

## Re: GCC 3.3.1, new warnings with <limits>

**Source:** <http://unix.derkeiler.com/Mailing-Lists/FreeBSD/current/2003-07/0692.html>

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**From:** Craig Rodrigues (*rodrigc\_at\_crodrigues.org*)

**Date:** 07/13/03

Date: Sat, 12 Jul 2003 23:13:12 -0400

To: David Leimbach <leimy2k@mac.com>

On Sat, Jul 12, 2003 at 09:50:21PM -0500, David Leimbach wrote:

> *Heh that's because the offending macro \_\_glibc\_cpp\_digits calls*  
> *\_\_glibc\_cpp\_signed (T)*  
> *on an unsigned type which does a < compareison.*  
>  
> *std::numeric\_limits <signed long>::digits on a 32bit FBSD will yield 31*  
> *because its*  
> *got 31 bits for magnitude.*  
>  
> *Unfortunately the way it seems to go about calculating that stuff at*  
> *compile time*  
> *seems to be invalid due to the fact that it does < 0 compares on*  
> *unsigned types.*  
>  
> *Is this a gcc issue or a FBSD issue? [is this the original gcc c++*  
> *header file or has*  
> *it been tweaked?]*

Hi,

I think that this is a FreeBSD issue. I compiled the same file under Linux, with a GCC 3.3.1 checked out on 7/11 and did not encounter this warning.

I looked in the source code of gcc and found this:

/usr/src/contrib/gcc/c-common.c

```
2597 case LT_EXPR:
2598 if (extra_warnings && !in_system_header
2599 && ! (TREE_CODE (primop0) == INTEGER_CST
2600 && ! TREE_OVERFLOW (convert (c_common_signed_type
e (type),
2601 primop0))))
2602 warning ("comparison of unsigned expression < 0 is always
false");
2603 value = boolean_false_node;
2604 break;
```

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I am guessing that the C preprocessor does not think that it is in a system header, and thus prints out the warning.

If I take the following preprocessed source (test.ii) and compile it under FreeBSD with `g++ -W -c test.ii`:

```
=====
# 1 "test.cc"
# 1 "<built-in>"
# 1 "<command line>"
# 1 "test.cc"
# 1 "/usr/include/c++/3.3/iostream" 1 3
# 43 "/usr/include/c++/3.3/iostream" 3

static const int digits = (sizeof(unsigned int) * 8 - ((unsigned int)(-1) < 0));
=====
```

I get:

```
In file included from test.cc:1:
/usr/include/c++/3.3/iostream:44: warning: comparison of unsigned expression <
  0 is always false
```

If I compile the same file on my Linux box, with a gcc checked out from the FSF CVS repository (gcc version 3.3.1 20030711 (prerelease)), I do not get the warning.

I am not an expert on the GNU C preprocessor format, but I changed two of the lines in the above file to:

```
# 1 "/usr/include/c++/3.3/iostream" 1
# 43 "/usr/include/c++/3.3/iostream"
```

and when I recompiled it under Linux, I also got the warning:

```
In file included from test.cc:1:
/usr/include/c++/3.3/iostream:44: warning: comparison of unsigned expression <
  0 is always false
```

Any GCC/FreeBSD expert care to comment? ;)

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