Benefits of Auto-Remediation

1 Reduction of alerts, incident tickets and MTTR > **Cost reduction**

2 Ability to preempt outages, improved uptime

3 Reduction of risk and human error

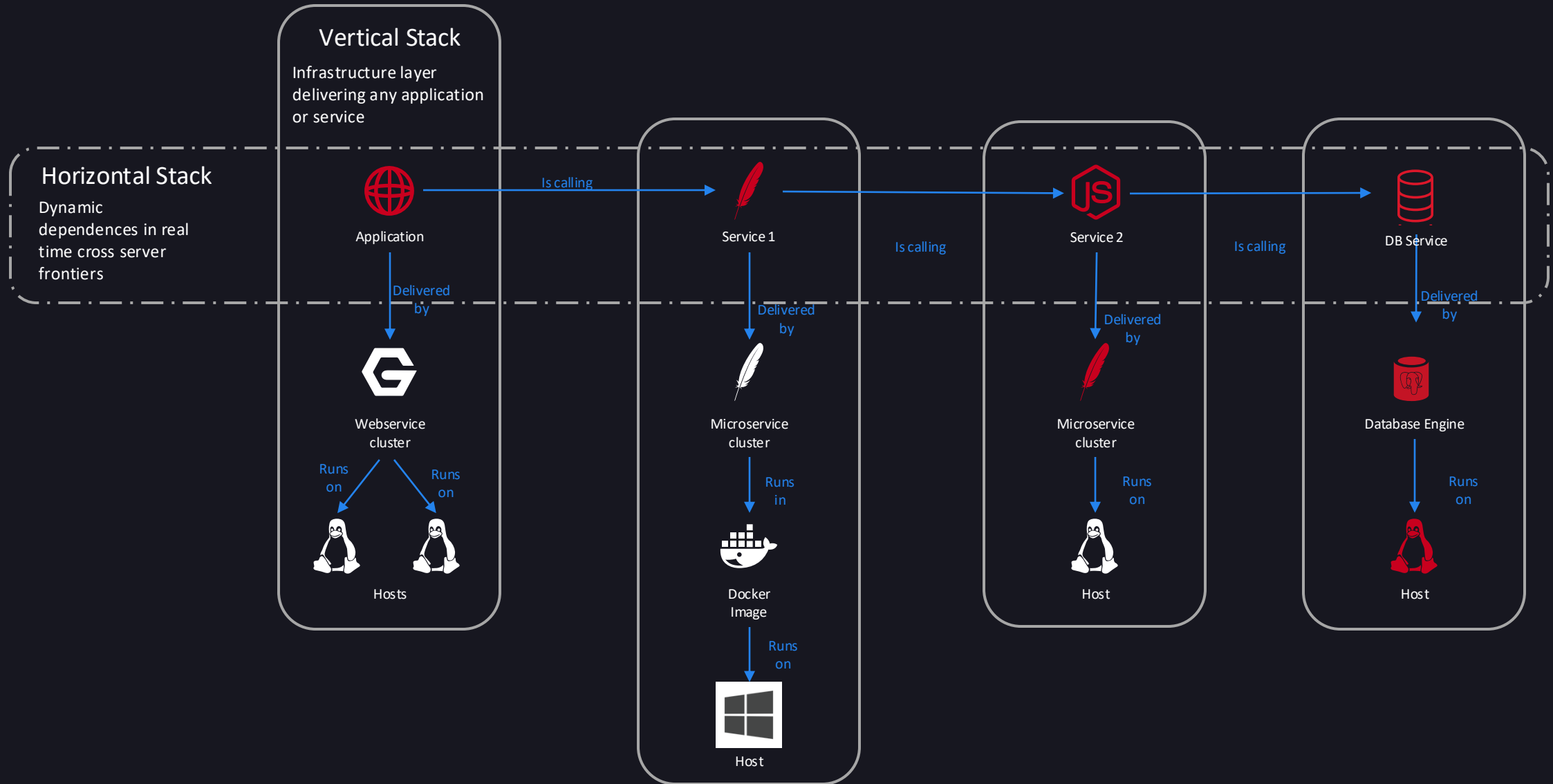**4** Improved user experiences

The timeline of an incident
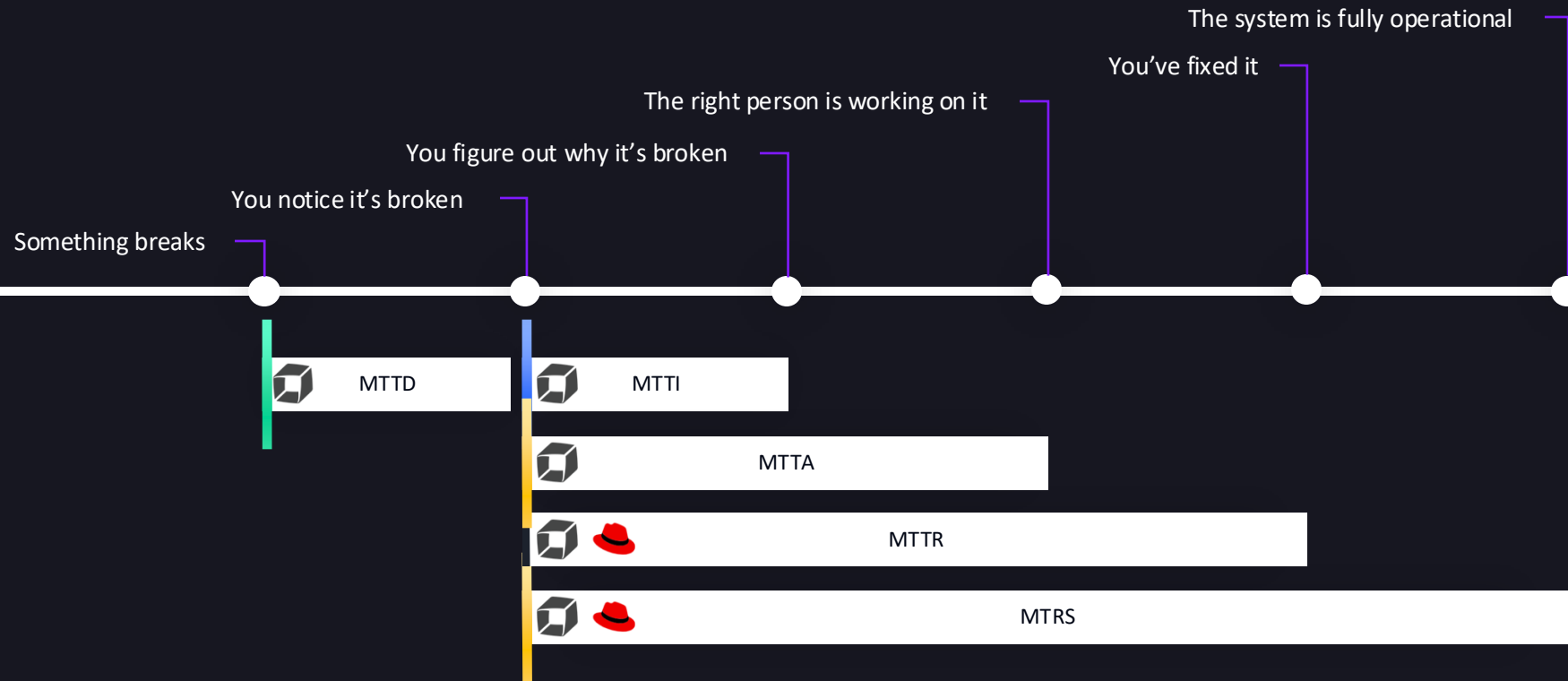
The system is fully operational

You've fixed it

The right person is working on it

You figure out why it's broken

You notice it's broken

Something breaks

MTTD

MTTI

MTTA

MTTR

MTRS

The Diagnostics of the unknowns

Vertical Stack

Infrastructure layer delivering any application or service

Horizontal Stack

Dynamic dependences in real time cross server frontiers

Application

Is calling

Service 1

Is calling

Service 2

Is calling

DB Service

Delivered by

Delivered by

Delivered by

Delivered by

Webservice cluster

Microservice cluster

Microservice cluster

Database Engine

Runs on

Runs on

Runs in

Runs on

Runs on

Hosts

Docker Image

Host

Host

Runs on

Host

Dynatrace Platform

Observability, Security and Business data

Traces · Metrics · Logs

+

Topology · Behaviour · Code

Metadata · Network · Problems

+

Business Events · Threats · Vulnerabilities

Deep, context-rich, full stack

Scalable data capture and ingest

OneAgent

API

OpenTelemetry

Semantic Dictionary

Ecosystem Integrations

Automatically captured in context & pre-processed

Graph powered Massive Parallel Processing Lakehouse

Grail

Stored contextually with massive parallel processing and graph query technology

Causal AI

Davis AI

Smartscape

Accessed by our causal AI for analysis & answers

Enterprise low-code programmability and data-science

AutomationEngine

AppEngine

DQL
Dynatrace Query Language

Post-process, combinate, act

Answer driven Automation and Security

Observability

Security

Automation

Custom Apps

Powering automation, orchestration, prevention and protection

Show problems ⌄

Applications
2/21

Services
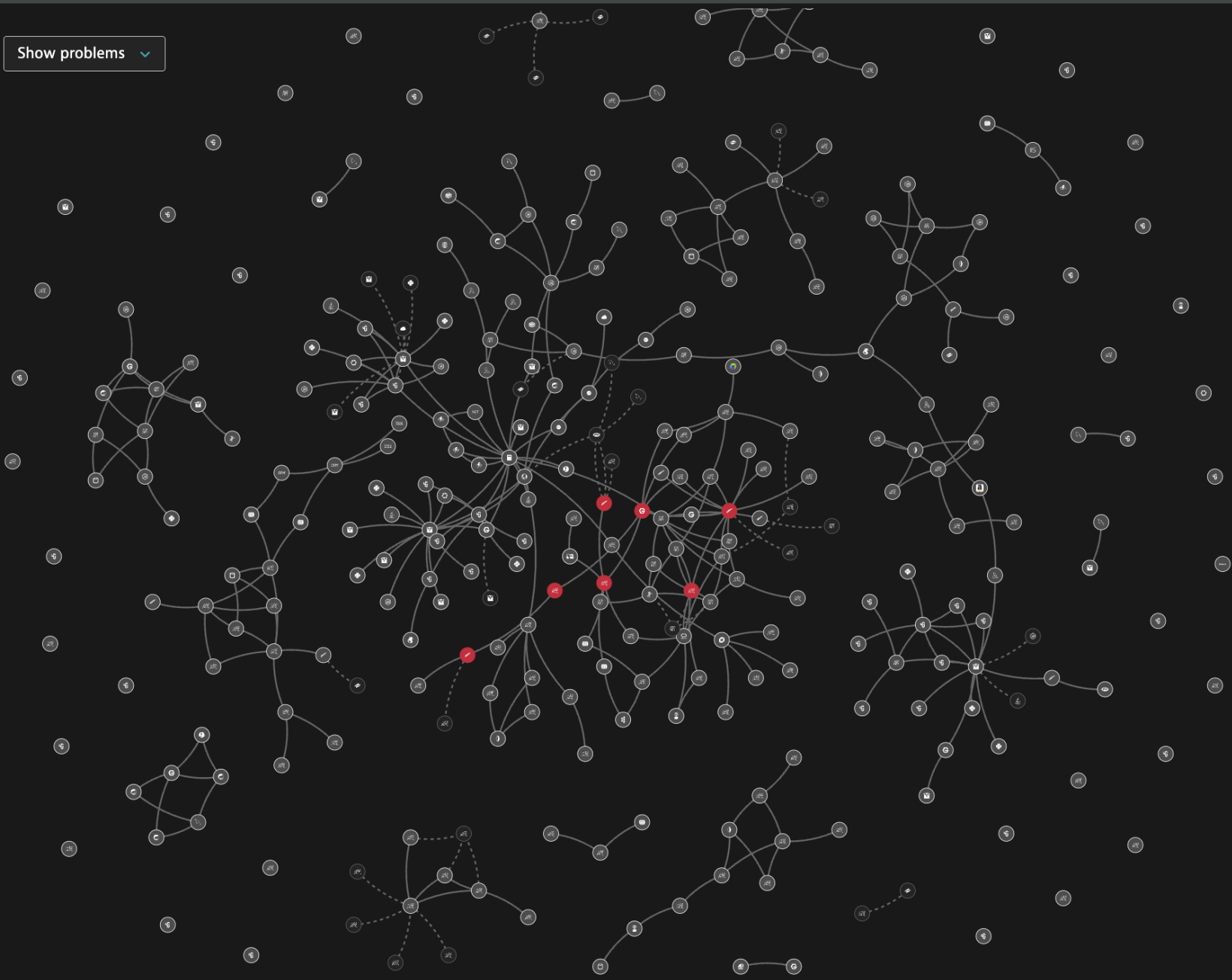7/329

Processes
6277

Hosts
355

Data centers
20

Show problems

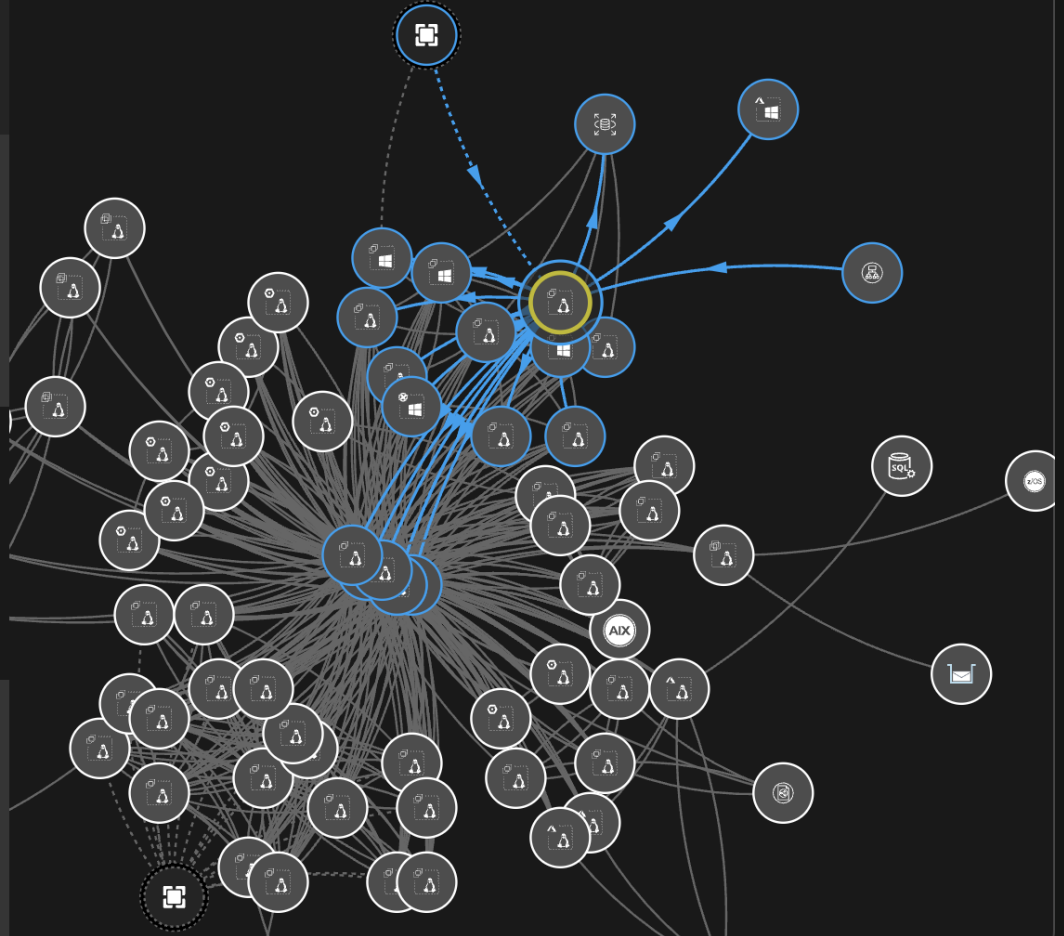Applications

2/5

Services

2/5

php

Processes

3   3

Hosts

LB-apache-php
Linux

355

Data centers

aws

www.easytravel.com: User action duration degradation

Problem P-23102533 detected at 08:03 - 08:29 (was open for 26 minutes).

Share feedback

Affected applications	Affected services	Affected infrastructure	Affected SLOs	DAVIS ®
1	9	2	15	analyzed dependencies across 18,251 monitored entities

Business impact analysis
Davis observed the following number of service calls and affected real users during the first 30 minutes of the problem timeframe.

744 / 776
affected users

2.65M
affected service calls

105
affected sessions
Replay sessions

⌄ Show more

1 impacted application
38.8+ User actions per minute impacted

🌐 **www.easytravel.com**
Web application

User action duration degradation

The current response time (~2.15 s) exceeds the auto-detected baseline (418 ms) by 413.4 %.
Incident occurred with user action Xhr.

Affected user actions	User action
38.8+ /min	3 User actions

Browser	Geolocation	OS
All	All	All

Comments
ⓘ

Comment on this problem

Add comment

Root cause
Based on our dependency analysis all incidents have the same root cause

CheckDestination
Custom service

Custom deployment event
Deployment change 2.0.0.3603.20231031-080000

Source	ServiceNow
Version	2.0.0.3603.20231031-080000
CI	https://ven01383.service-now.com/nav_to.do? uri=%2Fchange_request.do%3Fsys_id%3Df16e8d6ddbf84814ceb29a67db96192b
Remediation	https://ansibletower.internal.example.com/job?id=9
Project	easyTravel
Approver	Alice McBright (alice.mcbright@easytravel.com)
Build Number	1.223.23432
Git commit	e5a6baac7eb
Owner	Chuck Ryan (chuck.ryan@easytravel.com)

Events on:
Service **CheckDestination**

2 Service response time degradation events
The current response time (~267.66 ms) exceeds the auto-detected baseline (~19.2 ms) by 1294.18 %. Service CheckDestination has a slowdown.
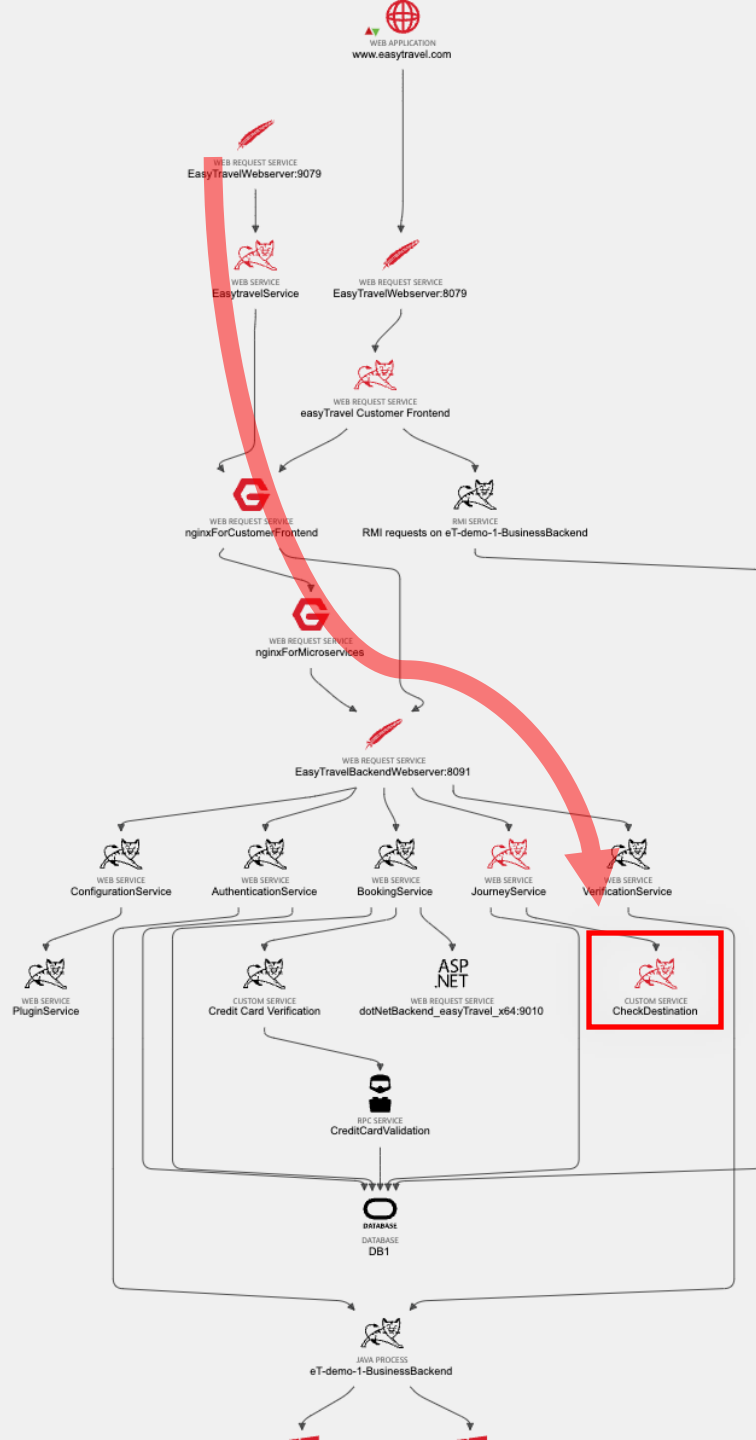
Events on:
Service **CheckDestination**

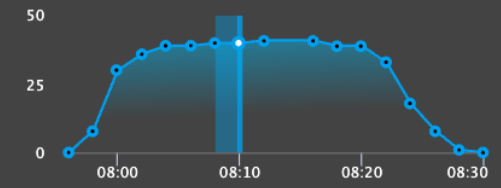📊🕐 Analyze code level, database calls, and outgoing requests.   **Analyze response time degradation**

Metric anomalies detected
Review the metrics which show abnormal or outlying behavior.

WEB APPLICATION
www.easytravel.com

WEB REQUEST SERVICE
EasyTravelWebserver:9079

WEB SERVICE
EasytravelService

WEB REQUEST SERVICE
EasyTravelWebserver:8079

WEB REQUEST SERVICE
easyTravel Customer Frontend

WEB REQUEST SERVICE
nginxForCustomerFrontend

RMI SERVICE
RMI requests on eT-demo-1-BusinessBackend

WEB REQUEST SERVICE
nginxForMicroservices

WEB REQUEST SERVICE
EasyTravelBackendWebserver:8091

WEB SERVICE
ConfigurationService

WEB SERVICE
AuthenticationService

WEB SERVICE
BookingService

WEB SERVICE
JourneyService

WEB SERVICE
VerificationService

WEB SERVICE
PluginService

CUSTOM SERVICE
Credit Card Verification

ASP .NET

WEB REQUEST SERVICE
dotNetBackend_easyTravel_x64:9010

CUSTOM SERVICE
CheckDestination

RPC SERVICE
CreditCardValidation

DATABASE
DB1

JAVA PROCESS
eT-demo-1-BusinessBackend

Problem evolution   ◀ ▶

50

25

0

08:00   08:10   08:20   08:30

2023-10-31 08:08 – 08:10   40 ongoing events in 12 components
Trend △ 1 ▽ 1

Custom service   ⬚
CheckDestination
▷ The current response time (~267.66 ms) exceeds the aut...
▷ The current response time (~267.66 ms) exceeds the aut...

Web application   ⬚
www.easytravel.com
▷ The current response time (~2.98 s) exceeds the auto-d...
▷ The current response time (~2.25 s) exceeds the auto-d...
▷ The current response time (~2.25 s) exceeds the auto-d...
▷ The current response time (~2.2 s) exceeds the auto-d...
▷ The current response time (~3.34 s) exceeds the auto-d...
▷ The current response time (~2.18 s) exceeds the auto-de...
▷ The current response time (~2.15 s) exceeds the auto-de...
▷ The current response time (~2.51 s) exceeds the auto-de...
▷ The current response time (~2.13 s) exceeds the auto-de...
▷ The current response time (~5.68 s) within the slowest 1...
▷ The current response time (564.5 ms) exceeds the auto-...
▷ The current response time (~3.83 s) exceeds the auto-d...
▷ The current response time (~3.42 s) exceeds the auto-d...
▷ The current response time (2.42 s) exceeds the auto-det...
▷ The current response time (~3.53 s) exceeds the auto-d...
△ The current response time (~2.85 s) exceeds the auto-d...
▽ The current response time (~2.82 s) exceeds the auto-d...

Web request service   ⬚
easyTravel Customer Frontend
▷ The current response time (~3.48 s) exceeds the auto-d...

Web request service   ⬚
EasyTravelBackendWebserver:8091
▷ The current response time (~299.2 ms) exceeds the auto...
▷ The current response time (~226.42 ms) exceeds the aut...

Web request service   ⬚
EasyTravelWebserver:8079
▷ The current response time (~3.48 s) exceeds the auto-d...

Web request service   ⬚
EasyTravelWebserver:9079
▷ The current response time (~494.07 ms) exceeds the aut...
▷ The current response time (~388.21 ms) exceeds the aut...
▷ The current response time (~3.1 s) exceeds the auto-det...
▷ The current response time (~3.2 s) exceeds the auto-det...

Web request service

(AM) Mitigate CPU and failure ...   Modi...

Save   ▷ Run   Executions

Davis problem trigger

On: active problem; Severity: error, or resource

forecast_service_load

Execute a customizable AI/ML task using Davis® analyzers

get_problem_details

Build a custom task running js Code

extract_prediction

Build a custom task running js Code

get_owners

Retrieves owners from Entities and Team identifiers.

merge_event_data

Build a custom task running js Code

meta_data

Build a custom task running js Code

send_event_to_event-driv...

Send an event to the Red Hat Event-Driven-Ansible Controller via Event...

send_message

Send a message to a Slack workspace

Davis problem trigger

← Change trigger

Run workflow based on problems detected by Davis.

Event state

active

Event category

Error, Resource

Learn more about event categories ↗ .

Affected entities

include entities with all defined tags below

Tags

remediation   eda

Enter key...   Enter value

⌄ Additional custom filter query

Filter query

```
1   maintenance.is_under_maintenance == false a
2   event.status_transition =="CREATED"
3
4
5
```

The workflow is triggered when an event matching the criteria above is ingested.
==, and, or, and grouping with brackets (). For more options, see the documentati

▷ Query past events

---

eventData

```
1    {
2      "email": [
3        {
4          "email": "dietmar.schnitzer@dynatrace.com",
5          "entities": [
6            "SERVICE-A56B35CCDC1557C1"
7          ],
8          "teamName": "Nilgans"
9        }
10     ],
11     "slack": [
12       {
13         "entities": [
14           "SERVICE-A56B35CCDC1557C1"
15         ],
16         "teamName": "Nilgans",
17         "slackChannel": "acme-corp-ops"
18       }
19     ],
20     "eventId": "-6853650204335686131_1717599900000V2",
21     "eventName": "Failure rate increase",
22     "problemId": "P-24065",
23     "eventStart": "2024-06-05T15:10:00.000000000Z",
24     "eventStatus": "ACTIVE",
25     "problemArea": "SERVICES",
26     "cpu_forecast": 20.018429325190304,
27     "problemLevel": "ERROR",
28     "problemTitle": "Failure rate increase",
29     "problemStatus": "ACTIVE",
30     "impactedEntitiesId": [
31       {
32         "name": "AuthenticationService",
33         "entityId": {
34           "id": "SERVICE-A56B35CCDC1557C1",
35           "type": "SERVICE"
36         }
37       }
38     ]
39   }
```

Workflows   **Executions**

(AM) Mitigate CPU and failure ...   Modi...   Save   ▷ Run   Executions ⌄   ⋮

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Build a custom task running js Code

send_event_to_event-driv...

Send an event to the Red Hat Event-Driven-Ansible Controller via Event...

send_message

Send a message to a Slack workspace

send_event_to_event-driven-ansible_1

Send an event to the Red Hat Event-Driven-Ansible Controller via Event Source Plugin

Input   **Conditions**   **Options**   **Sample result**

Connection

RE_AM_Controller

Event data
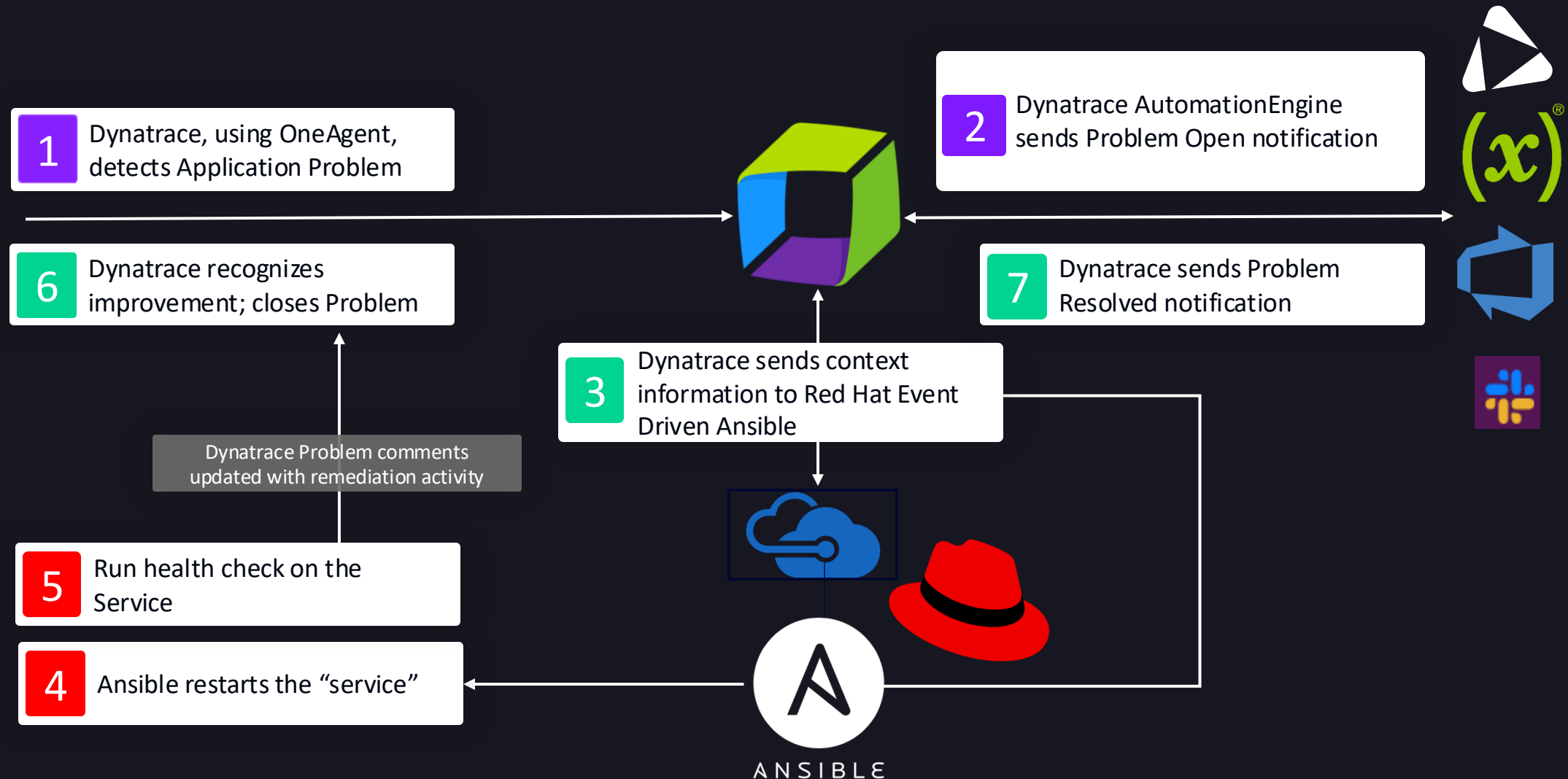
1   {{result("merge_event_data")}}

JSON payload

eventData

```
 1   {
 2       "email": [
 3           {
 4               "email": "dietmar.schnitzer@dynatrace.com",
 5               "entities": [
 6                   "SERVICE-A56B35CCDC1557C1"
 7               ],
 8               "teamName": "Nilgans"
 9           }
10       ],
11       "slack": [
12           {
13               "entities": [
14                   "SERVICE-A56B35CCDC1557C1"
15               ],
16               "teamName": "Nilgans",
17               "slackChannel": "acme-corp-ops"
18           }
19       ],
20       "eventId": "-6853650204335686131_1717599900000V2",
21       "eventName": "Failure rate increase",
22       "problemId": "P-24065",
23       "eventStart": "2024-06-05T15:10:00.000000000Z",
24       "eventStatus": "ACTIVE",
25       "problemArea": "SERVICES",
26       "cpu_forecast": 20.018429325190304,
27       "problemLevel": "ERROR",
28       "problemTitle": "Failure rate increase",
29       "problemStatus": "ACTIVE",
30       "impactedEntitiesId": [
31           {
32               "name": "AuthenticationService",
33               "entityId": {
34                   "id": "SERVICE-A56B35CCDC1557C1",
35                   "type": "SERVICE"
36               }
37           }
38       ]
39   }
```

Solution Architecture for Auto-Remediation

1 Dynatrace, using OneAgent, detects Application Problem

2 Dynatrace AutomationEngine sends Problem Open notification

6 Dynatrace recognizes improvement; closes Problem

7 Dynatrace sends Problem Resolved notification

3 Dynatrace sends context information to Red Hat Event Driven Ansible

Dynatrace Problem comments updated with remediation activity

5 Run health check on the Service

4 Ansible restarts the "service"

A N S I B L E

HOW TO START

1 **Analyze**

... your problems and find repetitive patterns

2 **Create**

... your playbook and workflow which can be manually triggered

3 **Optimize**

... into a manual-approval based process

4 **Automate**

... the remediation actions with a proven track record end-to-end