Trillian – Linux on IA-64

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VA Linux Systems

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Agenda

- The Project
- The Team
- Architecture
- Development Environment
- Development Schedule
- ISV Timeline and Issues
The Project

- **Goals**
  - Single port
  - Optimized for IA-64
  - Open source availability at product launch

- **Co-operative effort to deliver the best code**
  - Similar to classic Linux model but development done under NDA
  - Many players contributing technology and resources
    - Cygnus, HP, IBM, Intel, SGI and VA Linux Systems
# The Team

<table>
<thead>
<tr>
<th>Company</th>
<th>Tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cygnus</td>
<td>GNUPro Toolkit (gcc, g++, gdb)</td>
</tr>
<tr>
<td>HP</td>
<td>kernel, initial gcc, gas, ld, emacs; glibc (CERN)</td>
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<tr>
<td>IBM</td>
<td>kernel</td>
</tr>
<tr>
<td>Intel</td>
<td>kernel, IA-32, platform, s/w dev env, apache</td>
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<tr>
<td>SGI</td>
<td>compiler, kernel</td>
</tr>
<tr>
<td>VA Linux</td>
<td>kernel, SMP, platform, E &amp; GNOME, XFree86, cmds &amp; libs, bootloader, OpenGL, GIMP</td>
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Key Features

- It really is just Linux!
- LP64 programming model
  - 64-bit kernel
  - 64-bit virtual memory support
- IA-32 backward compatibility
  - Linux/x86 binaries run without recompile
- Enterprise features
  - SMP, large memory, large file systems, performance monitoring
Key Features (cont)

- Kernel debugger
- Optimized tool chains
- Advanced Configuration and Power Interface (ACPI) support
- Extended Firmware Interface (EFI) support
IA-64 Linux Attributes

Development platform: Linux/x86
Tool chain: Standard GNU tool chain based (gcc, g++, glibc, gdb, gas, ld, etc)
Simulator: Full platform simulator (IA-64 s/w dev. env.)
Data model: LP64
Byteorder: little endian
Object file format: ELF64/IA-64 and ELF32/IA-32
Page size: 4K or 8K
Virtual address space size: 64 bits
Development Environment

- Development Methodology
  - Distributed development
  - Shared source repositories
  - Bug databases and mailing lists

- Development Tools
  - Full GNU tool chain, revision control (BitKeeper)
  - Cross compiling now, native hosting later

- Issue Resolution
  - The best code wins, new features lose to conformance to Linux/x86
# Development Schedule

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Actual/Target</th>
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<tbody>
<tr>
<td>Single user on IA-64 s/w dev env</td>
<td>5/28/99</td>
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<tr>
<td>OS boot on IA-64 s/w dev env</td>
<td>6/25/99</td>
</tr>
<tr>
<td>Simple Install (CD)</td>
<td>Q4 1999</td>
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<tr>
<td>Development Release</td>
<td>Early Q1 2000</td>
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<tr>
<td>Advanced Apps &amp; Utils</td>
<td>Q2 2000</td>
</tr>
<tr>
<td>Production Release</td>
<td>Itanium™ Launch</td>
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ISV Timeline

- **1999**
  - IA-32 Linux port
  - 64-bit cleanup
- **2000**
  - dev release
  - final release

- Port to IA-32 Linux now
- Perform 64-bit code cleanup and prepare for IA-64
- Expect development release in early Q1 2000
- Expect final release with Itanium™ release
Porting to IA-64 Linux

...in three easy steps

- Port to Linux IA-32...now
- Get 64-bit clean
- Recompile for IA-64
Development Tools

- **Cygnus optimized GNUPro Toolkit**
  - gcc/g++/gdb for the Itanium™ processor
  - Base port Q4 1999, optimized port Q1 2000
  - Production release with Itanium™ processor release

- **SGI Compilers**
  - GNU C library (glibc)

- **Other Open Source development tools**
  - JAVA, Perl, Python, PHP, Tcl/TK, etc.

- **OEMs will provide tools for their platforms**
ISV Resources

- www.linuxia64.org
  - Status reports
  - Discussion forums
  - Technical resources
  - Linux IA-64 evangelism
  - Software downloads
Conclusions

- ISVs can participate in Linux momentum and growth
  - Follow the three easy steps to port!
- Linux will be ready at Itanium™ launch
  - LP64 model fully supported
  - Support for existing IA-32 binaries
- ISV engagement in Q1 2000
  - On-line resources

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