

Testing GCC 4.2 on IA64

A summary of defects found and reported

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Abstract. This report presents the results from a testing effort of GCC 4.2 on the IA64 platform. As a test suite the popular Debian distribution with over 6000 packages containing code that needs to be compiled was used. Through these tests, at least 8 IA64 specific and 10 generic defects previously unknown have been identified. These defects affect several dozens of software packages. The defects have subsequently been reported to the GCC bug tracker together with test cases. The majority of the bugs have been fixed in the meantime, ensuring that GCC 4.2 will have few regressions on the IA64 platform. Additionally, GCC 4.1 has been tested once to ensure the upcoming 4.1.2 release will be of high quality. In summary, over 20 defects have been reported to the GCC project and one defect to the binutils projects.

1 Testing

1.1 1st Round

Begin: 2006-07-25

End: 2006-08-04

Compiler: `gcc-snapshot 20060721-1`

IA64 Specific Defects

- ICE in `ia64_expand_move`, at `config/ia64/ia64.c:1088`: #379885, PR28490 (new)
- ICE in `final_scan_insn`, at `final.c:2448`: #379886, PR28495 (new)
- ICE in `move_insn`, at `haifa-sched.c:1968`: #379866, PR28489 (new)
- switch statement points to unreferenced label at `-O2`: #381176, PR28574 (new)

Generic Defects

- ICE in `add_virtual_operand`, at `tree-ssa-operands.c:1309`: #380482, PR28544 (new)
- latent segfault in `remove_phi_node`: #381480, PR28624 (new)

1.2 2nd Round

Begin: 2006-09-13

End: 2006-09-21

Compiler: `gcc-snapshot 20060912-1`

The long delay between round 1 and 2 was because of PR28672, a bootstrap error on IA64 that took fairly long to get fixed.

IA64 Specific Defects

- ICE in `move_block_after_check`, at `haifa-sched.c:4337`: #387990, PR29128 (new)
- spurious dependency-violation warnings: PR15445 (known): I submitted some testcases to the Bugzilla issue so this can be tracked down and informed Steve Ellcey.

Generic Defects

- ICE: `verify_stmts` failed (invalid operand to unary operator): #387257, PR29059 (new)
- ICE: `verify_stmts` failed, other: #387368, PR29070 (new)
- tree check: expected class 'expression', have 'exceptional' (baseline) in `get_base_var`, at `ipa-utils.c:224`: #387271, PR29016 (already known)
- segfault in `add_candidates`: #387728, PR29105 (new)

1.3 3rd Round

Begin: 2006-09-23
End: 2006-09-30
Compiler: gcc-snapshot 20060922-1
Options: optimization set to -O3

IA64 Specific Defects

- ICE in create_recovery_block, at haifa-sched.c:3692: PR29201 (new)

Generic Defects

- ICE in expand_expr_real_1, at expr.c:6932: #389148, PR29195 (new)
- ICE: verify_cgraph_node failed (inlined_to pointer is set but no predecessors found): PR29254 (new)

1.4 4th Round

Begin: 2006-10-15
End: 2006-10-22
Compiler: gcc-snapshot 20061015-1
Options: optimization set to -O3

IA64 Specific Defects

- No new regressions found, but I've confirmed that a number of fixes for bugs I reported are working.

Generic Defects

- No new regressions found.

1.5 5th Round

Begin: 2006-10-23
End: 2006-11-05
Compiler: gcc-snapshot 20061022-1
Options: -O3 -msched-control-spec (requested by Maxim Kuvyrkov)

IA64 Specific Defects

- ICE: in change_pattern, at haifa-sched.c:4066: PR29682 (new)
- Segmentation fault: PR29794 (new)

Generic Defects

- ICE: tree check: expected ssa_name, have var_decl in is_old_name, at tree-into-ssa.c:558: #395162, PR29585 (new)

1.6 6th Round

Begin: 2006-11-16
End: 2006-11-25
Compiler: gcc 4.2 20061116
Options: -O3 -fprefetch-loop-arrays (requested by Steve Ellcey)

IA64 Specific Defects

- No new regressions found.

Generic Defects

- ICE in `coalesce_abnormal_edges`, at `tree-outof-ssa.c:644`: PR29902 (new)
- ICE in `set_lattice_value`, at `tree-ssa-ccp.c:434`: PR29908 (new)

1.7 7th Round

Begin: 2006-12-15

End: 2006-12-22

Compiler: gcc 4.2 20061114 (SVN revision 119861)

IA64 Specific Defects

- No new regressions found, but I tested whether all IA64 specific defects which have been identified have now been fixed. This is the case with the exception of PR29682.

Generic Defects

- No new regressions found.

2 Additional work

2.1 GCC 4.1 Testing for Debian etch

Matthias Klose asked me to test a recent version of GCC 4.1 (4.1.1ds1-16, taken from SVN on 20061008) to evaluate whether this can be used as the compiler for Debian etch (Debian version 4.0). Additionally, this testing would be beneficial for an upcoming release of GCC 4.1.2.

Begin: 2006-10-09

End: 2006-10-15

Compiler: gcc-4.1 4.1.1ds1-16

IA64 Specific Defects

- Binutils bug when building GHDL: ld reports: aborting at elflink.c line 6778 in elf_link_check_versioned_symbol: Sourceware Bug 3351 (new)

Generic Defects

- parse error for valid code (rejects templates in destructors): #393010, PR29408 (new)
- segmentation fault related to sizeof: #393071, PR29435 (new)
- ICE: output_operand: invalid expression as operand with -gstabs: PR29443 (new)
- (DR 224) error: non-template 'pair' used as template - rejects possibly valid code: #392559, PR29469 (new)

A Affected Packages

A.1 PR28489

- erlang_1:11.b.0-3
- gnu-smalltalk_2.1.8-2.1
- john_1.6-40
- kvirc_2:3.2.0-5
- parrot_0.4.5-1
- pnet_0.7.4-1
- rlwrap_0.24-1
- swi-prolog_5.6.14-1

A.2 PR28490

- dash_0.5.3-3
- dcraw_7.94-1
- dump_0.4b41-3
- ecl_0.9i-2
- yorick_1.5.14-1.1

A.3 PR28495

- ickle_0.3.2-6
- xstow_0.5.1-2

A.4 PR28544

- mysql-dfsg-5.0_5.0.22-4

A.5 PR28574

- ragel_5.9-1
- yasm_0.5.0-1

A.6 PR28624

- fityk_0.7.5-2

A.7 PR29016

- aplus-fsf_4.20.2-4
- blender_2.42a-1
- cinepaint_0.20-1-1.3
- ecos_2.0-0pre3
- firefox_1.5.dfsg+1.5.0.6-5
- fltk1.1_1.1.7-2
- gfccore_2.3.1-6
- jigdo_0.7.3-1
- jikes_1:1.22-5
- kdegames_4:3.5.4-2
- libcorelinux_0.4.32-7
- mlview_0.9.0-1
- mozilla_2:1.7.13-0.3
- nvu_1.0final-2
- openvrml_0.15.10-8
- pan_0.112-1
- sfs_1:0.8-0+pre20060720.1-1
- strigi_0.3.8-1
- synfigstudio_0.61.05-5
- thunderbird_1.5.0.5-1
- xevil_2.02r2-4
- xulrunner_1.8.0.5-4.2

A.8 PR29059

- blobwars_1.05-2
- bsdgames_2.17-8
- bygfoot_2.0.0-1
- firebird2_1.5.3.4870-10
- glui_2.2-2.2
- kinoplus_0.3.5-3
- pam_0.79-3.2
- re_0.1-5
- tochnog_20010124-3

A.9 PR29070

- flac_1.1.2-5
- nufw_1.0.23-1.1
- snort_2.3.3-8

A.10 PR29105

- adept_2.1.1

A.11 PR29128

- erlang_1:11.b.1-1
- john_1.6-40

A.12 PR29195

- sope_4.4rc.2-3

A.13 PR29201

- metacity_1:2.14.5-1

A.14 PR29254

- qof_0.7.1-3

A.15 PR29408

- firebird2_1.5.3.4870-10_20061011-1541
- holotz-castle_1.3.8-1.1
- koffice_1:1.5.2-2
- matplotlib_0.87.5-2
- qucs_0.0.9-1
- scummvm_0.9.0-1
- supertransball2_1.5-3

A.16 PR29435

- cinepaint_0.20-1-1.3

A.17 PR29469

- avifile_1:0.7.44.20051021-2.2
- crystalspace_0.99-20060125-2

A.18 PR29585

- opensaml_1.1a-2
- openvrl_0.15.10-8
- pasmo_0.5.2-4
- yate_1.0.0-1.dfsg-2

A.19 PR29682

- dspam_3.6.8-4
- rpm_4.4.1-10

A.20 PR29794

- openbox_3.3-2

A.21 PR29902

- gambit_0.2006.01.20-2
- libjingle0.3.0.3.9-1

A.22 PR29908

- k3d_0.5.12.0-2
- shibboleth-sp_1.3f.dfsg1-1