Trace Compass Update

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Agenda

— Introduction & History
— What’s new
— Trace Server Protocol
— Ongoing development
— Incubator
Introduction

- Eclipse Trace Compass is an open source application to solve performance and reliability issues by reading and analyzing traces and logs of a system.
- Its goal is to provide views, graphs, metrics, and more to help extract useful information from traces.
Trace Compass History

Joining Eclipse Linux Tools
- Tracing and Monitoring Framework
- Support for LTTng 0.x
- Customizable test/XML parsers
- Trace Research Project
Trace Compass History

LTTng 2.0
- Common Trace Format (CTF)
- LTTng 2.0 Kernel and UST
- LTTng Tracer Control

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Standalone Application (RCP)
- Analysis Framework
- New views types
- More trace types (e.g. GDB Trace)

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- Own Eclipse Project
- More trace types (not only Linux)
- Time synchronization of traces
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### Performance Analysis
- Latency and real-time analysis
- Pattern Analysis
- Critical Path

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Trace Compass History

Call Graph Analysis

- Flame Graph View
- Function Duration Statistics
- Function Duration Density

2016
Trace Compass History

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Trace Compass Add-ons
- More trace types
  - ftrace, atrace, maven, trace event
- Many different views, e.g.
  - Generic Flame Chart/ Graph
  - VM analysis views
Trace Compass History

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### Jaeger Tracing
- Trace parser for Jaeger traces
- Various views for Jaeger traces
- Container Analysis
- In Trace Compass incubator project

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THEIA
Distributed Architecture
- Trace Server Protocol (TSP)
- Trace Compass trace server
- Web-frontend
New in 4.0 and 4.1

— Resource View is now the default view for kernel
— CPU frequency is now visible in resource view
— Time event highlight and filtering
Highlight and Filtering
New in 4.0 and 4.1

— CTF trace trimming (including experiments)
New in 4.0 and 4.1

- Time Graph improvement
  - Diagonal navigation (middle mouse drag)
  - Better keyboard navigation (commands are now re-assignable)
    - WASD
    - CTRL-D to toggle bookmarks
  - Adding symbols markers
New in 4.2 (Dec 19, 2018)

- Better support for dark theme
- Detection of potential memory leaks
- Change default zoom per trace type
- APIs to support traces in JSON format
  - Support for sorting
  - Ex. Open Tracing and Chrome trace
Trace Compass Architecture
Trace Compass Architecture

Current (ongoing)

Trace Compass UI

Data Providers

Trace Compass Core

Trace
State System
Segment store

Trace
State System
Segment store
Trace Compass Architecture

- Trace Compass UI
  - Trace Compass Core
    - Data Providers
      - Trace
      - State System
      - Segment store
  - Trace Visualization Client
    - Data Serializer
      - Data Providers
        - Trace
        - State System
        - Segment store
    - Trace Server Protocol (REST or RPC)
    - Presentation Layer
  - Trace Compass Core
    - Business Layer
    - Data Layer
  - Trace Server
Trace Server Protocol (TSP)

— Motivation
  — Integration with next generation IDEs (e.g. Theia or VS Code)
  — Automated trace analysis
    — in CI environment
    — of traces attached to bug reports
  — Scale trace analysis

— Scope
  — Handle the communication between core and UI of trace viewer
  — Exchange visualization data between a client and a server
  — Trace management
  — Various visualization types
  — Server side filtering and searching
  — [https://github.com/theia-ide/trace-server-protocol](https://github.com/theia-ide/trace-server-protocol)
Use Cases

Launching

Open experiment

Post trace
200
Post trace config
200
Post experiment
200
Post experiment config
200
display

Great Success, have an 

open as experiment

start
started

Get list available views
200
show available views

open timeline
get view data
200
display view data
zoom in timeline view
get view data
200
display view data
hover over view element
get detailed element data
200
display tooltip
tsp-typescript-client

- Provide a TSP ready client to perform your requests
- Written in TypeScript
- Abstract the technology used (REST, HTTP)
- Currently under heavy development and testing
- [https://github.com/theia-ide/tsp-typescript-client](https://github.com/theia-ide/tsp-typescript-client)
TSP ongoing activities

- Continuous improvements on TSP
- Frontend
  - Time graph library with common time axis
  - Prototype based on Theia
  - Prototype available on GitHub ([https://github.com/delislesim/theia-trace-extension](https://github.com/delislesim/theia-trace-extension))
- Backend
  - Trace server prototype updates
  - Improvement on how we handle data provider query
  - Everything is in the incubator or Gerrit
- More libraries like the typescript client
Incubator and other updates

- Open Tracing and Jaeger support
- Global model for kernel trace (TID/PID)
- Kernel traces extra: file access, LTTng callstack context (kernel and userspace)
- CI trace visualization
- Global filtering
Q & A
News from Poly

— Dorsal cloud! 8 physical machines ready for action
— Lttng-utils project: helper for LTTng tracing
  https://github.com/tahini/lttng-utils
— Trace Compass tutorial (lisa conference)
  https://github.com/tuxology/tracevizlab
Contact

— Online
  — Mailing list: tracecompass-dev@eclipse.org
  — IRC: oftc.net #tracecompass
— Offline
  — We are still human. We talk!