



Tracing the Google Platform

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Summary

- Speaker presentation
- Why Google needs tracing
- Tracing requirements
- Ktrace vs LTTng
- Development plans



Speaker presentation

- Mathieu Desnoyers
 - Ph.D. student at École Polytechnique de Montréal
- LTTng maintainer since 2005
- IBM Research intern summer 2006
- Google intern winter 2007



Why Google needs tracing ?

- Real-life examples OLS2007
 - Occasional poor latencies for I/O write requests
 - Race condition in OOM killer



Tracing requirements

- Tracing on production systems
- Very low impact when disabled
- Low impact when enabled
- Disk dump and flight recorder modes
- Triggers to gather the data
- Use memory as efficiently as possible

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Ktrace vs LTTng

- Ktrace is a home-made tracer made to fit Google's needs
 - Compact buffers
 - Low impact syscall tracing
- LTTng is a more generic and efficient alternative
 - Suitable for mainlining
 - Port Ktrace features to LTTng



Development plans

- Integrate LTTng to the Google platform
- Aim at LTTng mainlining
 - Markers (already in 2.6.24)
 - Tracer



LTng mainlining plans

- Local cmpxchg
 - in mainline / -mm
- Markers support for multiple probes
 - in -mm
 - Steven Rostedt latency tracer (-rt tree)
- Text Edit Lock
- Immediate values



LTTng mainlining plans

- Instrumentation
- Kernel Trace thread flag
- Timestamping
- LTTng buffering
- LTTng format string parser
- Statedump
- Linux Kernel Markers /proc interface

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Questions ?

Mathieu Desnoyers