Linux Tools Project

EclipseCon 2009

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Agenda

- Tools for Linux packagers
- Change of *main* focus
- Tools for C/C++ developers built on CDT
- Future plans and how to get involved
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rpmlint warnings

Add/Remove rpmlint Warnings
“RPM Stubby”

“Stub” out an RPM specfile
<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>eclipse-oprofile</td>
</tr>
<tr>
<td>Version</td>
<td>0.1.0</td>
</tr>
<tr>
<td>Release</td>
<td>%{dist}</td>
</tr>
<tr>
<td>Summary</td>
<td>Eclipse plugin for OProfile integration</td>
</tr>
<tr>
<td>Group</td>
<td>Development/Tools</td>
</tr>
<tr>
<td>License</td>
<td>EPL</td>
</tr>
<tr>
<td>URL</td>
<td><a href="http://www.eclipse.org/linuxtools/projectPages/oprofile/">http://www.eclipse.org/linuxtools/projectPages/oprofile/</a></td>
</tr>
<tr>
<td>Source0</td>
<td>%{name}-fetched-src-%{src_repo_tag}.tar.bz2</td>
</tr>
<tr>
<td>Source1</td>
<td>%{name}-fetch-src.sh</td>
</tr>
<tr>
<td>Patch0</td>
<td>%{name}-includefixes.patch</td>
</tr>
<tr>
<td>BuildRoot</td>
<td>%{tpath}/%{name}-%{version}-%{release}-root-%{__id_u} -n</td>
</tr>
<tr>
<td>ExcludeArch</td>
<td>ppc ppc64</td>
</tr>
<tr>
<td>BuildRequires</td>
<td>eclipse-pde &gt;= 1:3.4.0</td>
</tr>
<tr>
<td>BuildRequires</td>
<td>eclipse-cdt &gt;= 5.0.1</td>
</tr>
<tr>
<td>BuildRequires</td>
<td>eclipse-linuxprofileframework &gt;= 0.1.0</td>
</tr>
<tr>
<td>BuildRequires</td>
<td>oprofile &gt;= 0.9.3</td>
</tr>
<tr>
<td>BuildRequires</td>
<td>oprofile-devel &gt;= 0.9.3</td>
</tr>
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<td>BuildRequires</td>
<td>binutils-devel &gt;= 2.18.50.0.6</td>
</tr>
<tr>
<td>Requires</td>
<td>eclipse-platform &gt;= 3.4.0</td>
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<td>Requires</td>
<td>eclipse-cdt &gt;= 5.0.1</td>
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<tr>
<td>Requires</td>
<td>eclipse-linuxprofileframework &gt;= 0.1.0</td>
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<tr>
<td>Requires</td>
<td>oprofile &gt;= 0.9.3</td>
</tr>
<tr>
<td>Requires</td>
<td>usermode &gt;= 1.98</td>
</tr>
</tbody>
</table>

**%description**

Eclipse plugins to integrate OProfile's profiling capabilities with the CDT.

**%prep**

%setup -q -c
#remove binaries
rm -f org.eclipse.linuxtools.oprofile.core.linux.*/os/linux/*/opxml
%setup
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etc.
Focus

“Linux Distros” -> “Linux Tools”

Haven't forgotten our roots
C/C++ Tools

- Developer-focused
- Sane defaults
- Integrate with CDT functionality
GNU Autotools

Synopsis: Declare variable is a precious variable, and include its description in the variable section of configure --help.

Being precious means that
- variable is substituted via AC_SUBST.

- The value of variable when configure was launched is saved in the cache, including if it was not specified on the command line but via the environment. Indeed, while configure can notice the definition of CC in configure CC=bizarre-cc, it is impossible to notice it in CC=bizarre-cc /configure, which, unfortunately, is what most users do.

Press ESC to focus...
Libhover

```c
void *blah = malloc;

if (display_name)
  display = gdk_display_open(display_name);
else
  GList *display = gdk_display_get_default();
const char *period = strptimeבטחון,
if (period)
  gulong n;
```

This function returns a pointer to a newly allocated block size bytes long, or a null pointer if the block could not be allocated.
```
probe kernel.function("vfs_read").return {
    reads[execname()] += $return
}

probe kernel.function("vfs_write").return {
    writes[execname()] += $return
}

probe timer.s(1) {
    foreach (p in reads)
        total_io[p] += reads[p]
    foreach (p in writes)
        total_io[p] += writes[p]
    foreach (p in total_io - limit 10)
        printf("%15s r: %8d KiB w: %8d KiB\n", p, reads[p]/1024, writes[p]/1024)
        printf("\n")
    # Note we don't zero out reads, writes and total_io,
```
OProfile

```cpp
if (n <= 1)
    return 1;
else
    return n * factorial1(n-1);

unsigned long long factorial2(unsigned
unsigned long long ret = 1;
for (unsigned int i = 1; i <= n; i++)
    ret *= i;
return ret;
```
Valgrind

```c
int *foo() {
    return (int *)malloc(SIZE);
}

void bar(int *ptr) {
    free(ptr);
}
```

Valgrind test (memcheck) [memcheck] /usr/bin/valgrind (17/03/09 3:07 PM)

- 4,000 bytes in 100 blocks are definitely lost in loss record 1 of 1 [pid: 28810 / tid: 1]
  - at 0x4A073E: malloc (vg_replace_malloc.c:207)
  - by 0x400589: foo (valgrindtest.c:21)
  - by 0x400541: main (valgrindtest.c:12)
Valgrind

![Valgrind Heap Chart](image)

**simpleMassifTest [massif] /usr/bin/valgrind (24/03/09 3:23 PM)**

**[PID: 7737]**

**Snapshot** | **Time (i)** | **Total (B)** | **Useful Heap (B)** | **Extra**
---|---|---|---|---
1 | 113,869 | 4,008 | 4,000 | 8
2 | 113,911 | 8,016 | 8,000 | 16
3 | 113,953 | 12,024 | 12,000 | 24
4 | 114,841 | 12,024 | 12,000 | 24
5 | 114,841 | 8,016 | 8,000 | 16
6 | 114,880 | 4,008 | 4,000 | 8
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- Demonstrations
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Plans

- SystemTapGui contribution
- Tracing tools (LTTng, SystemTap)
- Unit testing and coverage (CPPUnit, gcov)
- GCC static analysis
- Virtual machine integration
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  • Plug-in developers
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  • Documentation authors
  • Graphic designers
  • Commercial adopters