



# ***SGI Compiler Update***

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# Overview

**MIPSpro 7.3.1.3m**

**Compiler Runtime Libraries**

**Patches**

**MIPSpro 7.4**

# MIPSpro7.3.1.3m

## LATEST Maintenance update to MIPSpro

- **Overlays for 6.5.x**
- **Released in December '01 and available on Supportfolio**
- **Runtime libraries (compiler\_eoe, ftn\_eoe, c++\_eoe) also incorporated in IRIX6.5.14/15**
- **Also includes patch 4440 for debugging Fortran programs with alternate entries**

# MIPSpro 7.3.1.3m

## Items in Release

- 60+ Fixes to Customer Reported Bugs
- Fix to #pragma optional handling
- SWP flag for when induction variable size and pointer size do not match (to improve performance)
- -INLINE:space=N flag
- Flag to suppress C++ prelinker messages (-quiet\_prelink)

# New SWP flag

**Message: Loop line 9 wasn't pipelined --  
incorrectly formed end test.**

**Problem: -i8 makes loop index 64-bits  
while n32 pointer size is 32 bits.**

**This can cause our SWP to wrap around**

**Use `-SWP:allow_unsafe_IV_end_test`  
when you know it is safe**

# New **-INLINE:space** flag

## **-INLINE:space=N**

- N is an integer that specifies that inlining should stop when the program size has increased by N%.
- The default is 100%
- Larger values of N will allow inlining of more functions which can also improve SWP BUT
- Can also result in code bloat

# Compiler Runtime Library Support

Runtime libraries are shared objects and packaged in `compiler_eoe`, `ftn_eoe`, `c++_eoe`.

IRIX 6.5 - 6.5.9 - MIPSpro 7.2.1 runtimes

IRIX 6.5.10-13 - MIPSpro 7.3.1.2m runtimes

IRIX 6.5.14-15 - MIPSpro 7.3.1.3m runtimes

# Using 7.3.x Runtimes

What if your application was built with MIPSpro 7.3.x and uses -LANG:std or any of the other new features but your end user does not have MIPSpro 7.3 runtimes (IRIX 6.5 - 6.5.9] ?

Solution:                    patch 3911  
(compiler\_eoe)                    patch  
3742 (c++\_eoe)                    patch  
3743 (ftn\_eoe)  
patch 3965 (libmp)



# Patches

**Patch 4440 (compiler\_dev) in 7.3.1.3m distribution will soon be replaced by patch 4533**

**Patch 4511 (ftn\_eoe); Very important fix for libffio**

# MIPSpro7.4

**The release number indicate major changes to all compiler components**

- Current Schedule is BETA this summer**
- New features**
  - c99
  - updated c++
  - updated back-end
  - OpenMP2.0
- Bug Fixes**

# MIPSpro 7.4

## C99

- **New version of C Front-end supports syntax updates**
- **Complex type math library functions**
- **Wide character support in header files and library functions**
- **Standards compliance test suite**

# MIPSpro 7.4

## Updated C++ Front-End

- Provides fixes to many bugs we could not fix with MIPSpro 7.3.x
- Working to clean up header files and provide new ones for namespace std
- Improves ANSI standard compliance but we need to remain compatible with existing C++ runtimes
- `-LANG:std` will be default (there will be a flag for `non_std`)

# MIPSpro 7.4

## New Backend Work

- **New intermediate language constructs to enable more optimizations on code with bitfields and small structs**
- **Internal Infrastructure to support new MIPS microprocessors (and instructions) as they come out**
- **Bug fixes**