Canarytrace

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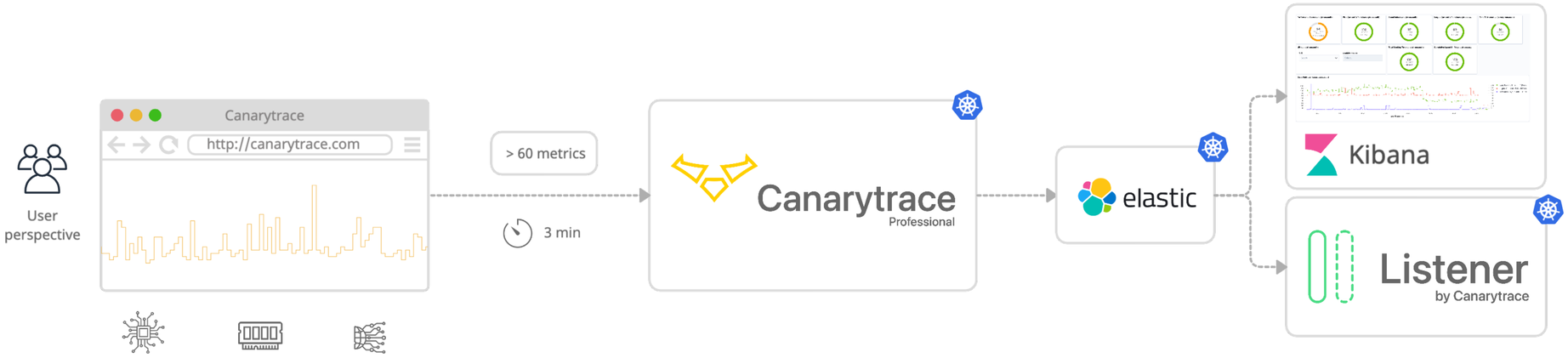
Plug’n'Play stack for monitoring vitality and availability of the web applications from user perspective.

Canarytrace in a Nutshell

- Monitoring vitality of the web application.
- Measure from user-perspective, because browser is a small infrastructure with many APIs.
- Non-invasive, maintenance-free and ready to run in Kubernetes (Plug'n'Play).
- Gathers more than 60 metrics every 3 min.
- Provides performance audits.
- Smoke or User-Journey.
- Automatic analyse data and alerting.
- Dashboards and trends.



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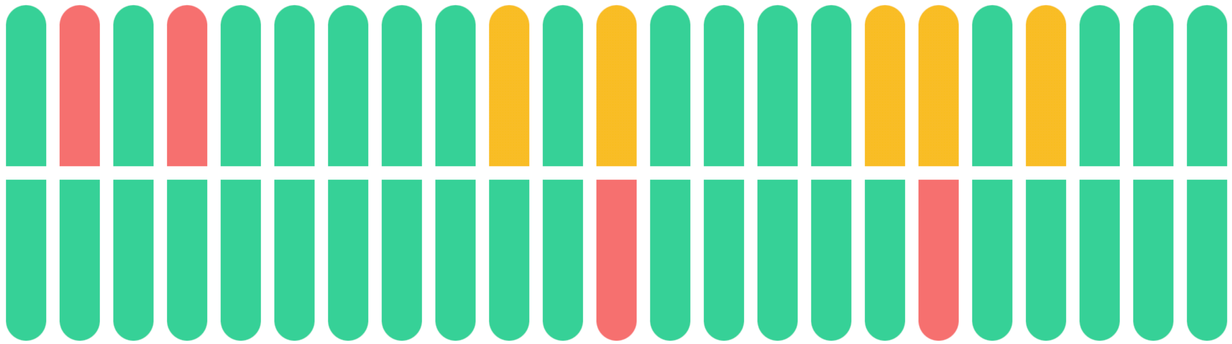

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Availability and Vitality

Canarytrace testing a measure every 3 min two aspects of the web applications.

Vitality - How fast the web application loads and if there is a problem with speed, then where. Is a slow frontend or backed? Which phase of loading the frontend is causing problems.

Availability - Is the application available and usable? Is the availability issue caused by the backend or frontend? Is possible go through the main business core scenarios such as buy product, fill form, log in etc.

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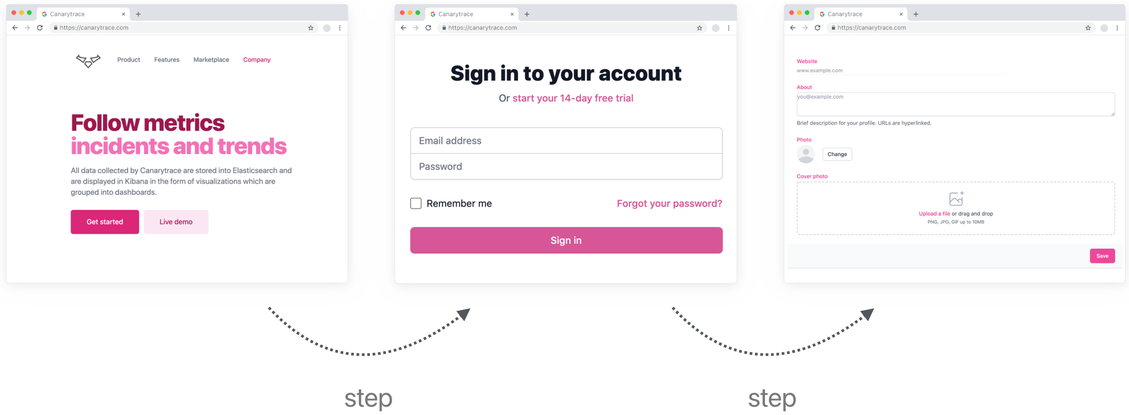
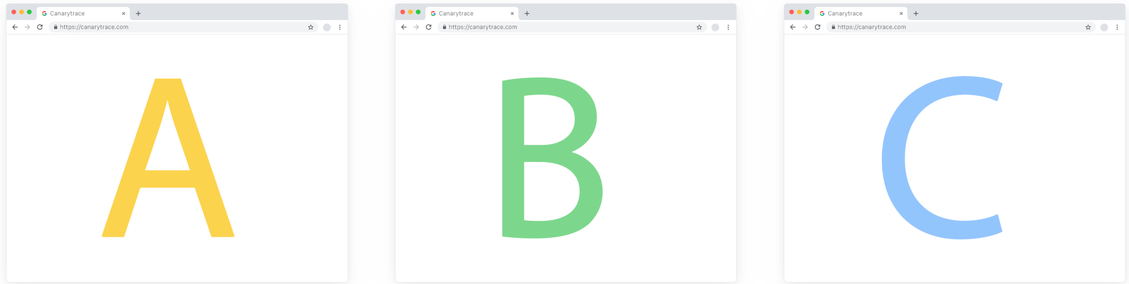
Smoke or User-journey





Landing page A

Landing page B

Landing page C

User-journey is a mode for testing and monitoring your web application from user perspective. E.g. open homepage -> search product -> add product to basket -> buy. From each step you get an overview of whether it is available and how fast it loads.

User-journey mode use monitor script based on testing framework Webdriver.IO 7.5

You can switch on smoke mode, because smoke is a maintenance free stack and just enter only a collection of landing pages. You get an overview of whether each landing pages works and how fast it loads.

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HERO ELEMENTS

Your business probably has these questions: When exactly does the user see the car or button ORDER NOW?
The only way to find out are Hero Elements.

Add measure marks into your code / HTML template. When measure mark passes through the parser, Canarytrace stores the exact render time. After that, you can see individual phases in the graph.
Thanks to Hero Elements you can specify the exact requirements for the rendering time of the whole page as well as its part.
E.g. After each release, the button ORDER NOW must be displayed within 1.300 ms.

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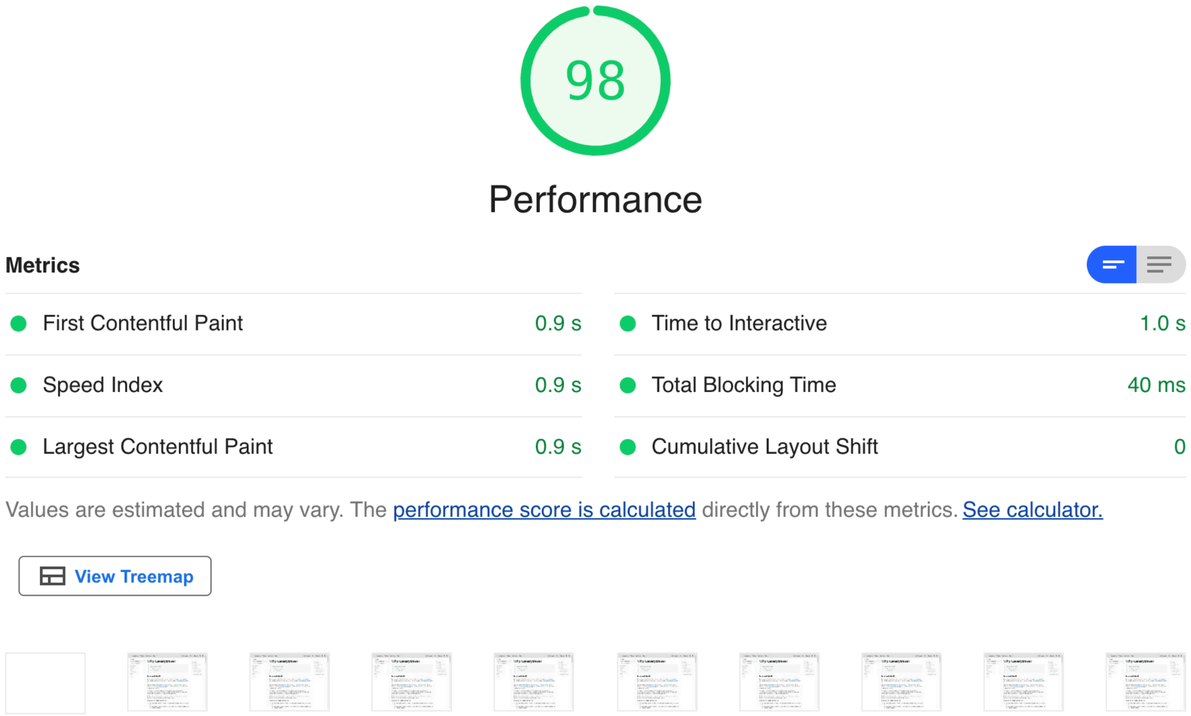

Performance Audit

Performance audit help improving the quality and loading speed of web pages and points to problematic and slow places in your application.

Canarytrace use Lighthouse 8 performance audit and for obtaining metrics such as WebVitals, diagnostics and opportunities for performance tuning.

You can monitor the results of performance audits on the timeline in Kibana or in the original HTML report.

Performance audit is useful for detecting problems with web loading speed.

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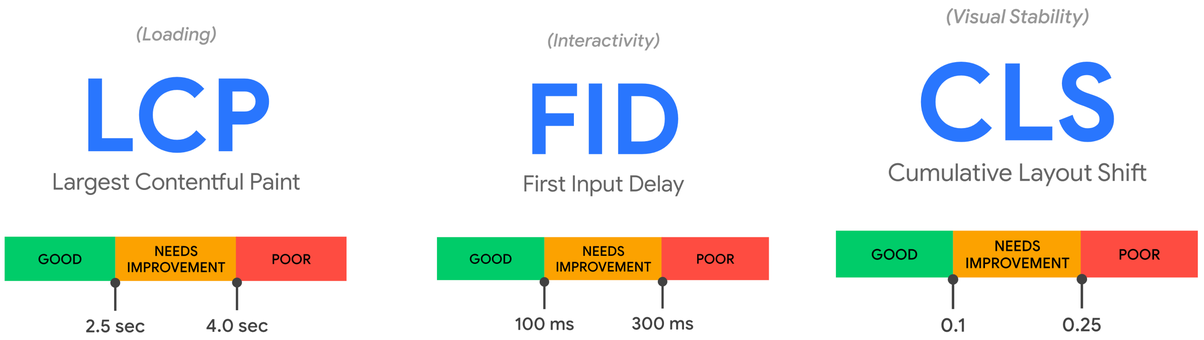

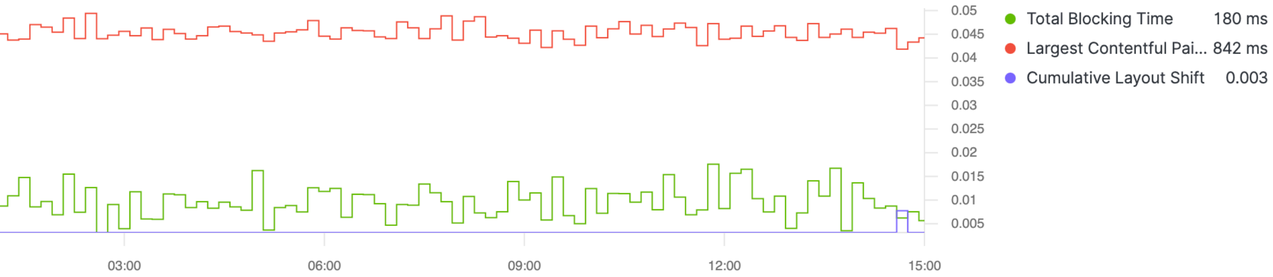

Web Vitals

Web Vitals is an initiative by Google to provide unified guidance for quality signals that are essential to delivering a great user experience on the web.

Just follow only of these metrics, which according to Google evaluate the quality of the web application.

You can follow WebVitals on timeline, because Canarytrace records them every three minutes.

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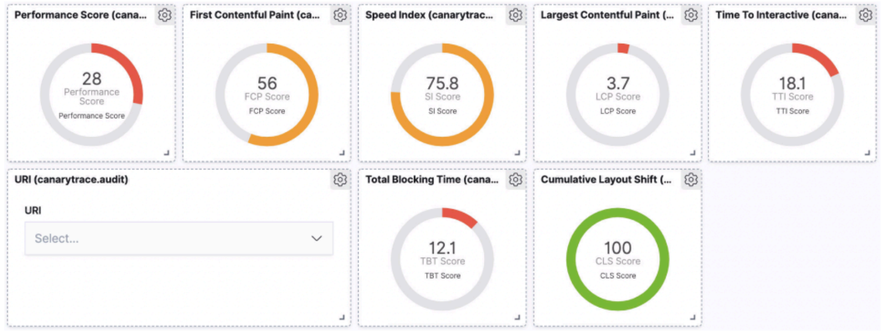
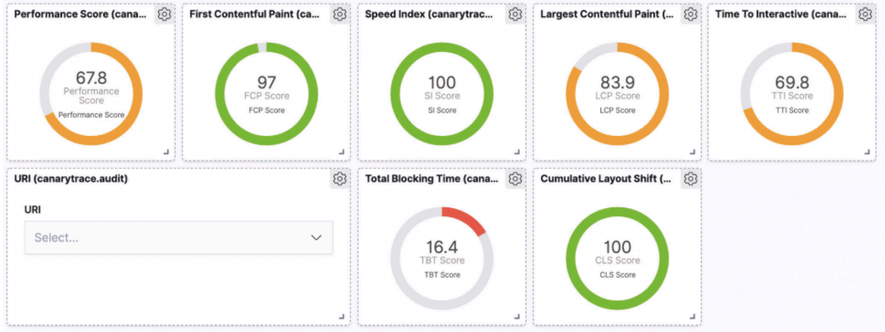
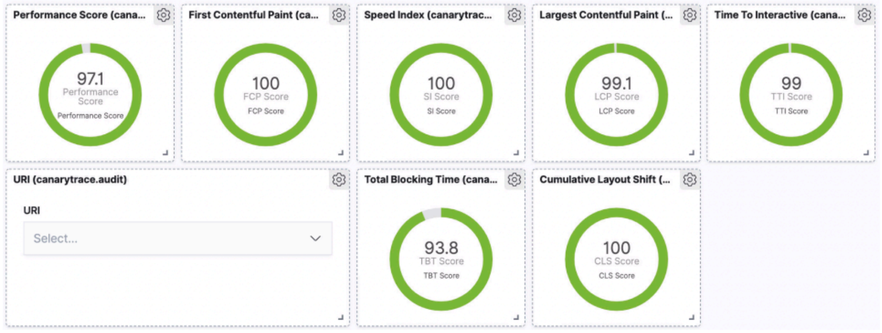
mobileRegular3G



mobileSlow4G



desktopDense4G



Desktop or mobile or both?

Different devices (desktop or mobile) and different types of connections will load your web application differently quickly.

Is recommendation create work load model by your production profile and by devices used your clients. Canarytrace has built-in network and CPU throttling presets.

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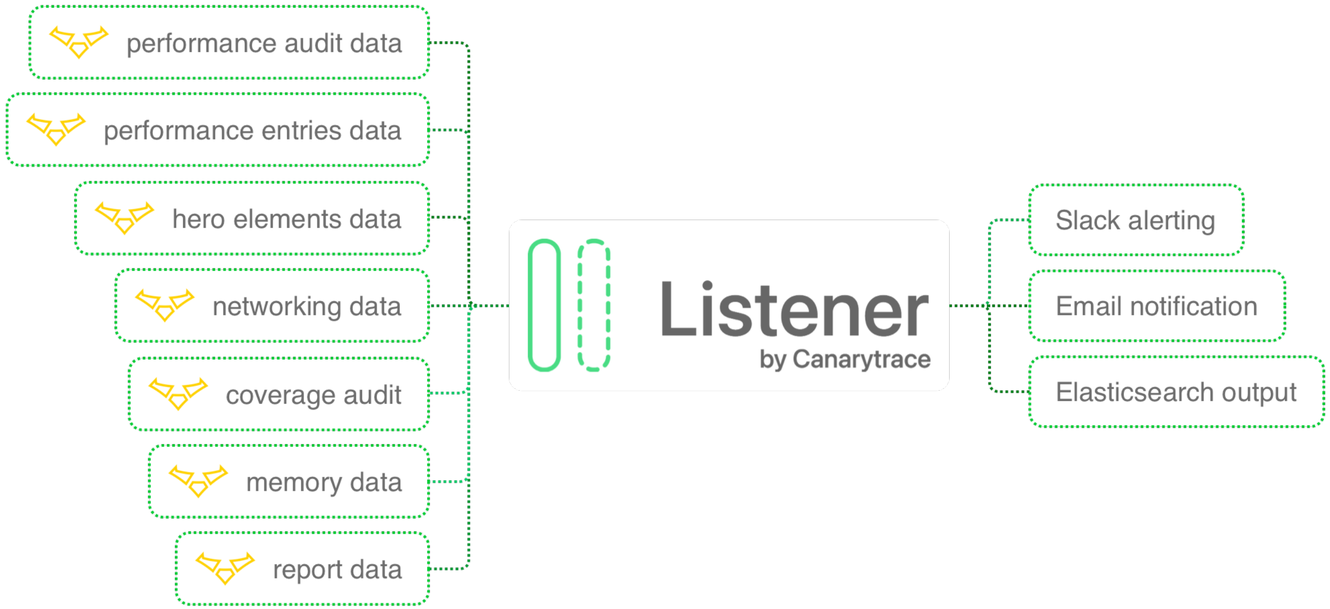

Listener Agent

Listener is additional components which brings automated monitoring of thresholds exceedances and send alerts according set of rules.

Canarytrace stores a lot of metrics. How fast images are loaded, how fast is javascript executed, how fast the page is rendered, what files the web application downloads to the browser, how large they are, how quickly the browser responds on mouse clicks, what headers contain requests and responses, etc.

Listener searches the stored metrics and, according to the set of built-in thresholds, warns of problems.

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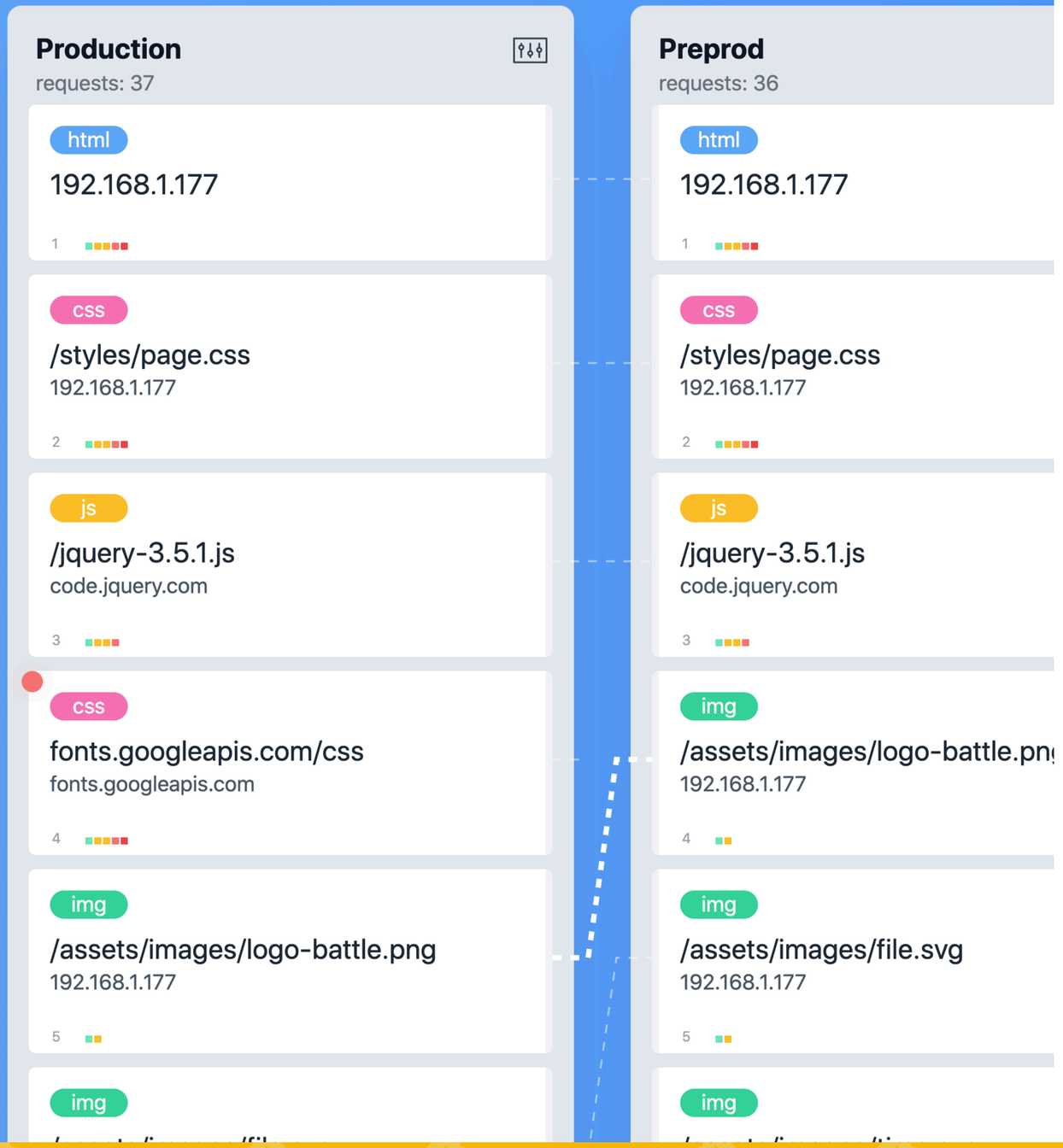

Listener Feeds

Compare environments with each other (e.g. prod vs. pre-prod) or compare environments before and after release.

Listener Feed is useful for checking differences between environments or releases, because Canarytrace records traffic on the network of the browser, ie. requests and responses.

This is useful for everyone who needs quickly to know changes in the environment such as DevOps or performance testers.

You may see a missing requests or a new one, priorities of requests, order of requests and type of requests.

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Canarytrace Monitoring Overview

This report shows results of measurement availability and vitality (performance) for your every problems. Green cell means that your application is running well, yellow color means that your app your application running very slowly or will not load at all.

https://canarytrace.com/ desktop smoke release 7

https://canarytrace.com/docs/features/lighthouse desktop smoke release 5 feature

https://canarytrace.com/docs/features/live-reporting desktop smoke release 7 feature

https://canarytrace.com/docs/features/hero desktop smoke release 6

https://canarytrace.com/docs/features/dashboards desktop smoke release 6 feature

Listener Daily Reports

Highlevel overview on availability and vitality of your a web pages.

Are you a manager or administrator, you don't want to know the technical details, but do you need of see of a traffic light on the timeline to know the availability of a web application during whole a day?

Get into your email an automatic report for the previous day every morning.

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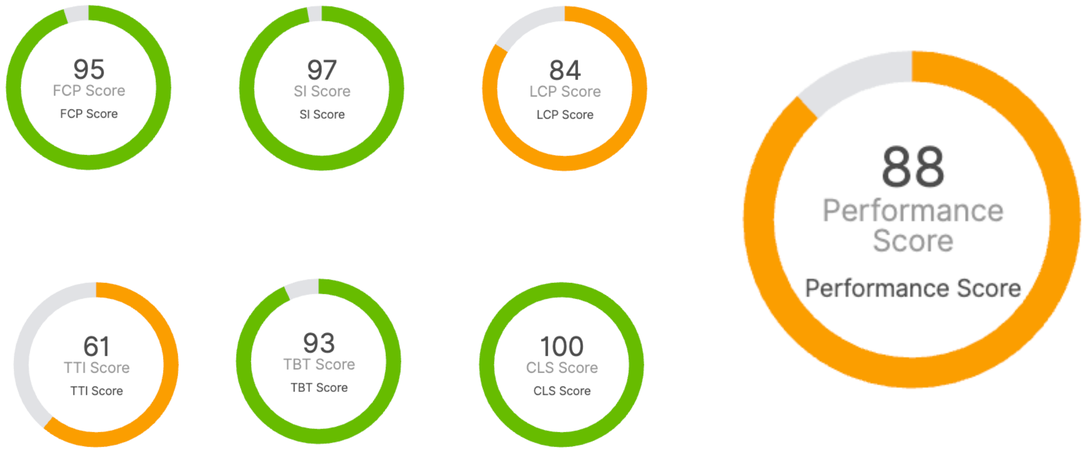

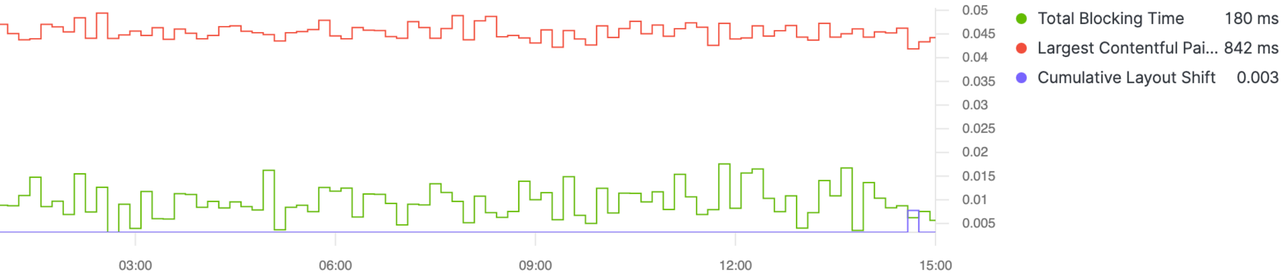

Performance budget and NFR

Performance budgets and Non-functional requirements will help your team clearly define when the application is healthy.

Watch the score and try to get as high as possible, each low score is a specific problem.

Watch all metrics on the timeline and track changes during releases.
Correlate metrics that are linked to each other e.g. speed of backend vs. speed of frontend.

You can define automatic thresholds for NFR e.g. all frontends must be loaded within to 2 seconds.

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Deep analysis

Where Chrome DevTools end, there tracing begins. Canarytrace generate Trace Event Profiling report for diagnostic a performance problem.

When diagnosing performance problems it can be valuable to see what Chrome is doing "under the hood." Tracing contains a lot of information, but sifting through it can help identify performance bottlenecks, slow operations, and events with irregular lengths.

You can show the resulting report in Google Chrome in the chrome://tracing tab.

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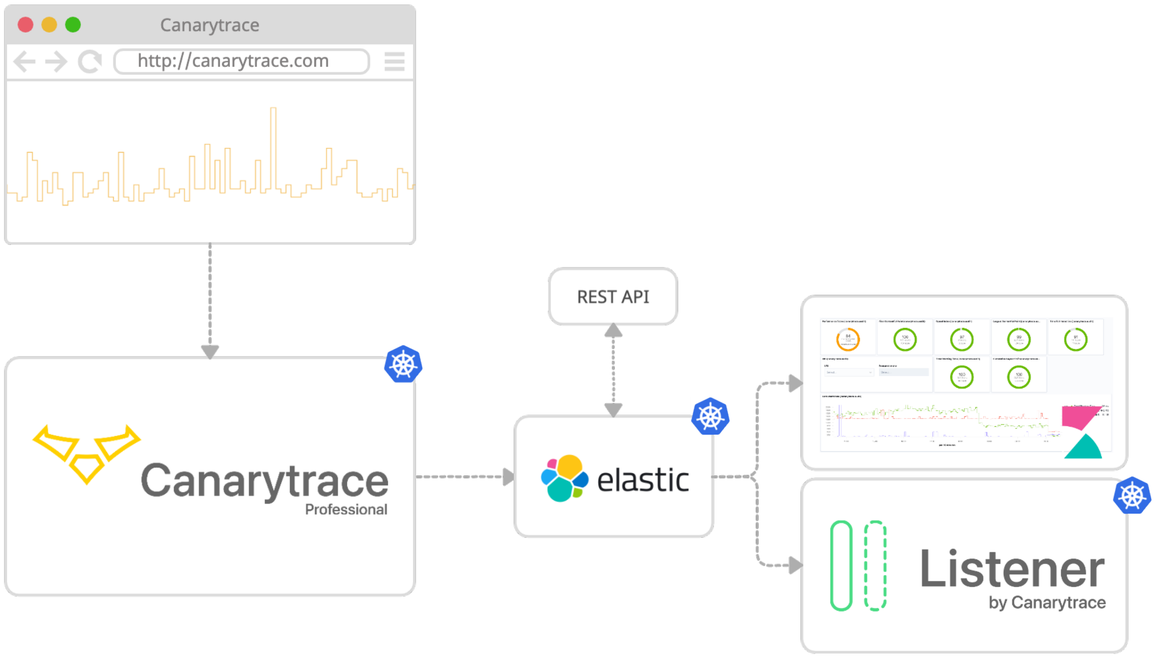
Elasticsearch and Kibana



Canarytrace stores a lof of data into Elasticsearch and are displayed in Kibana in the form of visualizations which are grouped into dashboards. You can create your own visualizations.

Elasticsearch contains data from performance audits, live reporting (test steps), used memory by browser, network traffic (requests and responses), console errors and more.

Data stored into Elasticsearch are available via REST API, so the collected data can be used by other tools.

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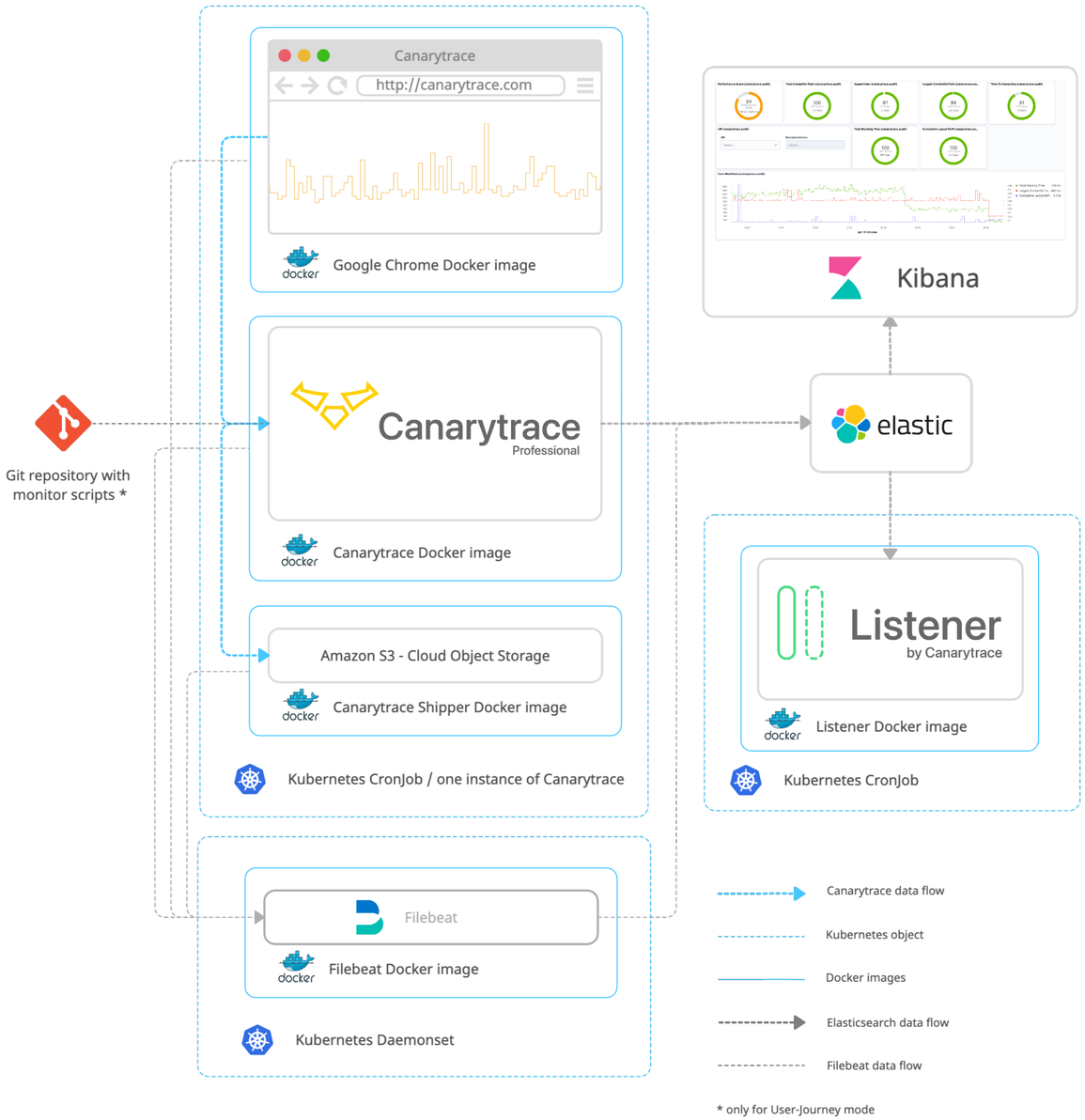

Kubernetes and architecture

Canarytrace is based on dockerized components, which are orchestrated in Kubernetes or OpenShift. Thanks to this approach is easy deploy Canarytrace to in cloud e.g. AWS, Google Cloud Engine, DigitalOcean, Azure Cloud etc. or in your own datacenter where is possible install of Kubernetes.

One instance of Canarytrace consists of the mandatory docker images (Canarytrace and Google Chrome) other components are optional such as Filebeat, Listener etc.

Canarytrace Shipper send all static files into AWS S3 as Lighthouse HTML or record of Chrome's processes.

Filebeat provides live logging all events before start of Canarytrace runner and during its life cycle.

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Interesting metrics

- Backend speed and frontend speed.
- Speed of loading image, javascript, css and other sources.
- Used RAM.
- Unused resources that have been downloaded to the browser (javascript and css).
- Count of type resources such as javascript files, images, fonts, XHR, css etc.
- Time required for javascript execution.
- Processing time every test steps.
- Time of First Paint on user screen.
- WebVitals.
- Timing of request and response phases such as start connection, DNS resolve, TCP and start secure connection.
- Timing of browser rendering phases.
- Time required to go through the business process or flow.
- Hero Elements metrics.
- Count of availability checks via smoke.

Advantages over other tools

- Monitoring vitality and availability every 3 min.
- Run Canarytrace on any environment or in a pipeline or start measure from your country.
- Ready to run in your Kubernetes or OpenShift.
- Gathers more than 60 metrics every 3 min.
- Get metrics from Canarytrace using REST API.
- A combination of desktop and mobile presets.
- User-journey monitor script is based on real testing framework.
- Automatic rule-based error detection.
- Smoke is maintenance free.
- Live reporting all metrics into Elasticsearch. Dashboards and metrics for Kibana are ready.
- Frequently updates and news.
- Performance report, traffic records and resource coverage reports.
- Get an overview when the user sees important content with the help of Hero Elements.
- Metrics are interesting for your colleagues Development, DevOps, Testing and Marketing.

Use cases

- Monitoring availability and vitality of web applications from user perspective.
- Measure during performance tests and during peak on production.
- Early testing (monitoring of performance metrics, traffic on the line, headers etc.)
- Competition monitoring.
- Hero Elements - when is displayed critical content your clients.
- Alerting when web application is not healthy.
- Browser-based Performance Testing.
- Monitor the differences between releases and follow trends.
- Smoke and Web Performance testing on every landing page.
- Required measurements during development in your pipelines.