



GCC

Jason Merrill, Red Hat, Inc.

# GCC

- Overview
- Recent Changes
- Coming Attractions

# Overview - Technical

- State-of-the-art industrial compiler
- System compiler for Linux distributions
- Front ends for C, C++, Objective-C, Ada, Fortran, Java, ...
- Back ends for nearly everything
- Millions of lines of code

# Overview - Social

- 158 developers this year
- Serves many communities
  - By language
  - By platform
- Development funded by many companies

# Recent Changes – General Trends

- Up-to-date language conformance
- Stricter language conformance
- Better compiler performance
- Better compiler output
- More features

## Recent Changes - 4.3

- Better optimizations
  - ... watch out for signed overflow
- Experimental support for C++0x
  - Rvalue references
  - Variadic templates
- libstdc++ parallel mode
- Early inlining

# Coming Attractions - Tuples

- New representation of GCC IR
- Reduces memory use
- Simpler streaming for ...

# Coming Attractions - LTO

- Link-time optimization
- Saves intermediate representation to disk
- Optimizes across file boundaries

# Coming Attractions – Incremental Compiler

- Compiler runs as server
- Recompile only the functions that have changed
- Fast turnaround times
- Extract interesting meta-data from compiler

# Coming Attractions - Miscellaneous

- More work on C++0x
- OpenMP 3.0
- Better debug info
  - Important for systemtap, frysk
- New register allocator

## More Information

- <http://gcc.gnu.org/>
- <http://gcc.gnu.org/wiki/>