Enterprise monitoring

Baselining, Cloud-Scale Monitoring and Auto-Remediation with AppMon and how Dynatrace changes the game

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Platform Engineer

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dynatrace | Sentry

#Perform2018

Who am I?

- Platform Engineer at Sentry Insurance
- Utilizing AppMon for 6 years
- Written or Updated many AppMon Plugins for the community
  - RabbitMQ, DB Query, Linux Filesystem, etc.
- Monitoring 82 Applications across ~1500 servers in all environments

Brian Perrault

Moving to a Cloud environment

- Why move to the Cloud?
  - Scalability
  - Versatility
  - Microarchitecture
- Challenges for monitoring?
  - Servers no longer constant
  - Not all applications have the same performance expectations
  - Automation pipeline integration

Amazon Web Services (AWS)

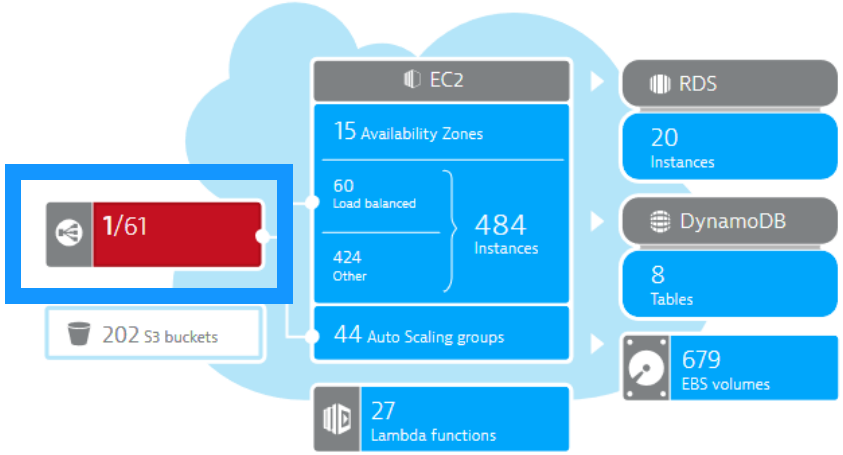
- AWS is the chosen cloud provider
- Robust API
- Many different locations across the US
- Easy Server Image Management
- Elastic Load Balancer (ELB)
- Automatically add new instances to load balancer

AWS > test

Start typing to filter

test

Showing all ELB instances



61 Load balancers

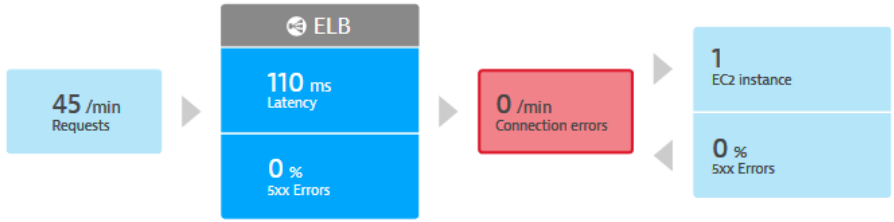
Name	EC2 count	Backend connection errors ▾	Latency	Requests
awseb-e-a-AWSEBLoa-15DUM2QOSZUI4	1/1	308 /min	342 ms	0 /min
af80ca5c0a27d11e78ce00ef70bbc359	2	0 /min	-	0 /min
synth-noc-dev	1	0 /min	-	0 /min
cp-dev-web-elb	1	0 /min	20.5 ms	14 /min
jobs-dynatracelabs-sandbox-LB	1	0 /min	1.75 ms	0 /min
jobs-dynatracelabs-dev-LB	1	0 /min	31.9 ms	0 /min
oam-dynatracelabs-sandbox-LB	2	0 /min	8.67 ms	0 /min

awseb-e-a-AWSEBLoa-15DUM2QOSZUI4

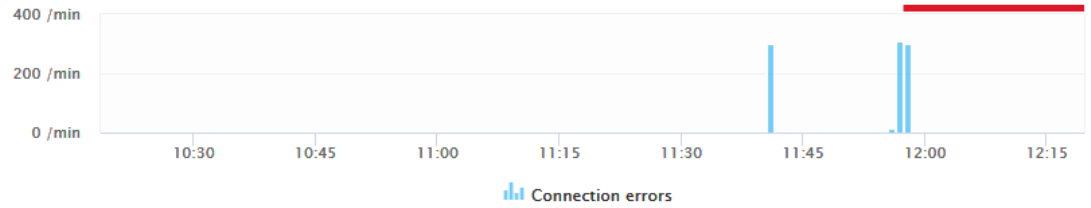
Smartscape view

Properties and tags

[AWS]Name: opcui-sprint-08-... [AWS]aws:cloudformation:logical-id: AWSEBLoadBala... [AWS]aws:cloudformation:stack-id: arn:aws:cloudfor...



Connection errors



4 Problems in last 72 hours

Frequent issue: **Elastic load balancer has a high backend failure rate**

Dynatrace reports recurring problem patterns as "frequent issues." Alerts are sent out only if severity increases.

Problem 495: Elastic load balancer has a high backend failure rate

awseb-e-a-AWSEBLoa-15DUM2QOSZUI4
Since 2018 Jan 16 11:57:00 (22 minutes)

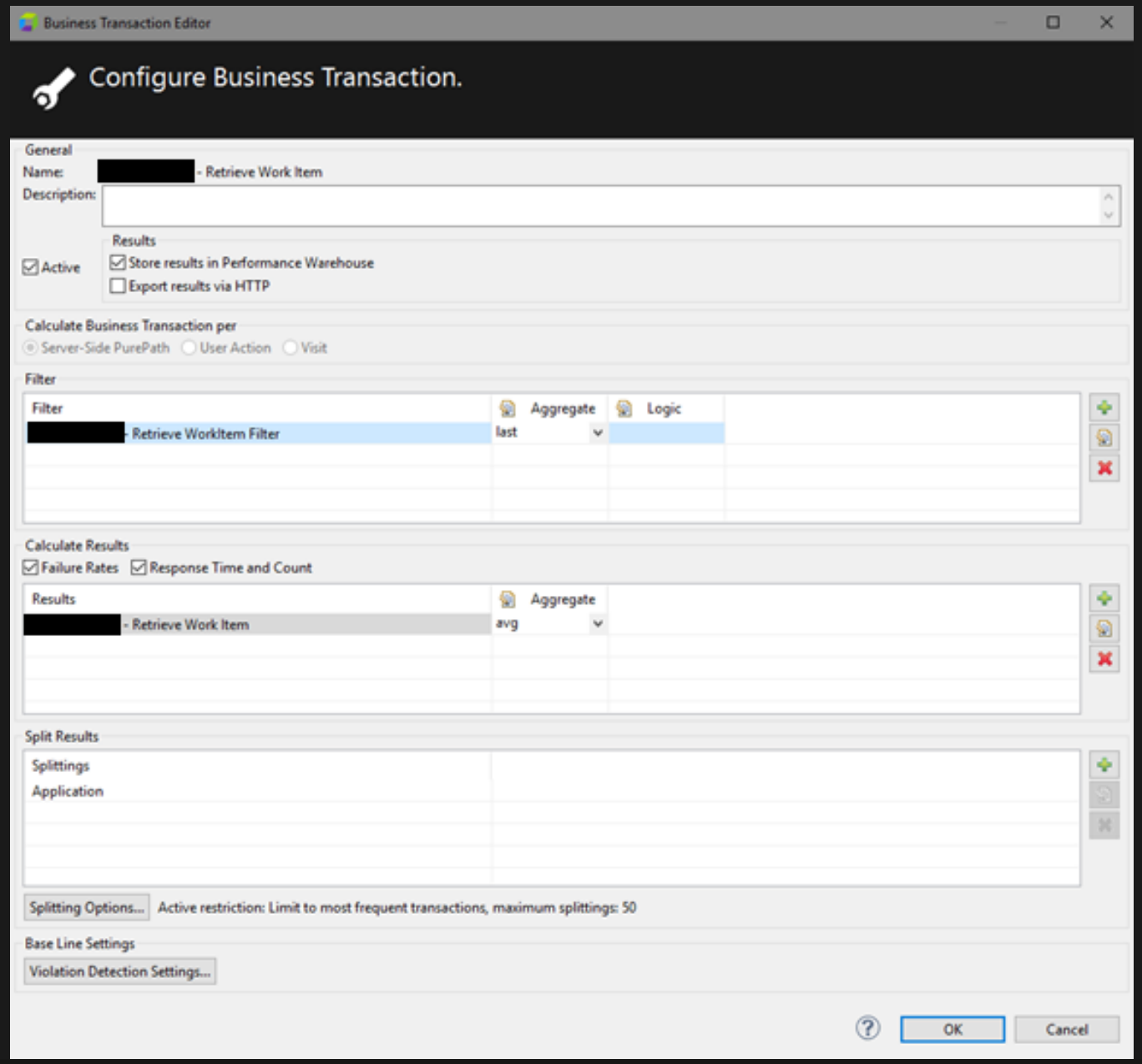
No events

Today, 10:19 - 12:19

Implementing baselining

- Automatic for all new added applications
  - Great for cloud where new instances are spun up and down
- Grants flow rate calculation
  - Not a hard limit
  - Detect abnormal activity levels
- Granular detection for errors on the page level
  - Load Balancer only knows if the page is serving HTML, not if it is operating properly

Example Baseline



[redacted] - System Monitoring - Dynatrace Client

Dashboard Edit Tools Settings Help

last 30 minutes | Monitoring

[redacted] - ApplicationServices-Claims ▾ > Applications > [redacted]

[redacted]

Find Visits | Web Request Performance | End User Experience

Throughput ⓘ
77 requests/minute

Failure Rate ⓘ
0 %
Violations

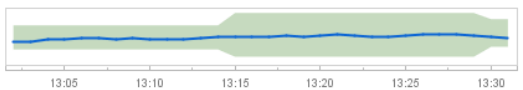
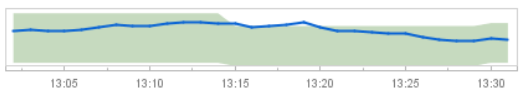
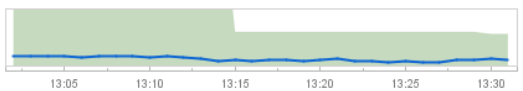
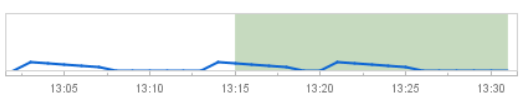
Response Time ⓘ
131 ms
Violations

System Health ⓘ
6 Processes OK
4 Hosts OK

User Experience ⓘ
- UE Index
Setup Conversion

Business Transactions

Health States: all ▾ | Search Business Transactions

Throughput ⓘ	Failure Rate ⓘ	Response Time ⓘ	System Health ⓘ
☆ ⚙ clms/jsonTable.do [redacted] - Get Doc List			
30 Requests / Minute 	0 %	159 ms [972 ms]	4 Processes OK 4 Hosts OK Transaction Flow
☆ ⚙ clms/receiveGuid.do [redacted] - Receive GUID (legacy)			
8 Requests / Minute 	0 %	4.2 ms [5.2 ms]	4 Processes OK 4 Hosts OK Transaction Flow
☆ ⚙ clms/documentsFaxSend.do [redacted] - Send Fax			
0.6 Requests / Minute 	0 %	412 ms [473 ms]	4 Processes OK 4 Hosts OK Transaction Flow
☆ ⚙ clms/printDocuments.do [redacted] - Print Document			
0 Requests / Minute	- %	- ms [- ms]	2 Processes OK 2 Hosts OK Transaction Flow
☆ ⚙ CreateEvents [redacted] - Web Services			
0 Requests / Minute 	- %	- ms [- ms]	4 Processes OK 2 Hosts OK Transaction Flow

1 row found

[redacted] dix-q-dyntrc-01 [redacted] sho-p-dyntrc-01 ✓ 0

Dynamic web requests of dotNetBackend_easyTravel_x64:9010

Request type: Dynamic requests

1 Problem Today, 10:26 - 12:26

Frequent issue: Response time degradation

Dynatrace reports recurring problem patterns as "frequent issues." Alerts are sent out only if severity increases.

Problem 259: Response time degradation

dotNetBackend_easyTravel_x64:9010
Since 2018 Jan 16 10:47:00 (1 day 1 hour 39 minutes)

Problematic requests

Slow response time 9.29 ms
/WebService/FinanceService.svc

View Median Slowest 10 %

Response time

Response time degradati
Frequent issue

75 ms
50 ms
25 ms
0 ms
10:25
10:30

60 /min
40 /min
20 /min
0 /min
12:20

Analyze all requests during this e

Analyze co
requests.
Analyze response time degradation

the selected period.
Analyze outliers

downs...
More...

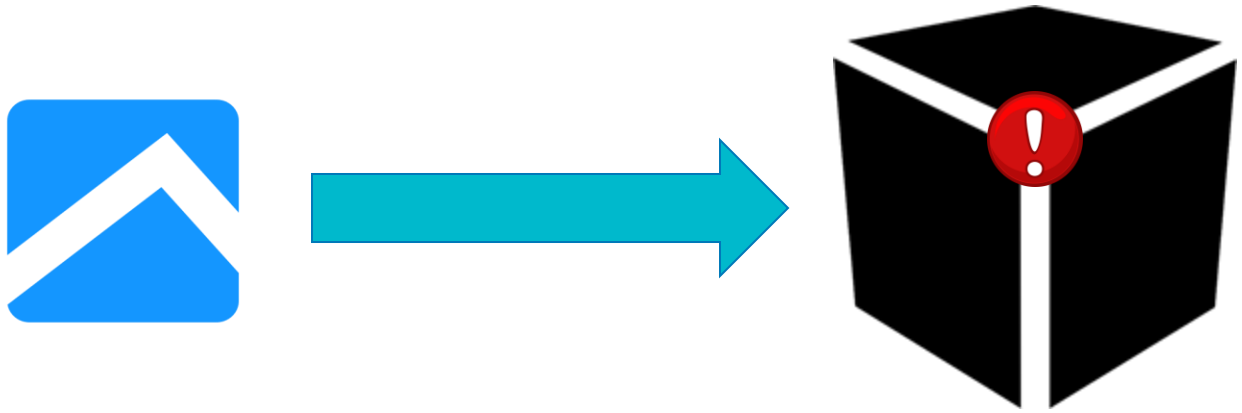
Response time of requests sent by monitored services

Implementing automation

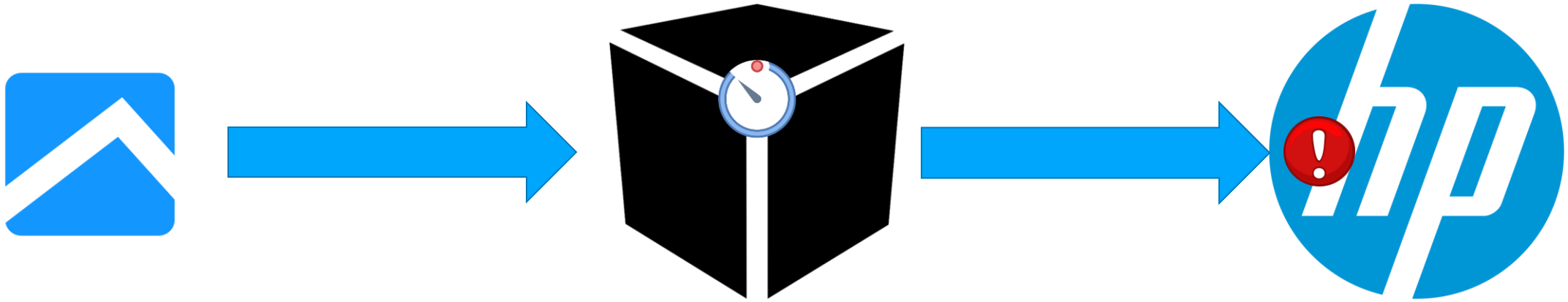
- Integration with corporate automation solution
- Ability to pull details from AppMon Incident
- Ability to escalate issue if automated remediation does not work

Remediation flow diagram

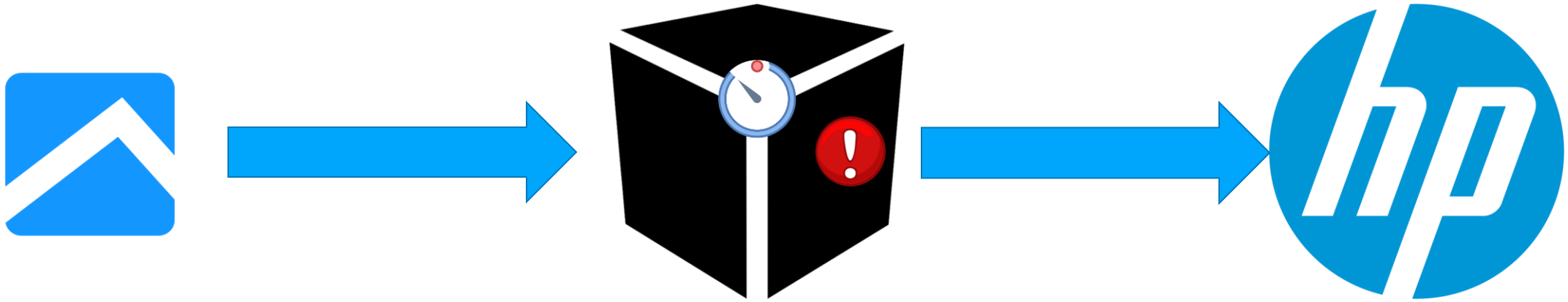
Remediation flow diagram



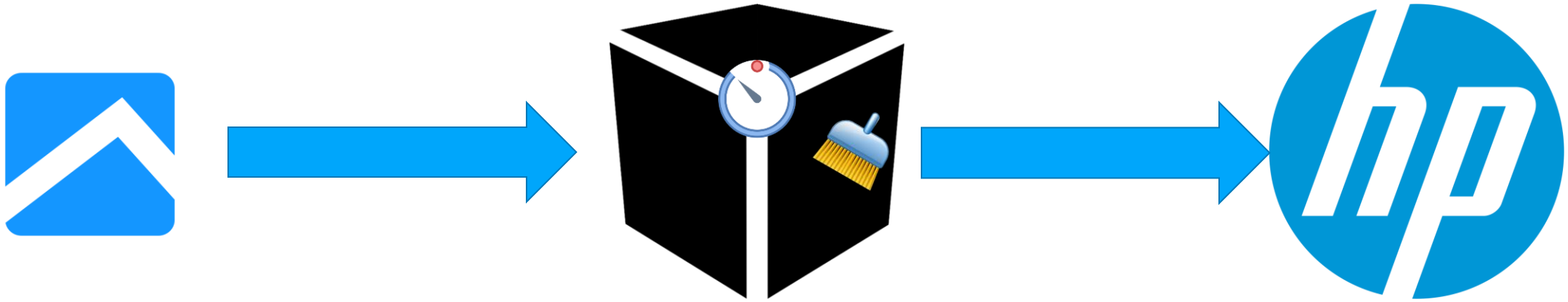
Remediation flow diagram



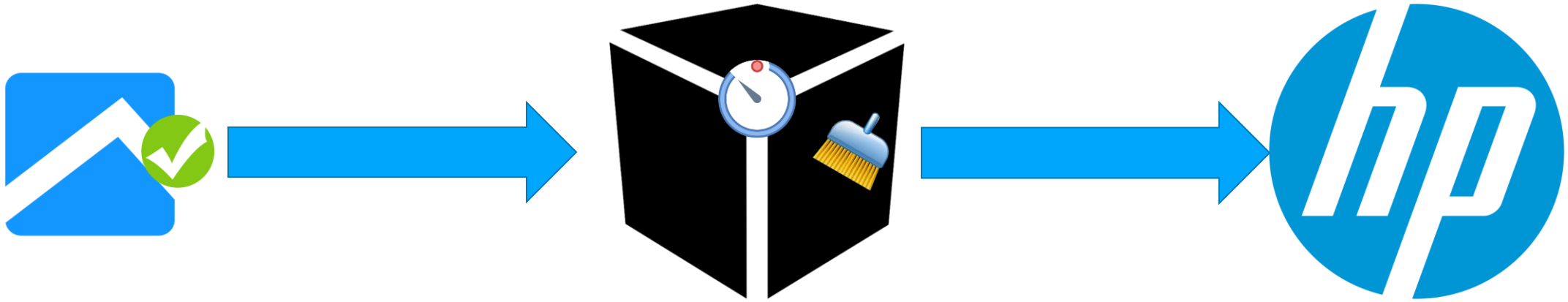
Remediation flow diagram



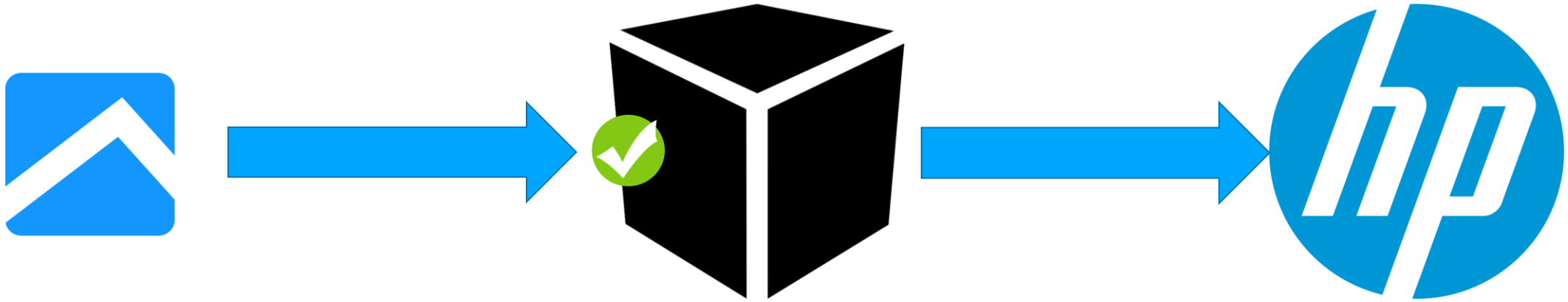
Remediation flow diagram



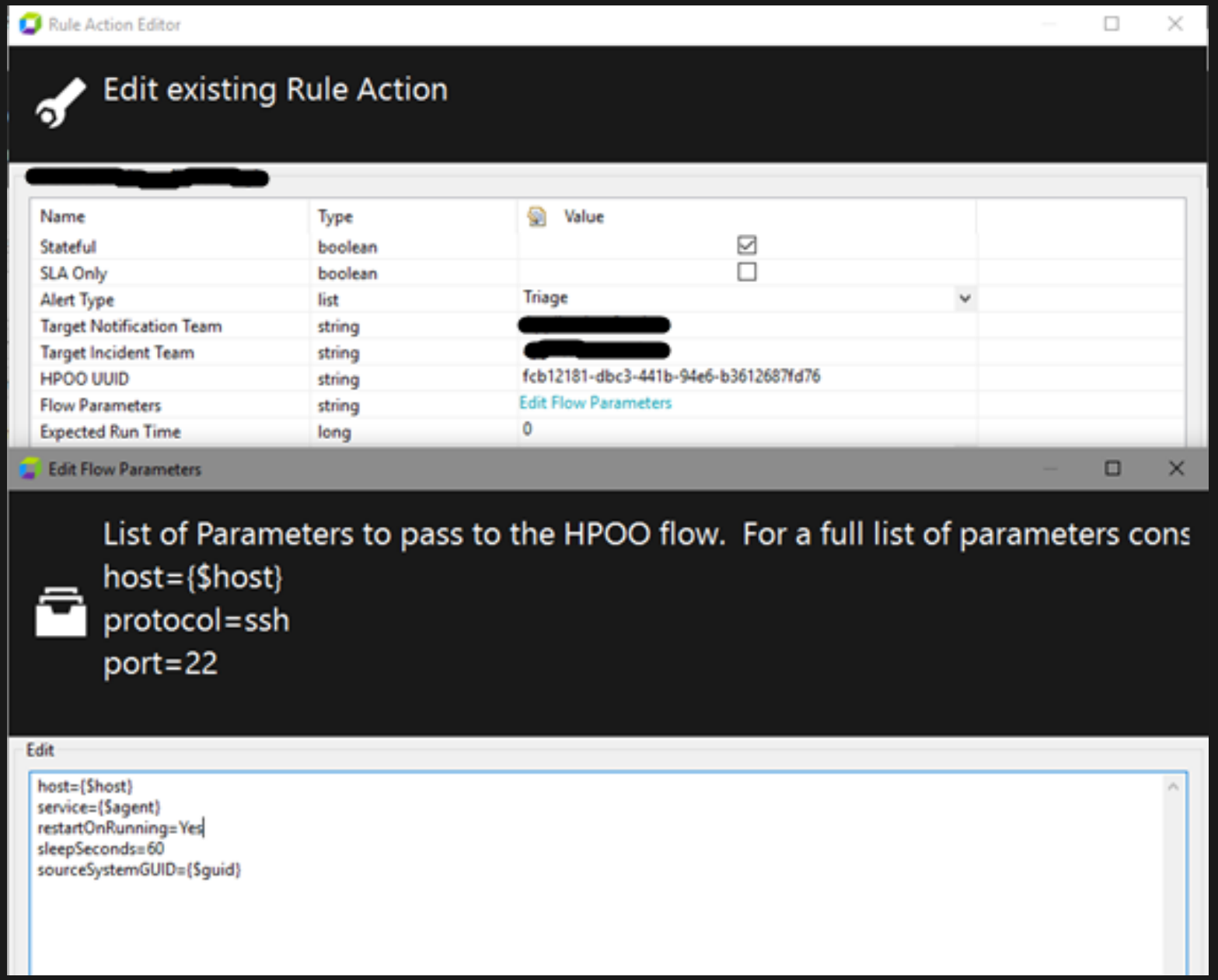
Remediation flow diagram



Remediation flow diagram



AppMon incident action config



Settings

Monitoring
Setup and overview
Monitoring overview
Monitored technologies

Process groups
Detection, naming & monitoring

Web and mobile monitoring
Global settings and configuration

Cloud and virtualization
Connect vCenter, OpenStack or AWS

Server-side service monitoring
Manage & customize service monitoring

Log analytics
Setup log-based events and log storage

Anomaly detection
Configure detection sensitivity

Alerting
Configure alerting settings

Integration
Integrate Dynatrace with 3rd party syste...
Problem notifications
Dynatrace API
Platform as a Service
Dynatrace modules
User session export

Integrate with other notification systems

Integrate Dynatrace problem notifications with your organization's existing incident-management system or team-collaboration channel. Please keep in mind that, for individual users, the Dynatrace mobile apps are the preferred method of receiving problem notifications, as your custom watch settings do not apply within 3rd-party systems integration.

OpsGenie
Integrate with an OpsGenie incident management platform.

VictorOps
Integrate with the VictorOps incident management platform.

PagerDuty
Integrate with the PagerDuty incident management platform.

Slack
Integrate with a Slack team collaboration channel.

HipChat
Integrate with a HipChat team collaboration chat.

ServiceNow
Integrate with a ServiceNow enterprise service management.

Email
Notify other systems via email.

JIRA
Integrate with JIRA to automatically create issues.

Trello
Integrate with Trello to automatically create cards on your board.

Custom integration
Integrate by building your own web hook.

Set up custom integration

Name

My auto remediation

Webhook URL

http://myURL/myRemediationEndpoint

Additional HTTP headers

+ Add header Create basic authorization header

Custom payload

```
{
"State":"{State}",
"ProblemID":"{ProblemID}",
"ProblemTitle":"{ProblemTitle}"
}
```

Alerting profile

FDITeam

Select an alerting profile to filter the problem feed.

My alerting profile

Done

Create one or more filter rules for this alerting profile. Problems are filtered based on severity level, tagged impact, and problem duration.

Create alerting rule

Rule	Delete	Edit
Availability alert (Immediate; All entities)		

Problem severity level

Availability

Send a notification if a problem remains open longer than 5 minutes.

Filter problems by tag

Include all entities

Cancel Save

Error alert (Immediate; All entities)		
Slowdown alert (Immediate; All entities)		
Resource alert (Immediate; All entities)		
Custom alert (Immediate; All entities)		

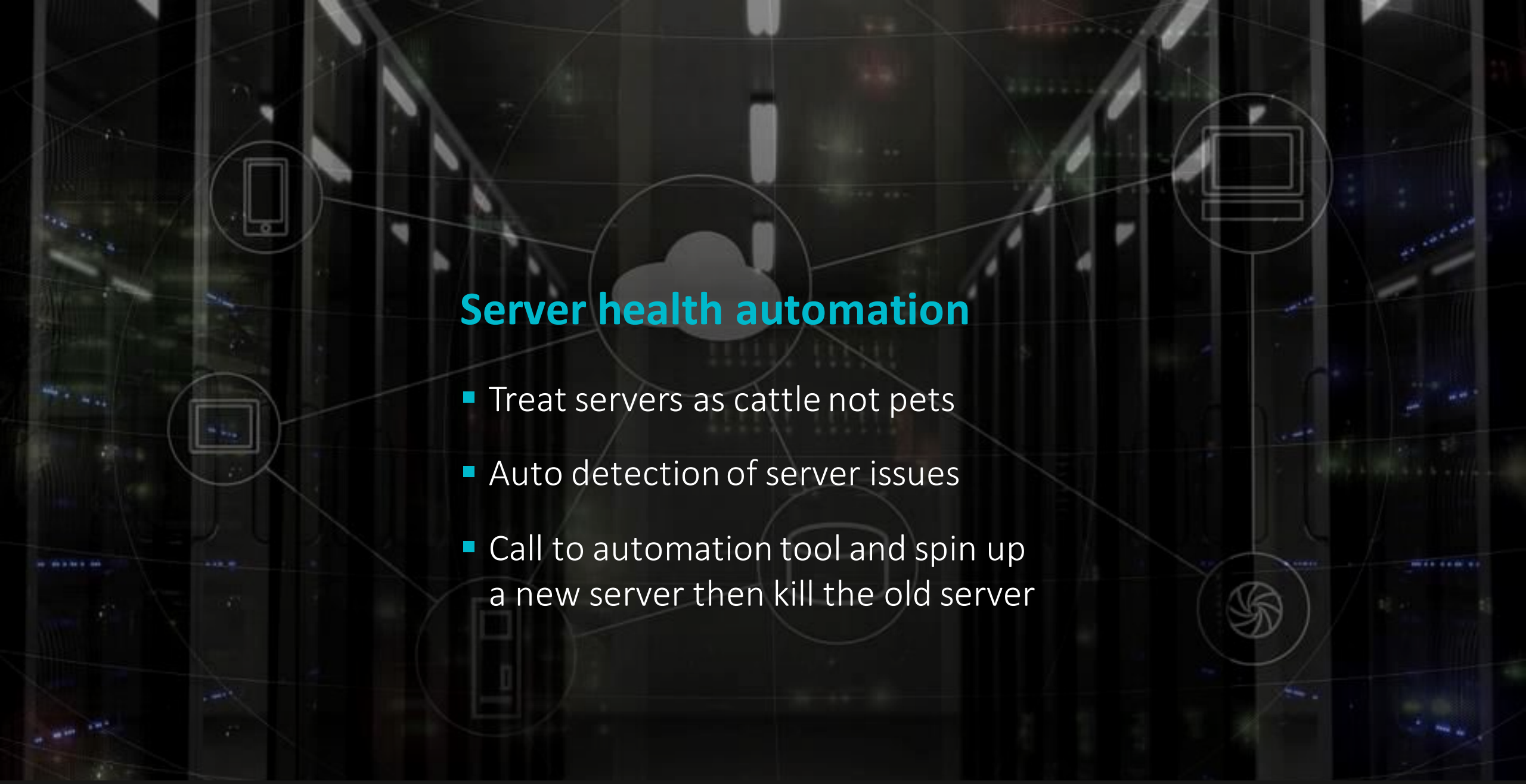
Reset to default

Assign profile to users

Alerting profiles can only be assigned to users who have logged into Dynatrace at least once.

Filter this table

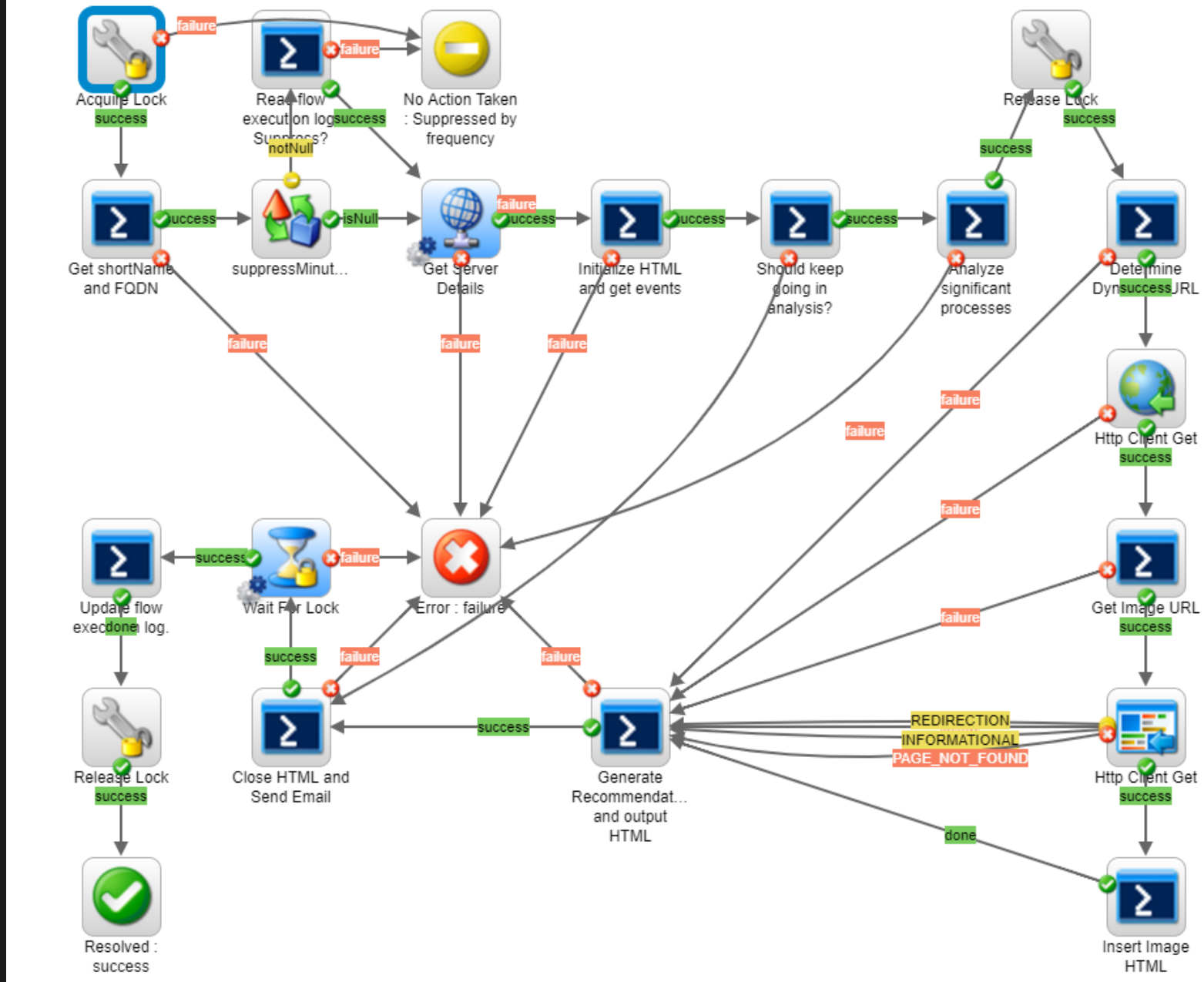
Enable	User
	thorsten.roth@ruxit.com



Server health automation

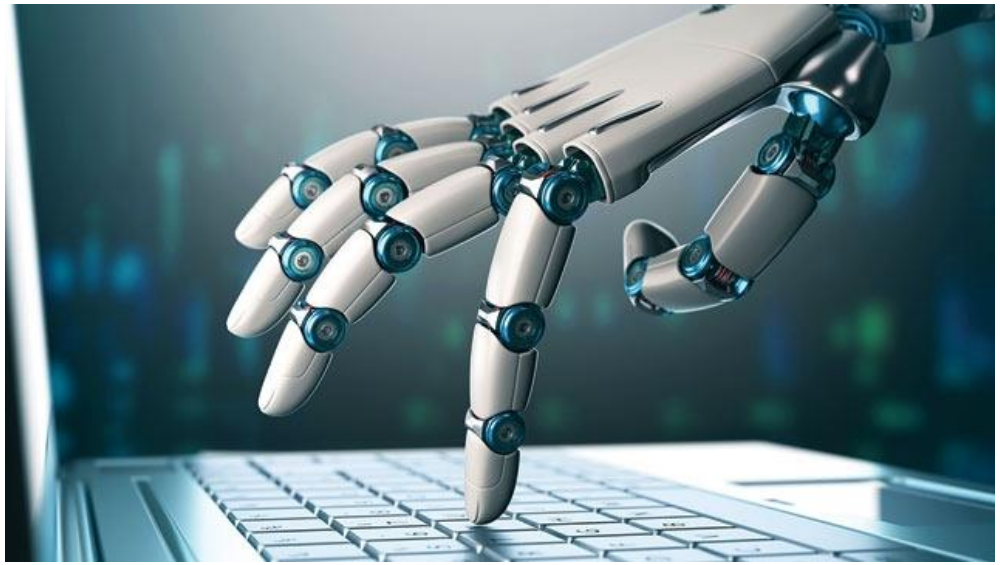
- Treat servers as cattle not pets
- Auto detection of server issues
- Call to automation tool and spin up a new server then kill the old server

Example HPOO flow – Resource exhaustion



Error automation

- Load Balancer cannot detect all issues an application may have
- Automatic detection of errors
- Call to automation tool can remove a server from the Load Balancer
  - Try restarting the server
  - If errors persist the server can be killed and replaced



Scalability automation

- Staying ahead of the load
- Baseline monitoring detects an abnormal load
- Call out to automation tool which adds new servers to config
- When incident ends a new flow to remove the servers is run

Applications

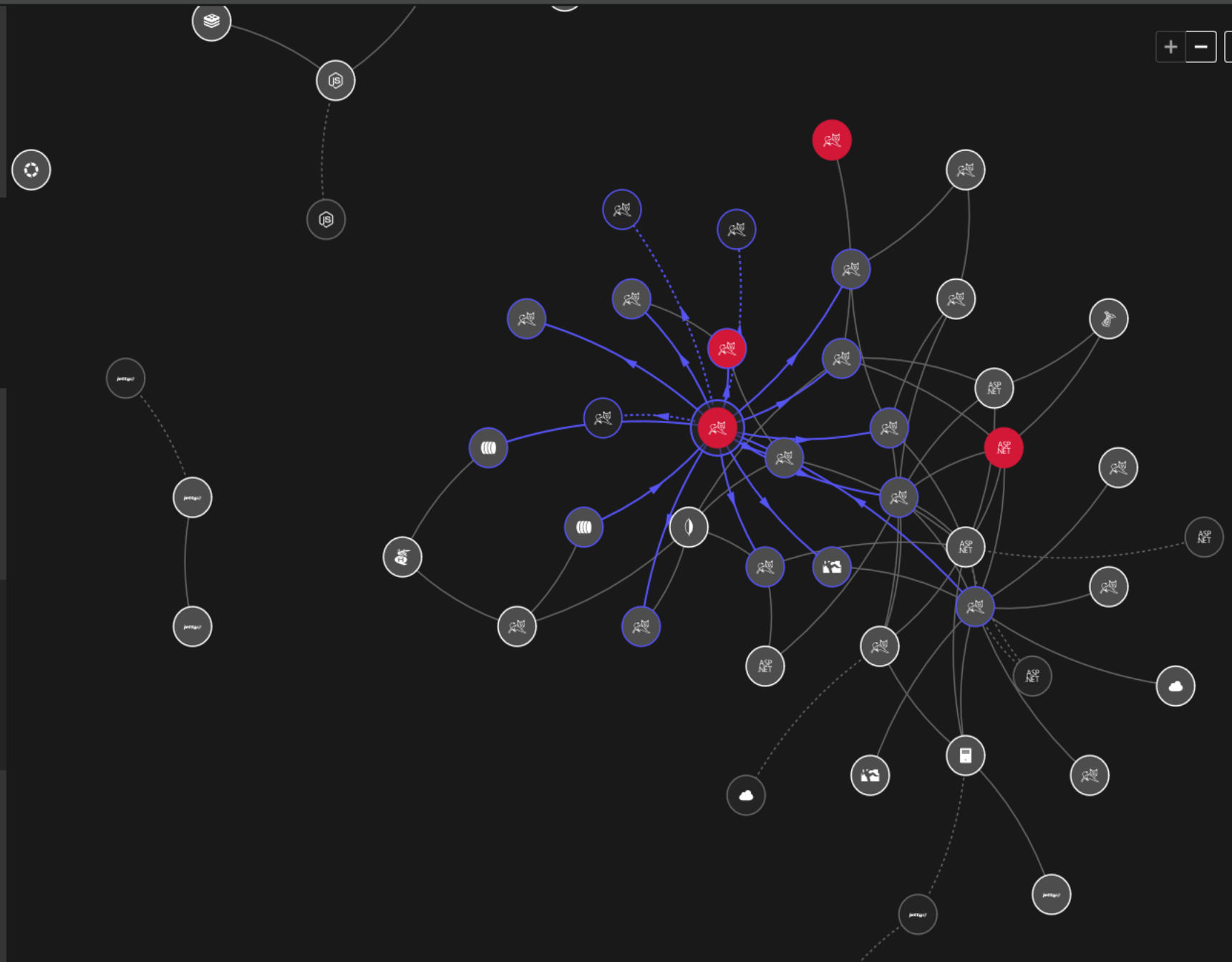
Services
4/58

dev: easyTravel Customer Frontend Web Request

Processes

Hosts

Data centers



dev: easyTravel Customer Frontend

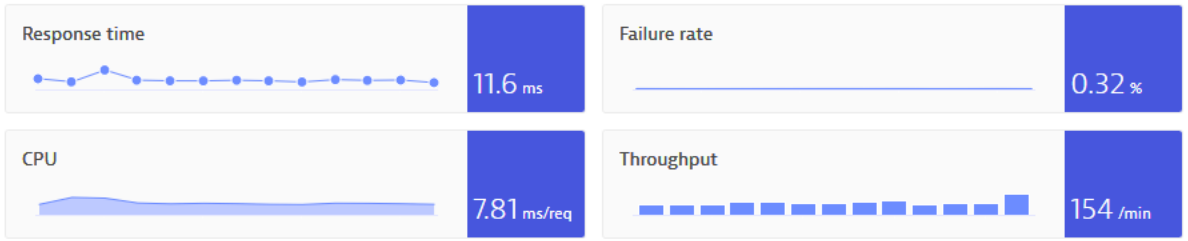
Seen recently

Smartscape view ···

Properties and tags

Andreas' Enviro... ✕ | SubenvA | Wolfgang ✕ | baba | 4 more...

Dynamic web requests



View dynamic requests

Resource requests

0.32 ms	0 %	0.5 ms/req	697 /min
Response time	Failure rate	CPU	Throughput

View resource requests

1 Problem

Today, 08:47 - 10:47

Frequent issue: **Response time degradation**

Dynatrace reports recurring problem patterns as "frequent issues." Alerts are sent out only if severity increases.

Problem 491: Multiple application problems

4 applications

Since 2018 Jan 15 00:31:00 (2 days 10 hours 16 minutes)

Problematic requests

Slow response time 454 ms
/CalculateRecommendations

Slow response time 1.13 s
/orange-booking-payment.jsf

Multi-dimensional analysis views

Create

This section will list your bookmarked multi-dimensional analysis views for this service. Click Create to start.

Understand dependencies

Today, 08:47 - 10:47

Understand all dependencies and response time contributions

View service flow

Understand which user actions and related services are dependent on this service

Analyze backtrace

Search ruxitdev@ruxit.com: easyTra

6

Problems > Problem 491

Maintenance: be77088a-8

4 applications: Multiple a

Problem 491 detected at Jan 15 00:31 (oper

This problem affects real users.

- Applications
- Services
- Infrastructure components

Business impact analysis

An analysis of all affected service calls and impact impact.

135 Impacted users

3.49k Affected

4 impacted applications

64.6 User actions per minute impacted

easytravel-bf.lab.dynatrace.org/

Synthetic monitor / Healthy again for 1 day 18

Synthetic monitor global outage

1 Failure

Actions

Loading of https://easytravel-bf.lab.c

Type

503 Service unavailable

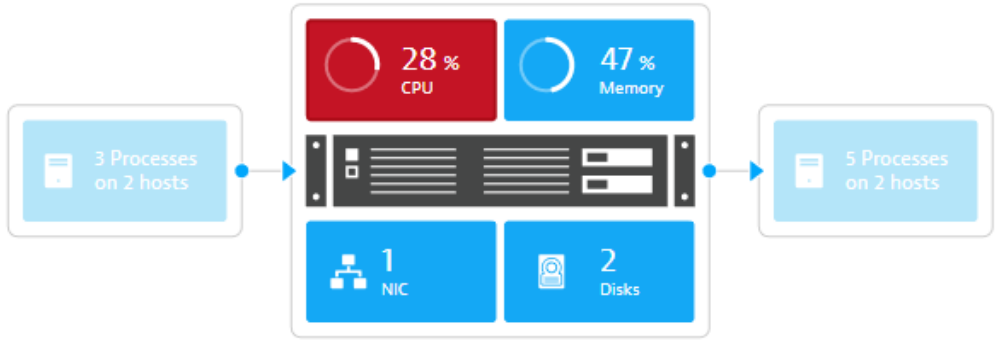
lr-ub-l04v

Uptime: over 9 days

Analyze process connections ...

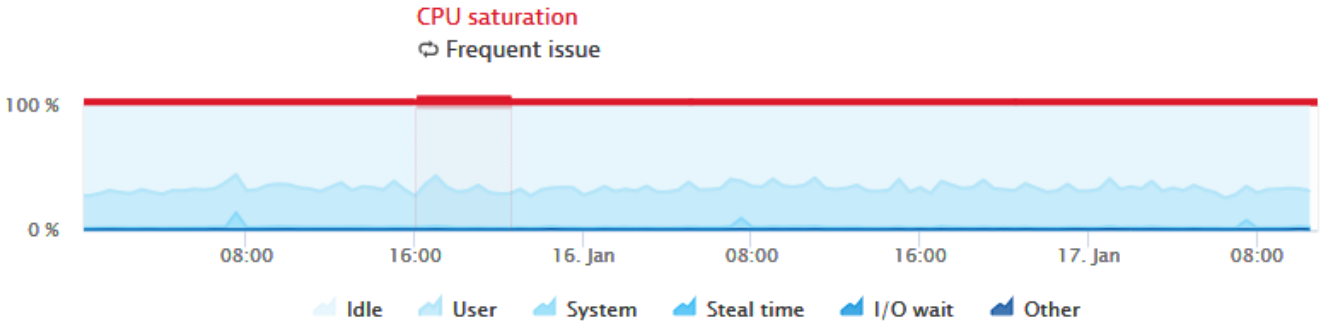
Properties and tags

SubenvA | Tag for lr-ub-l04 | aaakaro2 | dadada | dynatrace-dev | watched-by-de... | more...

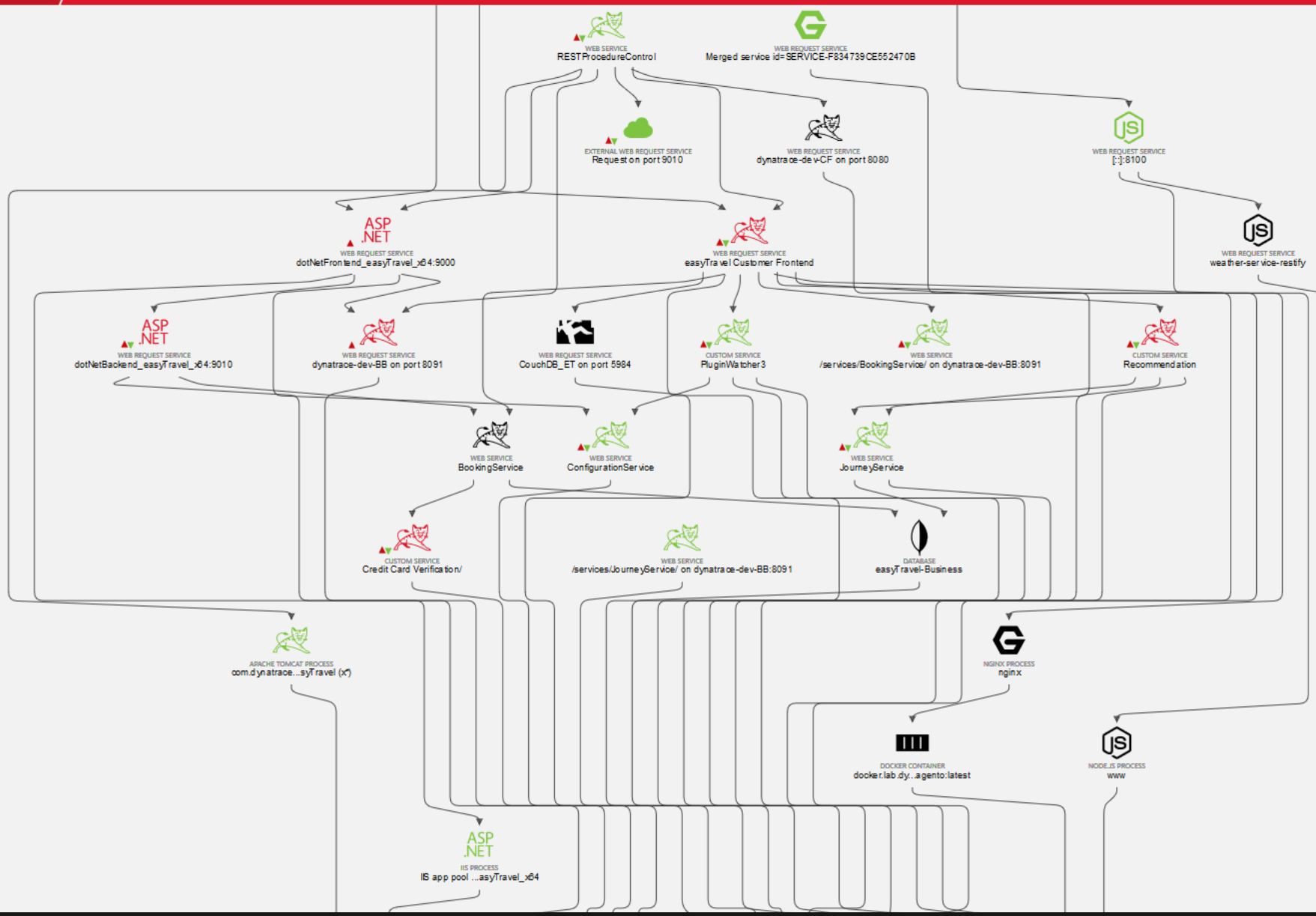


CPU usage 28 % | Physical CPU | CPU ready time

Actively used CPU of the host as a percentage of available CPU.

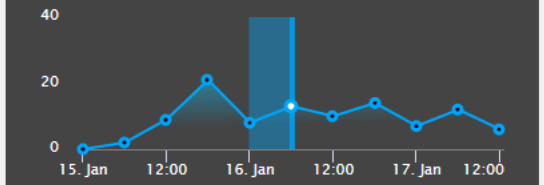


Consuming processes



Replay

Problem evolution



2018-01-16 00:00 - 06:00 | 13 ongoing events in 1 component

Trend ▲ 30 ▼ 25

Apache Tomcat process
dynatrace-dev-CF
- ▲ TCP connectivity rate for process dynatrace-dev- ...
- ▲▼ TCP connectivity rate for process dynatrace-dev- ...

Apache Tomcat process
dynatrace-dev-CF
- ▲ TCP connectivity rate for process dynatrace-dev- ...
- ▲▼ TCP connectivity rate for process dynatrace-dev- ...

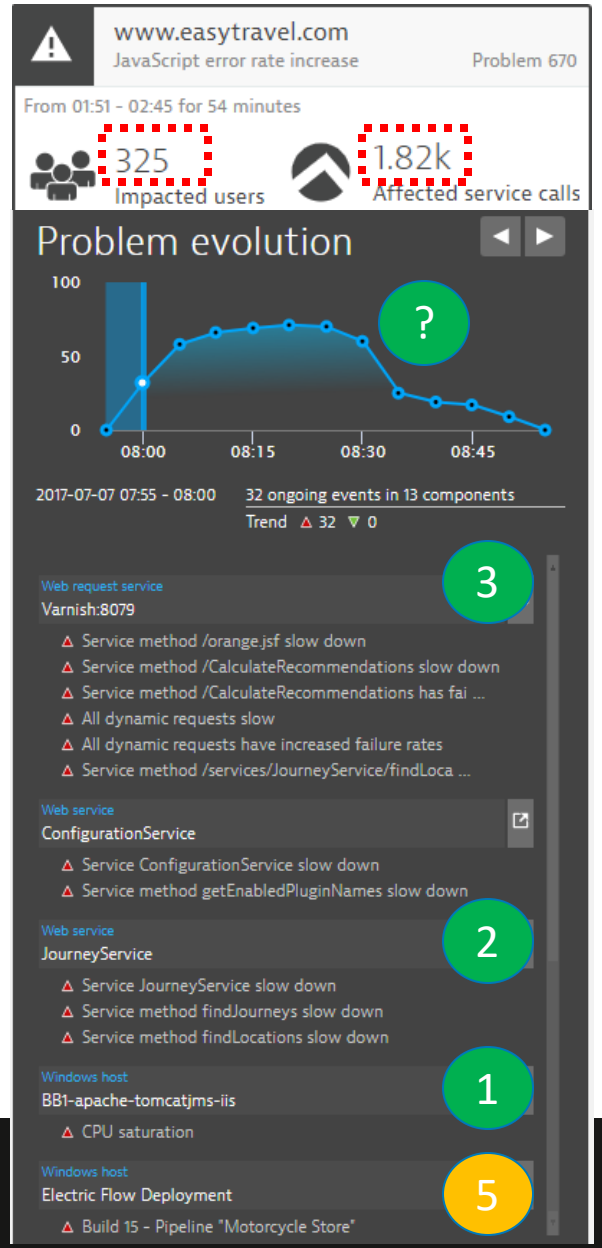
Custom service
Credit Card Verification/
- ▲ Service Credit Card slow down
- ▲▼ Service Credit Card slow down
- ▼ Service Credit Card slow down

Custom service
PluginWatcher3
- ▲▼ Service PluginWatcher3 slow down
- ▲▼ Service method PluginRefreshThread.retrieveEnabl ...

Custom service
Recommendation
- ▲ Service dev-CF: Recommendation slow down
- ▲ Service method RecommendationBean.run slow down
- ▼ Service method RecommendationBean.run slow down
- ▼ Service dev-CF: Recommendation slow down

External web request service
Request on port 9010
- ▲▼ All dynamic requests slow

Improve MTTR: Automate Mitigate with AI Data



Escalate at 2AM?

Auto Mitigate!

1 *CPU Exhausted?* Add a new service instance!

2 *High Garbage Collection?* Adjust/Revert Memory Settings!

3 *Hung threads?* Restart Service!

? *Impact Mitigated?* → Update Dev Tickets

5 *Still ongoing?* Initiate Rollback! → Mark Bad Commits

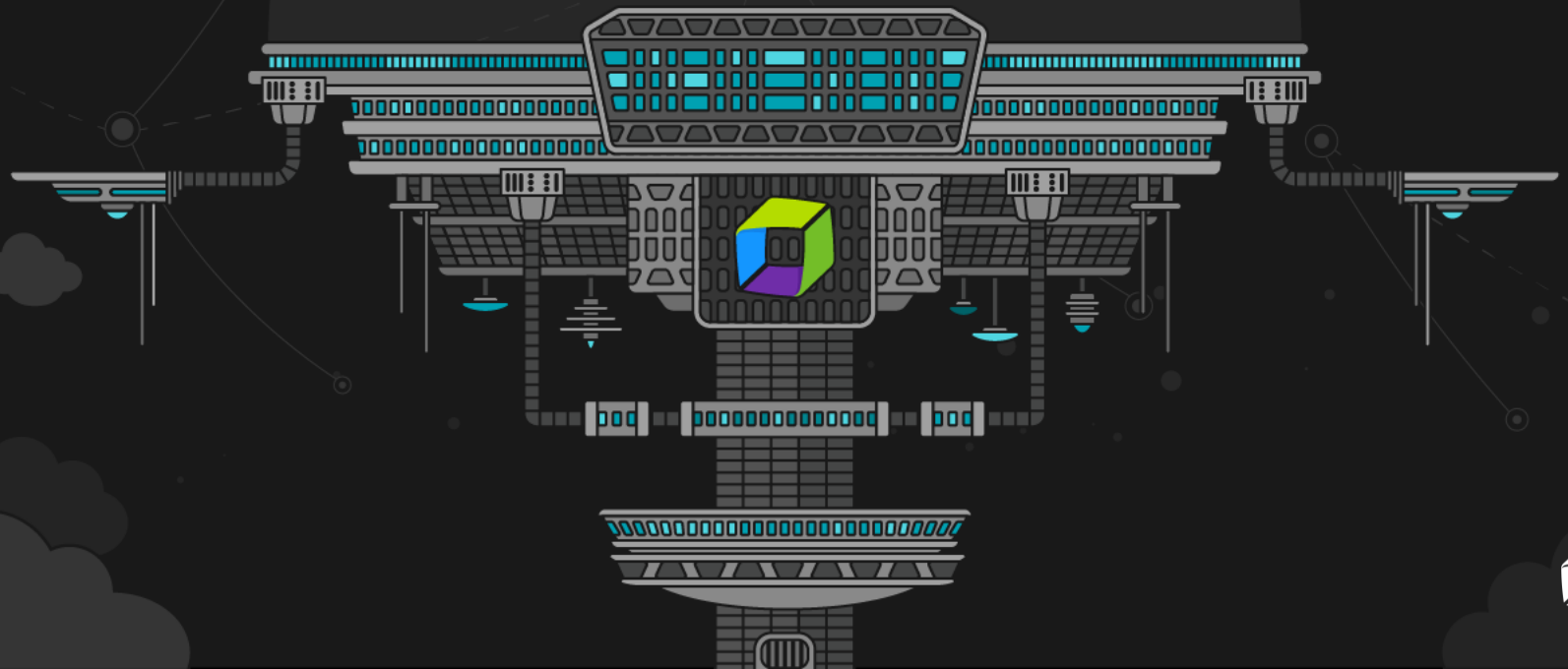
? *Still ongoing?* → Escalate

Key takeaways

- Threshold based monitoring does not work in the cloud
- Alerts should be applied to all applications
- Automation, Automation, Automation

OPEN Q&A

Thank you



dynatrace