Porting Sage For Fun And Profit!

http://www.sagemath.org

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Outline

Status of Sage on Solaris 10

- Primary compiler: gcc, Sun Forte would require a lot of work with little benefit
- 32 and 64 bit version on Sparc and x86-64 - we really only care about the 64 bit release
- A working port depends on Maxima with ecl
- problematic spkgs: cvxopt, sympow
- about 5 or 6 bugs are left to fix

Solaris 10: Custom Toolchain

- gcc 4.2.3
- binutils
- gmake
- shellutils

Motivation for Windows - CNet about the 3rd Quarter 2008

"Put more simply, usage of 64-bit Windows Vista is growing much more rapidly than 32-bit," he said. "Based on current trends, this growth will accelerate as the retail channel shifts to supplying a rapidly increasing assortment of 64-bit desktops and laptops.". The trend is also evident by looking at the kinds of systems being sold at retailers. In its circular this Sunday most of the desktops and half of the dozen notebook models being advertised by Office Depot had the 64-bit version of Windows pre-installed. The mix was similar in Circuit City's advertisement, with nearly all of the desktops and many of the notebooks running 64-bit Windows. Gateway, for example, is shifting to an entirely 64-bit Windows lineup on its desktops, starting with the back-to-school shopping season. It's a dramatic shift even from last quarter, in which only about 5 percent of its total desktop and notebook models had a 64-bit OS installed. For the third quarter, 95 percent of desktop models and 30 percent of notebook systems will have a 64-bit OS.

Outline

Status of Sage on Windows

- General issues
- Cygwin
- MSVC 32 bit
- MSVC 64 bit

General Windows portability issues

- Build system
- GNUIsms
- POSIX dependencies
- sizeof(long)!=8 bytes in 64 bit mode, i.e. LLP64 arch
- No free 64 bit compilers, i.e. MSVC 64 bit and Intel Fortran/C++ are not free as in beer and obviously free as in freedom
- The is an experimental gcc 4.4.CVS with a 64 bit Windows target, so it should be supported once it is out. But the legal status of the port is in question, i.e. the MinGW people have some problems and the port is not in the official repo

Status of Sage on Windows/Cygwin

- libSingular problem - due to loads of time spend in libSingular debugging problems on OSX 64 bit and Solaris the path seems clear
- DLL remapping issue - script exists to solve the problem
- Cygwin release are rather messy, i.e. the latest binutils release breaks gmp releases before 4.2.2.
- A lot of the old problems, i.e. mwrank crashing, was actually due to bugs in mwrank that were fixed

Status of Sage on Windows/MSVC 32bit

- Salami tactic: Move component by component over from the Cygwin build
- pexpect has a working prototype code - might need to be debugged
- build environment needs a few bits and pieces, we can use MinGW build C libraries with MSVC 2005 in 32 bit mode
- We need Perl
- We need Maxima on ecl
- We need eMPIRe

Status of Sage on Windows/MSVC 64 bit

- C99 support in MSVC 2005/2008 is not as complete as it should be.
- various packages, for example FLINT use gcc's __build_in functions in its test suite.
- The build environment needs work, i.e. the Windows port of pthreads needs work
- ATLAS does depend on a 32 bit Cygwin build env and many more small and annoying problems.