Trace Compass Incubator

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Remember these? Now let’s see the menu!

Prototype → Incubator → Trace Compass master

Users ↔ Incubator

Users
Trace Types (and some analyses on them)

**Json Trace-event traces**

- MessageLoop: RunTask
  - 2593788.989 000 000: E INFO 30674 30649 task
- MessageLoop: PostTask
  - 2593788.989 003 000: f INFO 30674 30649 task
- ImmediateInputRouter: ProcessInput
  - 2593788.989 003 000: B INFO 30649 30649 input
- MessageLoop: RunTask
  - 2593788.989 004 000: B INFO 30674 30649 task

**UfTrace traces**

- 237206.127 440 475 entry
  - 0 malloc 14819 14819 
    - `/usr/bin/x86_64-linux-gnu-gcc-6`
- 237206.127 440 542 exit
  - 0 malloc 14819 14819 
    - `/usr/bin/x86_64-linux-gnu-gcc-6`
- 237206.127 440 952 entry
  - 0 __cxa_atexit 14819 14819 
    - `/usr/bin/x86_64-linux-gnu-gcc-6`

**Perf sampling traces**

- 1504633868.175 610 perf_stream-0-0
  - 0 cycles:pp
    - perf.ip=0x7699f8a3cf0, perf.tid=6948, perf.pid=6801, perf.period=5171732, perf.callchain.size=6, perf.callchain=[0xffffffff000, 0x7699f8a3cf0]
  - 0 perf_mmap2
    - pid=6948, tid=6948, start=0x715a0b0f000, filename=/usr/lib/python3.6/lib-dynload/_json.cpython-35m-x86_64-linux-gnu.so
  - 1504633868.263 728 perf_stream-0-0
  - 0 perf_exit
    - pid=6948, ppid=6948, tid=6948, ppid=6948, time=609964377326
  - 1504633868.264 857 perf_stream-0-0
  - 0 perf_fork
    - pid=6950, ppid=6801, tid=6950, ppid=6875, time=609965308757
  - 1504633868.264 701 perf_stream-0-0
  - 0 cycles:pp
    - perf.ip=0xffffffff80645404, perf.tid=6950, perf.pid=6950, perf.period=1, perf.callchain.size=34, perf.callchain=[0xffffffff800, 0xffffffff8064504]
  - 1504633868.264 710 perf_stream-0-0
  - 0 cycles:pp
    - perf.ip=0xffffffff80645404, perf.tid=6950, perf.pid=6950, perf.period=1, perf.callchain.size=34, perf.callchain=[0xffffffff800, 0xffffffff8064504]

**Trace Compass JUL Log traces**

- 1504633863.250 899 lttng._jul_channel_3
  - 3 lttng._julevent
    - msg="ts=60480933817,"ph":1,"tid":1,"name":"TimeGraphView:LoadingTrace","args":{"trace":"many-threads","viewId":"org.eclipse.tracecompass.anal"
- 1504633863.251 058 lttng._jul_channel_3
  - 3 lttng._julevent
    - msg="ts=604951620732,"ph":1,"tid":1,"name":"TimeGraphView:Rebuilding","cat":"org.eclipse.tracecompass.analysis.os.linux.views.controlflow","id";
- 1504633863.251 105 lttng._jul_channel_3
  - 3 lttng._julevent
    - msg="ts=604951734417,"ph":1,"tid":1,"name":"RefreshRequested","cat":"org.eclipse.tracecompass.analysis.os.linux.views.controlflow","id":"0x10",
• **Generic callstack:** data-driven, instrumented or profiled applications, grouped in various ways (not just pid/tid), all kinds of statistics on this data type

• **Virtual machine analysis:** Qemu/KVM and containers, tracing host only or host + VMs, various analyses: usage of physical resources, overhead, critical path
Analyses (frameworks of)

- Context Switch HeatMap: Violon plot for number of context switches in kernel trace

- LTTng-UST extras: Critical path including userspace spin locks
Experimentations

- XaF analysis: Analysis of patterns using real time state machines
- Jersey Rest Server: A rest server for Trace Compass
Trace Compass habitual approach

Traces

Analysis

Data providers

Views

Extract data from trace

Get data from analysis and show it

Use other analysis
Incubator approach to trace analysis

Traces

Analyses: Feed the model

System model: One model/host

Data providers

Views

Extract data from trace

Tid/pid/cpu

Give me the statuses of tid X between t1 and t2

Processes Threads CPUs Disks

Kernel thread statuses

UST thread statuses

Who was running on CPU Y at time t?

What is the PID of Z

Still uses data from the analysis, but can get more information

Still uses data from the analysis, but can get more information
Example of the approach:
Generic Callstack
Resources

- Sources: http://git.eclipse.org/c/tracecompass.incubator/org.eclipse.tracecompass.incubator.git
- Traces used in this demo: https://secretaire.dorsal.polymtl.ca/~gbastien/traces/jul_perf.tgz
  https://secretaire.dorsal.polymtl.ca/~gbastien/traces/vm_ls.tgz
- My personal blog on new tracing features: http://versatic.net
- Twitter: @genbastien (Geneviève Bastien) @DavisTurlis (Matthew Khouzam as the name implies...)
Supporting screenshots (Java critical path)
Supporting screenshots (VM overhead)