>X3904U</b>	Could not open via file '<file>'.
<b>X3905U</b>	Error when reading from via file '<file>'.
<b>X3906U</b>	Malformed via file '<file>'.
<b>X3907U</b>	Via file '<file>' command too long for buffer.
<b>X3908U</b>	Overflow: '<string>' will not fit in an integer.
<b>X3910W</b>	Old syntax, please use '<hyphens><option><separator><parameter>'.
<b>X3912W</b>	Option '<option>' is deprecated.
<b>X3913W</b>	Could not close via file '<file>'.
<b>X3915W</b>	Argument '<argument>' to option '<option>' is deprecated
<b>X3916U</b>	Unexpected argument for option '<dashes><option>'
<b>X3917U</b>	Concatenated options cannot have arguments: --<option> <arg>
<b>X9905E</b>	cannot use --apcs=/hardfp without floating point hardware
<b>X9906E</b>	cannot use --apcs=/hardfp with fpu <fpu_option>
<b>X9907E</b>	unable to select no floating point support
<b>X9908E</b>	--fpmode=none overrides --fpu choice