

# ChatOps for Autonomous Operations

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DevOps to NoOps in Action

 dynatrace  
**Perform**

# ChatOps for Autonomous Operations

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DevOps to NoOps in Action

 dynatrace  
**Perform**



**Nestor Zapata**

Data Center & Cloud Operations Manager  
Citrix



**Andreas Grabner**

DevOps Activist  
Dynatrace

# Autonomous Cloud Survey Results

3 : 2

Dev Ops Ratio

24 to 40

Sprint to Releases

7

Autonomous Ops Score

*Let's hear from Nestor how ChatOps impacts these numbers!*

Fill out the survey: <https://dynatrace.ai/acsurvey>



# New Citrix

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- GoTo Products (old Citrix)
- Reimagine - secure digital workspaces built around end-user experience
- People, organizations, things – connected anywhere, anytime, any device
- Cloud First!
  - Secure enterprise apps and data
  - Simplify IT complexity across cloud environments





# Continuous improvement

**CITRIX®**  
2018

**75%** Increased  
Automation  
Faster MTTR



More Time for  
Continuous  
Improvement



Cultural Shift



Automation and AI



**90%**  
Faster

Pre-prod Fully  
Automated Deploy



now  
#

Self-Healing Production  
Services



# Cultural shift

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## Pre-2017

- Traditional Waterfall or "OldOps"
- No Agile methodologies

## 2017 - 2018

- Intro to Agile (Scrum to Kanban)
- Agile management of Ops tickets and emergencies
- 'Automation First' mentality

# Cultural shift - technology

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- Trust the data
- Work smarter not harder
- Don't fear Automation, AI or Bots will take your job
- *"Automate yourself out of your current job role! Automate yourself into the next level!"*

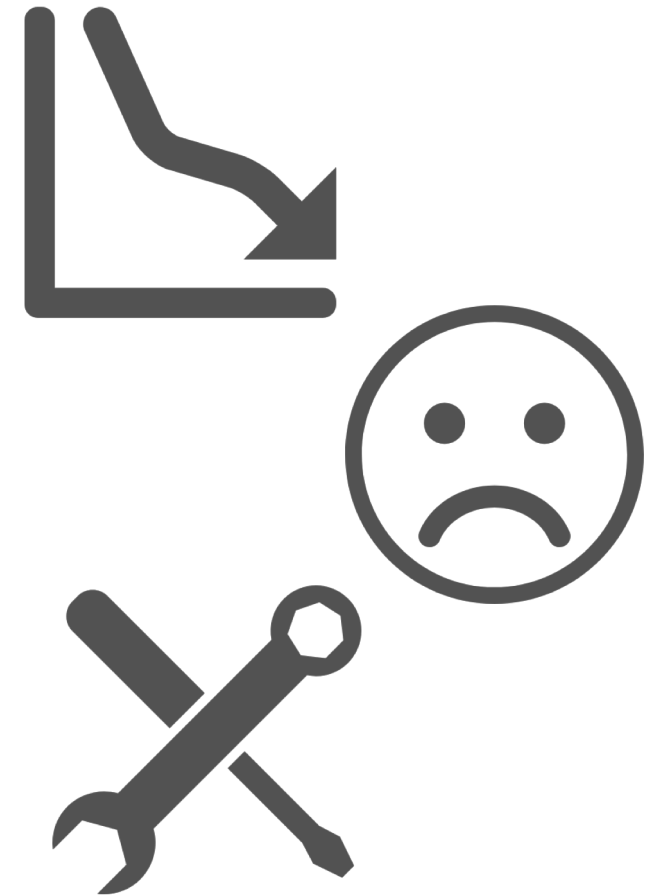




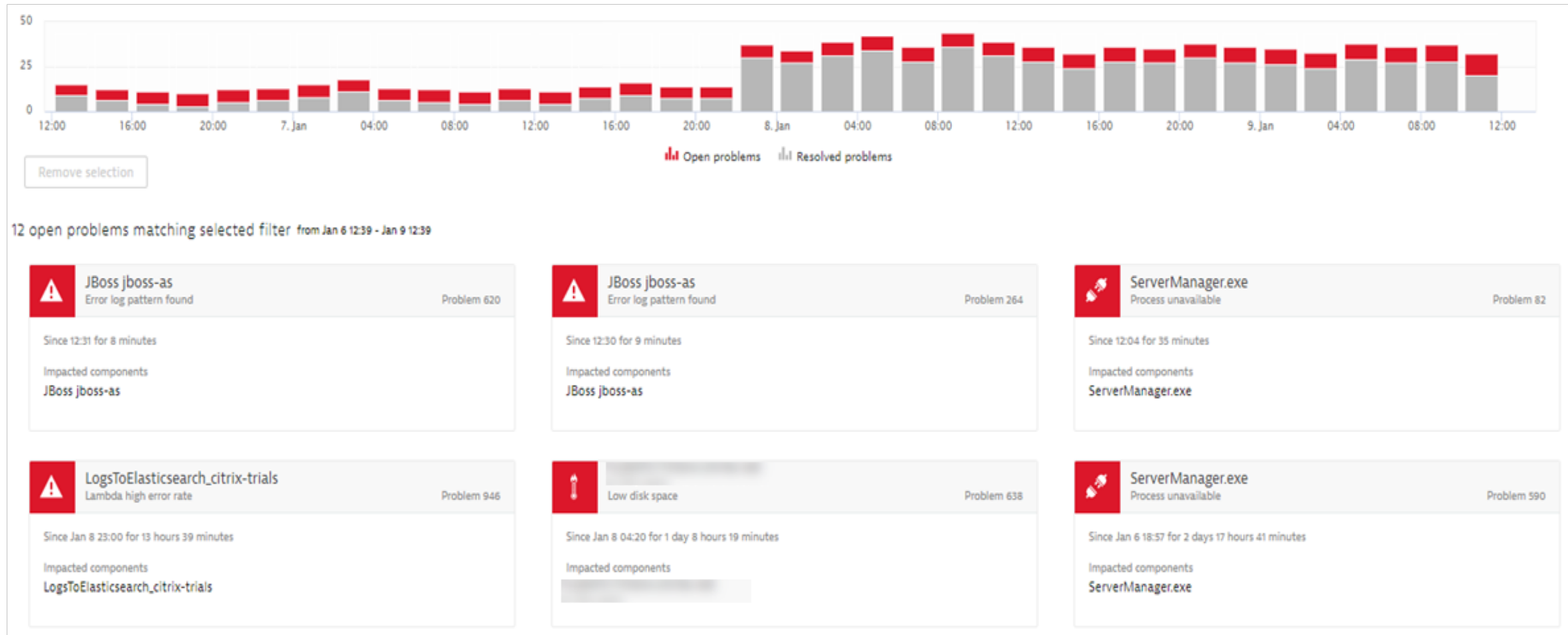
# Dynatrace Analytics

## MDM ( Master Data Management)

- MDM business usage
- MDM application servers experienced instability
- Constant failures with our Informatica batch jobs
- Outdated records for business users
- Work stoppage for sales master, marketing teams
- Constant reboot of the application and Linux servers
- Very low customer satisfaction with IT and



# Actionable data



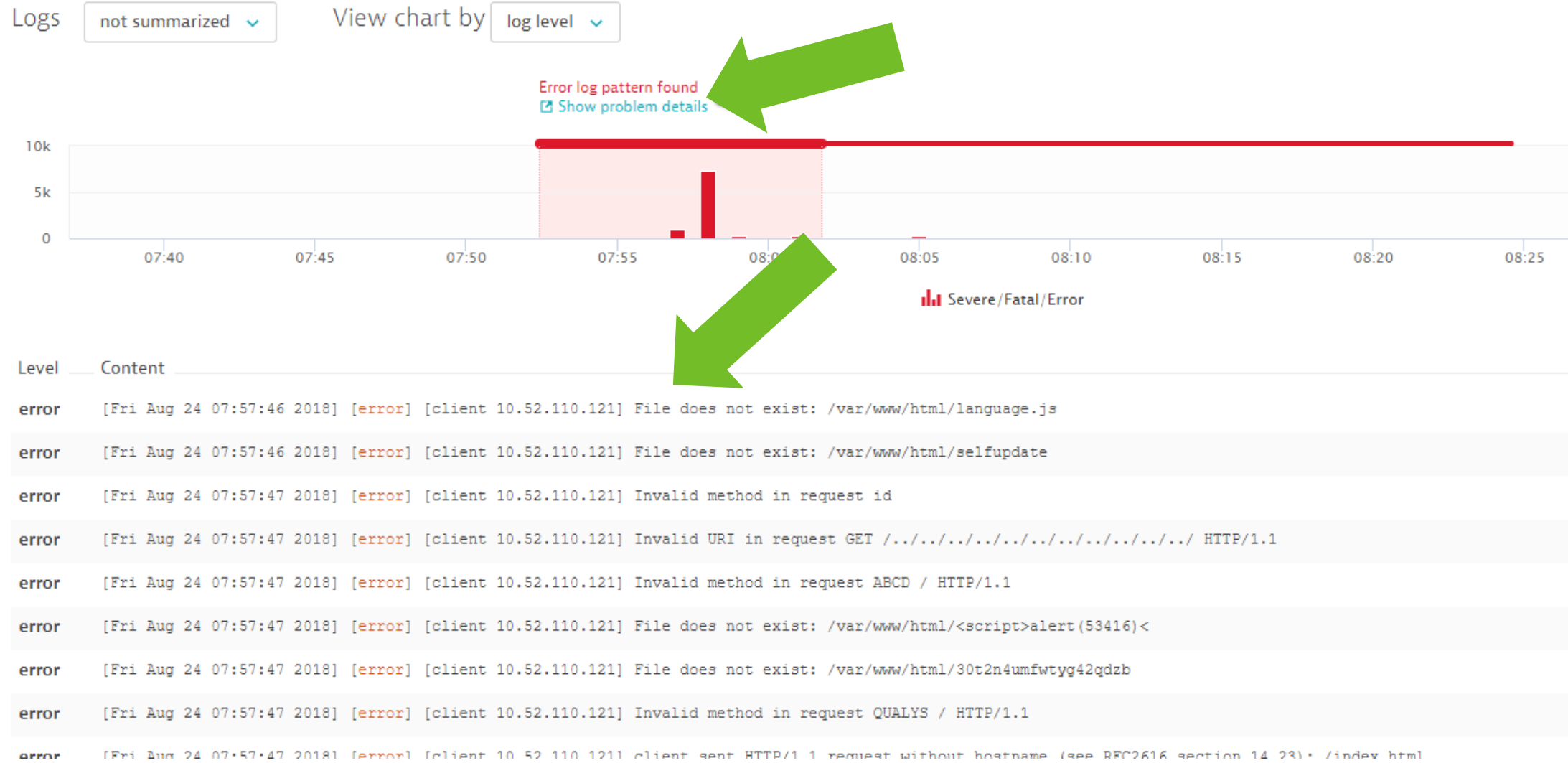
# Actionable data




- Java Heap config not optimal – monitoring set up
- Fixed Java Heap config issue
- Deeper analytics: all the transactions were concentrated on 1 node
- Oracle VIP settings updated to resolve issue
- 2 major issues resolved same tool / data







# Log Analytics: Reduced MTTR from 1h to 15min



# Log Analytics in depth



**ftlpmdmapp04.citrite.net:80: Failure rate increase**  
 Problem 554 detected at 07:53 - 08:24 (was open for 31 minutes).


|   | Affected | Recovered | Monitored |
|---|----------|-----------|-----------|
|  Applications              | -        | -         | 17        |
|  Services                  | -        | 1         | 23        |
|  Infrastructure components | -        | 1         | 137       |



  
 321,402  
 Dependencies analyzed

### Business impact analysis

An analysis of all affected service calls and impacted real users during the first 10 minutes of the problem shows the following potential impact.

 0  
Impacted users


 10.1k  
Affected service calls




[Show more](#)

### 1 impacted service

1.22k Requests per minute impacted


**ftlpmdmapp04.citrite.net:80**  
 Web request service




Failure rate increase  
 by a failure rate increase to 100 %


| Affected requests | Service method       |
|-------------------|----------------------|
| 1.22k /min        | All methods affected |


### Root cause

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


**Apache Web Server httpd**  
 Process

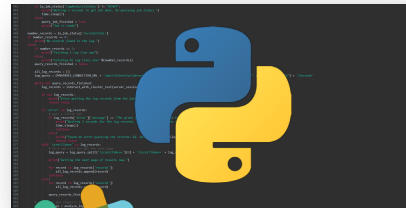
Error log pattern found  
  
 Pattern "MDM\_Apache\_error.log" found 1.69k times/min in "/var/log/httpd/error\_log"

 [Analyze logs](#)


**Visual resolution path**  
 Click to see how we figured this out.

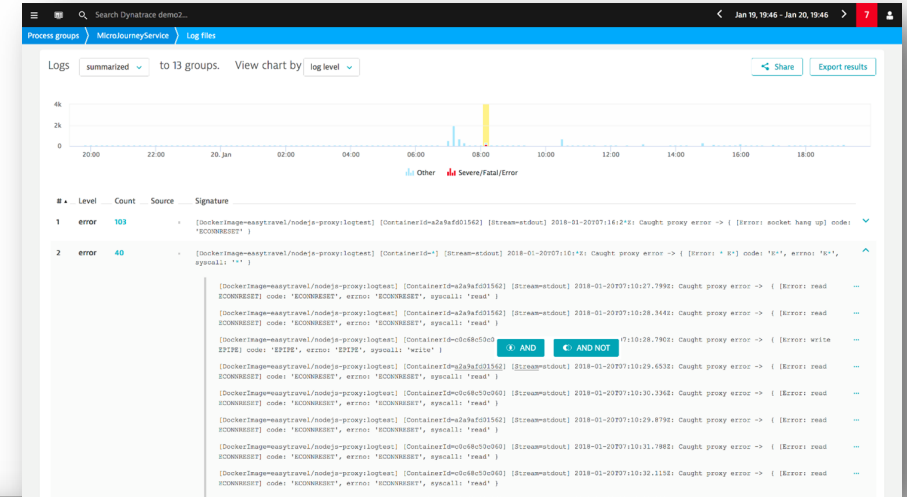
# Chat Bot for Log Analytics


## example from Dynatrace DevOps team





Slack


#1 Dynatrace LOG API




 **Nob (NoOpsBot)** APP 3:46 PM  
Jan 10, 2019 2:41:23 PM - @ruxit.com - Sending invitation email for License [License 01], Installer =


 **Nob (NoOpsBot)** APP 5:46 PM  
Jan 10, 2019 4:32:49 PM - @ruxit.com - Sending invitation email for offline License TRIAL - [License 01], Bu  
075558 js: 1.157.212.20181213-164340 sg: 1.157.215.20181217-084002 + nginx + [License 01]


 **Nob (NoOpsBot)** APP 6:31 PM  
Jan 10, 2019 5:20:15 PM - @ruxit.com - Sending invitation email for License [Perm], Installer =

 **Nob (NoOpsBot)** APP 7:46 PM  
Jan 10, 2019 6:41:48 PM - @ruxit.com - Sending invitation email for License [Term], Installer =

 **Nob (NoOpsBot)** APP 10:16 PM  
Jan 10, 2019 9:08:33 PM - @ruxit.com - Sending invitation email for License [License 01], Installer =

Today

 **Nob (NoOpsBot)** APP 1:46 AM  
Reached build 3744 now - audit analysis job still alive.

 **Nob (NoOpsBot)** APP 5:01 AM  
Jan 11, 2019 4:00:03 AM - @ruxit.com - Sending invitation email for License [License 01], Installer =



# Benefits of leveraging Dynatrace

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Increased

- Platform /infrastructure stability
- Uptime for MDM & IDD applications
- Productivity of our sales master, customer master and marketing teams
- 95% improvement in MDM application job stability



- SI's & MI's.
- Long running job errors in both customer master and prospect ORS
- SNOW tickets due to MDM & IDD issues



Decreased

# Root cause & predictive analytics "Metrics that Matter"

 **RMI requests on JBoss jboss-as: Failure rate increase**  
Problem 209 detected at 06:49 (open for 7 hours 8 minutes).

|   | Affected | Recovered | Monitored |
|---|----------|-----------|-----------|
|  Applications              | -        | -         | 21        |
|  Services                  | -        | 1         | 169       |
|  Infrastructure components | 1        | -         | 1,776     |



535,757,040  
Dependencies analyzed

## Business impact analysis

An analysis of all affected service calls and impacted real users during the first 10 minutes of the problem shows the following potential impact.



0  
Impacted users



64  
Affected service calls

Affected entry point services



RMI requests on JBoss jboss-as  
org.jnp.server.NamingServ... (100 % affected)

64

Affected service calls

[Show less](#)

## 1 impacted service

2.2 Requests per minute impacted



**RMI requests on JBoss jboss-as**  
RMI service / Healthy again for 5 hours 29 minutes

Failure rate increase  
by a failure rate increase to 93 %

| Affected requests | Service method       |
|-------------------|----------------------|
| 2.2 /min          | All methods affected |

## Root cause

Based on our dependency analysis all impacted services



**JBoss jboss-as**  
Process

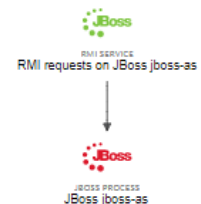
### Error log pattern found

Pattern "MDM\_CMX\_logs" found 16.8 times/min in "/opt/mdm\_logs/node6/cmserver/cmserver.log".  
Pattern "MDM\_CMX\_LOGS\_ERRORS" found 16.8 times/min in "/opt/mdm\_logs/node6/cmserver/cmserver.log".



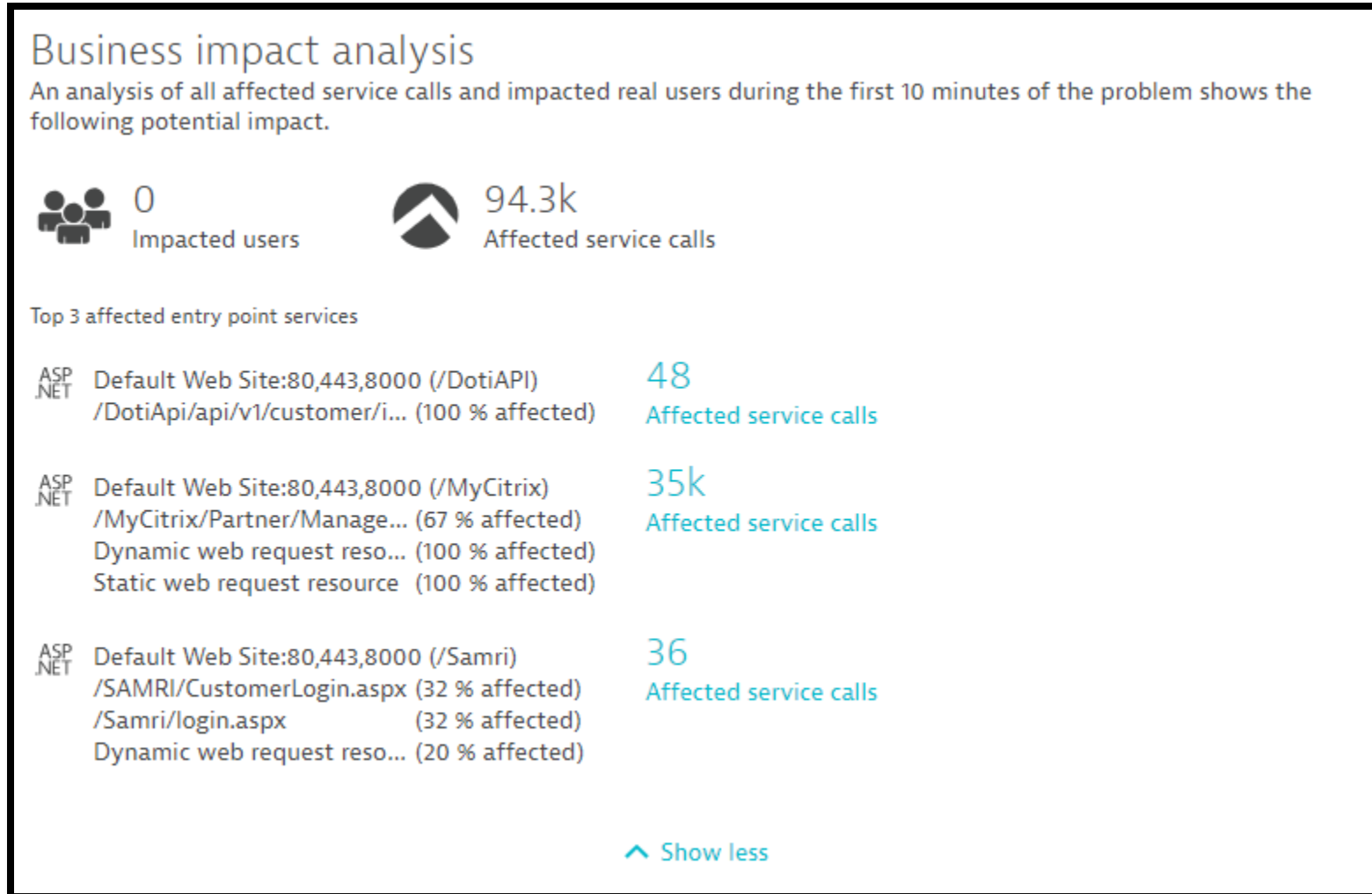
### Visual resolution path

Click to see how we figured this out.



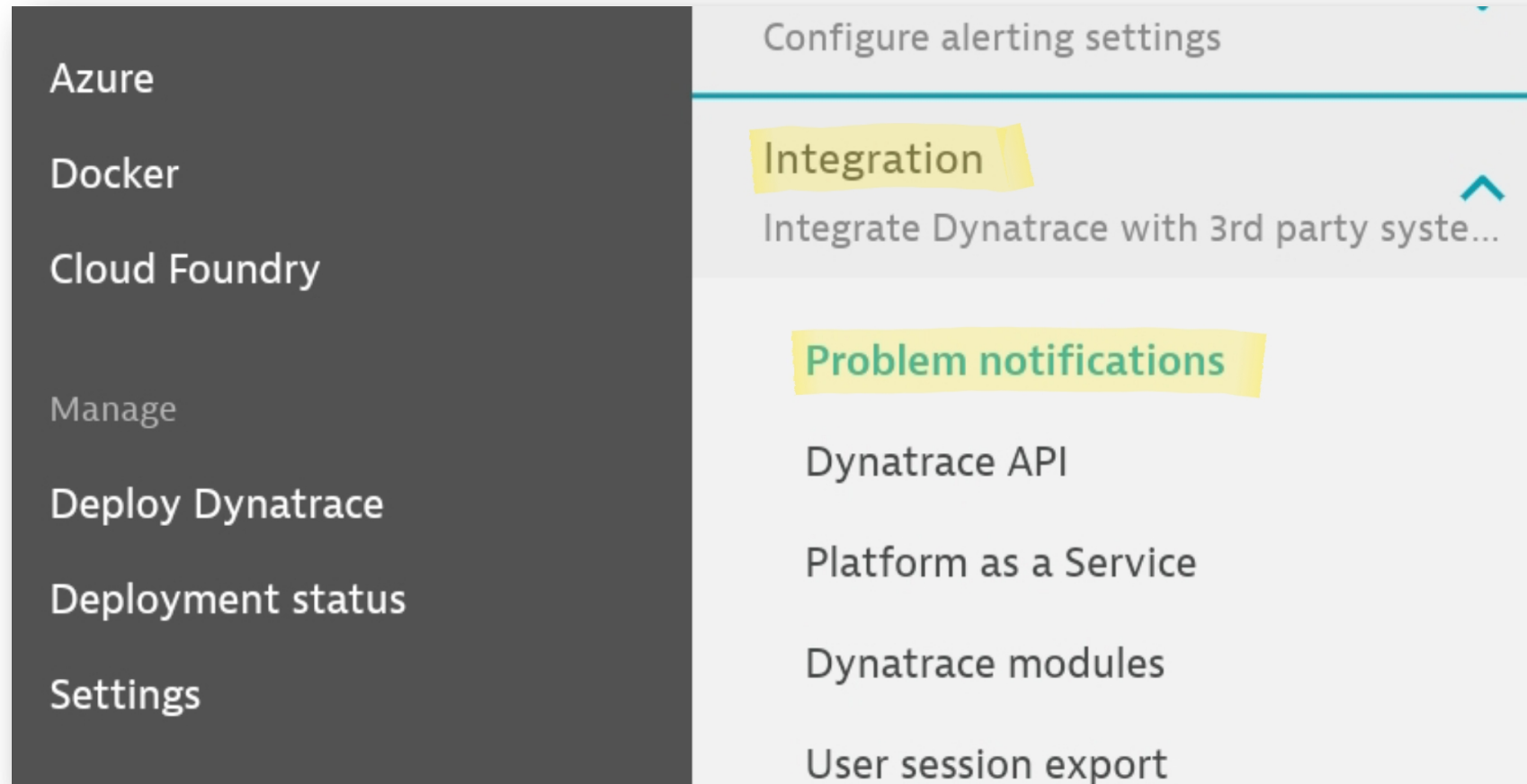
# Drill down beyond the technology . . .

## What does it mean for those outside of IT?





# Dynatrace AIOps integration with Slack: It's that easy



## Set up notifications

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### Problem notification setup

Although the Dynatrace mobile app is the preferred method for receiving real-time notifications related to problems in your environment, if your organization uses email or a different ticket/incident management system for alerting, click **Set up notifications** to configure integration with Dynatrace.

[+ Set up notifications](#)

## Pick your notification system, e.g: Slack

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### Integrate with other notification systems

Integrate Dynatrace problem notifications with your organization's existing incident management system or team-collaboration channel. **Alerting profiles** are used within problem integrations to filter the total number of alerts to a subset that is relevant to a team.



**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.



**Ansible Tower**

Integrate with the Ansible Tower deployment management platform.



**Email**

Notify other systems via email.

## Finish the configuration: name, webhook, channel, content

### Set up Slack integration

Display name

URL

Set up an incoming WebHook integration within your Slack account. Copy and paste the

Channel

Title

#### Available placeholders

**{ImpactedEntity}**: Entity impacted by the problem (or x impacted entities when there are multiple).

**{PID}**: Unique system identifier of the reported problem.

**{ProblemDetailsText}**: All problem event details including root cause as a text-formatted string. NEW

**{ProblemID}**: Display number of the reported problem.

**{ProblemImpact}**: Impact level of the problem. Possible values are APPLICATION, SERVICE, or INFRASTRUCTURE.

**{ProblemSeverity}**: Severity level of the problem. Possible values are AVAILABILITY, ERROR, PERFORMANCE, RESOURCE\_CONTENTION, or CUSTOM\_ALERT.

**{ProblemTitle}**: Short description of the problem.

**{ProblemURL}**: URL of the problem within Dynatrace.

**{State}**: Problem state. Possible values are OPEN or RESOLVED or in some cases MERGED when the problem has been merged into another problem.

**{Tags}**: Comma separated list of tags that are defined for all impacted entities.

# AI and integration with Slack



**Dynatrace** APP 8:51 AM

OPEN Problem 566 in environment qfi25645

1 impacted service

Web request service

Default Web Site:80,443,8000 (/Samri)

Failure rate increase

34 requests/min impacted

by a failure rate increase to 8.24 %

Service method: All dynamic requests

<https://qfi25645.live.dynatrace.com/#problems/problemdetails;>

Failure rate increase on Web request service Default Web Site

**Problem 566: Failure rate increase in environment: qfi25645**

Jul 25th

Default Web Site:80,443,8000 (/Samri)

Failure rate increase

34 requests/min impacted

by a failure rate increase to 8.24 %

Service method: All dynamic requests



**Dynatrace** APP 9:09 AM

RESOLVED Problem 566 in environment qfi25645

1 impacted service

Web request service

Default Web Site:80,443,8000 (/Samri)

Failure rate increase

34 requests/min impacted

by a failure rate increase to 9.46 %

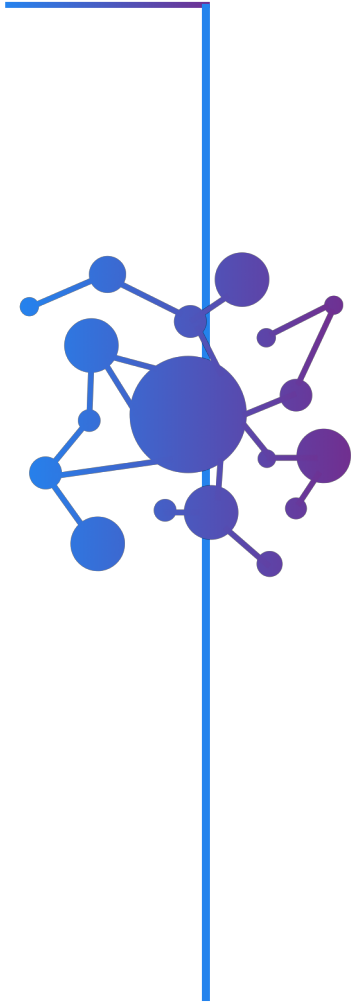
Service method: All dynamic requests

[https://qfi25645.live.dynatrace.com/#problems/problemdetails;pid=8401737832202764566: :](https://qfi25645.live.dynatrace.com/#problems/problemdetails;pid=8401737832202764566:)

Failure rate increase on Web request service Default Web Site:80,443,8000 (/Samri)

**Problem 566: Failure rate increase in environment: qfi25645**

# AI and fully automated deployment: 10x Productivity Increase!



**Atom** APP 11:26 AM

#Deployment Request from Barry.Lindelof@citrix.com

**Request:** RITM0210510

**Title:** Build v18.12.61

**Environment:** Pre-Prod

**Build:** v18.12.61

**TicketStatus:** true

**PreprodPath:** PreProd\_v18.3

**TestPath:** TEST\_v18.4



**Ultron** APP 11:26 AM

Deploying build v18.12.61 to Pre-Prod



**jenkins** APP 11:26 AM

MyCitrix-PreProd Deployment - #1547 Started by user svcacct\_devopsauto ([Open](#))

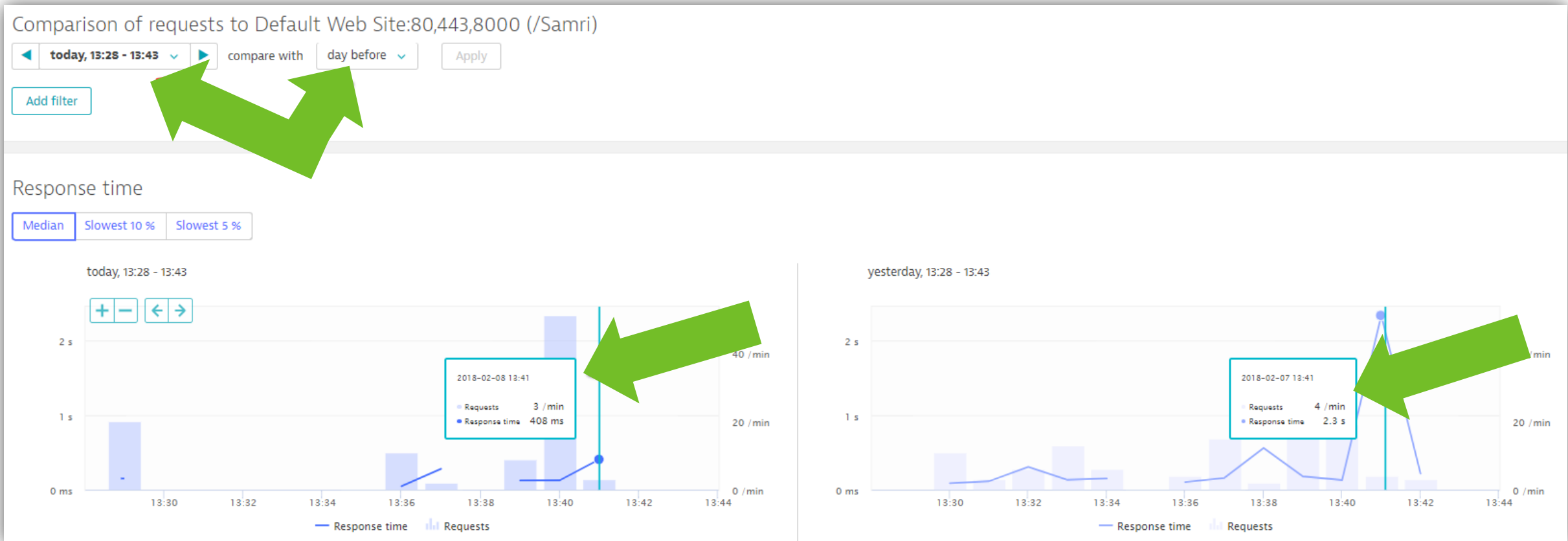


**jenkins** APP 12:00 PM

MyCitrix-PreProd Deployment - #1547 Success after 34 min ([Open](#))



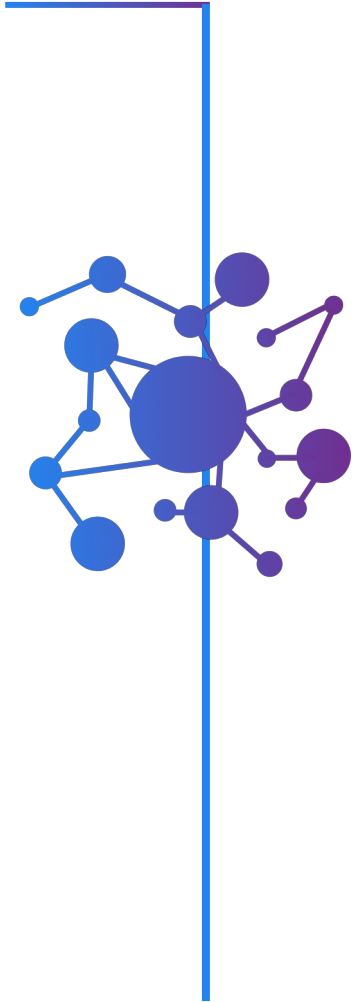
# Compare features – post deployment



# Compare features – post deployment: Auto-Detect Endpoint Changes

| Requests                            |                      |                                   | Instances            |  |
|-------------------------------------|----------------------|-----------------------------------|----------------------|--|
| Name                                | Response time median | Response time median difference ▼ | Response time median |  |
| /Samri/CRT/ResellerCustomers.aspx   | 2.58 s               | 286 ms                            | 2.29 s               |  |
| /SAMRI/CustomerLogin.aspx           | 292 ms               | 199 ms                            | 92.6 ms              |  |
| /Samri/Quote/OpenQuote.aspx         | 206 ms               | 129 ms                            | 77.6 ms              |  |
| /SAMRI/RenewWindow.aspx             | 105 ms               | 61.2 ms                           | 44.3 ms              |  |
| /Samri/login.aspx                   | 511 ms               | 29.7 ms                           | 482 ms               |  |
| CSS                                 |                      |                                   | 1.07 ms              |  |
| New /samri/pleasewait.aspx          |                      |                                   | 29.8 ms              |  |
| New /Samri/Quote/QuoteQ             |                      |                                   | -                    |  |
| New /Samri/CRT/crtmain-na           |                      |                                   | -                    |  |
| Removed /SAMRI/ChangeQu             |                      |                                   | 150 ms               |  |
| New /samri/pleasewait.aspx          |                      |                                   | 29.8 ms              |  |
| New /Samri/Quote/QuoteQuestion.aspx |                      |                                   | 152 ms               |  |
| New /Samri/CRT/crtmain-na.aspx      |                      |                                   | 164 ms               |  |
| Removed /SAMRI/ChangeQuoteDate.aspx |                      |                                   | -                    |  |

# AI + Ops = AIOps: Enabling Bot-Supported Self-Healing



**Atom** APP 8:43 AM

#keysvc\_selfheal keysvc15 - KeyService failing on 15 Node



**Ultron** APP 8:43 AM

Let me try to fix it...

KeyService self healing work flow has been executed on keysvc15.



**Atom** APP 3:50 AM

#Deployment Request from [gourav.saxena@citrix.com](mailto:gourav.saxena@citrix.com)

**Request:** RITM0210319

**Title:** Deploy v18.12.54

**Environment:** Pre-Prod

**Build:** v18.12.54

**TicketStatus:** true

**PreprodPath:** PreProd\_v18.3

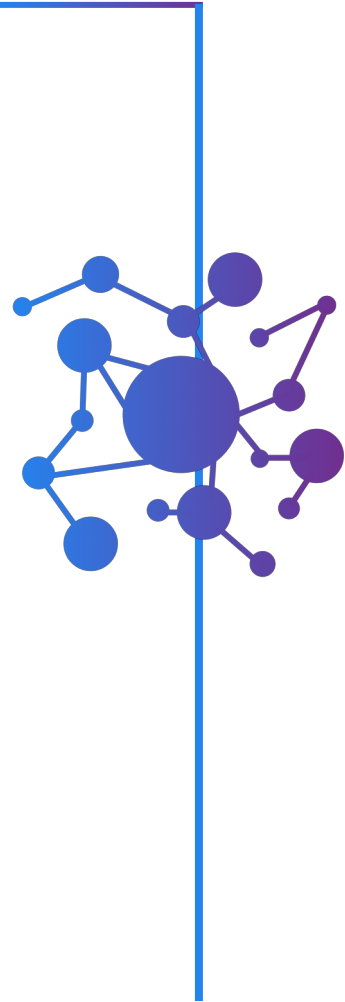
**TestPath:** TEST\_v18.3




**Ultron** APP 3:50 AM


Are you sure this build v18.12.54 exists? I can't find it!


# ChatOps: DAVIS in Action




 **Khajapeer Mulla** Dec 18th, 2018 at 2:48 PM  
@davis

15 replies

 **davis** APP 1 month ago  
Good afternoon! It looks like you have two open problems. Would you like to see a list of these issues?

 **Khajapeer Mulla** 1 month ago  
yes

 **davis** APP 1 month ago  
Here are the problems you requested.

Page 1 of 1


**28: User Defined Alert**


| Start Time         | Affected Service     |
|--------------------|----------------------|
| Dec 17 at 11:51 PM | Prod-/CitrixServices |


**573: Increase in Failure Rate**


| Start Time         | Affected Service |
|--------------------|------------------|
| Dec 14 at 12:39 PM | PreProd-         |

Please select an item, or say 'next page'.

 **Khajapeer Mulla** 1 month ago  
were there any DOTI issues today

 **davis** APP 1 month ago  
There were 46 problems today. 11 problems started Tuesday, December 18th at 5:00 AM. Would you like to see a list of these issues?

 **Khajapeer Mulla** 1 month ago  
yes

 **davis** APP 1 month ago  
Here are the problems you requested.

Page 3 of 16

**855: Degraded Service Response Time**

| Time Frame                            | Affected Service |
|---------------------------------------|------------------|
| Dec 18 at 8:44 AM - Dec 18 at 9:07 AM | TestVantiveData  |

**Service Method**  
acspGetAuditTrailByObjectIdObjectTypeAndColumnName

**634: Higher Than Expected Response Time**

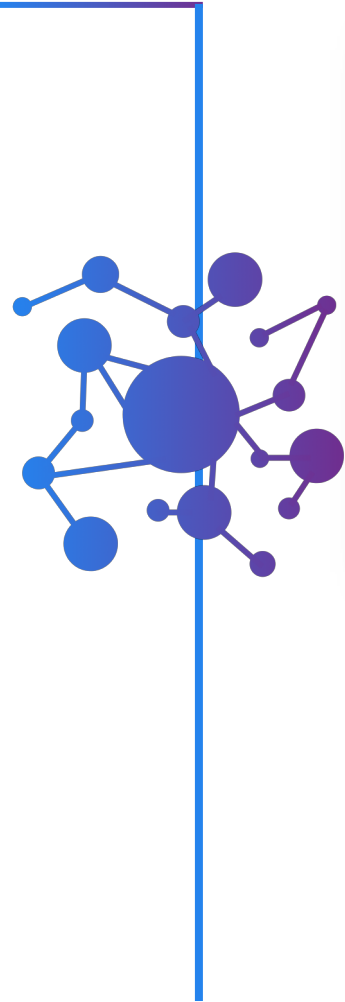
| Time Frame                            | Affected Service          |
|---------------------------------------|---------------------------|
| Dec 18 at 8:20 AM - Dec 18 at 8:43 AM | Prod-/DotiPartnerToolsApi |


**889: User Defined Alert**


| Time Frame                            | Affected Service |
|---------------------------------------|------------------|
| Dec 18 at 8:01 AM - Dec 18 at 8:14 AM | Prod-/DotiAPI    |


Please select an item, or say 'next page'.


# ChatOps: DAVIS in Action – Extending Root Cause Information




 **Citrix.Util.Async.ServiceExecutor.exe: Process unavailable**  
Problem 15 detected at 06:25 (open for 9 hours 27 minutes).

 Affected applications  
–


 Affected services  
–

 Affected infrastructure  
1

1 impacted infrastructure component


 **Citrix.Util.Async.ServiceExecutor.exe**  
Process


**Process unavailable**  
Process Citrix.Util.Async.ServiceExecutor.exe on host FTLPMYCTX14 has crashed

 23,400,506  
Dependencies analyzed

### Root cause

Based on time correlation and analysis of all transactions that use these components, this issue has the following root cause

 **Citrix.Util.Async.ServiceExecutor.exe**  
Process Group

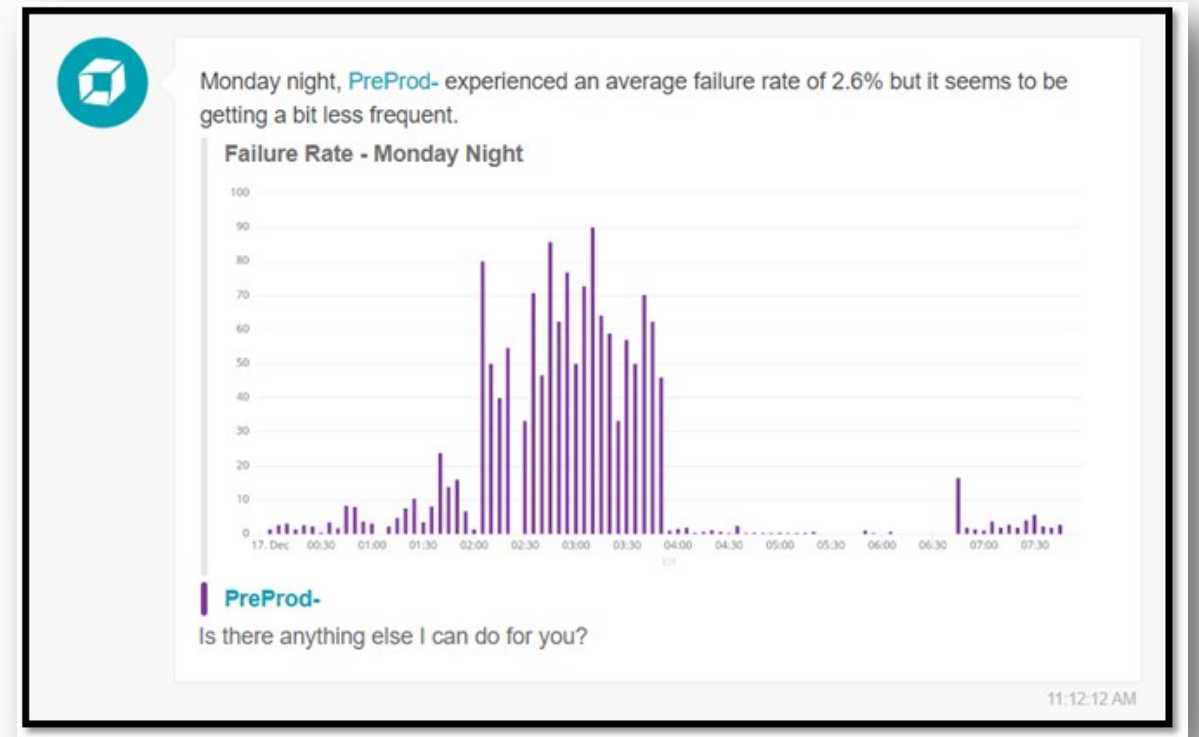
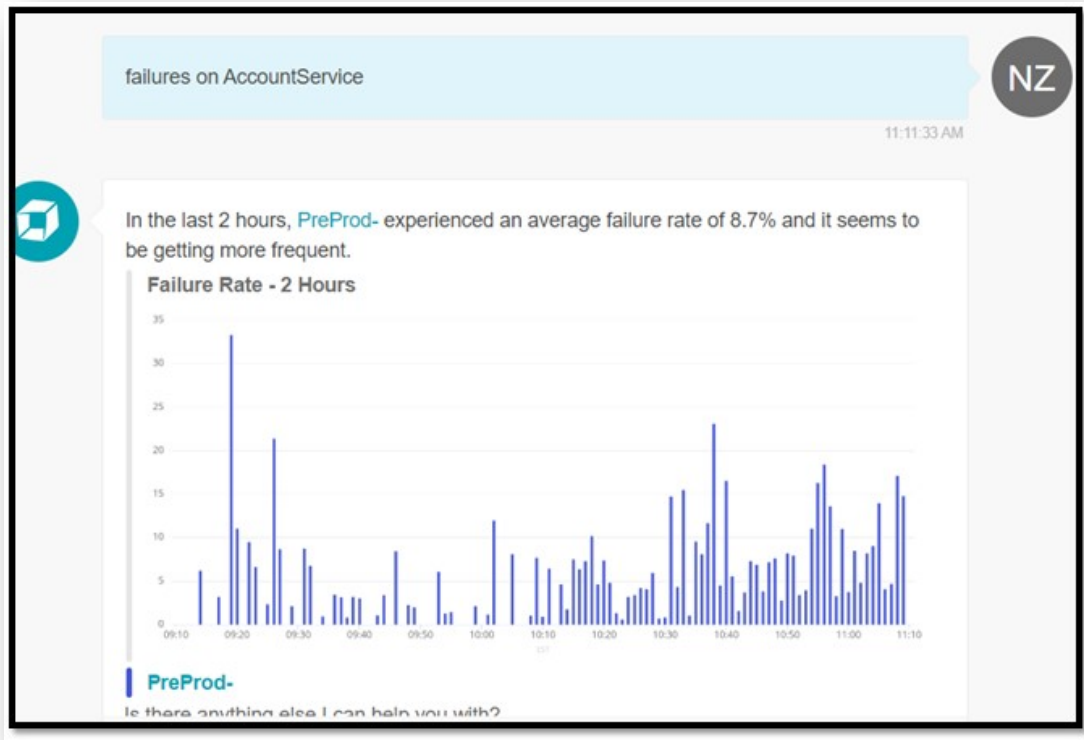


**Availability changes detected**  
Review all downtimes for associated hosts and processes.

**2 Process crashes**  
Process Citrix.Util.Async.ServiceExecutor.exe has crashed  
Today, 06:25 - 06:26

**2 Process unavailabilities**  
Process Citrix.Util.Async.ServiceExecutor.exe on host FTLPMYCTX14 has crashed  
Today, 06:25 - 15:52


# DAVIS in Action: Asking for Charts!







# ChatOps: DAVIS in Action – Problems to multiple channels

**Thread**  
# backend-one

 **Davis Dev** APP Today at 10:30 PM  
An increase in failure rate on [Frontend](#) was detected by Dynatrace. (updated Today 10:33 PM)

[616: Increase in Failure Rate](#) 


|  |   |
|--|---|
| <b>Start Time</b><br>Today at 10:21 PM   | <b>Affected Services</b><br><a href="#">Backend_one</a><br><a href="#">Frontend</a> |
| <b>Ticket</b><br><a href="#">DAV-1684</a>                                      | <b>Assigned To</b><br>Mike  |
| <b>Failure Rate</b><br>100%  | <b>Affected Requests per Minute</b><br>61   |
| <b>Root Cause</b><br><a href="#">Backend_one</a><br>- Increase in Failure Rate |   |

Remediation 

Add Comment

The root cause matches this channel's tag configuration.

5 replies

 **Davis Dev** APP 2 minutes ago  
**Michael Beemer Said:**  
The ticket [DAV-1684](#) was created in JIRA by Mike and assigned to Dan.  
Via JIRA.

Is the Root Cause critical for this channel?

## ChatOps: DAVIS in Action – Execute Auto-Remediations

Thread

# backend-one

Davis Dev

APP

Today at 10:30 PM

An increase in failure rate on [Frontend](#) was detected by Dynatrace. (updated Today 10:33 PM)

616: Increase in Failure Rate

Start Time

Today at 10:21 PM

Affected Services

[Backend\\_one](#)  
[Frontend](#)

Ticket

[DAV-1684](#)

Assigned To

Mike

Failure Rate

100%

Affected Requests per Minute

61

Root Cause

Backend\_one

- Increase in Failure Rate

Remediation

Add Comment

Backend\_one. - Backend one productio... ag configuration.

5 replies

Davis Dev

APP

2 minutes ago

Michael Beemer Said:  
The ticket [DAV-1684](#) was created in JIRA by Mike and assigned to Dan.  
Via JIRA.

Davis Dev

APP

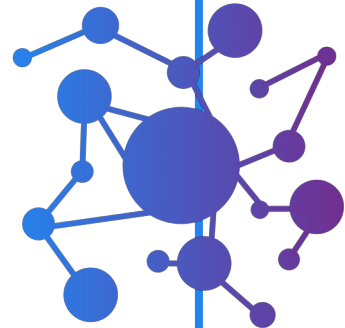
< 1 minute ago

Remediation action triggered successfully. Can I help you with anything else?

+

Reply...

# ChatOps with Azure Services



**#gts-dccp-alerts**  
 ☆ | 👤 31 | 🔔 12 | ➕ Add a topic

**AWS-Jenkins** APP 10:44 AM  
 MyCitrix-Test Deployment - #1094 Started by user svcacct\_devopsauto (Open)  
 MyCitrix-Test Deployment - #1094 Success after 3 min 18 sec (Open)

**Visual Studio Team Services - Slack Integration Ye** APP 11:59 AM  
 Build 20190124.1 succeeded

|                                       |                      |
|---------------------------------------|----------------------|
| Requested by<br>Marc Smith            | Duration<br>00:02:01 |
| Build pipeline<br>Credit Card API DEV |                      |

12:00 PM Deployment on stage **WebServer Deployment** succeeded.

|                                |                            |
|--------------------------------|----------------------------|
| Deployment status<br>Succeeded | Time to deploy<br>00:00:42 |
| Release<br>Release-15          |                            |

**Visual Studio Team Services - Slack Integration Ye** APP 12:56 PM  
 Build 20190124.2 succeeded

|                                       |                      |
|---------------------------------------|----------------------|
| Requested by<br>Marc Smith            | Duration<br>00:02:35 |
| Build pipeline<br>Credit Card API DEV |                      |

Deployment on stage **WebServer Deployment** succeeded.

|                                |                            |
|--------------------------------|----------------------------|
| Deployment status<br>Succeeded | Time to deploy<br>00:00:38 |
| Release<br>Release-16          |                            |

**Yegneshwara Rao** 2:22 AM  
 @Ultron keyservice all v2 user  
 8 replies Last reply 21 days ago

**Yegneshwara Rao** 2:23 AM  
 @Ultron keyservice all v1 user  
 8 replies Last reply 21 days ago

**Yegneshwara Rao** 2:28 AM  
 @Ultron help  
 1 reply 21 days ago

**Yegneshwara Rao** 2:32 AM  
 @Ultron enable keysvc selfhealing  
 2 replies View thread

8 replies

**Ultron** APP 21 days ago  
 Node 09 response time ~ 0.308

**Ultron** APP 21 days ago  
 Node 10 response time ~ 0.321

**Ultron** APP 21 days ago  
 Node 11 response time ~ 0.322

**Ultron** APP 21 days ago  
 Node 12 response time ~ 0.299

**Ultron** APP 21 days ago  
 Node 13 response time ~ 0.304

**Ultron** APP 21 days ago  
 Node 14 response time ~ 0.301

**Ultron** APP 21 days ago  
 Node 15 response time ~ 0.303

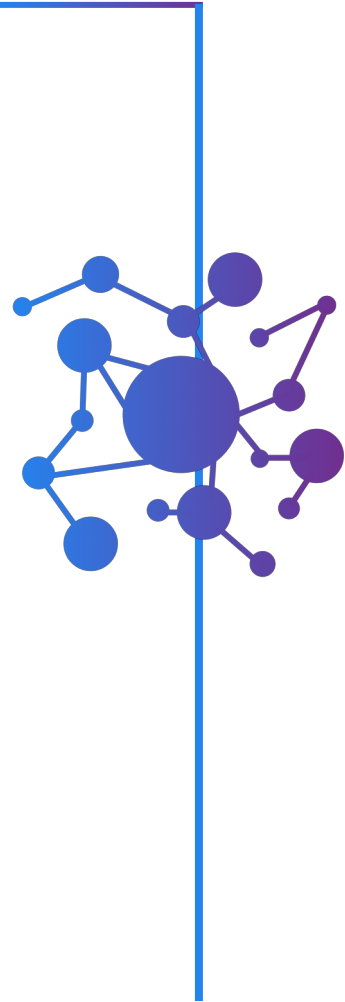
**Ultron** APP 21 days ago  
 Node citrixservices response time ~ 0.280


4 replies


**Ultron** APP 21 days ago  
 Enabling KeyService self healing work flows...


**Ultron** APP 21 days ago  
 keysvc09 = True  
 keysvc10 = True


# AI + Ops = AIOps






**Omar ElNaggar** 10:55 AM  
 Hi @chrisgo, can you please provision access to our Amazon S3 for @lawrencei (lawrence.ingraham@citrix.com) so that he can work on workspace.sapho.com and workspace.dev.sapho.com? He's going to be doing deploys there, working with Lubos and Tomas going forward. Let me know if any questions, thanks! #webrequest (edited)  
 oops  
 #webrequest @chrisgo can you please provision access to our Amazon S3 for @lawrencei (lawrence.ingraham@citrix.com) so that he can work on workspace.sapho.com and workspace.dev.sapho.com? He's going to be doing deploys there, working with Lubos and Tomas going forward. Let me know if any questions, thanks!  
 is that how to do it?... O=)


**Ultron** APP 10:55 AM  
 @omare: Sure, Opened a new request, you can find your request here <https://issues.citrite.net/secure/RapidBoard.jspa?rapidView=1907>


**Omar ElNaggar** 10:56 AM  
 too cool!  
 i've been waiting my whole life to work w/ Ultron  
 (though I assumed you never really work with Ultron, mostly for Ultron...)

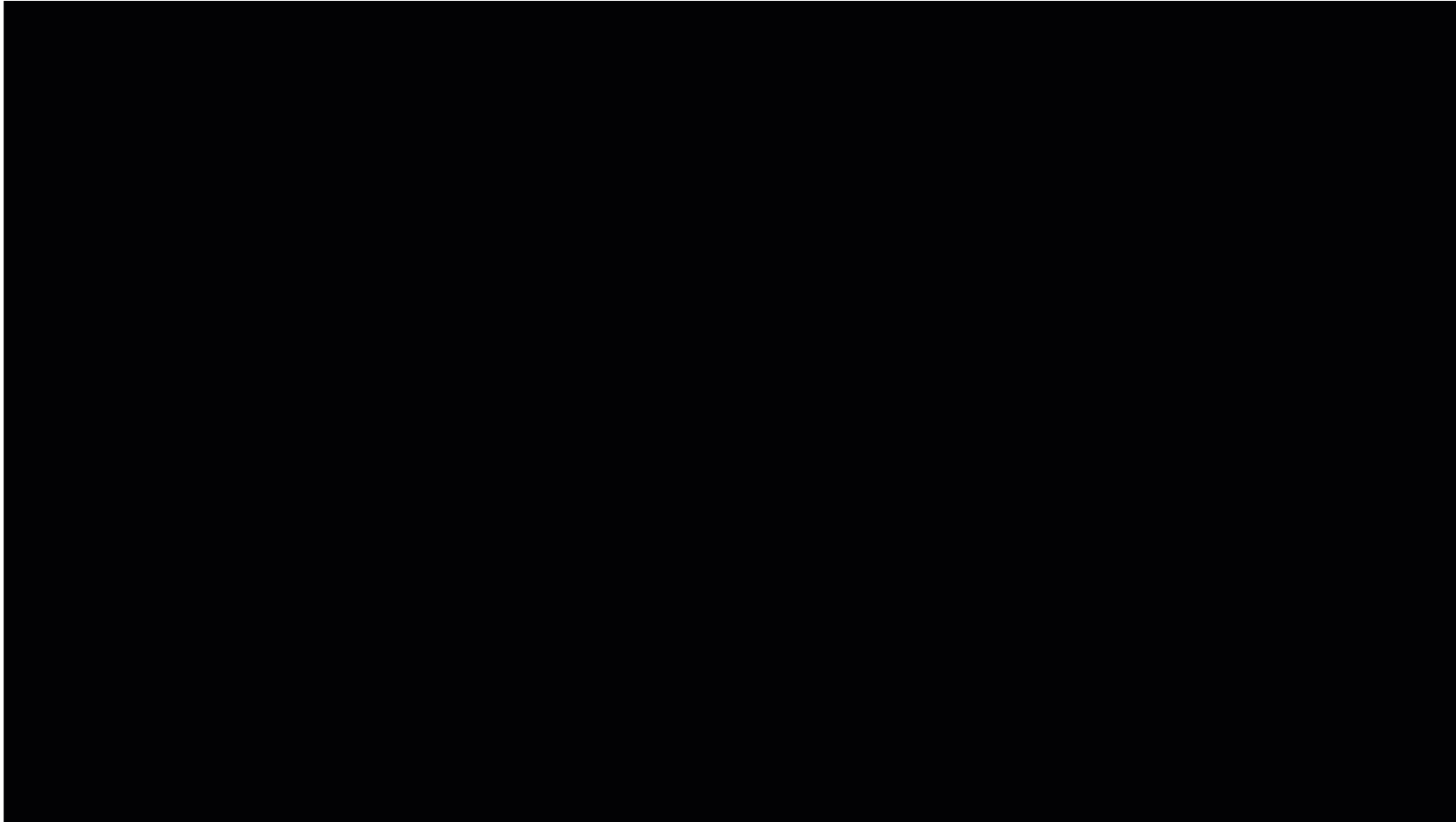

**Chris Goldsmith** 11:09 AM  
 @omare ticket updated and closed


**Chris Goldsmith** 8:28 AM  
 #webrequest Work with Sam Ivey on Sapho <-> Citrix VPN integration


**Ultron** APP 8:28 AM  
 @chrisgo: OK, You can find your request here, you can find your request here <https://issues.citrite.net/secure/RapidBoard.jspa?rapidView=1907>

## Do It: Integrate DAVIS your environments and connect with Slack, Alexa, ...

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<https://www.dynatrace.com/support/help/monitor/chatops-voiceops/>

## Final Remarks & Call to Action

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- Setup Slack / ChatOps Integration in Dynatrace
- Sign up for ChatOps / VoiceOps via <https://davis.dynatrace.com>
- Build your own Bots: It's not that hard! 😊
- Take the Autonomous Cloud Survey
  - In the PERFORM Mobile App or via <https://dynatrace.ai/acsurvey>
- ENJOY the rest of the conference!





Thank you

 dynatrace  
**Perform**