

RUM – Applications

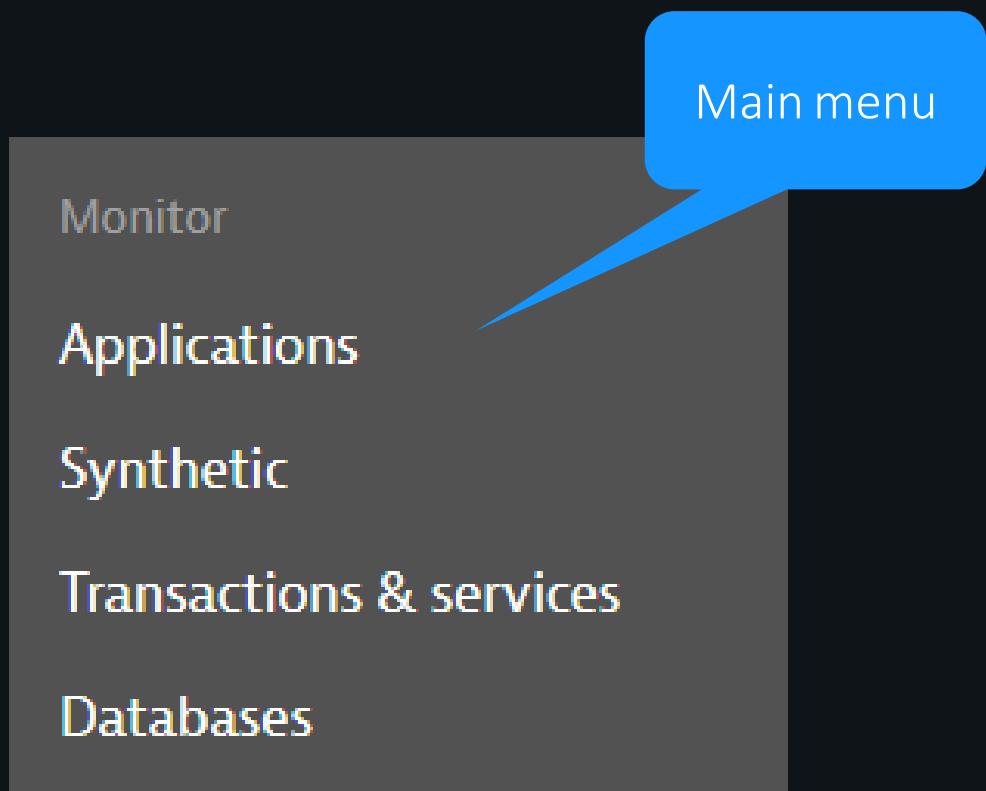
Dynatrace Training Module



Agenda

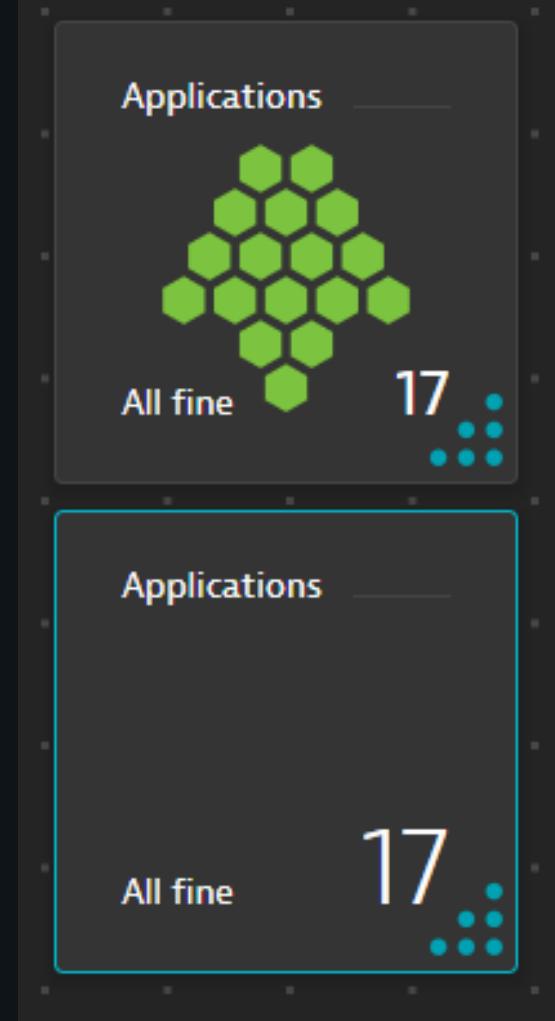
- Web Applications
 - Performance analysis
 - Error detection
 - User behavior
 - 3rd Party SaaS Vendors
 - Web analytics integrations

How do I analyze Applications?



OR

As a dashboard tile



Web Applications

Views and Filters

Performance Analysis

Key User Actions

User Behavior

3rd Party SaaS Vendors

Views and Filters

Applications

Search Filter

All 16

Status

- Monitored 15
- Unmonitored 1

Application type

- Web applications 9
- Mobile applications 1
- Enterprise applications 4
- AMP applications 1
- Custom applications 1

Injection type

- Auto injected 9
- Manually injected 1

Platform

- Android 1
- iOS 1
- Windows 1

16 Applications

Filtered by:

Name	Application type
easyTravel Mobile	Mobile application
image gallery	Web application
www.easytravelb2b.com	Web application
www.weather.easytravel.com	Web application
www.vmware.easytravel.com	Web application
Madison Island	Web application
www.cloud.easytravel.com	Web application
www.easytravel.com	Web application
www.openstack.easytravel.com	Web application
www.amp.easytravel.com	AMP application
TAG (SAP-A_SAPGUI)	Enterprise application
Citrix-A-XenApp.lab2.net (Citrix-A-StoreFront-HTTPS)	Enterprise application
Citrix-A-NetScalerFront-ICA	Enterprise application
Citrix-A-VDA-ICA	Enterprise application

Web Applications

Views and Filters

Performance Analysis

Key User Actions

User Behavior

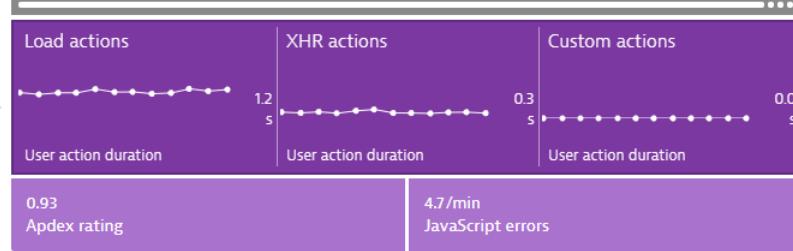
3rd Party SaaS Vendors

Performance Analysis

Performance analysis

Actions /min, Action duration, Apdex rating, JavaScript errors, 3rd party providers and Services.

- 25% Chrome Top browser
- 97% Real users Top user type
- [View geolocation breakdown](#)

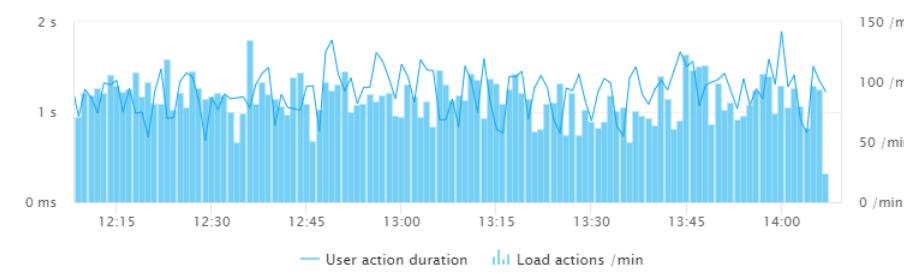


- Resources
 - 671/action 3rd party/CDN resources
 - 33.6/action Resources
- 1 Service

Impact of user actions on performance

To view the details of individual user actions, click specific time intervals in the charts below. Then click Analyze.

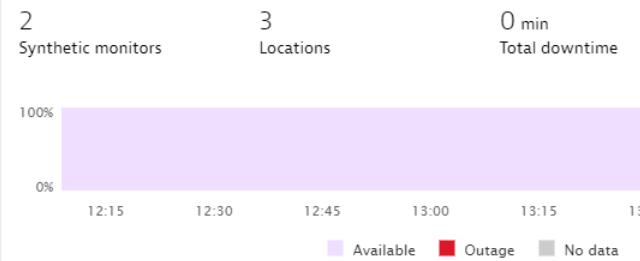
Load actions Median Slowest 10% Fastest 10%



XHR actions Median Slowest 10% Fastest 10%

No problems Today, 12:08 - 14:08

100 % Availability



Top Browser

Search your environment...

Applications > www.easytravel.com

www.easytravel.com
Properties, tags, and JavaScript frameworks

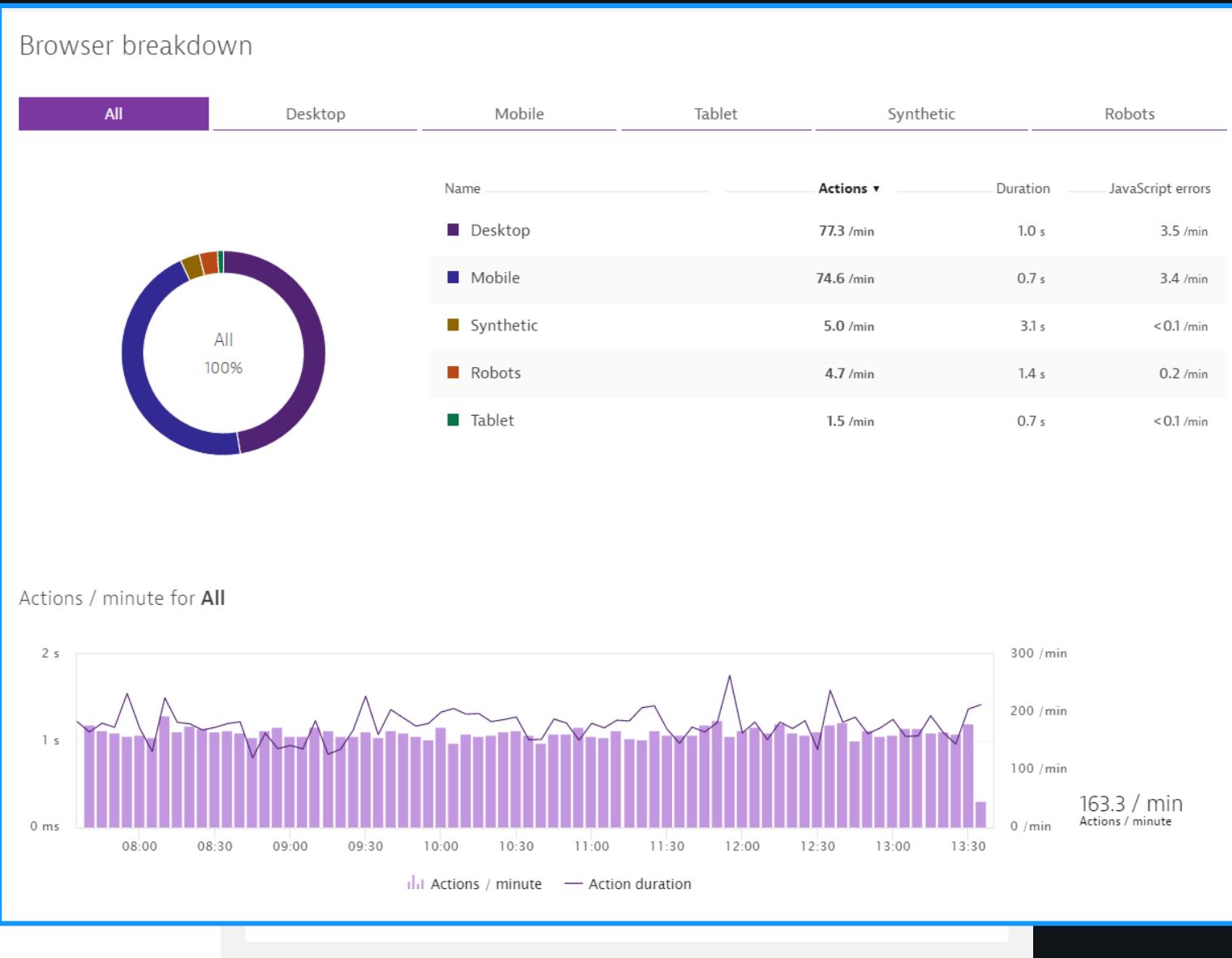
Performance analysis
Actions /min, Action duration, Apdex rating, JavaScript errors, 3rd party providers and Services

22 % Firefox
Top browser

94 % Real users
Top user type

View geographic breakdown

Actions
Show the median action duration for all actions



Top User Type

Search your environment...

Applications > www.easytravel.com

www.easytravel.com
Properties, tags, and JavaScript frameworks

Performance analysis
Actions /min, Action duration, Apdex rating, JavaScript errors, 3rd party providers and Services.

21 % Firefox Top browser

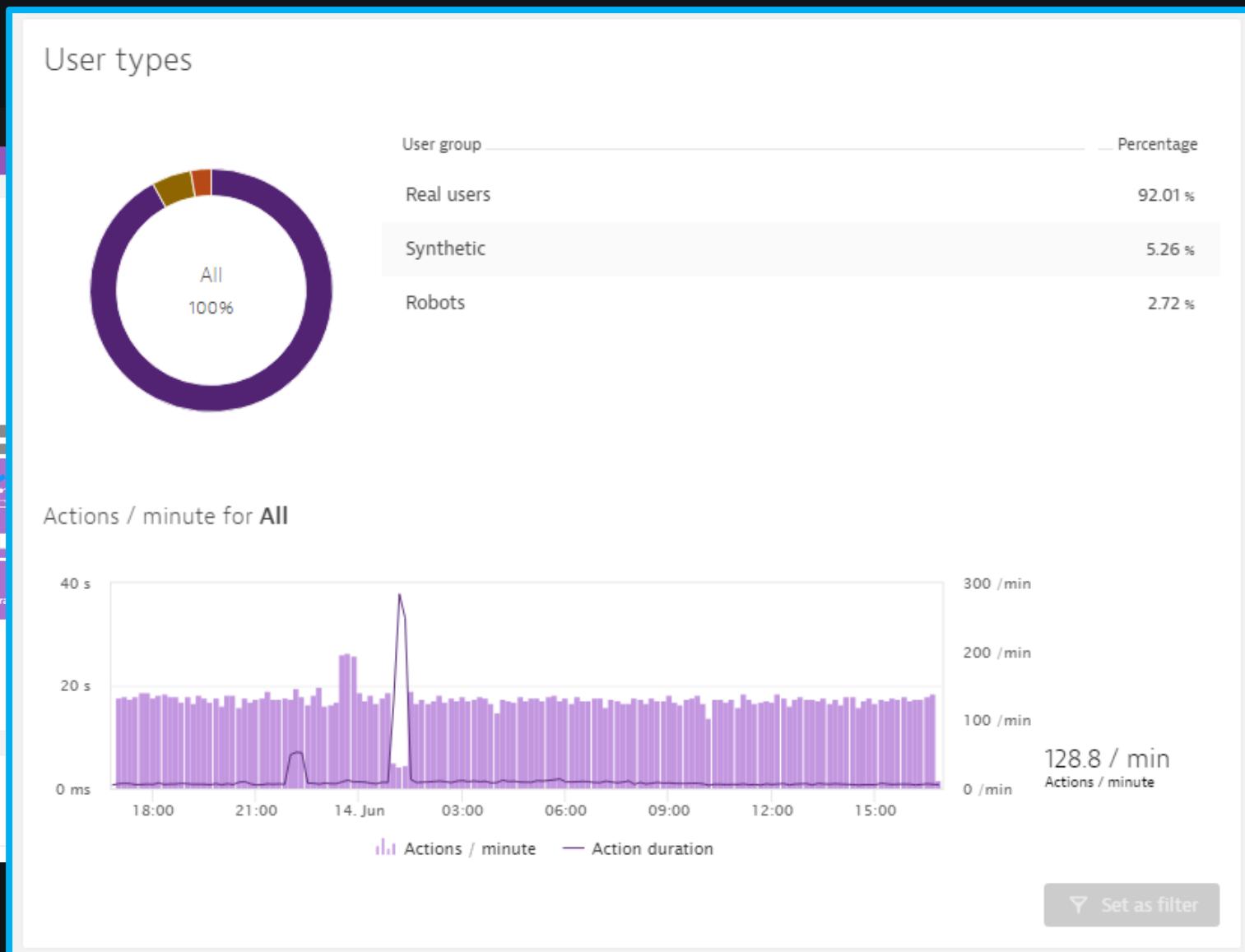
92 % Real users Top user type

View geographic breakdown

0.74 Apdex rating

User types

User group



Geographic Breakdown

Search your environment...

Applications www.easytravel.com

www.easytravel.com
Properties, tags, and JavaScript frameworks

Performance analysis
Actions /min, Action duration, Apdex rating, JavaScript errors, 3rd party providers and Services.

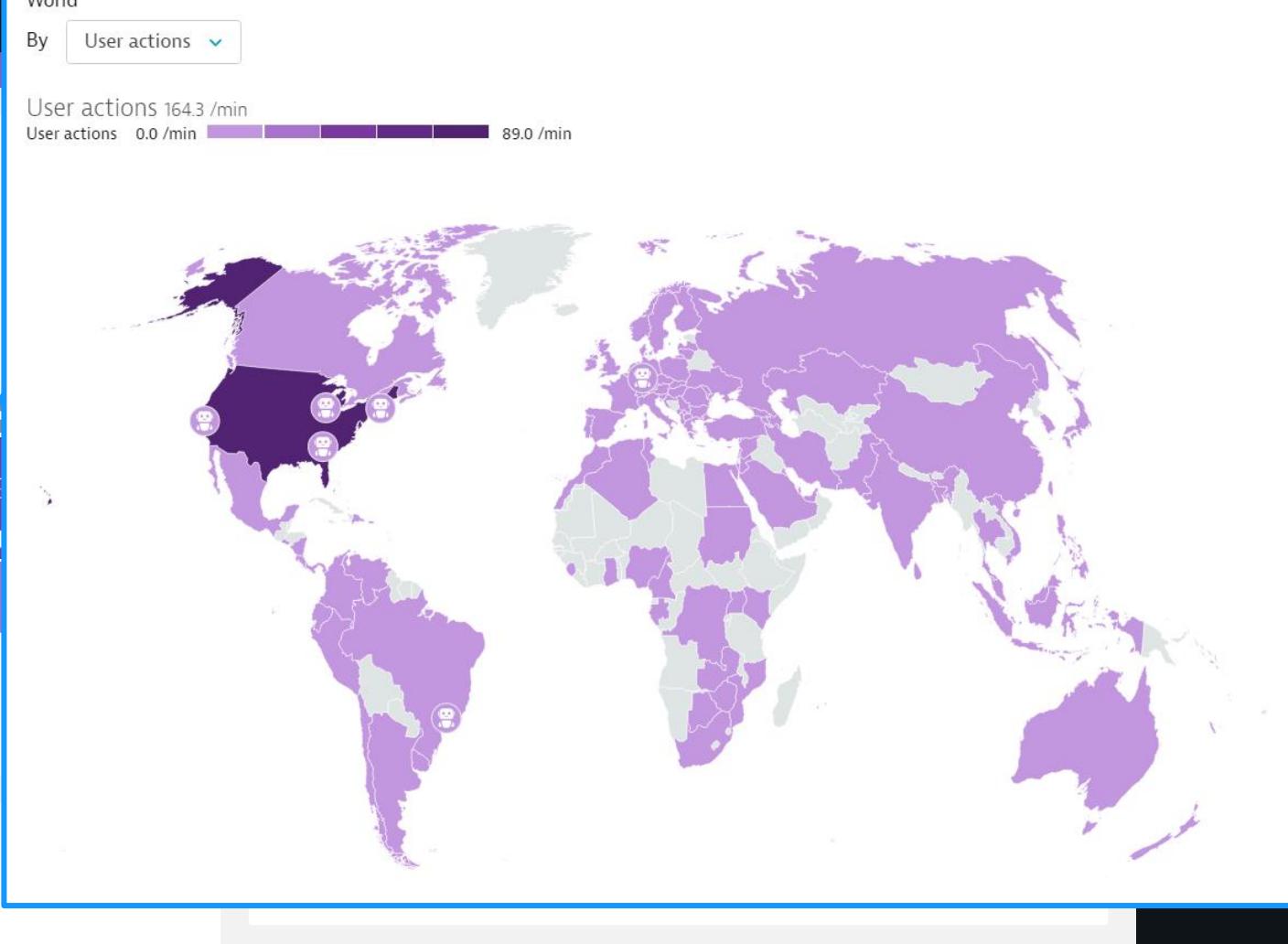
22 % Firefox Top browser

94 % Real users Top user type

View geographic breakdown

0.81 Apdex

Actions
Show the median action duration for all actions



A screenshot of a performance monitoring interface for the website www.easytravel.com. The interface includes a search bar at the top, a navigation bar with 'Applications' and the site URL, and a main panel titled 'Performance analysis'. This panel displays three key metrics: '22 % Firefox Top browser', '94 % Real users Top user type', and a button labeled 'View geographic breakdown'. A blue arrow points from the 'View geographic breakdown' button to a world map on the right side of the interface. The world map shows color-coded regions representing user action density, with darker shades indicating higher activity levels. The legend for the map indicates 'User actions 164.3 /min' (dark purple) and 'User actions 0.0 /min' (light green). The map covers all major continents, with high activity (purple) visible in North America, Europe, and parts of Asia and Australia, while lower activity (green) is seen in Africa and South America.

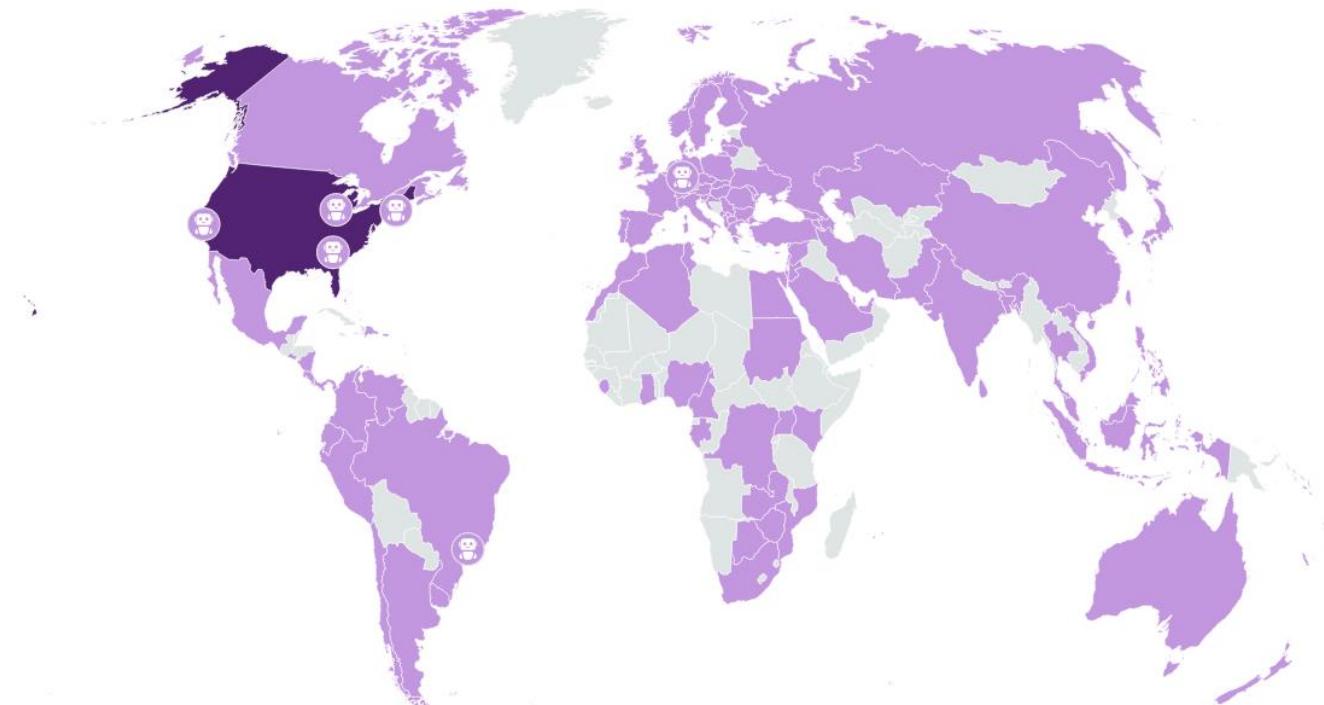
Geo locations

World

By User actions ▾

User actions 164.3 /min

User actions 0.0 /min 89.0 /min



Actions

Search your environment...

Applications > www.easytravel.com

www.easytravel.com
Properties, tags, and JavaScript frameworks

Performance analysis

Actions /min, Action duration, Apdex rating, JavaScript errors, 3rd party providers and Services.

22 % Firefox Top browser

94 % Real users Top user type

View geographic breakdown

0.9 s User action duration

163.8 /min User actions

0.81 Apdex rating

7.2 /min JavaScript errors

9.5 /action 3rd party/CDN resources

20.2 /action Resources

1 Services

Compare to previous time frame

Actions

Show the median action duration for all actions

Impact of user activity on action duration

0 ms 1 s 2 s

0 /min 100 /min 200 /min 300 /min

08:00 08:30 09:00 09:30 10:00 10:30 11:00 11:30 12:00 12:30 13:00 13:30

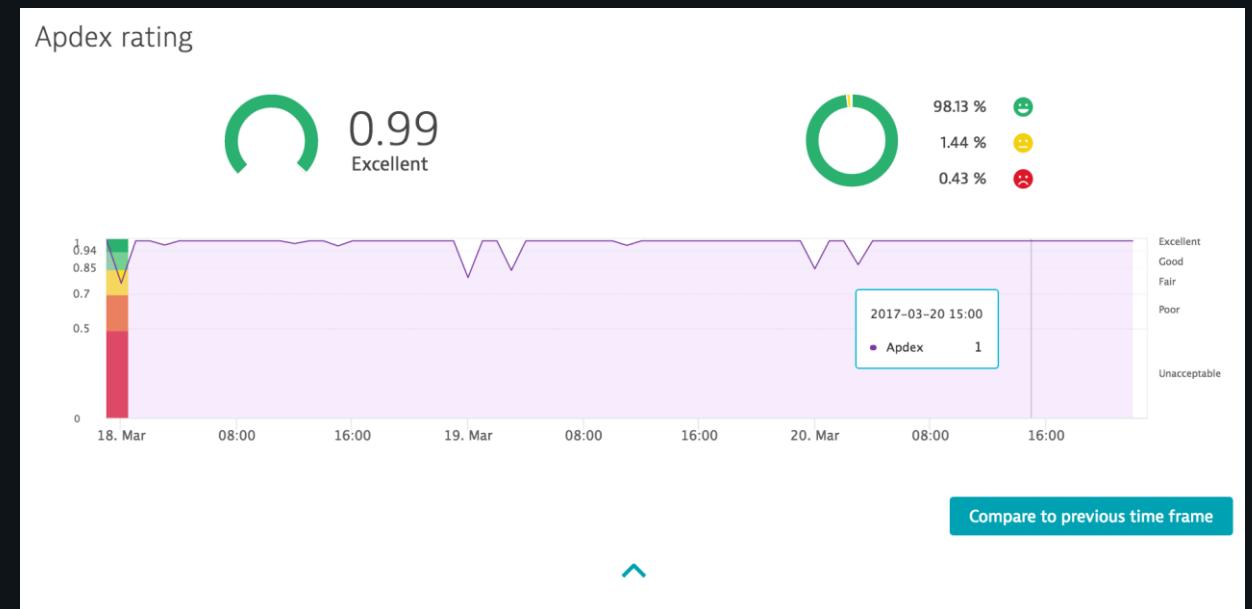
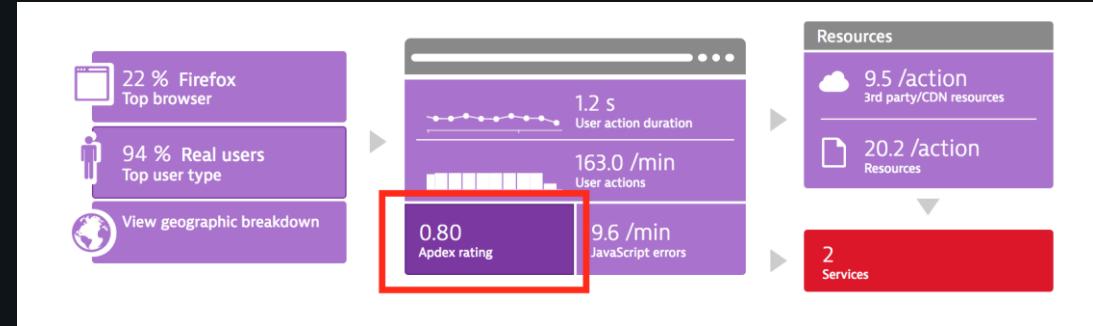
Action duration Actions / minute

15 Problems in last 72 hours

watched

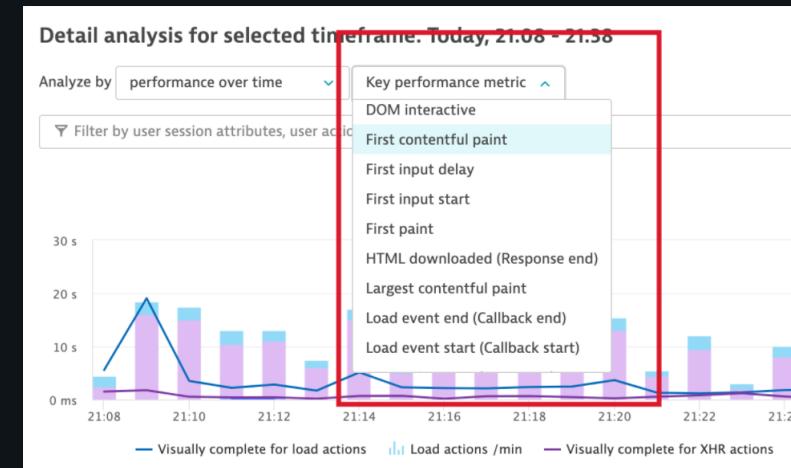
What is Apdex Rating?

- Apdex is a universal standard that is used to measure user satisfaction with application performance.
- Default threshold for all apps is 3 seconds
- Define your own thresholds for user satisfaction for individual actions
- How it works –
 - Value = 1 Perfect!
 - Value < 0.5 Poor ☹
- Benchmarking and comparison



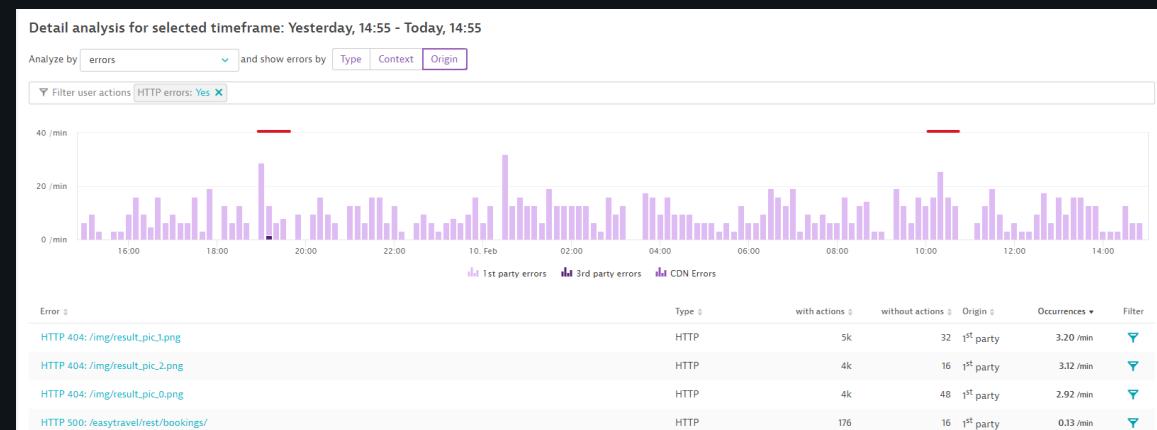
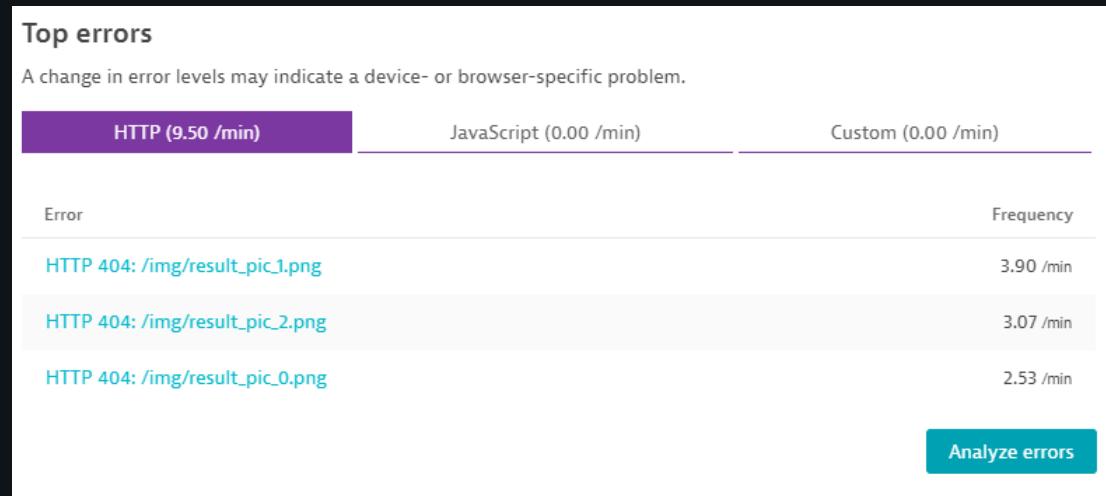
Important RUM metrics

- Dynatrace's 'visually complete':
 - Measurement of when the visual area of the page has finished loading
 - Most valuable measurement in terms of optimizing user-percieved performance
 - Configurable
- New 'industry' measurements:
 - First paint: The time spent from navigation to when the browser renders the first non-default background element
 - First input start: The point in time when the user first interacts (for example, clicks) with the page
 - First input delay: The time spent from first input start to when the browser is able to respond to that interaction
 - First contentful paint: The time spent from navigation to when the browser renders the first bit of content (such as text or images)
 - Largest contentful paint: The time spent from navigation until the largest content element in the viewport is completely rendered



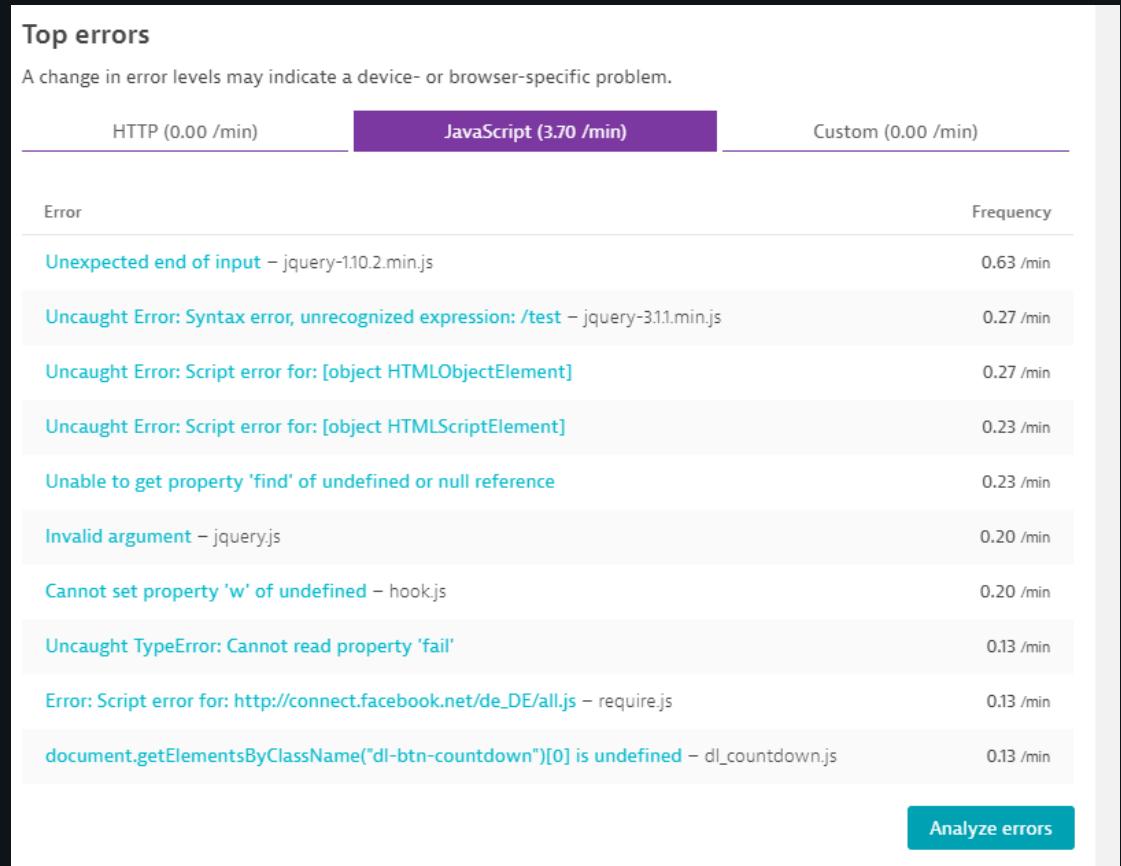
HTTP Errors

- View HTTP errors originating from:
 - CDNs
 - Third parties
 - Your instrumented servers
- Gauge impact of HTTP errors on end users
- Identify if issue is with your servers or a CDN:
 - If RUM picks up an error but OneAgent does not: *CDN issue*
 - If issue is picked up by OneAgent you have the data to triage
- Customize which errors should affect Apdex score
- Davis consideration of HTTP and customer errors available



JavaScript errors

- Analyze JavaScript errors across multiple dimensions
- When does the error occur?
- What browser?
- What user actions?
- What line of code?
- What is the stack trace?
- What other information does the browser provide me?



JavaScript errors

- Why is this relevant/ why did we build it:
 - How can you really know the impact of JS errors on your application? Do you have access to an infinite number of browsers, operating systems, and the devices they run on? No one does, which is why we must rely on real user monitoring to provide that information straight from the client's browser.
- When would I look at this?
 - To validate releases. To see if js errors relate to new distributions of websites, browsers or OS updates. DT will alert you of sudden increases, but vigilance is a healthy practice.
- What should I look for and what does it mean?
 - JS errors are shown by rate of occurrence in descending order. For every error, look for levels of isolation to see if patterns occur. Then reproduce in that environment, and address root cause in the script.

Analyzing individual JS errors answers the following...

- What is the stack trace?
- What other information does the browser provide me?
- Geo location info?
- When does the error occur?
- What browser?
- What user actions?
- What line of code?

Error details

View details for Firefox

Script file	jquery-1.10.2.min.js <small>:1</small>	Domains	ec2-54-210-22-3.comp
Browser	Firefox	Count	8
User actions	Loading of page /orange-booking-payment.jsf Loading of page /about-orange.jsf	Message	Unexpected end of in

Stacktrace

```
SyntaxError: Unexpected end of input
Object.parse (native)
    at Function.ct.extend.parseJSON in http://ec2-54-210-22-3.compute-1.amazonaws.com/javascript/pkg/vendors/jquery-1.10.2.min.js:15166
    at require.callback in http://ec2-54-210-22-3.compute-1.amazonaws.com/Store/cart/cart.jsp?dcs_action=additemtocart&url_catalog_ref_id=BOM0020-TFRGR-XL&url_product_id=BOM0020&url_quantity=1:22
    at Object.b.execCb in http://ec2-54-210-22-3.compute-1.amazonaws.com/javascript/pkg/common/bootstrap.js:28752
    at Object.x.check in http://ec2-54-210-22-3.compute-1.amazonaws.com/javascript/pkg/common/bootstrap.js:22988
    at Object.<anonymous> in http://ec2-54-210-22-3.compute-1.amazonaws.com/javascript/pkg/common/bootstrap.js:25253
    at <unknown> in http://ec2-54-210-22-3.compute-1.amazonaws.com/javascript/pkg/common/bootstrap.js:17248
    at <unknown> in http://ec2-54-210-22-3.compute-1.amazonaws.com/javascript/pkg/common/bootstrap.js:25637
    at each in http://ec2-54-210-22-3.compute-1.amazonaws.com/javascript/pkg/common/bootstrap.js:16774
    at Object.x.emit in http://ec2-54-210-22-3.compute-1.amazonaws.com/javascript/pkg/common/bootstrap.js:25605
```

Unexpected end of input
occurred 79 times

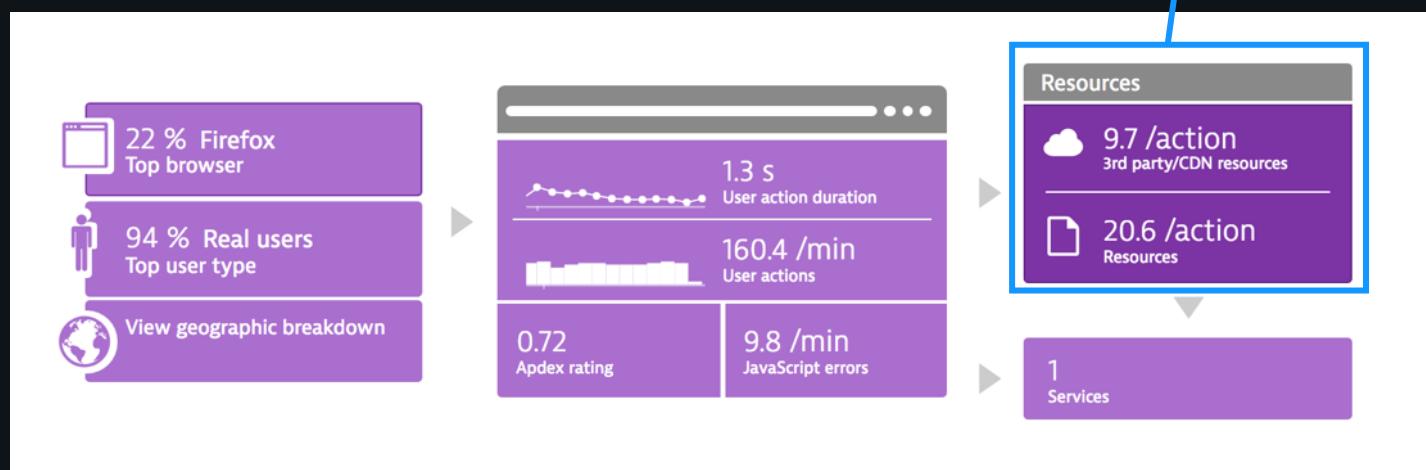
//javascript/pkg/vendors/jquery-1.10.2.min.js

Occurrence statistics

100% amazon.com	Multiple user actions
Multiple operating systems	Multiple locations

Resource Contribution

- Understand resource contribution breakdown
- 1st & 3rd party contribution
- CDNs



Called Services

The screenshot displays the New Relic application monitoring interface for the application `www.easytravel.com`. The main focus is the "Called services" section, which lists two external services: `Varnish:8079` and `Web Launcher`. Each service entry includes its response time (1.48 ms and 0.44 ms respectively), requests per minute (3.0k/min and 0.1/min), and error rate (0.31% and 1.35%). A prominent blue callout box highlights the `Varnish:8079` row. Below the table, there are three cards: "Top user type" (with a globe icon), "View geographic breakdown" (with a globe icon), and performance metrics for "User actions" (0.74 Apdex rating and 8.2/min JavaScript errors).

Called services

Service name	Response time	Requests	Error rate
Varnish:8079	1.48 ms	3.0k /min	0.31 %
Web Launcher	0.44 ms	0.1 /min	1.35 %

View service flow

User types
Type to filter...

Resources

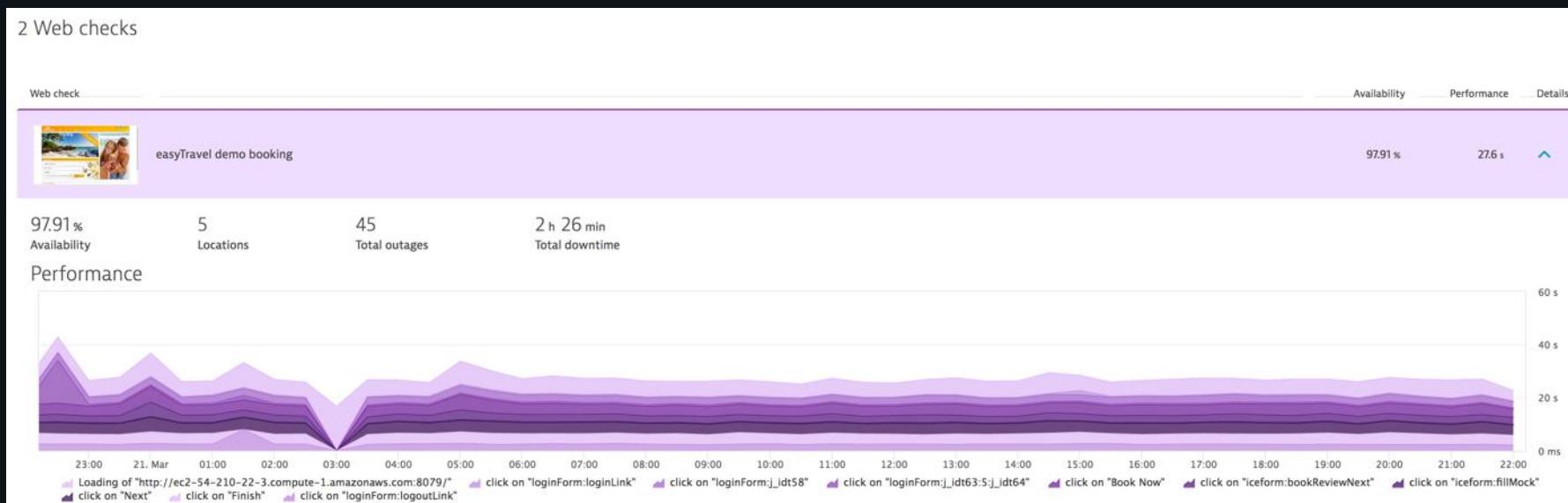
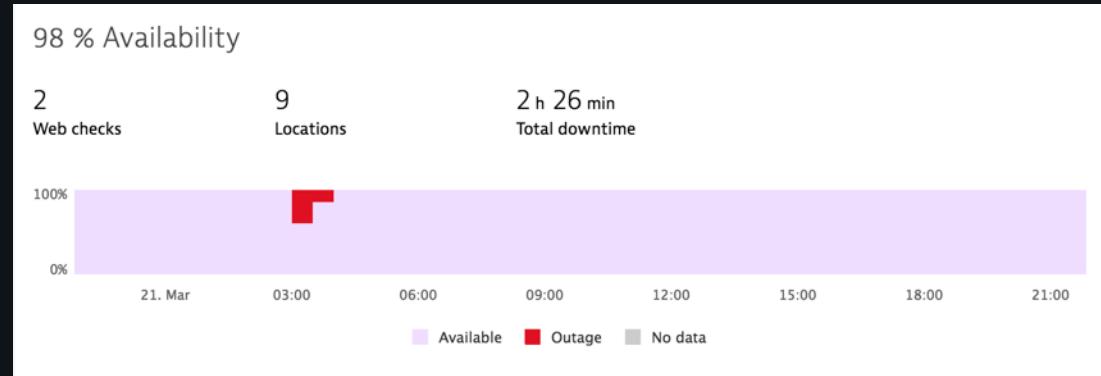
- 9.2 /action
3rd party/CDN resources
- 11.2 /action
Resources

Services

User behavior
Active sessions, Actions per session, Entry/Exit actions, Bounce rate, and Conversion goals.

Availability

- Synthetic Monitor Correlation
- Outage detection



Top User Actions

Top 3 user actions

These are the top user actions by looking on their consumption (action duration and frequency). Open the full details view for looking at other actions and more metrics.



Loading of page /orange.jsf

Time consumed



Actions 24.27 /min



click on "Search" on page /orange.jsf

Time consumed

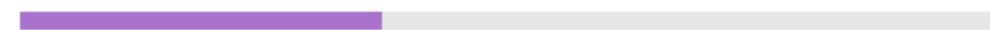


Actions 11.28 /min



click on "Book Now" on page /orange.jsf

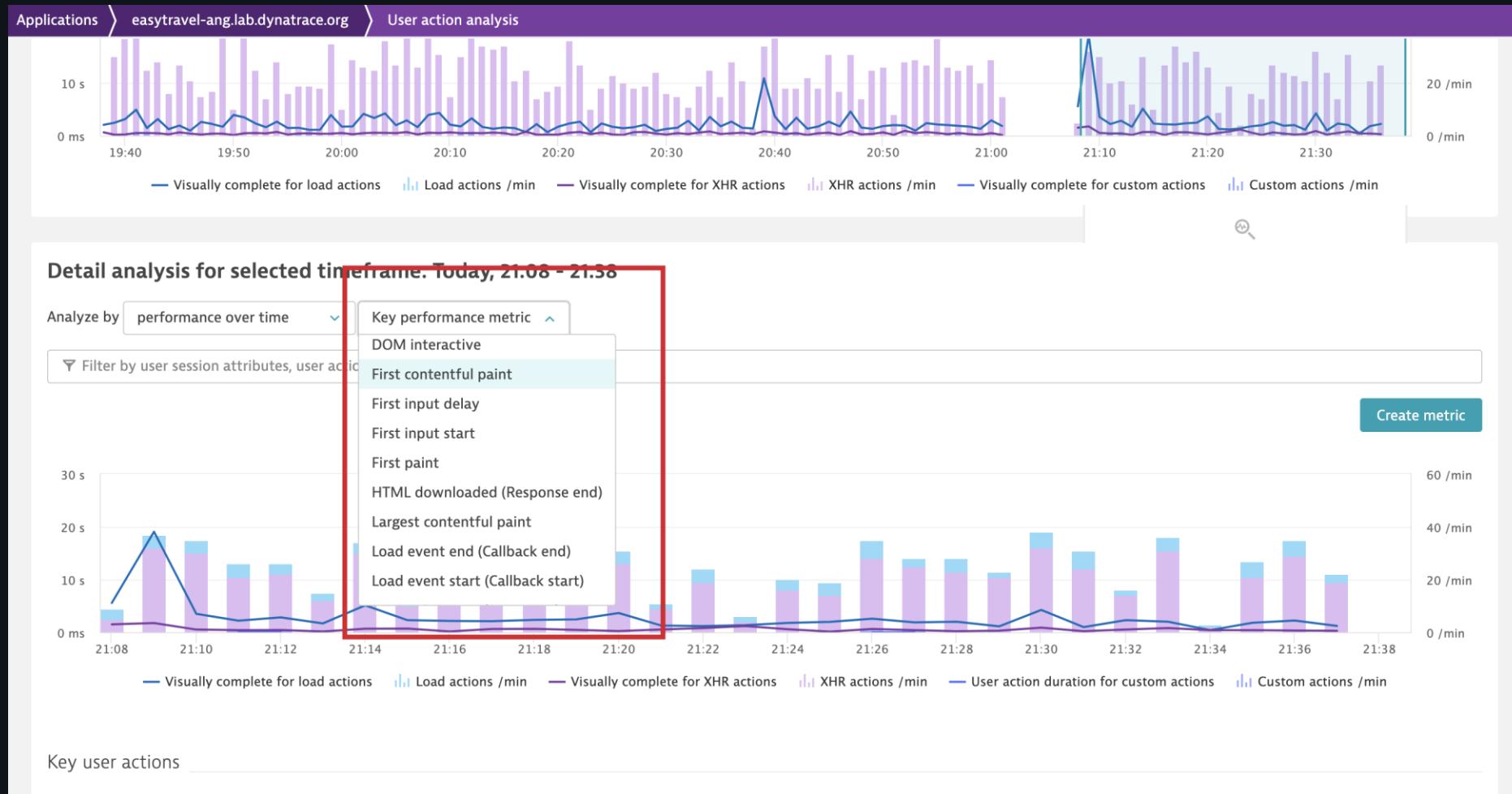
Time consumed



Actions 1.69 /min

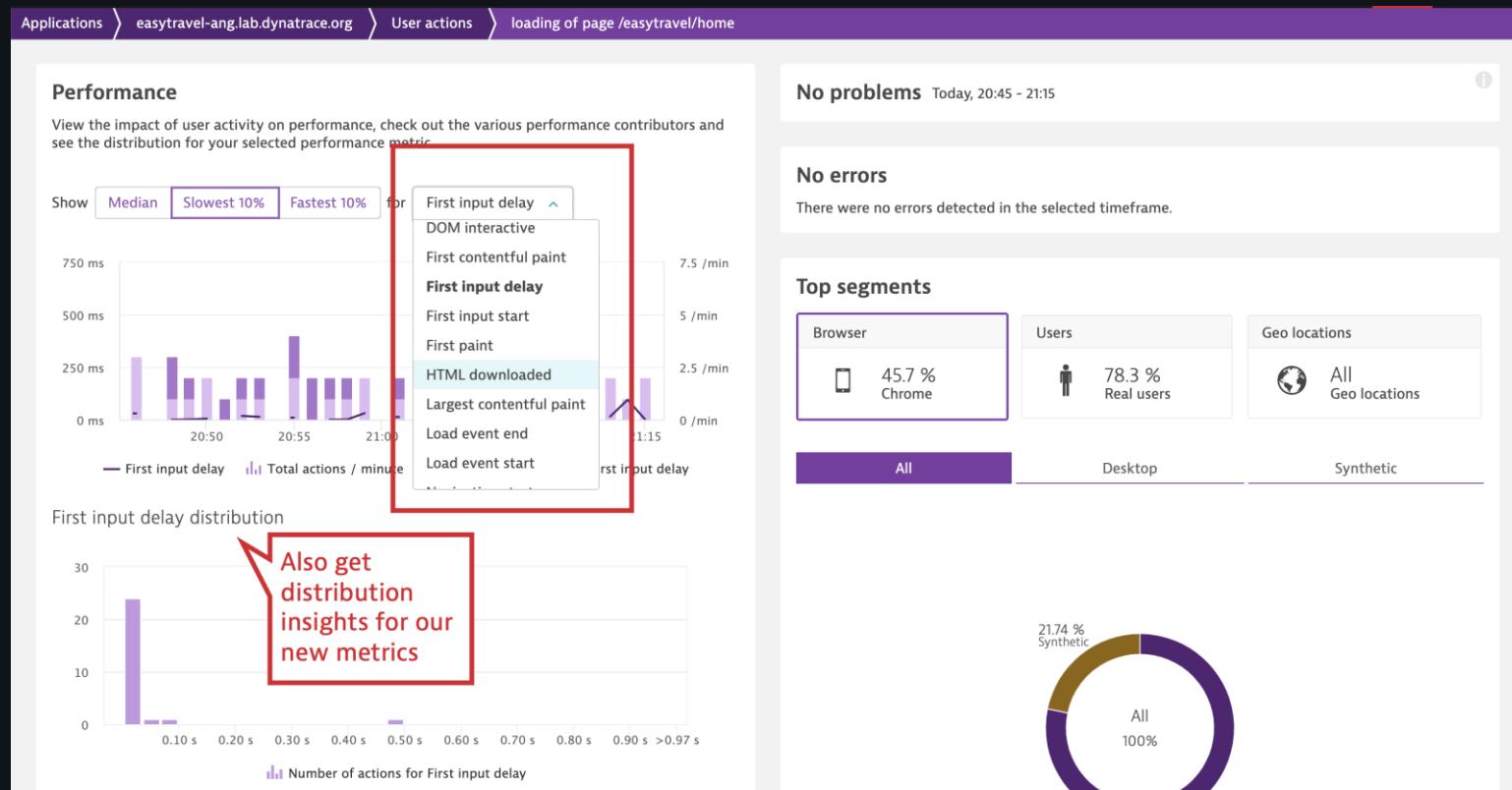
[View full details](#)

Multi - Dimensional Analysis

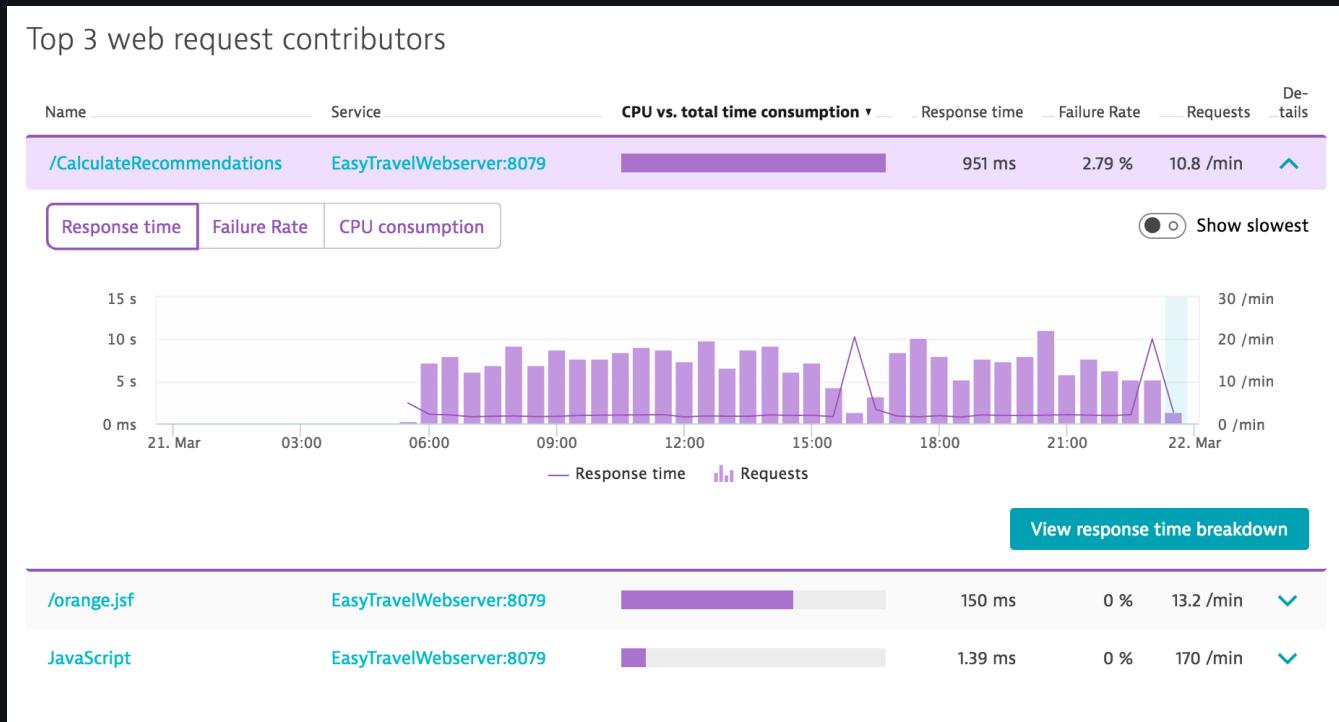


User Action Analysis Overview

- Action duration vs load
- Expanded metric analysis
- Contributor breakdown & waterfall analysis
- Problem correlation & filtering
- Segmentation analysis
- Resources
- Top web request contributors
- JavaScript impact & analysis
- Mark as a Key Request



Top web request contributors



Web Applications

Views and Filters

Performance Analysis

Key User Actions

User Behavior

3rd Party SaaS Vendors

Key User Actions

Applications > easyTravel Frontend > User actions > Loading of page /orange-booking-review.jsf

Analysis timeframe: Today, 14:59 - 15:29 Remove analysis timeframe

Filter user types

Mark as key user action

Loading of page /orange-booking-review.jsf
Type: Load action, domain: [REDACTED]

Data for non-key user actions is available back to 12 March 2018 10:58 PM. For longer historical trends, setting a user action specific Apdex threshold or adding a user action tile to your dashboard, mark this user action as **key user action** by using the context button.

105.8 s Visually complete
0.1 /min User actions

0.0 /min JavaScript errors

0.00 (Unacceptable) Apdex rating

27.0 Resources /action
7.0 CDN and 3rd party resources

Performance

Show Median Slower 10% Faster 10% for Key performance metric

15:00 15:05 15:10 15:15 15:20 15:25 15:30

150 s 100 s 50 s 0 ms

1.5 /min 1 /min 0.5 /min 0 /min

— Visually complete ■ Actions / minute

164.2s 1.3s 0.2s
Frontend time Network time Server time

No problems Today, 14:59 - 15:29

Contributors breakdown

Network/Server/Frontend breakdown based on W3C navigation timings. Open the waterfall view for full details.

120.00 s Frustrating
Visually complete

Request start 204 ms Speed index 84.61 s User action duration 165.70 s Time to first byte 383 ms DOM content loaded 132.71 s Load event start 165.70 s HTML downloaded 1.48 s DOM complete 165.61 s DOM interactive 26.95 s

Show contributors and distribution

View analysis in waterfall chart

The screenshot shows a detailed analysis of a user action named "Loading of page /orange-booking-review.jsf". It includes a summary card with metrics like visually complete time (105.8s), user actions per minute (0.1/min), JavaScript errors (0.0/min), Apdex rating (0.00), and resources per action (27.0). Below this is a "Performance" section with a histogram of visually complete times and a waterfall chart showing navigation timing details. A "Contributors breakdown" section provides a network/server/frontend breakdown. A red box highlights the "Mark as key user action" button in the top right corner.

Key User Actions

- Not every user action has the same importance to the success of your digital business. For example, visits to critical landing pages and shopping cart views can be particularly vital to your business operations and your customers' experience with your application.
- To give such critical user actions the attention they deserve, Dynatrace enables you to flag certain user actions as key user actions. You can define your own Apdex thresholds and key performance metrics for key user actions, access long-term monitoring data, and pin key user actions to your dashboards in the form of dedicated tiles.
- Custom anomaly detection for key user actions. (Discussed later)

Web Applications

Views and Filters

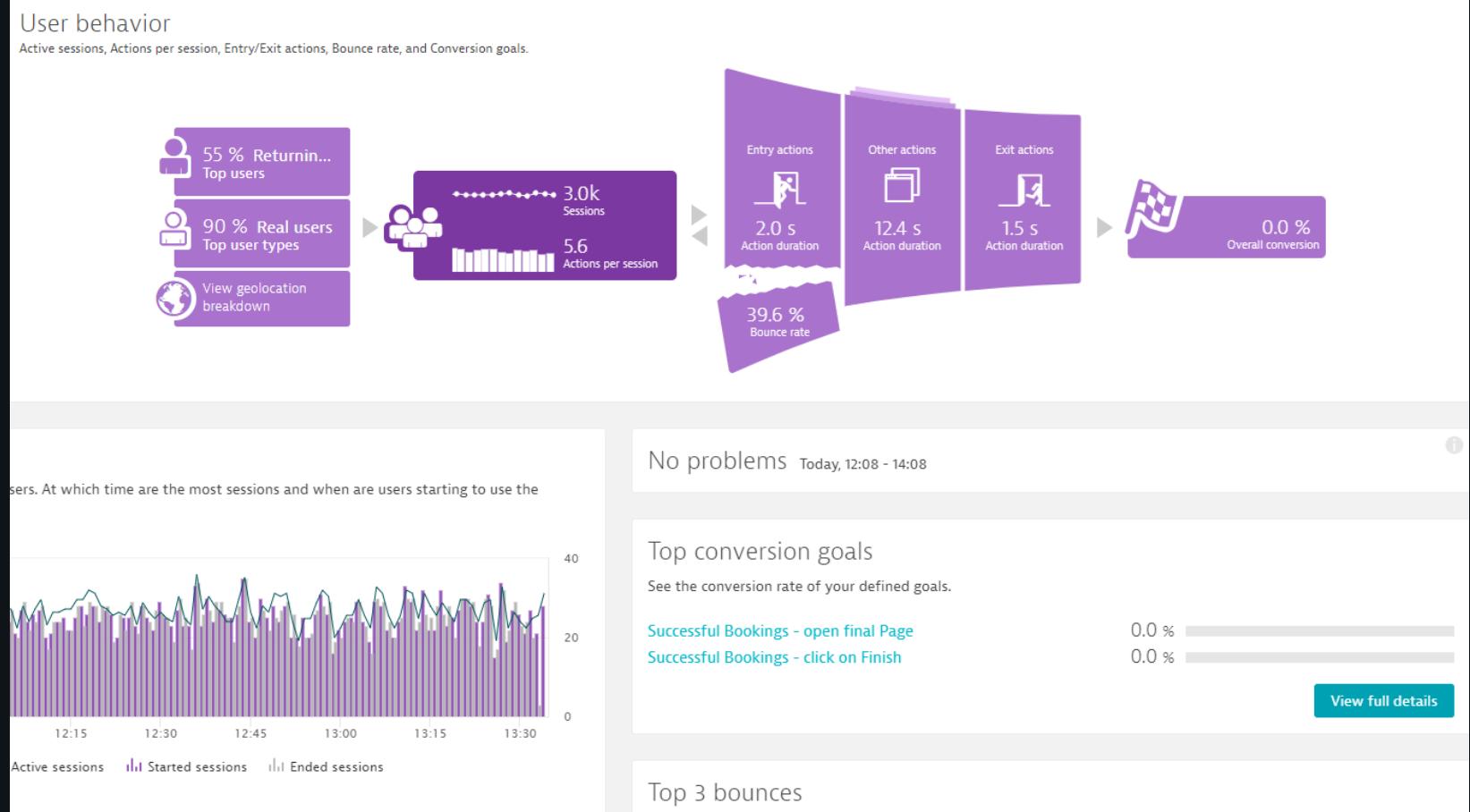
Performance Analysis

Key User Actions

User Behavior

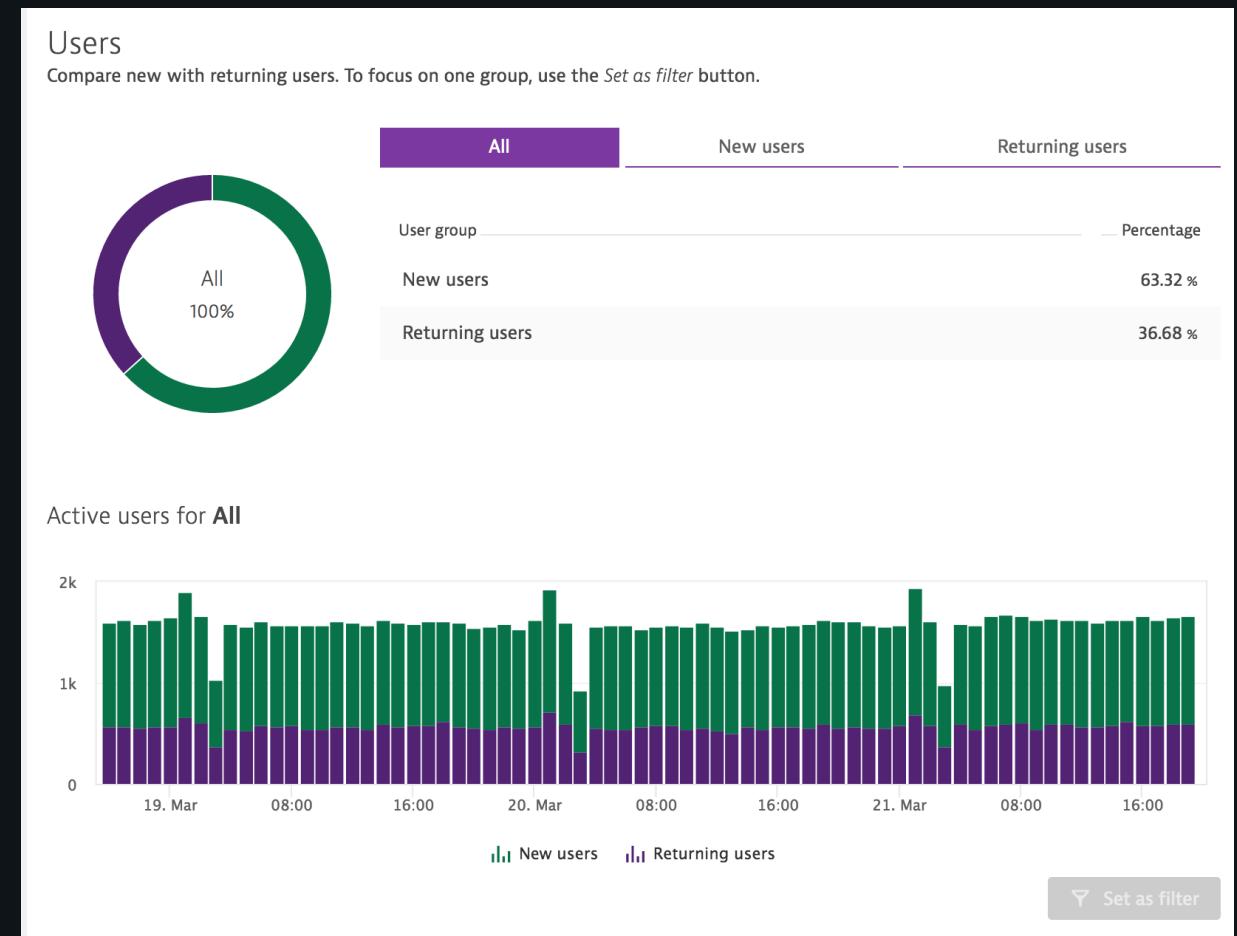
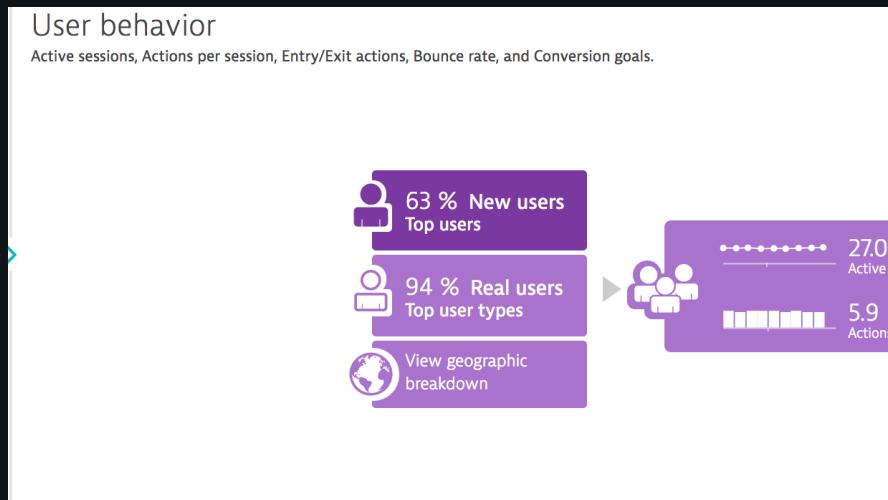
3rd Party SaaS Vendors

User Behavior



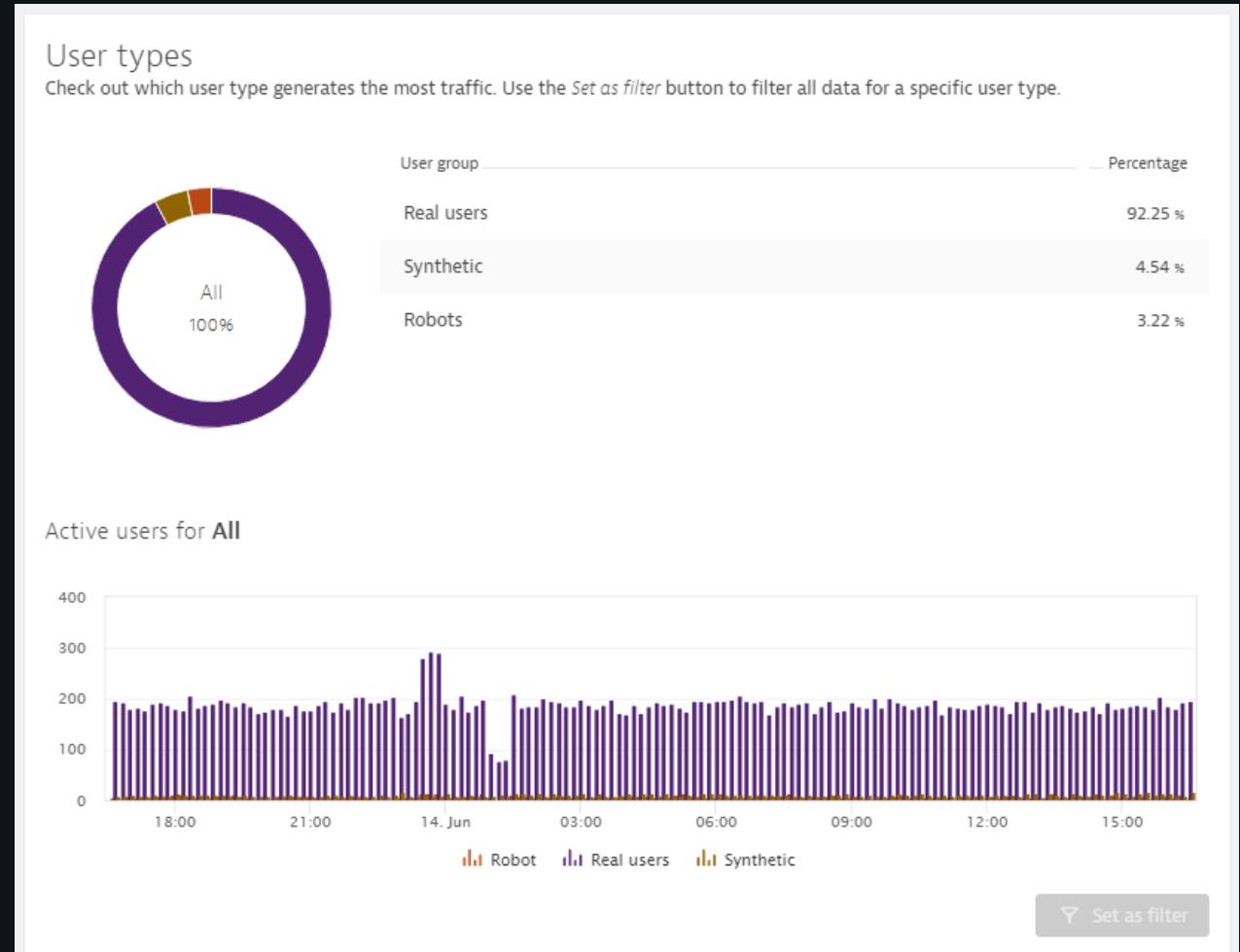
Top Users

- New vs Returning Users



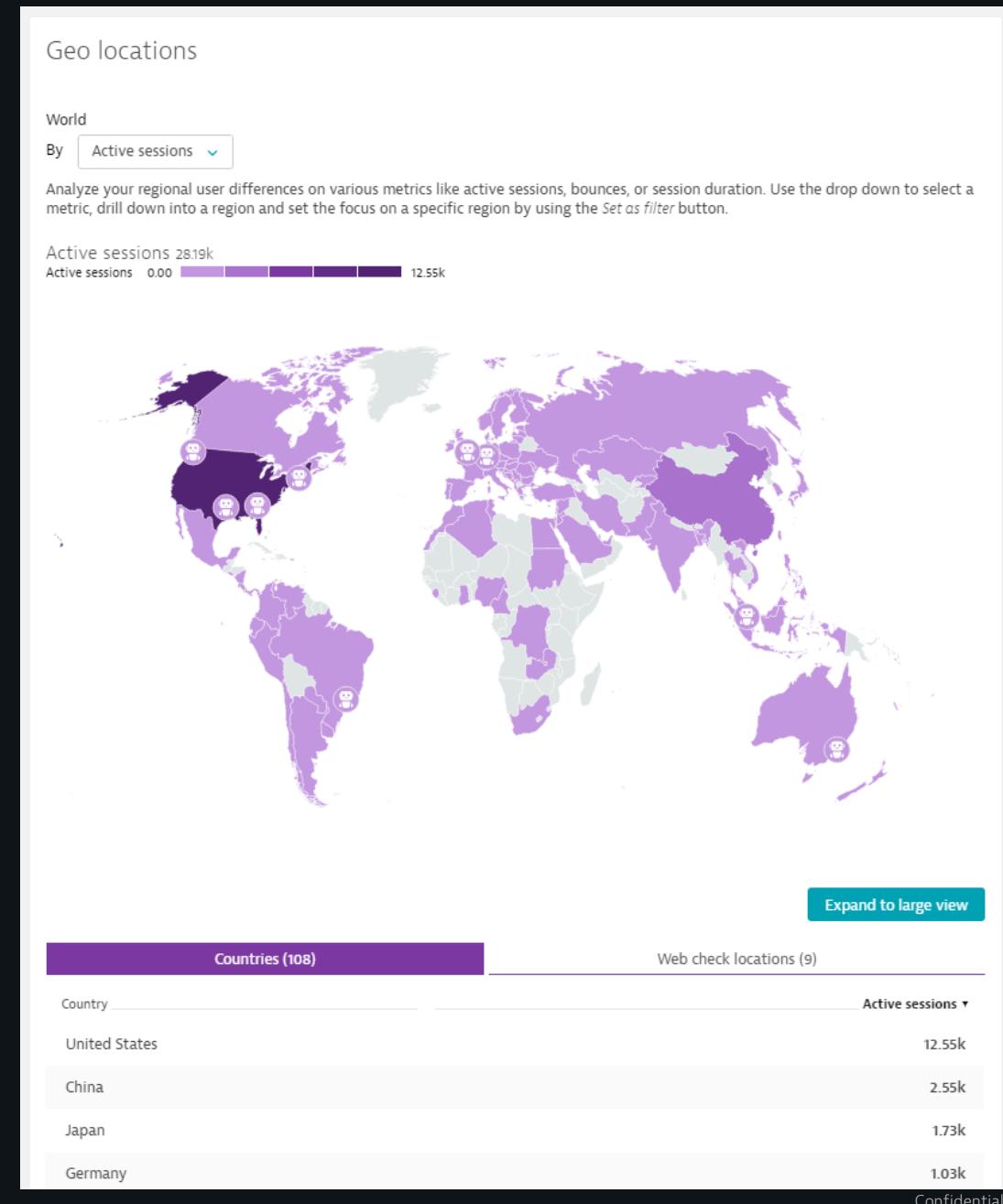
Top User Types

- Real vs Synthetic vs Robot users



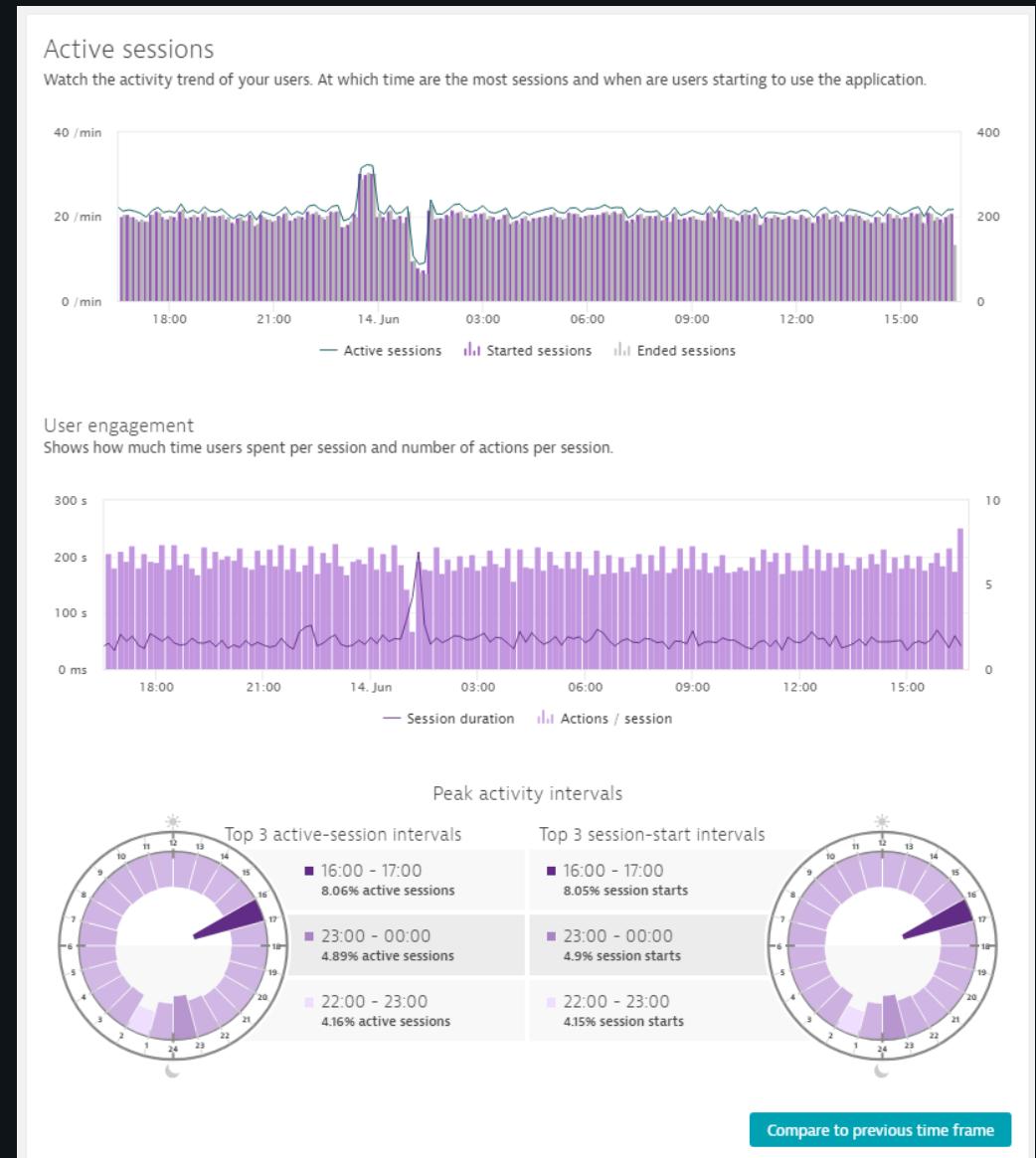
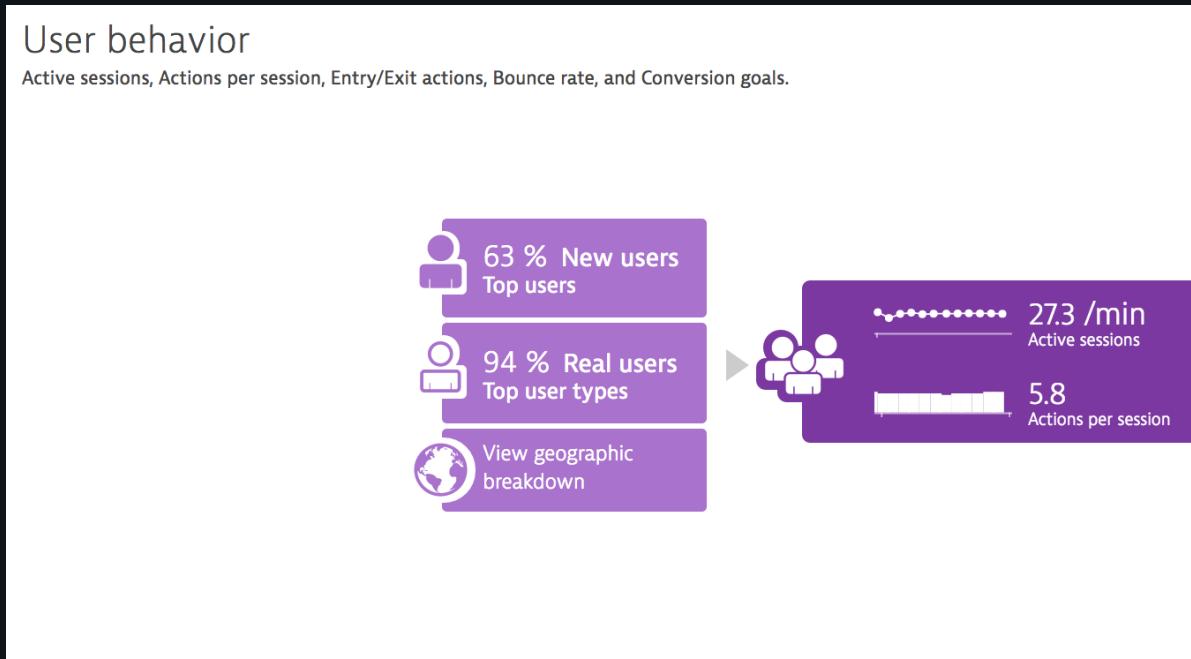
Geographic Breakdown

- Breakdown by Location



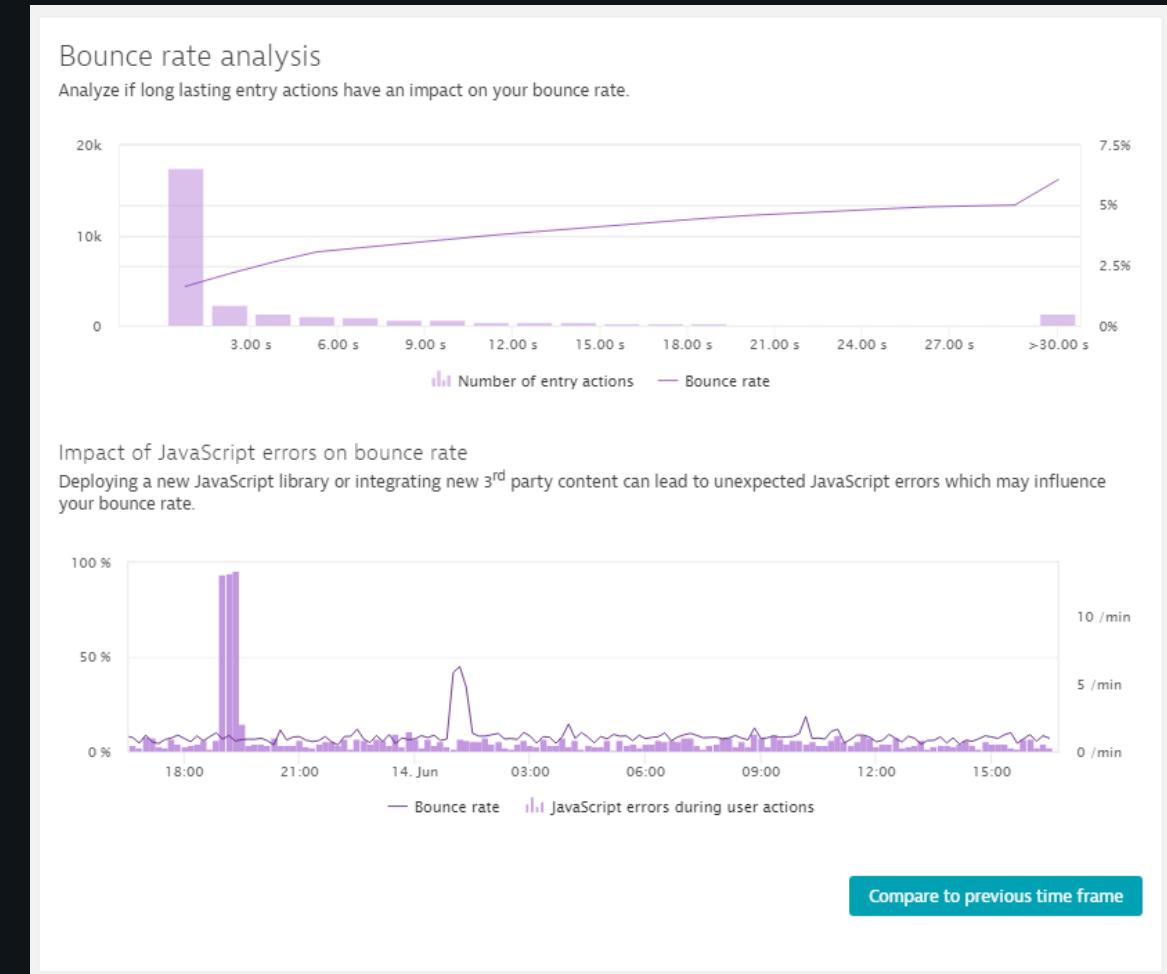
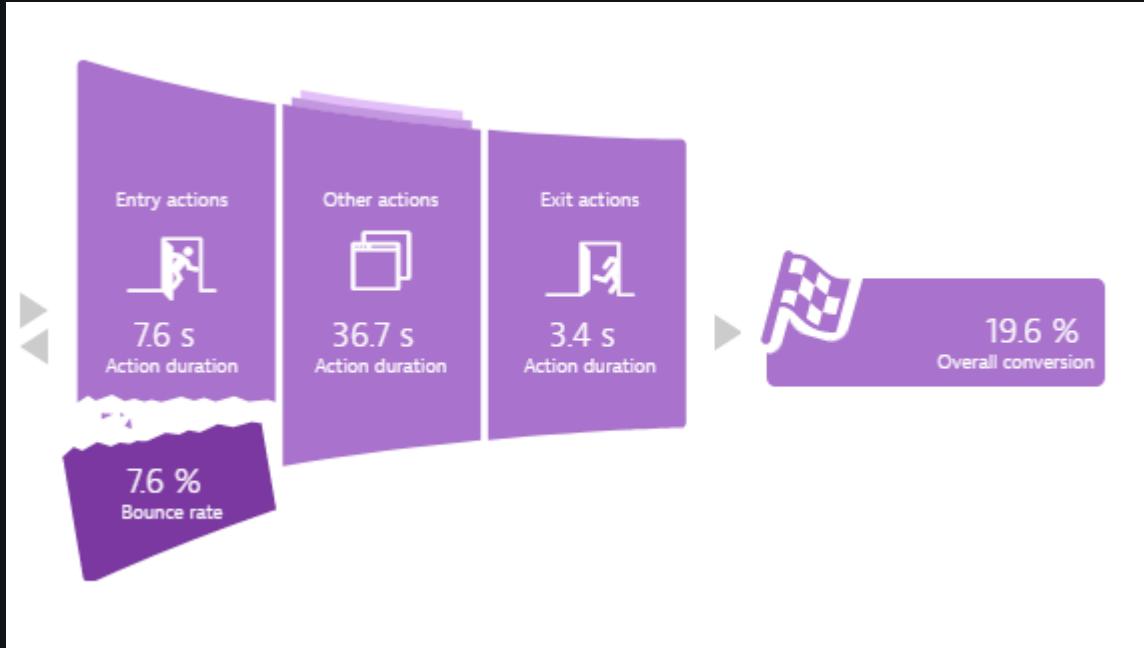
Active Sessions

- Active session & user engagement analysis
- Monitor and track peak activity intervals
- Compare against previous time frames



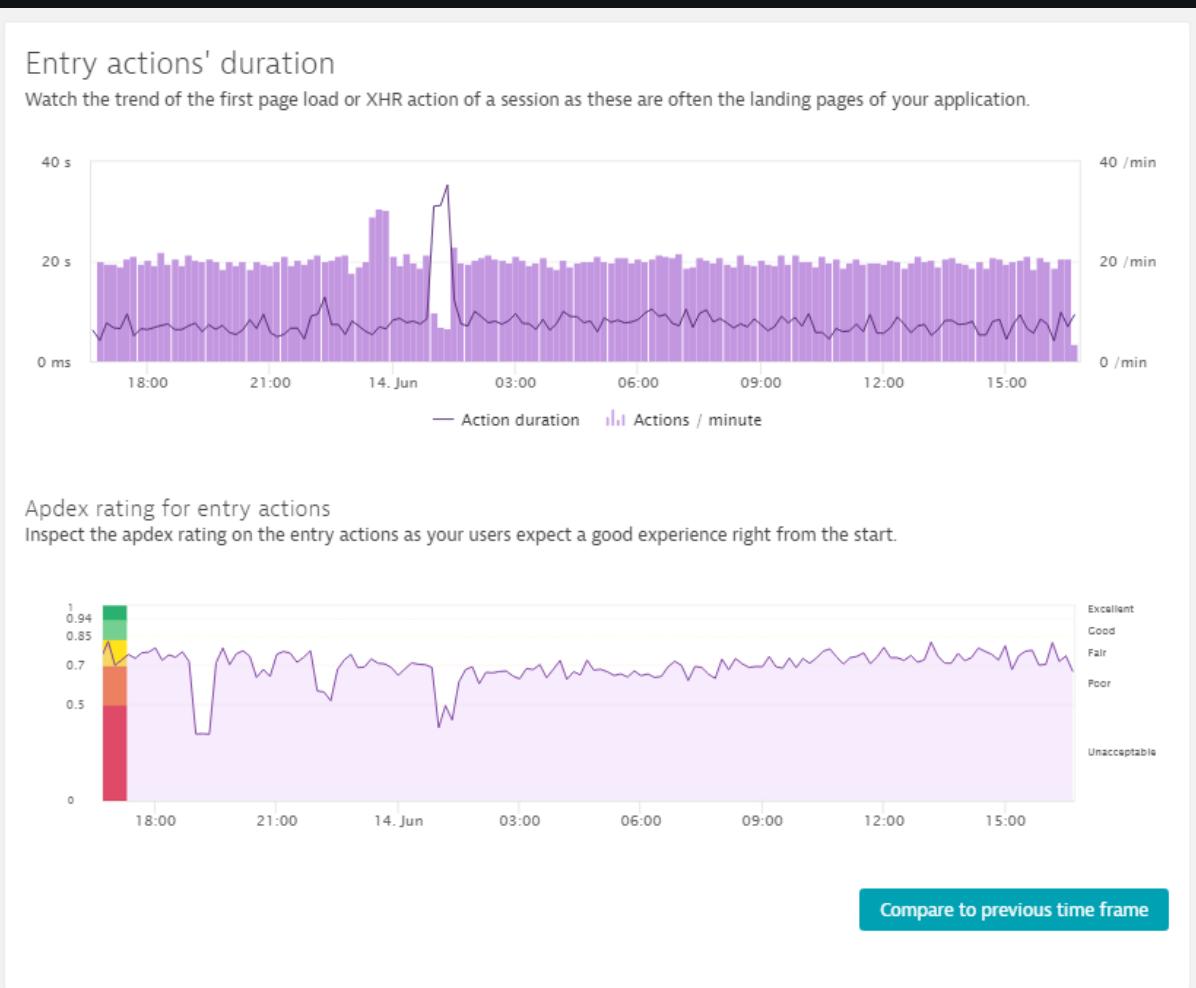
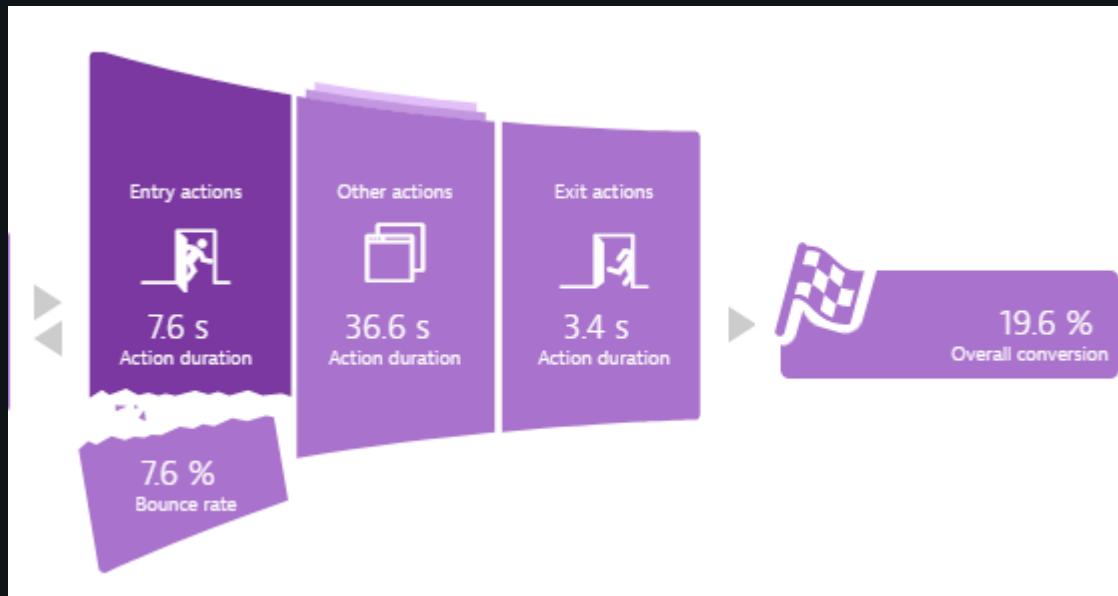
Bounce Rate

- Sessions that contain only one user action



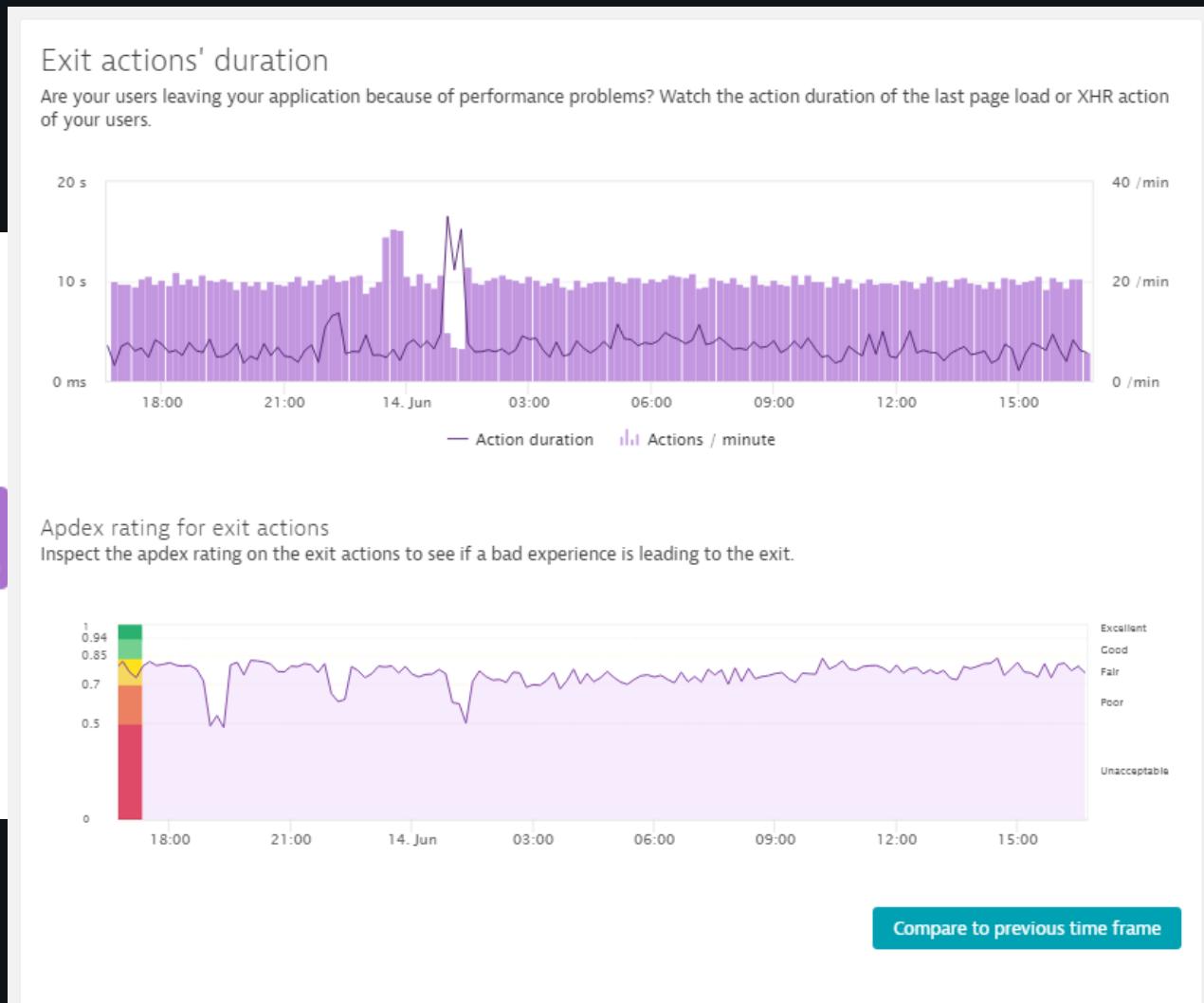
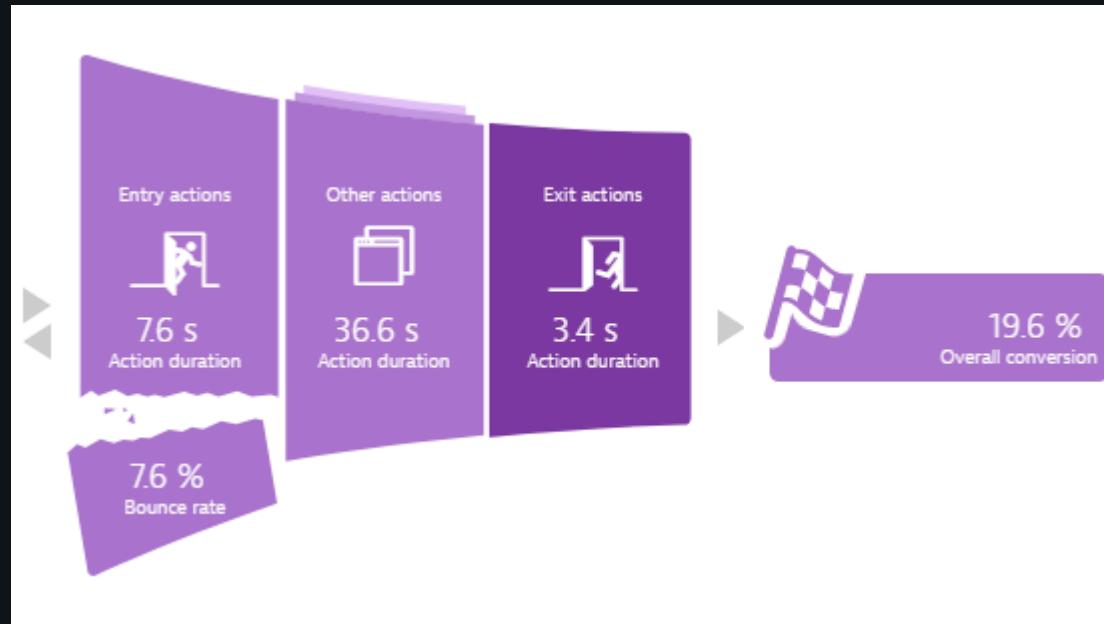
Entry Actions

- First action in a user's session



Exit Actions

- Last action in a user's session



Entry & Exit Actions

Top entry and exit actions

Shows where in your application users begin and end their journey.

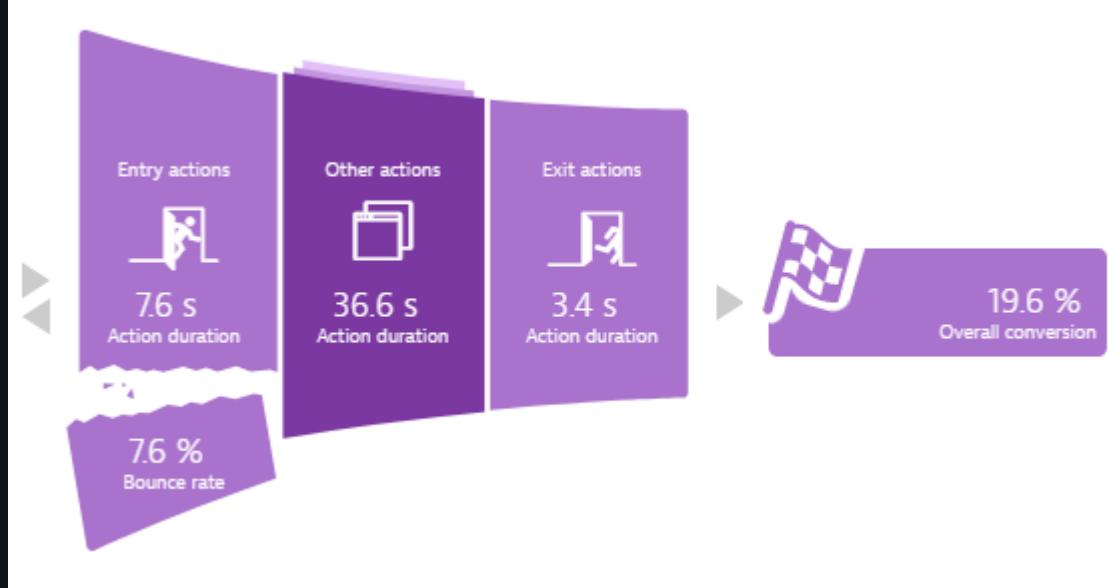
Top entry actions

Type	User action	Sessions	Bounce rate	Duration
	Loading of page /orange.jsf	9,913	0.7 %	14.37 s
	Loading of page /contact-orange-mobile.jsf	5,330	100.0 %	1.14 s
	Loading of page /blog/	4,622	0.2 %	16.92 s
	Loading of page /privacy-orange-mobile.jsf	3,724	100.0 %	0.63 s
	Loading of page /legal-orange-mobile.jsf	3,562	100.0 %	0.54 s

[View full details](#)

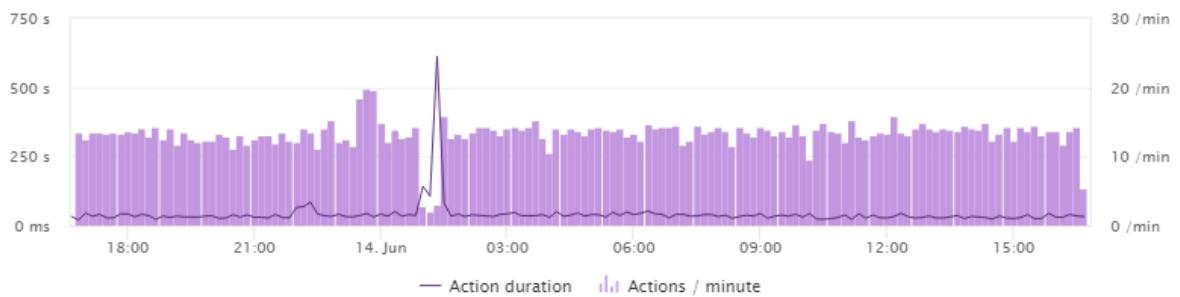
Other Actions

- Every action between the first and last



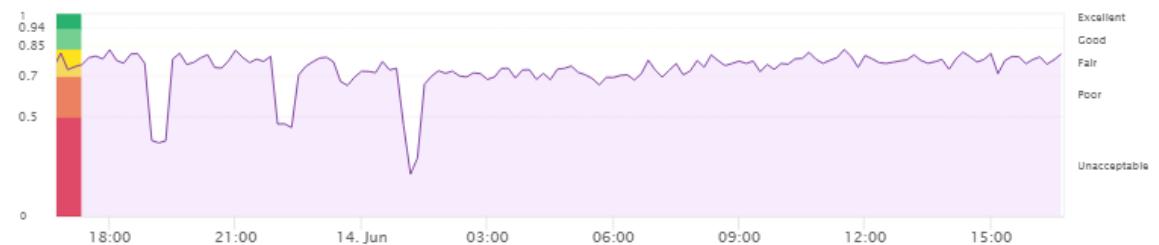
Other actions' duration

Check the action duration and actions per minute for all actions which are not the first or the last action of a users' session.



Apdex rating for other actions

Inspect the apdex rating on non-entry and non-exit actions.



[Compare to previous time frame](#)

Conversion goals

Applications | www.easytravel.com

Properties, tags, and JavaScript frameworks

Pin to dashboard... ⋮

Filter geolocations, user types, and returning or new users
Start typing to filter...

Performance ana... User behavior

Actions /min, Action duration, Apdex rating, JavaScript errors, 3rd party providers and Services.

67 % New users Top users
92 % Real users Top user types
View geographic breakdown

25.6 /min Active sessions
6.0 Actions per session

Entry actions 7.0 s Action duration
Other actions 36.7 s Action duration
Exit actions 3.2 s Action duration
33.2 % Bounce rate

32.4 % Overall conversion

Conversion trend

Shows overall rate of success toward your conversion goals. Each converted session met at least one of your conversion goals.

Conversion rate
Converted sessions

15 /min
10 /min
5 /min
0 %
100 %

19. Mar 03:00 06:00 09:00 12:00 15:00 18:00 21:00

Compare to previous time frame

22 Problems in last 72 hours

Problem 27: User action duration degradation
www.easytravel.com Since 2017 Mar 19 22:28:00 (35 min)

watched

Top conversion goals

See the conversion rate of your defined goals.

Place a Order 32.3 %

View full details

A screenshot of a digital marketing dashboard for the website www.easytravel.com. The dashboard is divided into several sections: 'Performance ana...' (Actions /min, Action duration, Apdex rating, JavaScript errors, 3rd party providers and Services), 'User behavior' (Active sessions, Actions per session, Entry/Exit actions, Bounce rate, and Conversion goals), 'Conversion trend' (Shows overall rate of success toward your conversion goals. Each converted session met at least one of your conversion goals.), and '22 Problems in last 72 hours' (Problem 27: User action duration degradation). A red arrow points from the 'Conversion trend' section to the 'Top conversion goals' section, which contains a button labeled 'Compare to previous time frame'. The 'Conversion trend' chart shows data from 19. Mar to 21:00, with a Y-axis ranging from 0 % to 100 % and an X-axis showing hours from 03:00 to 21:00. The 'Top conversion goals' section includes a progress bar for 'Place a Order' at 32.3 %.

This feature is still in beta. Have feedback for the team? Click the Chat icon in the menu bar.

www.easytravel.com

The conversions of your goals may vary significantly over time. Take a look at those changes in diverse timeframes.

Filter geolocations, user types, and returning or new users

Start typing to filter...

Compare goals of the **last 24 hours** with

day before ^

day before

week before

two weeks before

month before (only available for time ranges > 72 hours)

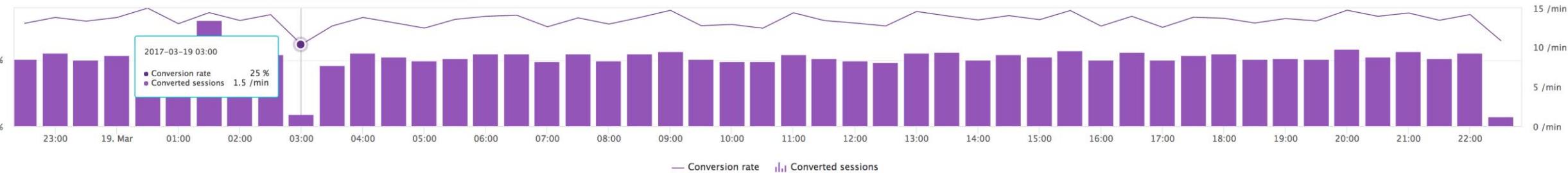
year before (only available for time ranges > 72 hours)

custom time frame

Overall conversions analysis

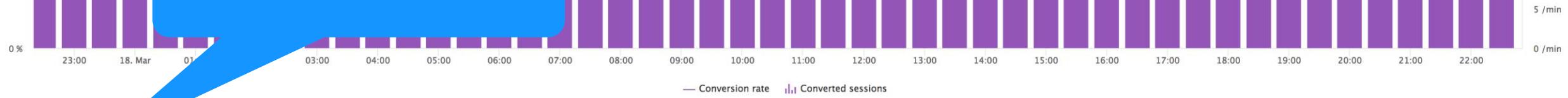
⌚ Yesterday, 22:34 - Today 22:34

Conversion rate trending and comparison features



⌚ Mar 17 2017, 22:34 - Yesterday 22:34

Problem correlation



22 Problems in last 72 hours

watched

Problem 27: User action duration degradation

www.easytravel.com
Since 2017 Mar 19 22:28:00 (41 min)

Web Applications

Views and Filters

Performance Analysis

Key User Actions

User Behavior

3rd Party SaaS Vendors

3rd Party SaaS Vendors

Deploy Dynatrace > Monitoring via browser extension

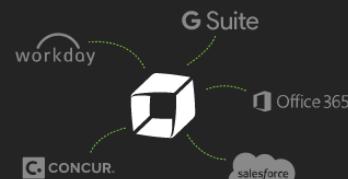
Set up monitoring via browser extension

For applications where you can't install OneAgent and also don't have access to the HTML you can use the Dynatrace browser extension to enable real user monitoring.



1. Install browser extension

Install the browser extension locally and [learn how to deploy the browser extension company wide](#)



2. Configure applications

Choose which application you want to monitor with the extension.



3. Start monitoring

Monitor all user sessions and the performance of your application

[Set up monitoring](#)

3rd Party SaaS Vendor

- Companies are increasingly looking for ways to ensure the customer experience and performance of the SaaS applications that their employees and customers rely on
- Unfortunately, it's usually not possible to install Dynatrace OneAgent on the web servers that SaaS vendors use to serve their applications
- This is why Dynatrace now offers a browser extension that enables you to gain user experience insights into the performance of SaaS applications without access to the underlying web servers
- The new Dynatrace Real User Monitoring (RUM) browser extension allows you to capture all the application performance and user behavior data that you need
- Once configured, the RUM browser extension delivers complete Dynatrace real user monitoring capabilities

Property packs

- Pre-built set of Dynatrace for configurations for common Web Analytics tools
 - Adobe Analytics
 - Google Analytics
 - Intercom
- Tie Dynatrace data back to the terms the business is familiar with:

The screenshot shows the 'Add property' screen in the Dynatrace interface. The top navigation bar includes 'Applications > easytravel-bf.lab.dynatrace.org > Settings > Session and user action properties > Property details'. On the left, a sidebar lists various application settings like General, Data privacy, User actions, Conversion goals, User tag, Session and user action properties (which is highlighted in blue), Metrics, Async requests and single page apps, Content capture, Session Replay, and Usability analytics. The main content area has a title 'Add property' and a subtitle 'Select the expression type that includes the metadata you want to use for this user tag rule. [More...](#)'. Below this are two tabs: 'Property packs' (selected) and 'Custom defined property'. A progress bar indicates '1) Select templates' (radio button selected) and '2) Finish configuration'. A dropdown menu shows 'Adobe' is selected. A search bar says 'Search property packs...'. A table lists several property packs with columns for 'Name', 'Needs configuration', 'Already added', and 'Configure properties'. Each row has an 'Add' button. The rows listed are: Page name, Page URL, Page type, Purchase ID, Transaction ID, visitorID, Campaign, Channel, and Events.

Name	Needs configuration	Already added	Configure properties
Page name	-	✓	Add
Page URL	-	-	Add
Page type	-	-	Add
Purchase ID	-	-	Add
Transaction ID	-	-	Add
visitorID	-	✓	Add
Campaign	-	-	Add
Channel	-	-	Add
Events	-	-	Add

Analysis – Live Demo

Questions?



Simply smarter clouds