Trace Compass Update

Simon Delisle

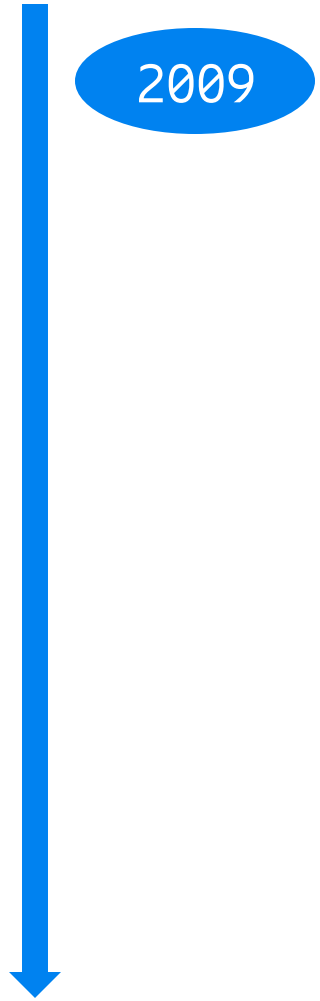
Agenda

- 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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TRACE COMPASS

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- Own Eclipse Project
- More trace types (not only Linux)
- Time synchronization of traces

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2015

Performance Analysis

- Latency and real-time analysis
- Pattern Analysis
- Critical Path

Trace Compass History

Call Graph Analysis

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

2016

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2016

2017

Trace Compass Add-ons

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

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Jaeger Tracing

2018

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

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2019

THEIA

Distributed Architecture

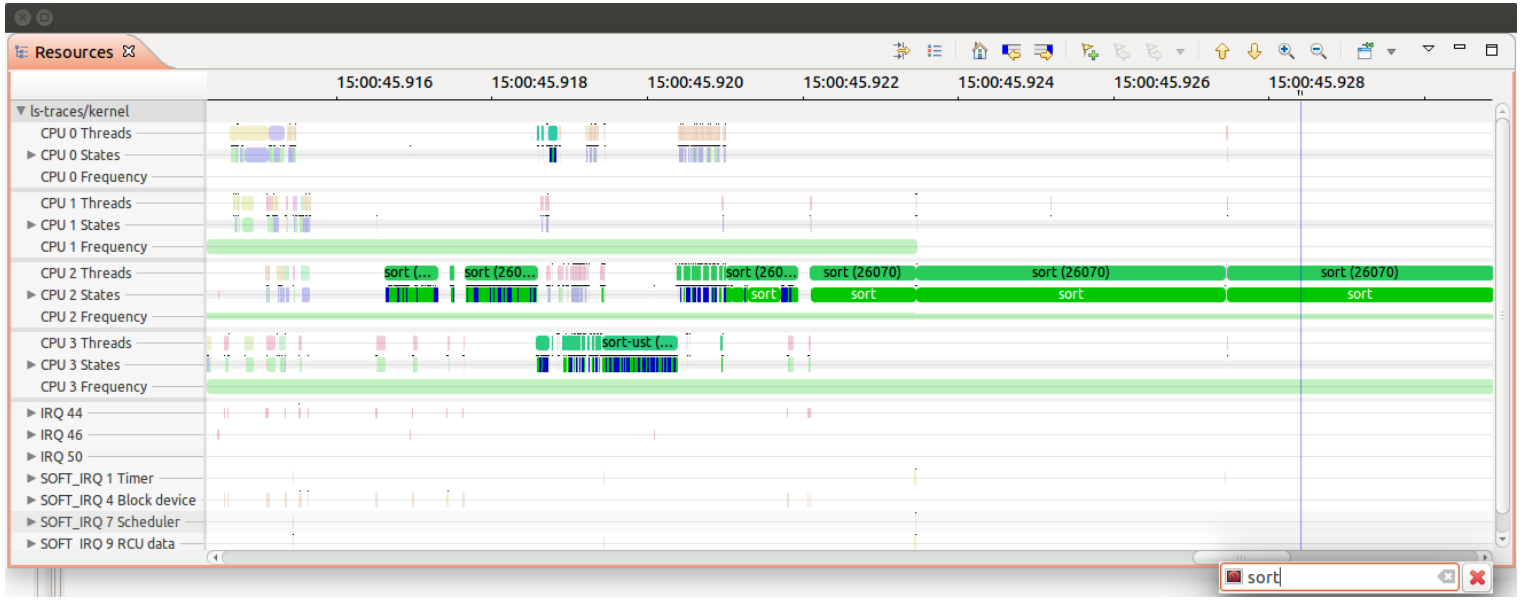
- Trace Server Protocol (TSP)
- Trace Compass trace server
- Web-frontend

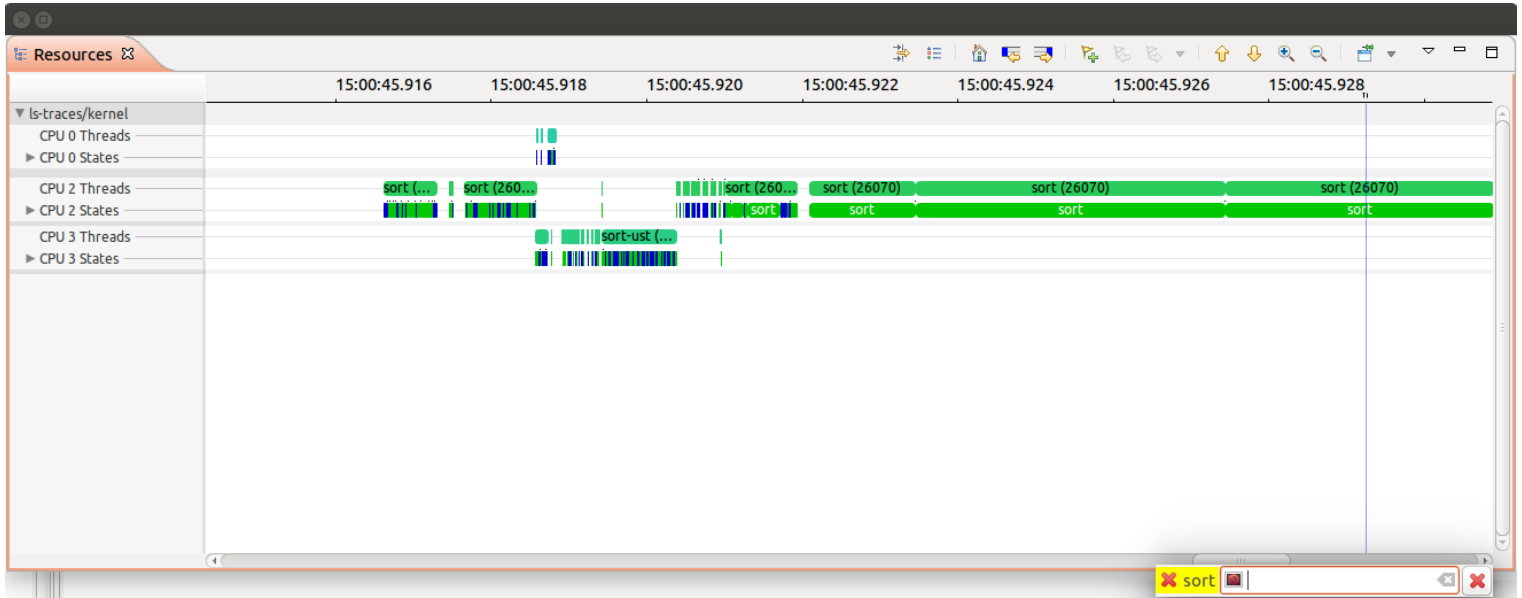
2020

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

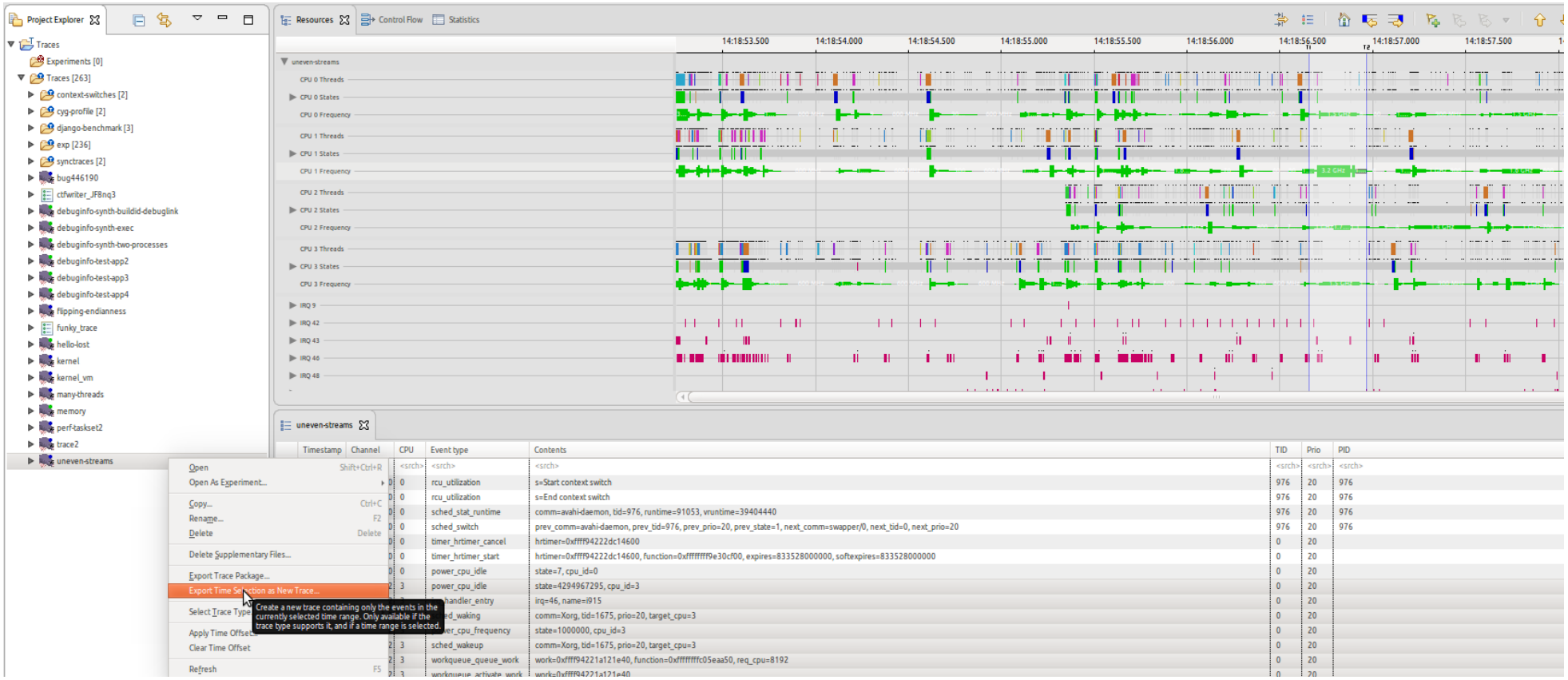
Highlight and Filtering





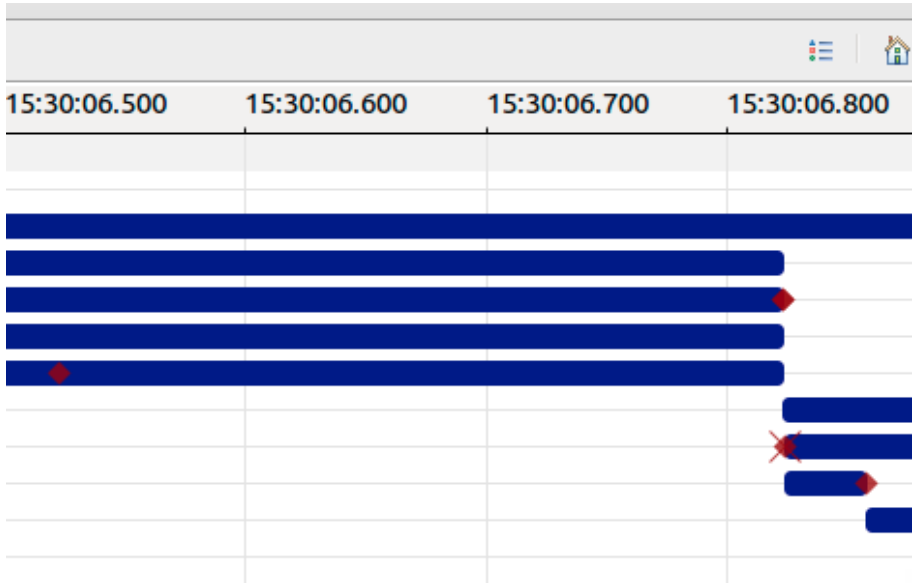
New in 4.0 and 4.1

— CTF trace trimming (including experiments)



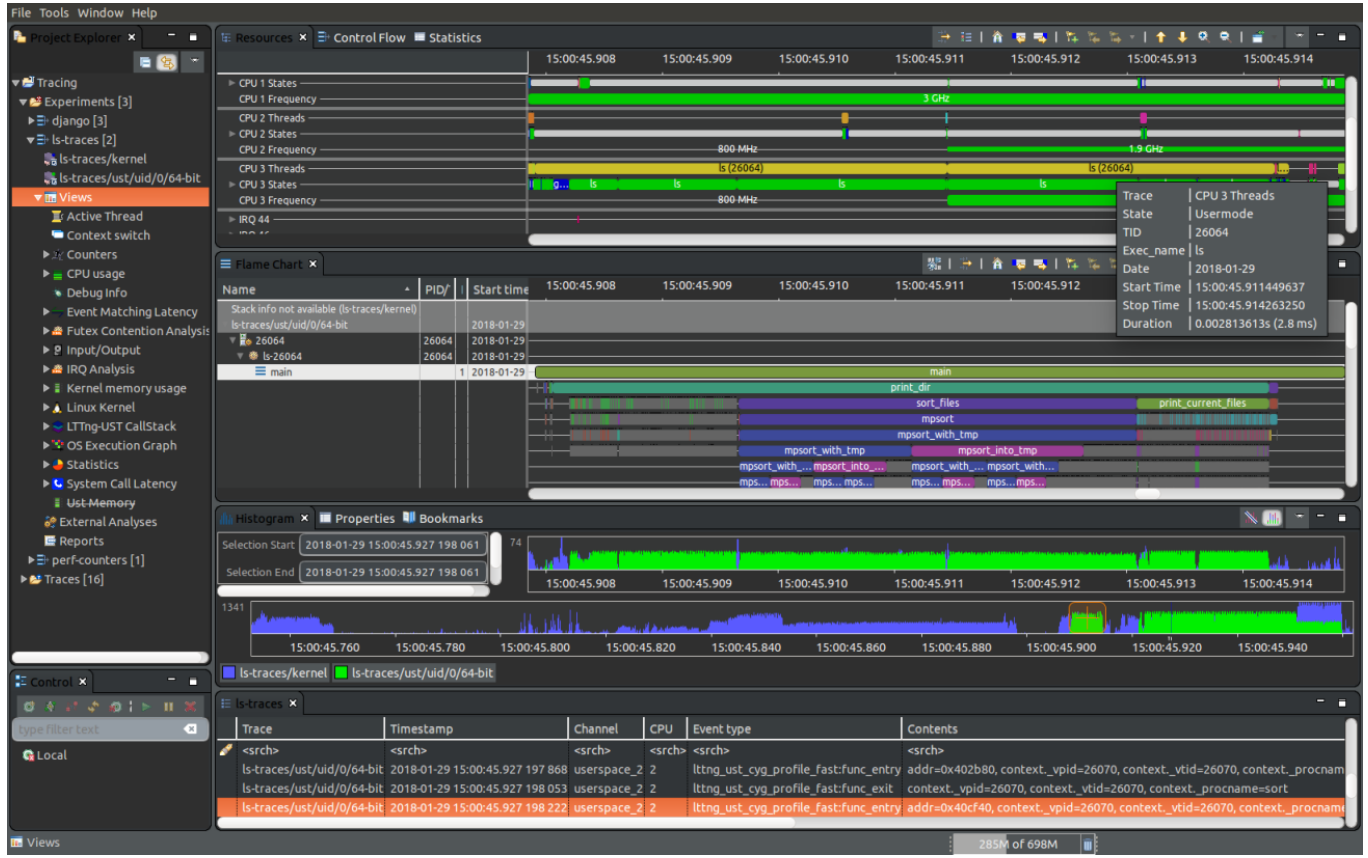
New in 4.0 and 4.1

- 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

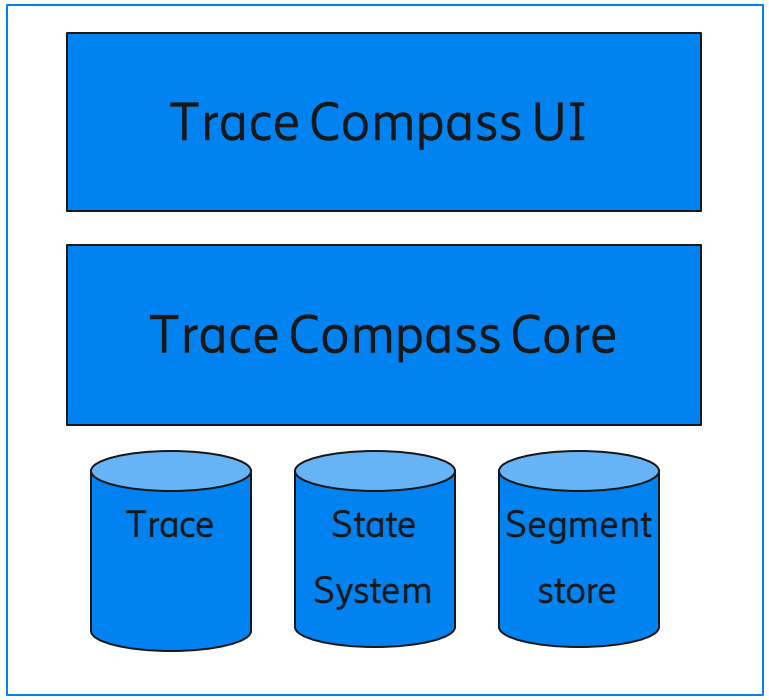


New in 4.2 (Dec 19, 2018)

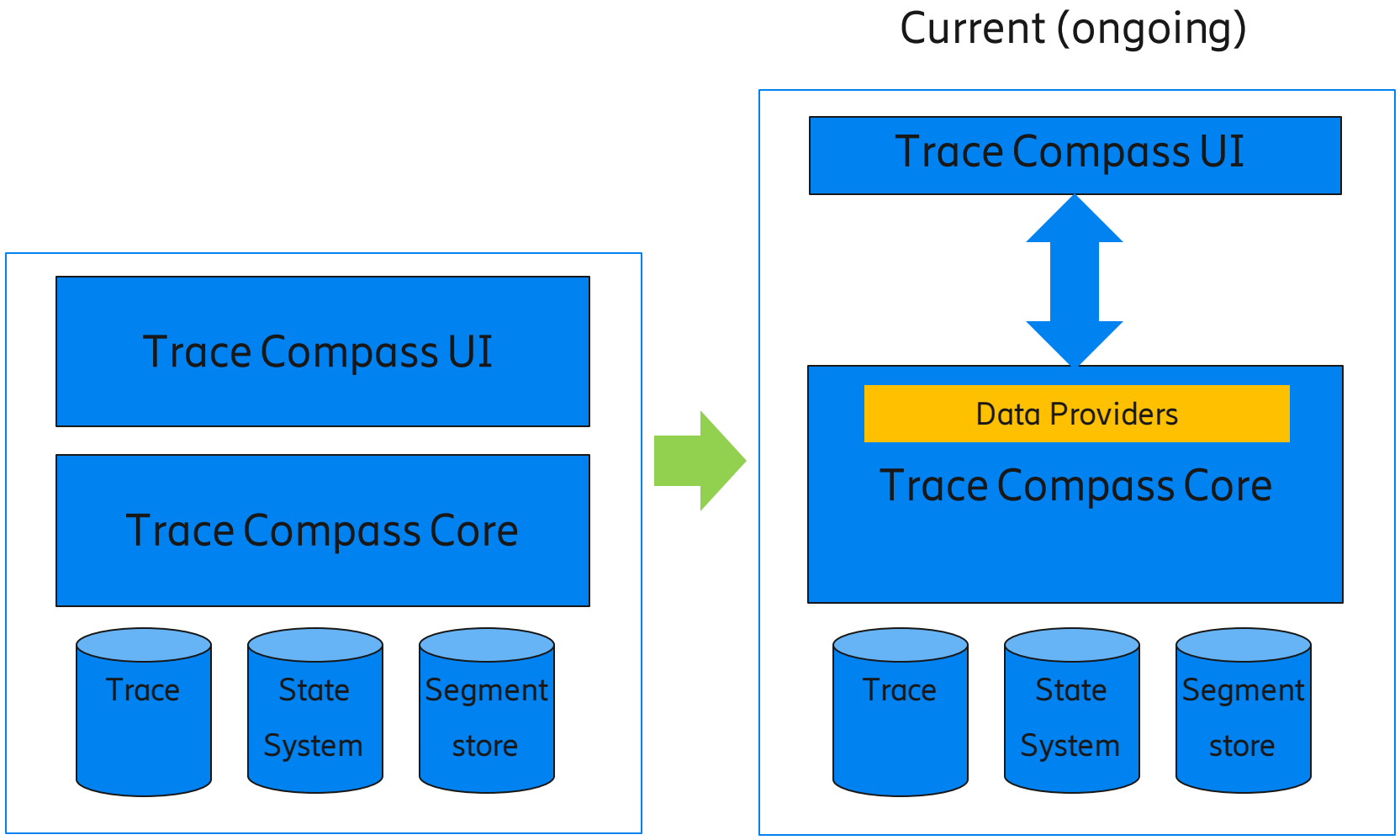
- Better support for dark theme
- Detection of potential memory leaks
- Change default zoom per trace type
- APIs to support traces in JSON format
  - Support for sorting
  - Ex. Open Tracing and Chrome trace



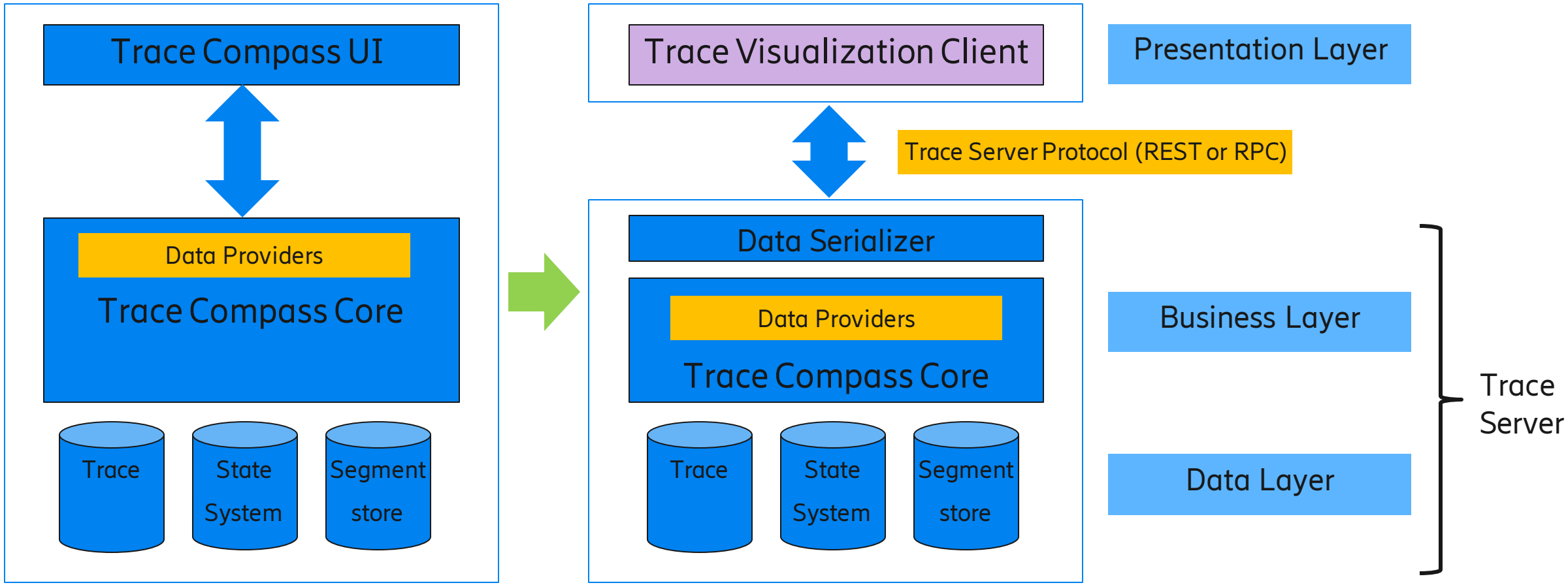
Trace Compass Architecture



Trace Compass Architecture



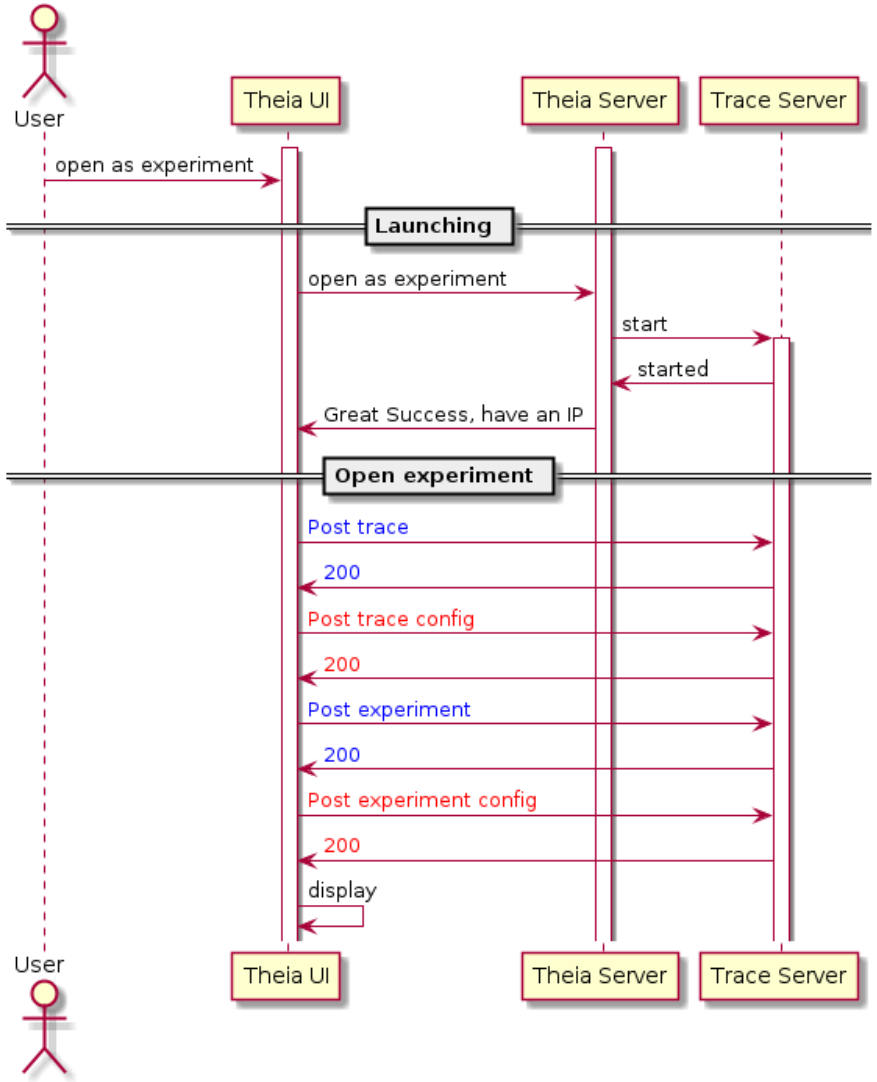
Trace Compass Architecture



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

Use Cases


User
Theia UI
Theia Server
Trace Server
open as experiment
Launching
open as experiment
start
started
Great Success, have an IP
Open experiment
Post trace
200
Post trace config
200
Post experiment
200
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200
display
User
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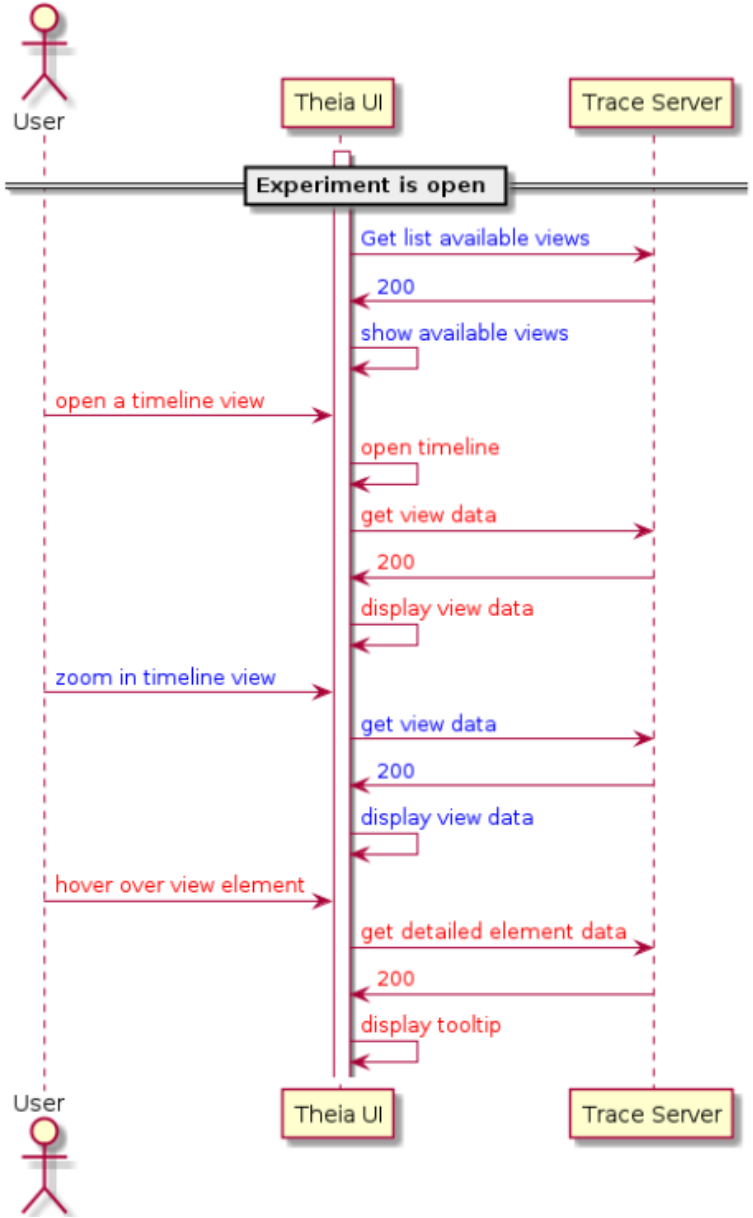

User
Theia UI
Trace Server
Experiment is open
Get list available views
200
show available views
open a timeline view
open timeline
get view data
200
display view data
zoom in timeline view
get view data
200
display view data
hover over view element
get detailed element data
200
display tooltip
User
Theia UI
Trace Server

tsp-typescript-client

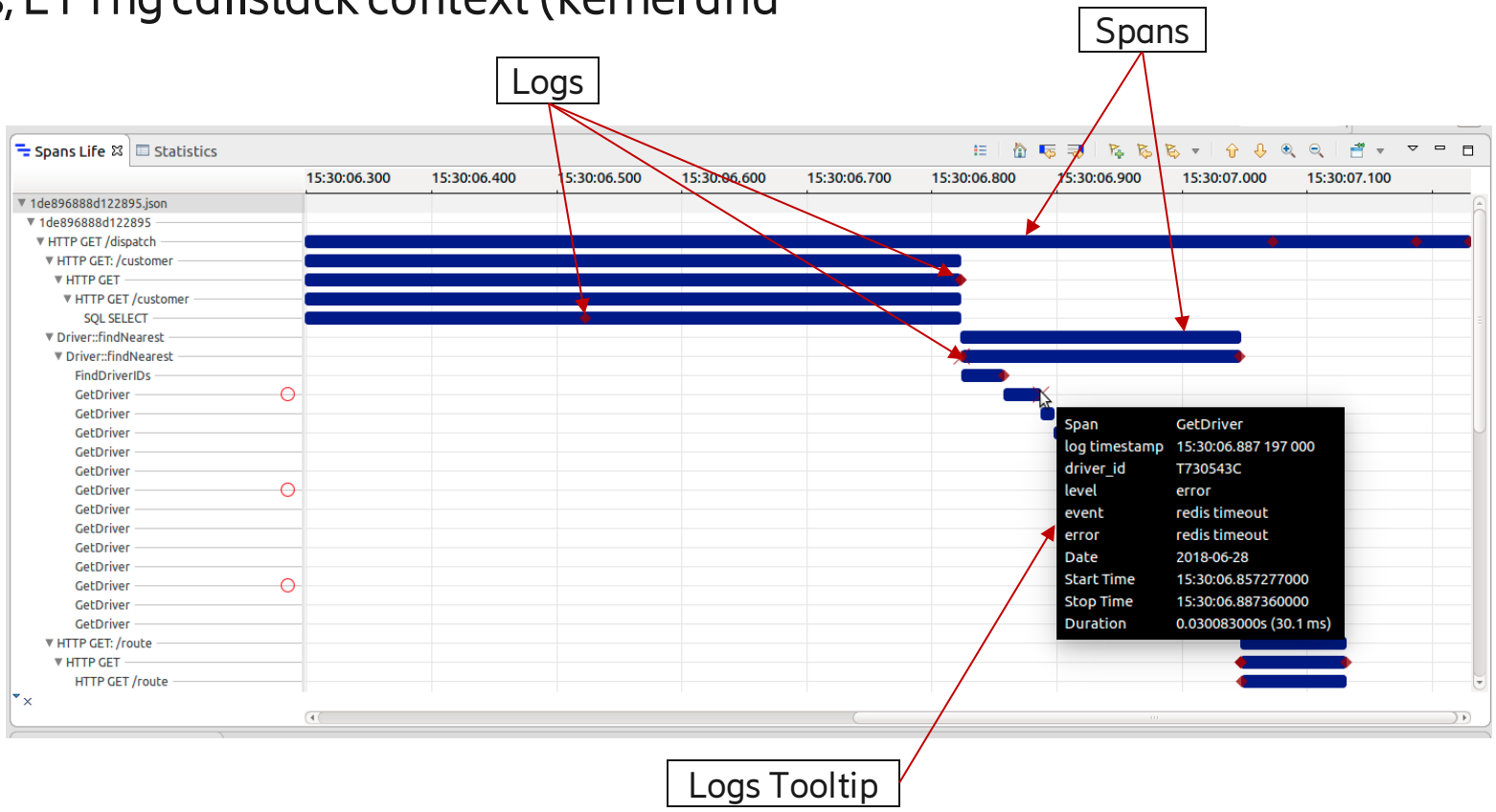
- Provide a TSP ready client to perform your requests
- Written in TypeScript
- Abstract the technology used (REST, HTTP)
- Currently under heavy development and testing
- https://github.com/theia-ide/tsp-typescript-client

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)
- 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 !