



# Shift-Left SRE: Selbst-heilende Applikationen auf OpenShift mit Ansible

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@jettlstorfer



#RHForum



A relentless pursuit of software perfection



1600 Employees



5000 Enterprise Customers



79 of the Global 100



Cloud providers



Banks



Retailers



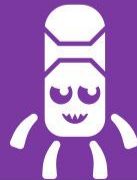
Manufacturers



Tech brands

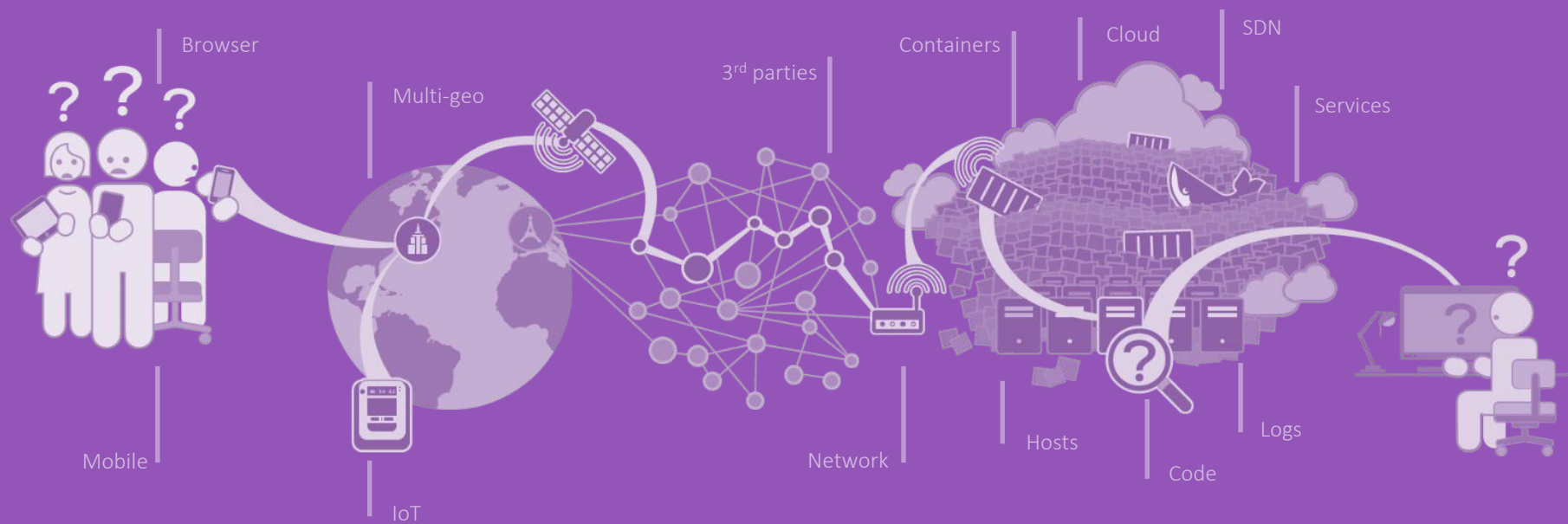
If you write applications,  
they will break eventually

~ Murphy's law

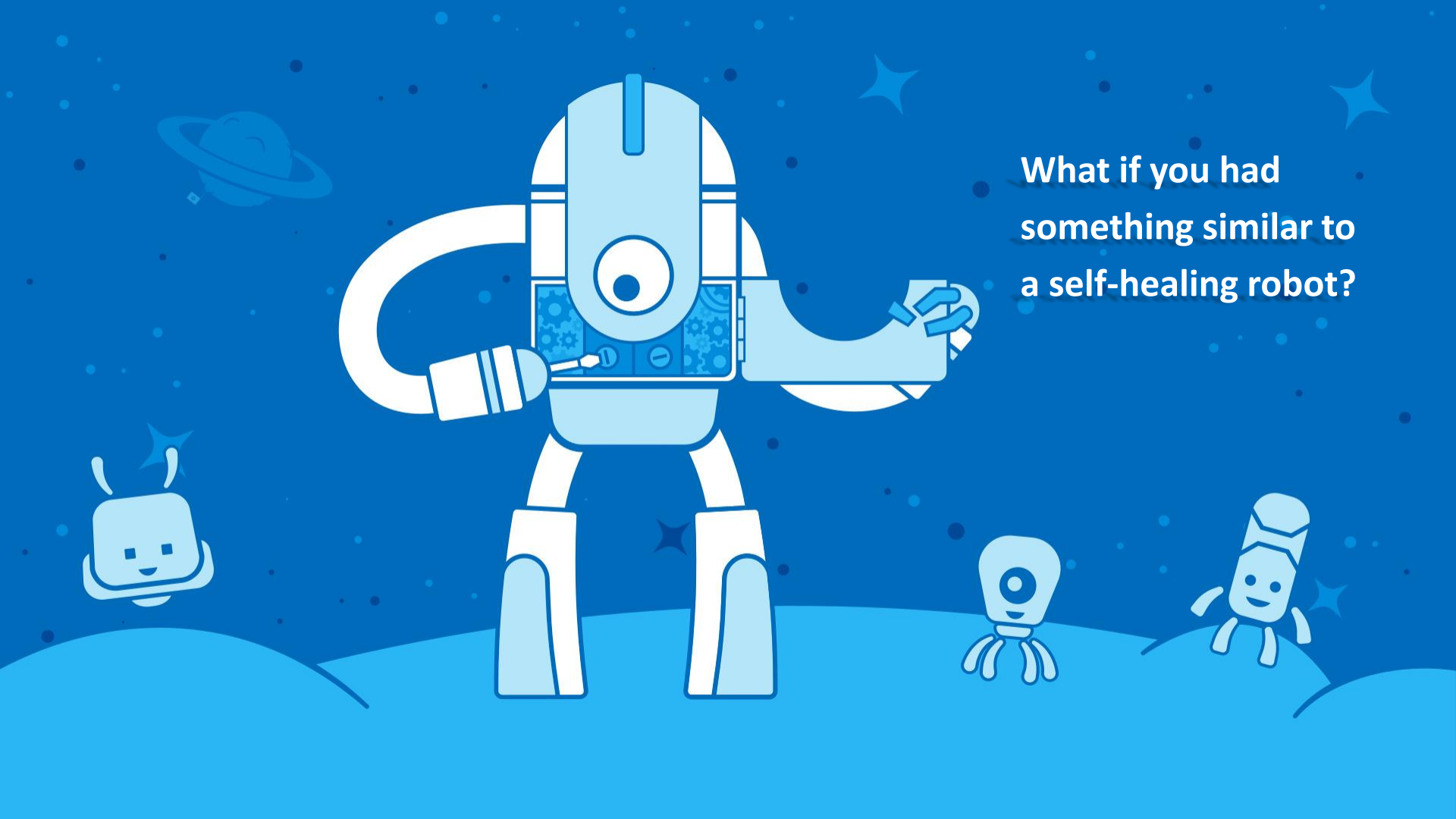


# Applications are getting more complex!

On average, a single transaction uses 82 different types of technology



**What if you had  
something similar to  
a self-healing robot?**

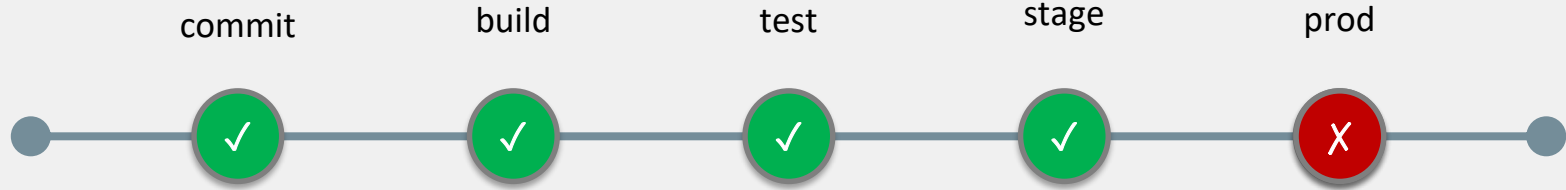




# Building auto-remediation into your pipeline

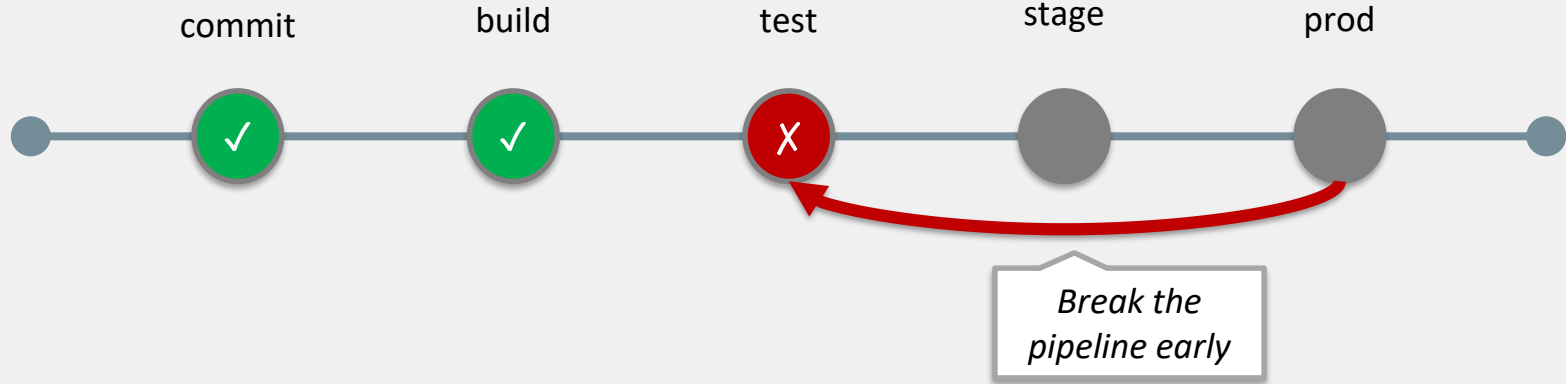


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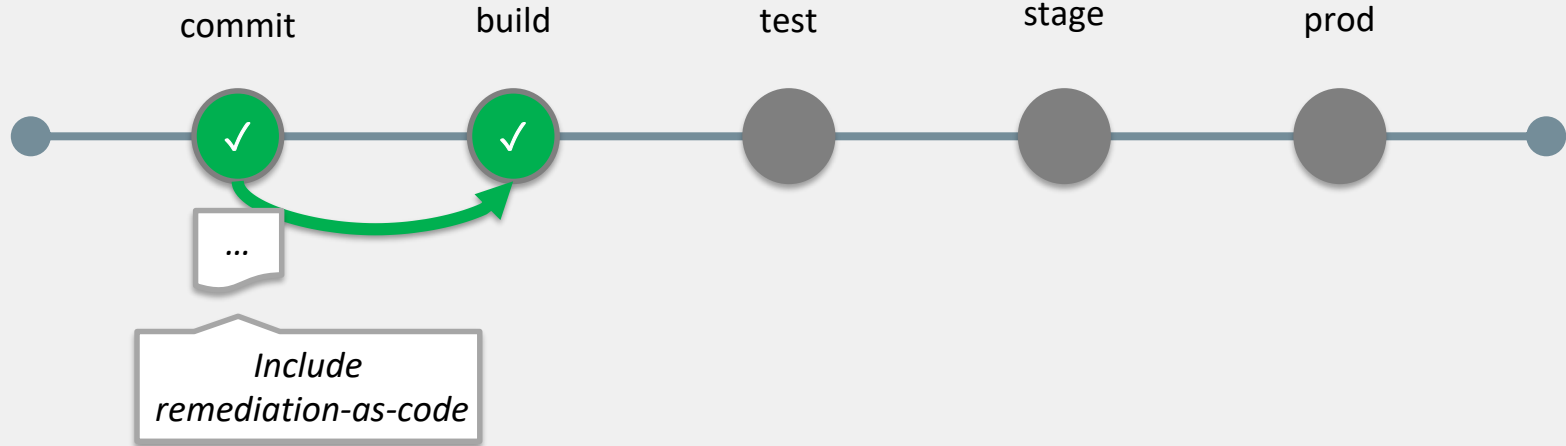




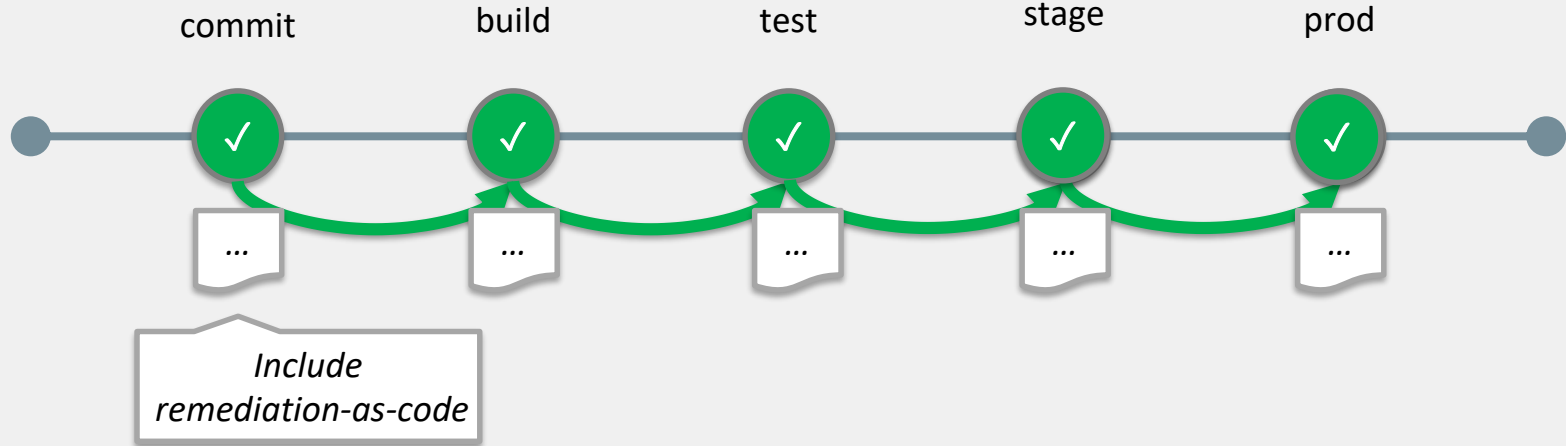
# Building auto-remediation into your pipeline



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# Building auto-remediation into your pipeline



# Self-healing Applications

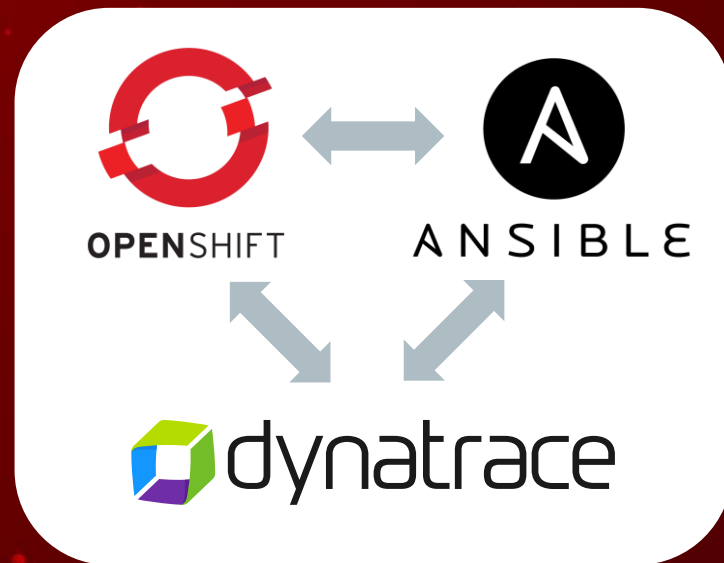
OpenShift Container Platform

+

Ansible Automation

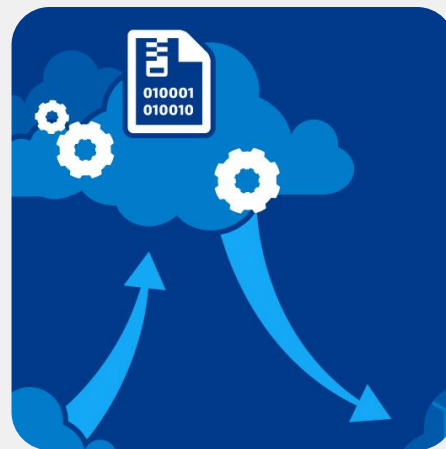
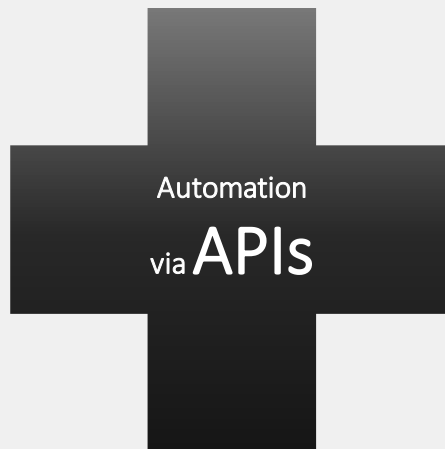
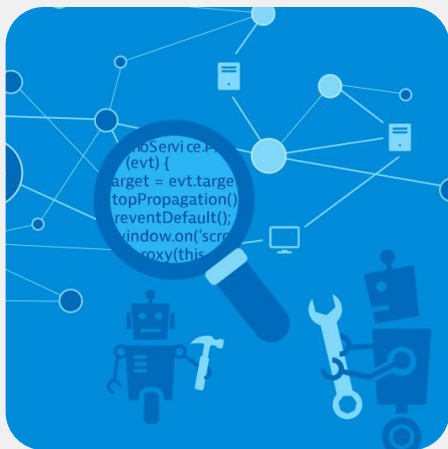
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Dynatrace Software Intelligence



## Self-healing building blocks

- **Monitoring:** know what's going on in your applications
  - End-to-end
  - Full-stack – fully integrated in production
- **Automation/Execution:** perform mitigation/remediation actions
  - Access to all systems





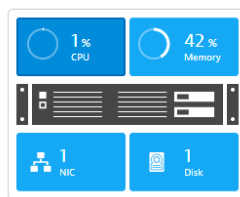
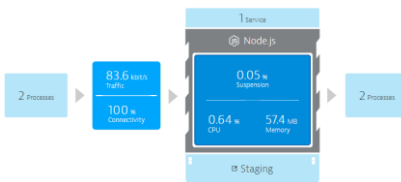
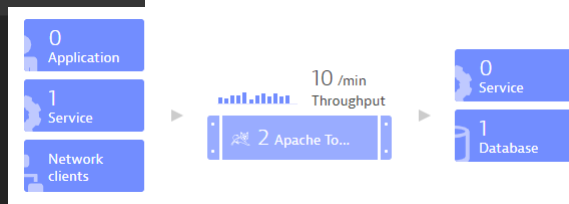
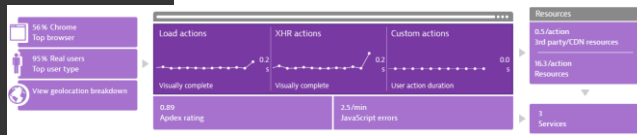
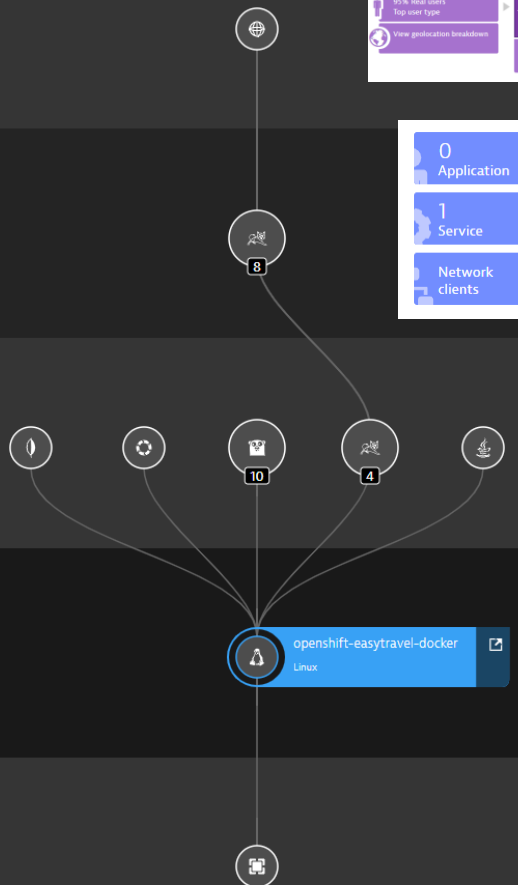
### Applications

### Services

### Processes

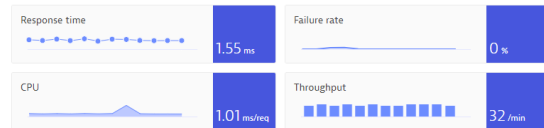
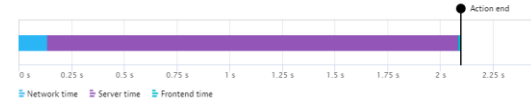
### Hosts

### Data centers



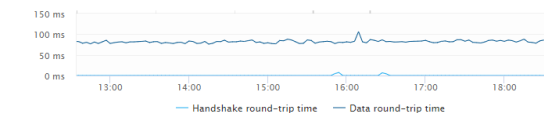
### Contributors breakdown

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

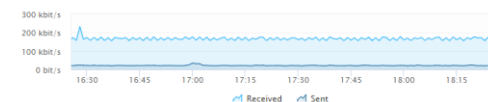


### Round-trip time

Estimated delay in packet transit introduced by network



Average rate at which data was transmitted during the interval. Right axis represents percentage of bandwidth usage.



### Latency

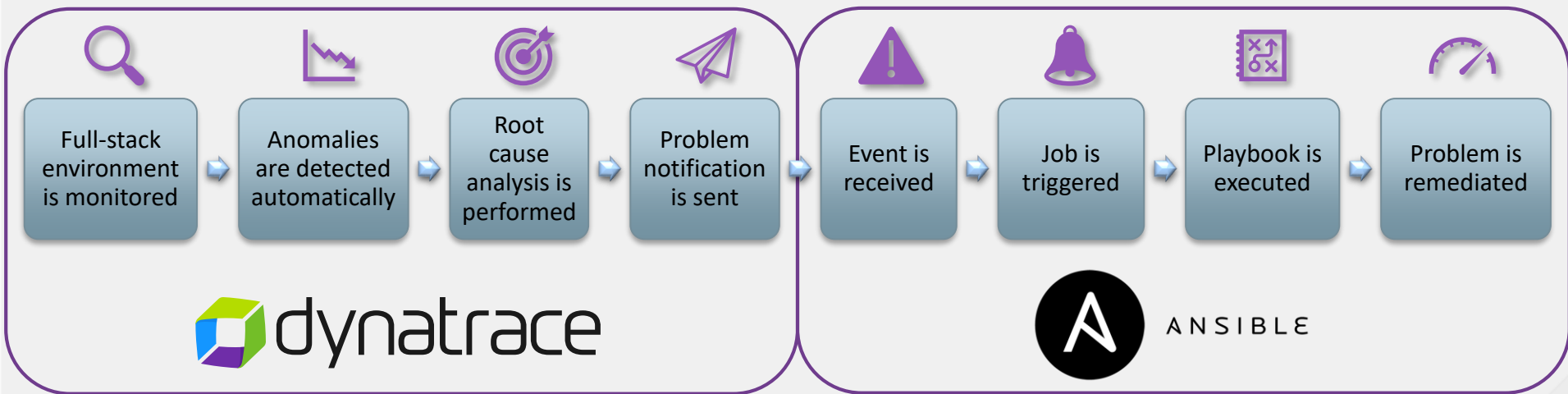


# Self-healing with Ansible Tower and Dynatrace

- APIs are key to enable automation
- Ansible Tower provides rich API for managing Ansible jobs
- Playbooks can be orchestrated in workflows and job templates

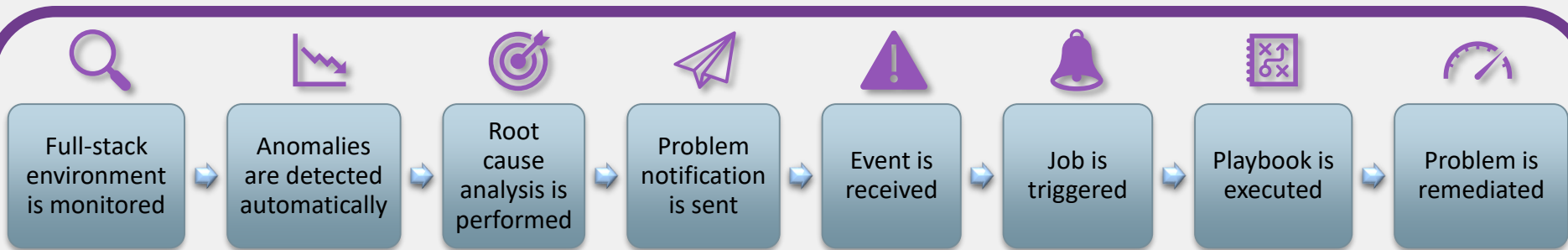


# How to enable **auto-remediation**

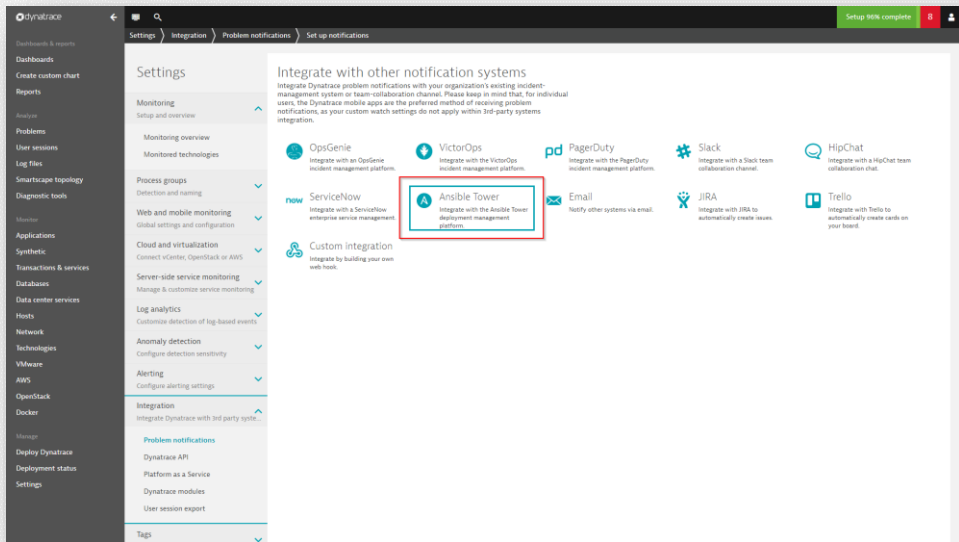




# How to enable **auto-remediation**



# Ansible Tower integration in Dynatrace



# Ansible Tower integration in Dynatrace

The image displays two screenshots of the Dynatrace web interface. The left screenshot shows the 'Integrate with other notification systems' page, where 'Ansible Tower' is highlighted with a red box. The right screenshot shows the 'Set up Ansible Tower integration' configuration page. In this page, the 'Ansible Tower job template URL' field is highlighted with a red box, containing the value: `https://ansible-tower-server.example.com/templates/job_templates/1`. Below this, there is a checkbox for 'Accept any SSL certificate (including self-signed and invalid certificates)'. The 'Alerting profile' dropdown is set to 'Infrastructure Alert'. At the bottom, there are buttons for 'Send test notification', 'Save', and 'Cancel'.

# Ansible Tower integration in Dynatrace

The image displays a multi-panel screenshot illustrating the integration of Ansible Tower with Dynatrace. The leftmost panel shows the Dynatrace 'Settings' interface, specifically the 'Integrate with other notification systems' section. The 'Ansible Tower' option is highlighted with a red box. The middle panel shows the 'Set up Ansible Tower' configuration page, where the 'Process restart remediation' job template is selected. A red box highlights the 'Accept any SSL certificate (insecure)' checkbox. The rightmost panel shows the Ansible Tower 'Integration Test' results for a job named '3788 - integration test'. The job status is 'Successful'. A red box highlights the 'EXTRA VARIABLES' section, which contains the following configuration:

```
EXTRA VARIABLES
  -
  - ImportedEntities:
    -
    - type: "PROCESS_UNAVAILABLE", name: "apache web"
      entity: "PROCESS-GROUP-INSTANCE-00000000000000000000"
    - ImportedEntity:
      - ImportedEntityName:
        - process.unavailable
```

The job output shows the following steps:

```
1 Identity added: /tmp/aw_3788_0586ni/credential_4 (/tmp/aw_3788_0586ni/credential_4)
2 [WARNING]: Found variable using reserved name: tags
3
4
5 PLAY [all] *****
6
7 TASK [gathering Facts] *****
8 ok: [52.39.227.172]
9
10 TASK [common : update apache] *****
11 changed: [52.39.227.172]
12
13 TASK [common : rollback apache] *****
14 changed: [52.39.227.172]
15
16 PLAY RECAP *****
17 52.39.227.172 | ok=3 | changed=0 | unreachable=0 | failed=0
18
```

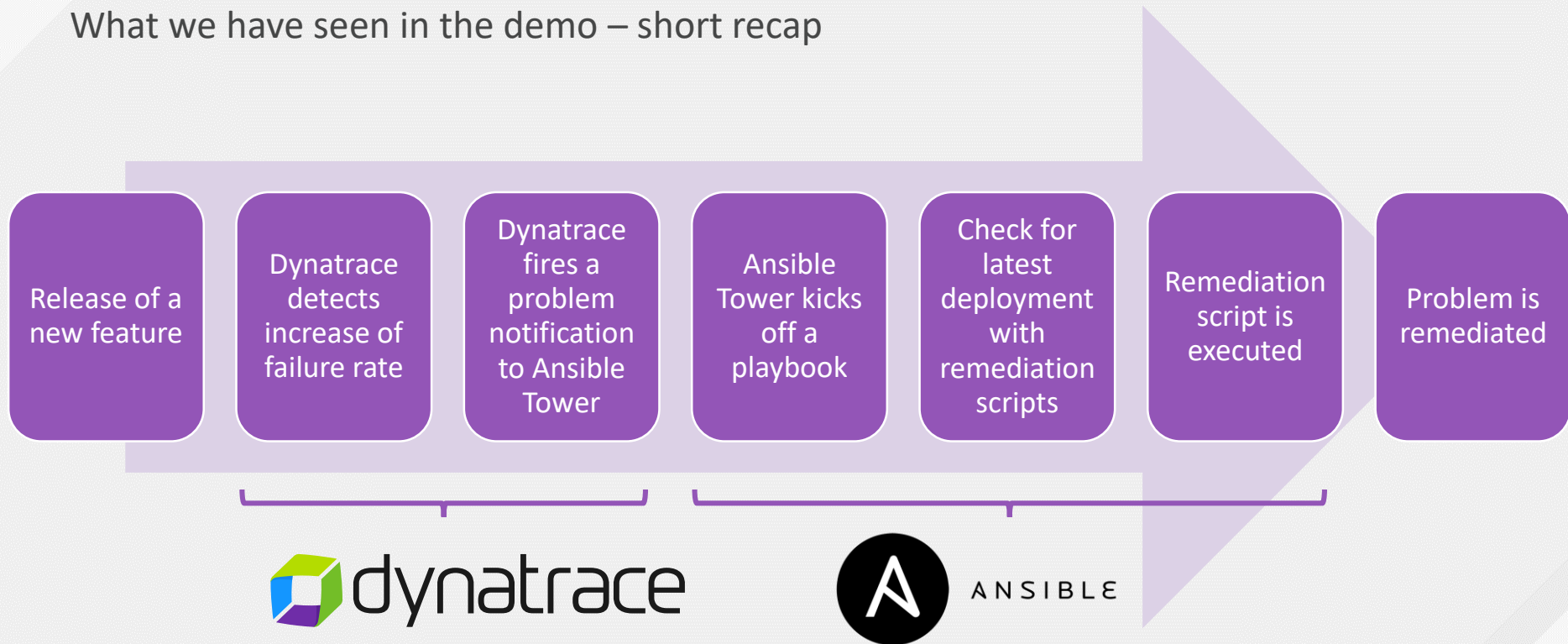
## What we will see in the demo

- TicketMonster application running on OpenShift
- Full-stack, end-to-end monitoring by Dynatrace
- Feature release via Ansible Tower
- Auto-remediation as code (Ansible playbooks)

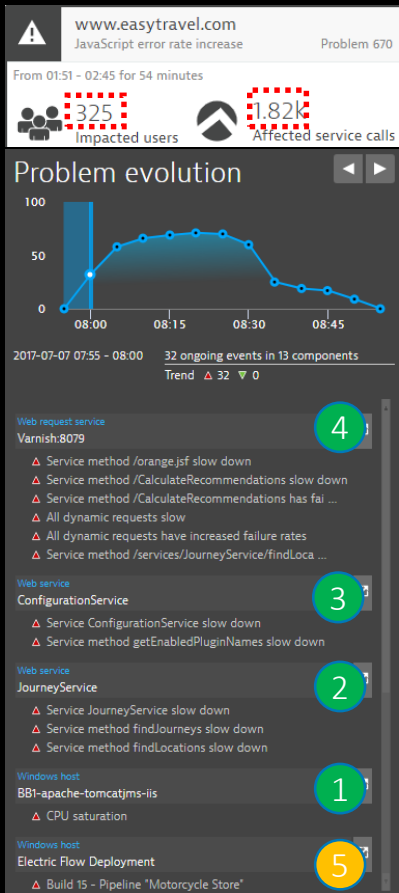


**DEMO TIME :)**

## What we have seen in the demo – short recap



# Self-healing in an enterprise environment



Escalate at 2AM?



Auto Mitigate!

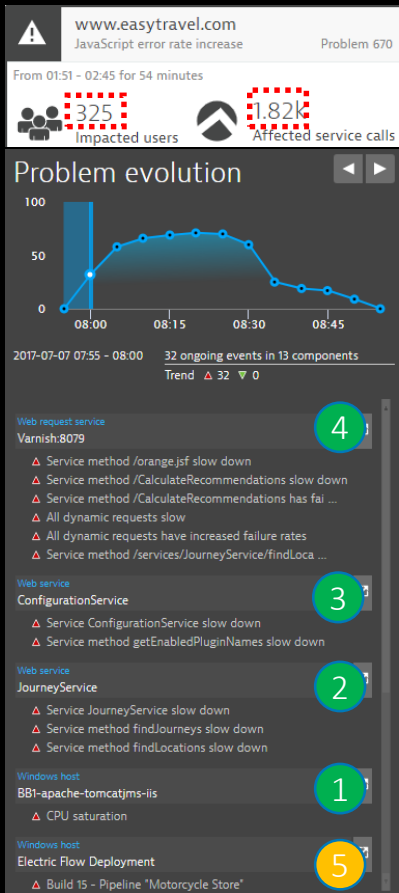


1

CPU Exhausted? Add a new service instance!



# Self-healing in an enterprise environment



Escalate at 2AM?



Auto Mitigate!

A



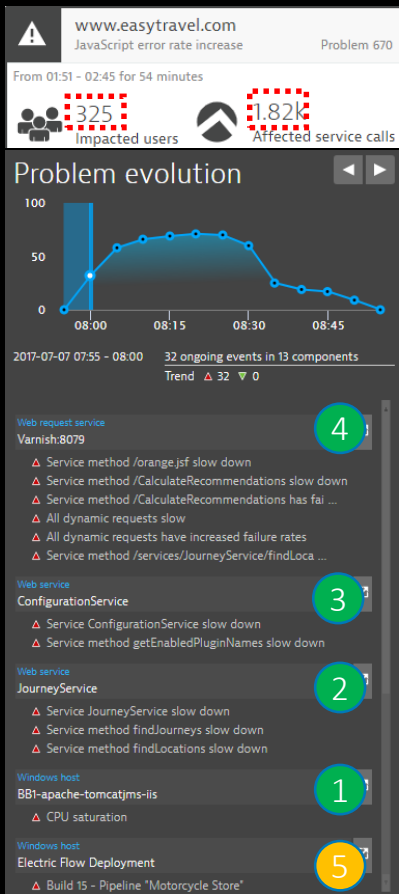
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CPU Exhausted? Add a new service instance!

2

High Garbage Collection? Adjust/Revert Memory Settings!

# Self-healing in an enterprise environment



Escalate at 2AM?



Auto Mitigate!

A



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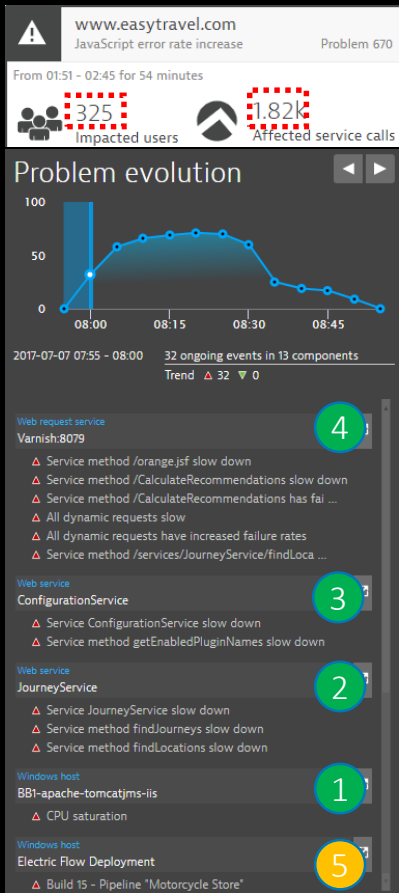
2

High Garbage Collection? Adjust/Revert Memory Settings!

3

Issue with BLUE only? Switch back to GREEN!

# Self-healing in an enterprise environment



Escalate at 2AM?



Auto Mitigate!

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

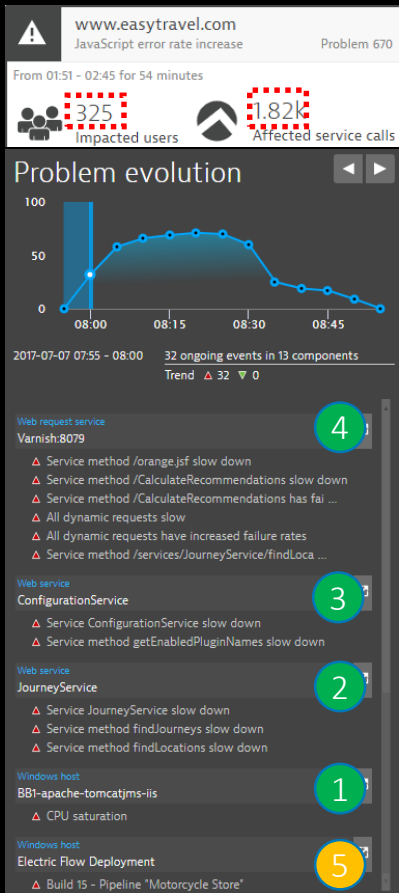
3

*Issue with BLUE only?* Switch back to GREEN!

4

*Hung threads?* Restart Service!

# Self-healing in an enterprise environment



Escalate at 2AM?



Auto Mitigate!

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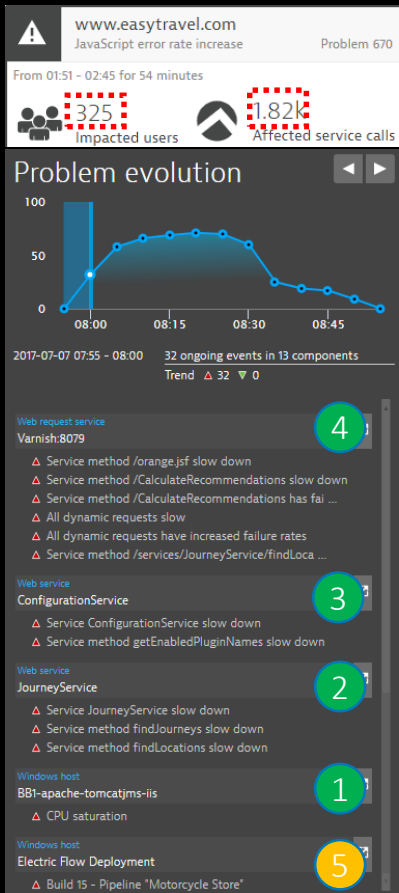
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Impact Mitigated?

Update Dev Tickets



# Self-healing in an enterprise environment



Escalate at 2AM?



Auto Mitigate!

1



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High Garbage Collection? Adjust/Revert Memory Settings!

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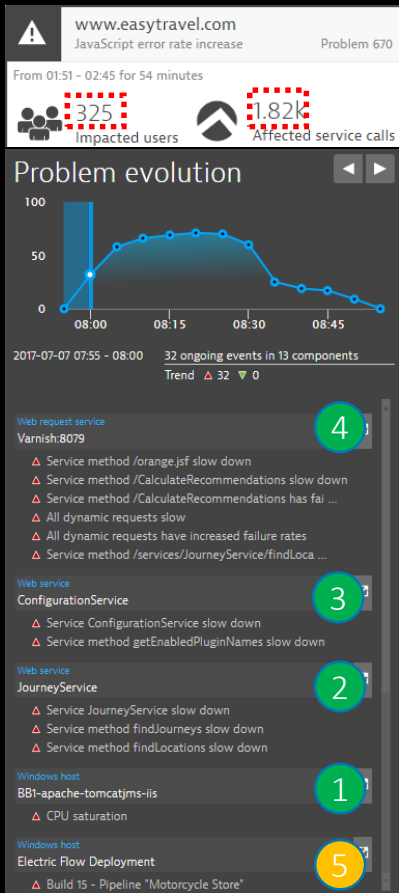
5

Still ongoing? Initiate Rollback!

Mark Bad Commits



# Self-healing in an enterprise environment



Escalate to 2AM?



Auto Mitigate!

A



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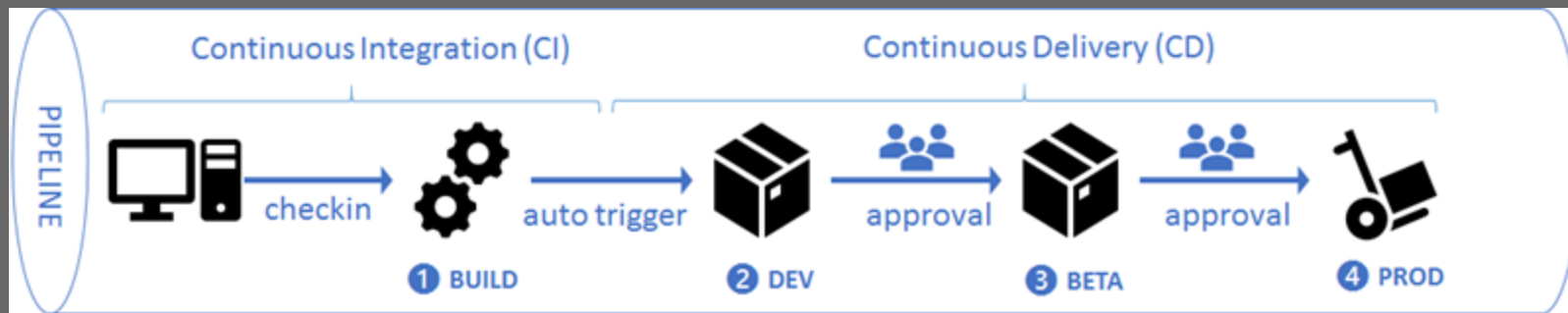
?

Still ongoing?

Escalate

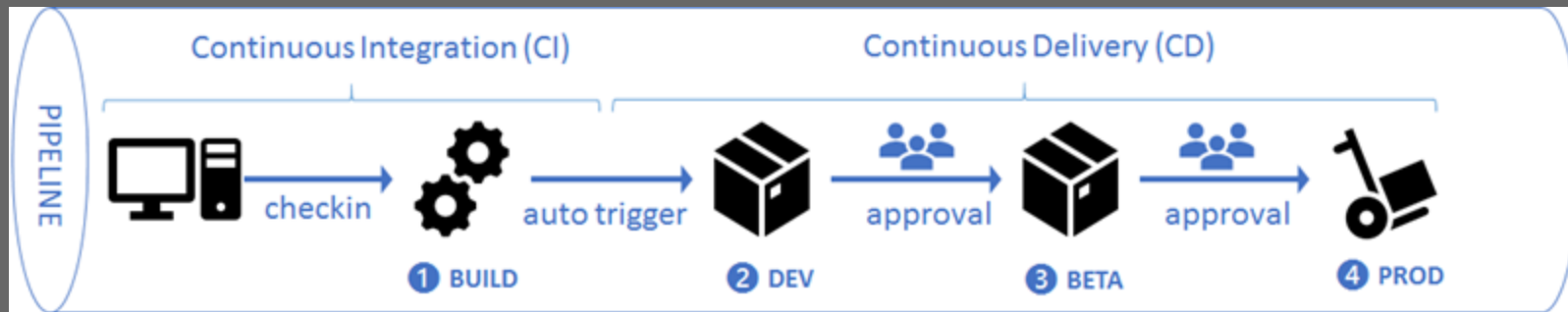


## Embed auto-remediation in your CI/CD pipeline



# Embed auto-remediation in your CI/CD pipeline

Shift-Right: Tags, Deploys, Events



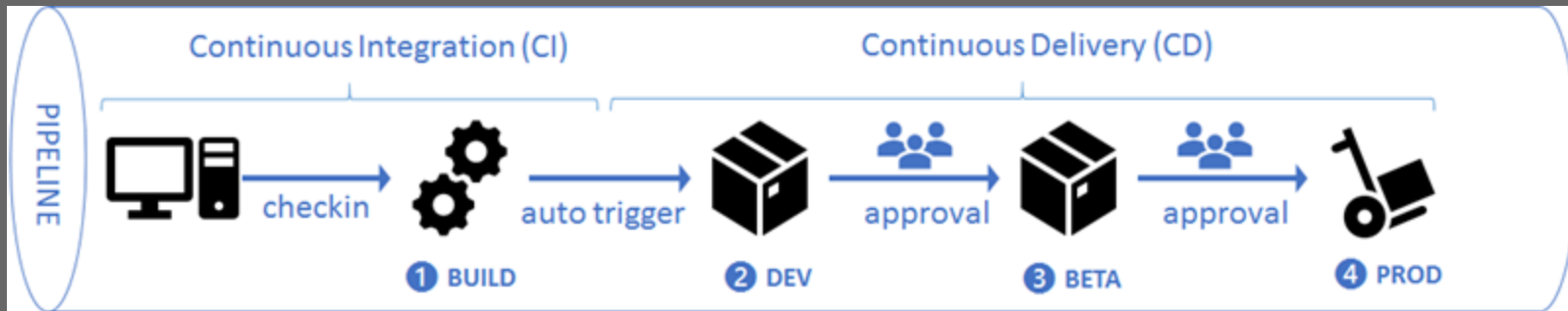
Path to NoOps: Self-Healing, ...



# Embed auto-remediation in your CI/CD pipeline

Shift-Left: Break Pipeline Earlier

Shift-Right: Tags, Deploys, Events



Actionable Feedback Loops

Path to NoOps: Self-Healing, ...



Red Hat® Ansible® Tower makes it easy to scale automation, manage complex deployments and speed productivity. Extend the power of Ansible with workflows to streamline jobs and simple tools to share solutions with your team.

ANSIBLE OVERVIEW PRODUCTS RESOURCES COMMUNITY

## INTEGRATION: ANSIBLE AND DYNATRACE



REQUEST MORE INFO

### DYNATRACE PLATFORM

Dynatrace is an intelligent, fully-automated monitoring and analytics platform for cloud native applications and architectures. Using artificial intelligence, Dynatrace automatically tracks and analyzes everything from the browser to the application code, including the network.

Dynatrace provides the answers DevOps teams need to quickly identify performance issues, and works with automation tools such as Ansible to fix them.

### AUTOMATE THE REMEDIATION OF PERFORMANCE ISSUES

Using the Dynatrace platform to identify the problem is the first step towards resolution. Remediation of the issue can be automated by Ansible, following your pre-defined processes, at the application layer, Infrastructure layer or

### ANSIBLE USE CASES

- Provisioning
- Configuration Management
- App Deployment
- Continuous Delivery
- Security & Compliance
- Orchestration

### ANSIBLE INTEGRATIONS

- Infrastructure
- Networks
- Containers
- Cloud

Set up Ansible Tower with Dynatrace to enable your self-healing applications

## THE INSIDE PLAYBOOK

### ENABLE SELF-HEALING APPLICATIONS WITH ANSIBLE AND DYNATRACE

April 13, 2018 by Jürgen Eitzinger

Successful development systems built on elastic infrastructures are constantly being updated. Dynatrace, however, applications, services are detected.

### Connect A

This blog post explains how to connect Ansible Tower and Dynatrace. We'll guide you through the process and show you how to get up and running.

- How to set up Ansible Tower
- How to configure Dynatrace

The size, complexity and high rate of change in today's IT environments can be overwhelming. Enabling the performance and availability of these modern microservice environments is a constant challenge for IT organizations.

One trend contributing to this rate of change is the adoption of IT automation for provisioning, configuration management and ongoing operations. For this blog, we want to highlight the repeatable and consistent outcomes allowed by IT automation, and explore what is possible when Ansible automation is extended to the application monitoring platform Dynatrace.

Thanks to Jürgen Eitzinger for giving us an overview of the Ansible and Dynatrace integration.

<https://www.ansible.com/blog/enable-self-healing-applications-with-ansible-and-dynatrace>

<https://www.dynatrace.com/news/blog/set-up-ansible-tower-with-dynatrace-to-enable-your-self-healing-applications/>

# OpenShift Dynatrace

*“Beyond years of industry knowledge in the APM space, Dynatrace offers one of the best solutions I’ve seen for monitoring applications running on OpenShift. What really distinguishes them from others is the use of artificial intelligence based root-cause analysis. OpenShift is a platform to allow you to run decoupled services and applications, which can be a monitoring nightmare, but Dynatrace’s insights makes it less scary.”*

**Chris Morgan, Technical Director** – Red Hat OpenShift Ecosystem



Thank you Vienna!

Jürgen Ettlstorfer, Technology Strategist



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