



## Why The Weather Company Uses Instana for Observability

Todd Eaton, Head of Consumer Product Systems

May 24, 2022





# Todd Eaton

- Head of Watson Advertising and Weather Consumer Product Systems
- Manage DevOps, Content Engineering, and QA teams for [weather.com](http://weather.com), [www.wunderground.com](http://www.wunderground.com) and The Weather Channel mobile applications
- Manage Central Security team for Watson Advertising and Weather



## Agenda

### ● **Our Journey**

- Switching to Instana
- Infrastructure Monitoring
- Application and Services Monitoring
- Smart Alerts
- Real User Monitoring
- Kubernetes
- Distributed Tracing

### ● **Conclusion**

- Lessons learned from our journey



# Switching to Instana

First ones in the pool



## First ones in the pool

- IBM acquires Instana end of 2020 and asked for early adopters
- TWC reviewing RUM replacements
  - Akamai mPulse, New Relic, Catchpoint
- Agreed to be an early adopter and started in Feb 2021
  - Infrastructure reporting by Feb 25th
- IBMWAWx Account
  - 2 Tenants (B2C and B2B)
  - 12th largest Instana deployment
    - not just simple host count
    - measure of telemetry ingest



Switching to  
Instana

# Overview View

2 Incidents

May 16

Last 10 minutes

Live

Deploy Agent

Add User

Websites & Mobile Apps (15)

Add Website

Add Mobile App

	<div>weather.com</div> <div>Website</div>		<div>Page Views</div> <div>1,272,548</div>		<div>onLoad Time</div> <div>2,278ms</div>	
	<div>TWC iOS Flagship</div> <div>Mobile App</div>		<div>Sessions</div> <div>290,525</div>		<div>Views</div> <div>0</div>	
	<div>www.wunderground.com</div> <div>Website</div>		<div>Page Views</div> <div>37,493</div>		<div>onLoad Time</div> <div>5,627ms</div>	
	<div>cms.weather.com</div> <div>Website</div>		<div>Page Views</div> <div>4</div>		<div>onLoad Time</div> <div>2,620ms</div>	
	<div>moonracer-ui.weather.com</div> <div>Website</div>		<div>Page Views</div> <div>0</div>		<div>onLoad Time</div> <div>—</div>	

All Websites & Mobile Apps

Applications (63)

New Application Perspective

	<div>All Services</div> <div>716 Services</div>		<div>Calls</div> <div>70,019,171</div>		<div>Latency</div> <div>67ms</div>		<div>Erroneous Call Rate</div> <div>0.02%</div>	
	<div>web-prod</div> <div>455 Services</div>		<div>Calls</div> <div>69,523,157</div>		<div>Latency</div> <div>65ms</div>		<div>Erroneous Call Rate</div> <div>0.01%</div>	
	<div>web-databases</div> <div>34 Services</div>		<div>Calls</div> <div>46,218,745</div>		<div>Latency</div> <div>10ms</div>		<div>Erroneous Call Rate</div> <div>0.00%</div>	
	<div>redis-instana-issues</div> <div>32 Services</div>		<div>Calls</div> <div>46,218,702</div>		<div>Latency</div> <div>10ms</div>		<div>Erroneous Call Rate</div> <div>0.00%</div>	
	<div>web-redis</div> <div>21 Services</div>		<div>Calls</div> <div>46,216,763</div>		<div>Latency</div> <div>10ms</div>		<div>Erroneous Call Rate</div> <div>0.00%</div>	

All Applications

Websites & Mobile Apps

Applications

Kubernetes

Infrastructure

Events





# Infrastructure Monitoring

A look at our landscape



A man with short brown hair and a beard is sitting at a desk in a dark room. He is looking at a computer monitor and has his hand on his chin, appearing to be in deep thought or focused on his work. The room is dimly lit, with the primary light source being the monitor and some ambient light from the background.

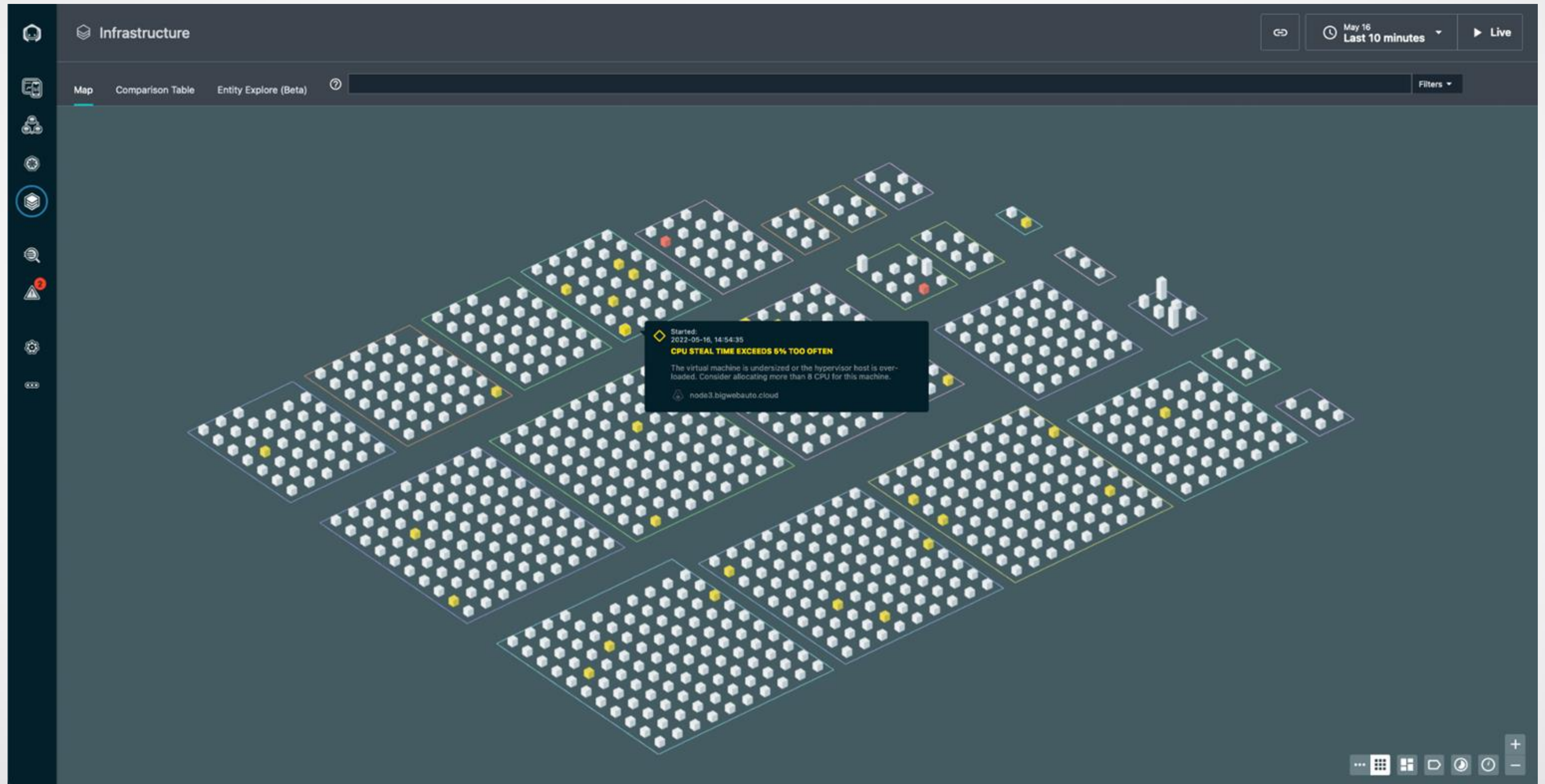
# *Infrastructure Monitoring*

## A look at our landscape

- Infrastructure agent and sensor installation was relatively easy and provided almost immediate metrics
- Map view works well for smaller environments
- Comparison Table is a primary jumping off page when troubleshooting devices/hosts
- Haven't really used Entity Explorer
- Consumer Product Systems
  - 3 regions (WDC, DAL, SJC)
  - 2 ROKS clusters per region
  - 2 IKS cluster in 2 regions
  - Various VMs throughout regions



# Infrastructure Map View





# Infrastructure Comparison Table

Infrastructure										
										May 16 Last 10 minutes
Live										
Map Comparison Table Entity Explore (Beta) Filters										
Table content: Hosts (875) Visualize metric for selected Hosts Please select										
Aggregates for metrics over 10m Clear Selections 1 2 3 ... 18										
Zone	Name	Hostname	OS	Type	#CPUs	CPU Usage	Memory	Memory Used	Health	
wxu-nonprod-vm-windows	39.f0.559e.ip4.static.sl-reverse.com	TWC	10.0 (amd64)		2	0%	4.00 GiB	51%	✓	
wxu-nonprod-vm-windows	3d.8a.35a9.ip4.static.sl-reverse.com	MANUAL	10.0 (amd64)		2	0%	4.00 GiB	45%	✓	
Undefined Zone	accessibility.jenkins.node.TWC-Web-Non-Prod.cloud	accessibility	4.15.0-154-generic (amd64)		4	1%	15.66 GiB	17%	✓	
wxu-nonprod-vm-windows	ad.b3.089f.ip4.static.sl-reverse.com	MANUAL	10.0 (amd64)		2	1%	4.00 GiB	50%	✓	
Undefined Zone	AllyTest.TWC-Web-Non-Prod.cloud	AllyTest	4.15.0-154-generic (amd64)		2	2%	7.78 GiB	16%	✓	
wxu-nonprod-vm-ubuntu	analytics.rest.db.ui.TWC-Web-Non-Prod.cloud	analytics	4.15.0-175-generic (amd64)		4	100%	7.78 GiB	14%	⚠	
A-VM-Zone	artemis-bastion	artemis-bastion	4.18.0-305.25.1.el8_4.x86_64 (amd64)		2	1%	3.65 GiB	26%	✓	
A-VM-Zone	artemis-grid	artemis-grid	4.18.0-305.25.1.el8_4.x86_64 (amd64)		2	2%	3.65 GiB	33%	✓	
A-VM-Zone	artemis-proxy-u	artemis-proxy-u	5.4.0-1019-ibm (amd64)		2	1%	3.84 GiB	64%	✓	
A-VM-Zone	artemis-selenoid	artemis-selenoid	4.18.0-305.25.1.el8_4.x86_64 (amd64)		16	1%	31.21 GiB	6%	✓	
A-VM-Zone	artemis-vmp	artemis-vmp	4.18.0-305.25.1.el8_4.x86_64 (amd64)		8	1%	31.21 GiB	10%	⚠	
A-VM-Zone	artsai-bastion	artsai-bastion	4.18.0-348.20.1.el8_5.x86_64 (amd64)		2	3%	3.65 GiB	31%	✓	
A-VM-Zone	artsai-prod-dal2	artsai-prod-dal2	4.18.0-305.25.1.el8_4.x86_64 (amd64)		48	1%	377.64 GiB	24%	✓	
A-VM-Zone	artsai-prod-dal3	artsai-prod-dal3	4.18.0-305.25.1.el8_4.x86_64 (amd64)		48	9%	377.64 GiB	46%	✓	
Undefined Zone	Automation-Execution-slave4.TWC-Web-Non-Prod.cloud	Automation-Execution-slave4	4.15.0-163-generic (amd64)		32	5%	125.89 GiB	11%	✓	
Undefined Zone	Brazil.IGPD.Slave.TWC-Web-Non-Prod.cloud	Brazil	4.15.0-139-generic (amd64)		8	1%	15.66 GiB	9%	✓	
Undefined Zone	Brazil.lgpd.GGR.TWC-Web-Non-Prod.cloud	Brazil	4.15.0-163-generic (amd64)		8	1%	15.65 GiB	7%	✓	
Undefined Zone	Brazil.lgpd.node1.TWC-Web-Non-Prod.cloud	Brazil	4.15.0-123-generic (amd64)		8	3%	15.65 GiB	22%	✓	
Undefined Zone	Brazil.lgpd.node2.TWC-Web-Non-Prod.cloud	Brazil	4.15.0-153-generic (amd64)		8	1%	15.65 GiB	16%	✓	
wxu-nonprod-vm-ubuntu	Brazil.lgpd.node3.TWC-Web-Non-Prod.cloud	Brazil	4.15.0-123-generic (amd64)		8	1%	15.65 GiB	19%	✓	
Undefined Zone	california.node1.TWC-Web-Non-Prod.cloud	california	4.15.0-147-generic (amd64)		8	6%	15.65 GiB	25%	✓	
Undefined Zone	california.node2.TWC-Web-Non-Prod.cloud	california	4.15.0-88-generic (amd64)		8	0%	15.65 GiB	24%	✓	
Undefined Zone	california.node3.TWC-Web-Non-Prod.cloud	california	4.15.0-128-generic (amd64)		8	1%	15.65 GiB	24%	✓	
Undefined Zone	California.Slave.GGR.TWC-Web-Non-Prod.cloud	California	4.15.0-147-generic (amd64)		4	1%	31.40 GiB	5%	✓	
us-east-1b	EC2AMAZ-098UNTG	EC2AMAZ-098UNTG	10.0 (amd64)	r5.16xlarge	64	1%	506.41 GiB	67%	✓	



The background of the slide features a tropical beach scene with several palm trees in the foreground and the ocean in the background. The entire image is covered with a semi-transparent blue overlay. The text is white and centered.

# Application/Services Monitoring

What's Up with the App?



## What's up with the app?

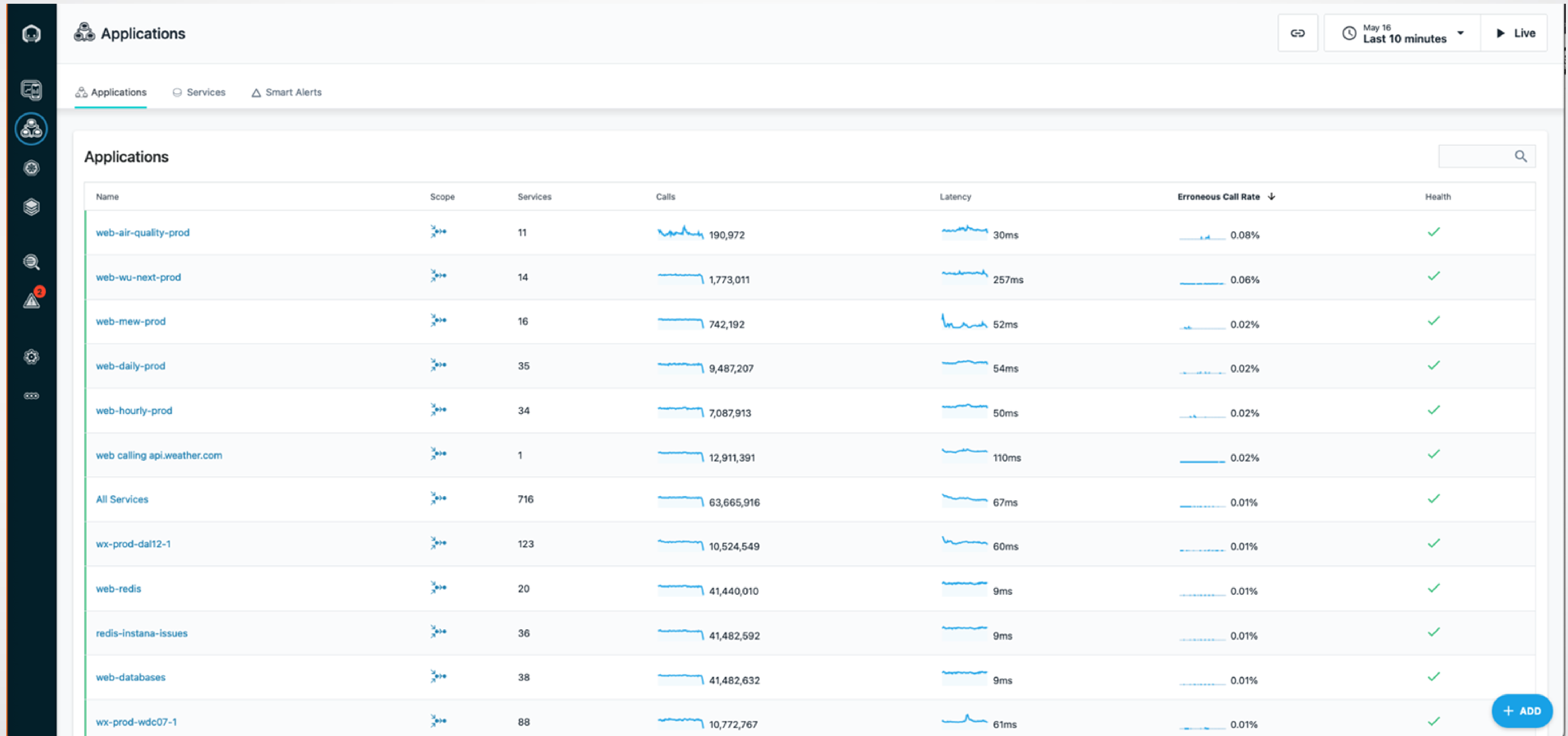
- Primary view for investigating application or service issues
- 50+ main services (containerized)
  - Services are by service name, environment and cluster
    - daybreak-today-prod-wdc07-1
- We roll-up like services into an application
  - web-daybreak-today
- Instant sort almost worth the price of admission

A woman with dark hair and glasses is sitting at a desk in an office, looking down at a tablet computer. The office has large windows in the background, and a clock is visible on the wall. A small potted plant sits on the desk. The overall scene is a professional office environment.

## Application/Services Monitoring



# Application/Services Monitoring





# Smart Alerts

Maybe a little too smart for us



A man with short brown hair and a beard is sitting at a desk in a dark room. He is looking at a large computer monitor. His hands are clasped together near his chin, suggesting he is thinking or listening intently. The room is dimly lit, with the primary light source being the screen of the monitor. The background is dark and out of focus.










# *Smart Alerts*

## **Maybe a little to smart for us**

- Setting up initial alerts wasn't too difficult
- Integration to Slack and PagerDuty was relatively seamless
- Smart Alerts use an AI that can take some effort to train (like any AI)
- Configuration options are interesting and take some time to adjust



# Smart Alerts



Event

AllIncidentsIssuesChangesMonitoring issues

Result 3 events

Started

Complete drop in the number of reque...  
2022-05-16, 16:38:50

Device '/dev/mapper/3600a09803830562f545d5044747a4c55' has less than 11 MB capacity left and free space is further decreasing.  
2022-05-16, 07:33:23

Device '/dev/vda3' is full.  
2022-05-16, 07:19:10

Device '/dev/vda3' is full.

Device '/dev/mapper/3600a09803830562f545d5044747a4c55' has less than 11 MB capacity left and free space is further decreasing.

Duration

9h 24m 11s

Severity

Critical

Active

3/8

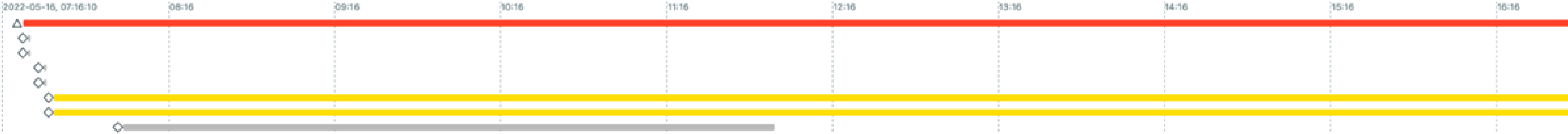
Changes

0

Affected entities

1

Incident Timeline



Triggering Event

07:19:10

Device '/dev/vda3' is full.

On: artemis-vmp

DURATION 9h 24m 11s

Related Events (7)

07:20:59

Inode usage is greater than 90%

On: artemis-vmp

DURATION 1m 2s

07:20:59

Inode usage is greater than 90%

On: artemis-vmp

DURATION 1m 2s

07:26:44

Inode usage is greater than 90%

On: artemis-vmp

DURATION 1m 2s

07:26:44

Inode usage is greater than 90%

On: artemis-vmp

DURATION 1m 2s

07:30:20

Inode usage is greater than 90%

On: artemis-vmp

DURATION 9h 13m 1s

07:30:20

Inode usage is greater than 90%

On: artemis-vmp

DURATION 9h 13m 1s

07:30:20

Inode usage is greater than 90%

On: artemis-vmp

DURATION 9h 13m 1s



# Smart Alerts Setup

wa-prod

No Issues Stack Upstream / Downstream

Summary Dependencies Services Error Messages

< Back to list of alerts

🔔

Calls are slower than usual

Alert Configuration

Details

Threshold Type Static Threshold Metric Latency (90th)

Trigger

Latency Threshold Violations

Scope

Alert individually for this Application Perspective

Included Calls

All Calls Calls performed within this application, by both consumers and producers

Selected Applications/Services/Endpoints

wa-prod

Time Threshold

When the condition persists over a specified amount of time 10 minutes

Edit Smart Alert

BETA You can send us feedback

Threshold 115 ms

Last 24 hours Last 7 days

Latency Threshold Violations

Time Threshold: When do you want to be alerted?

☒ When the condition persists over a specified amount of time

☐ Every time the condition triggers a specified amount of times in a defined time frame

☐ When a certain amount of requests are impacted

Persistence over time

Evaluation Granularity 5 min 10 min 15 min 20 min 30 min

Number of Consecutive Metric Violations 1 3 6 9 12

Alert Channels: Who needs to be alerted?

Alert Channels (1)

Select Alert Channels

Filter...

Name ↑

Properties

web-instana-alerts

Slack

CHANNEL web-instana-alerts

Cancel Save

May 20 Last 10 minutes Live

Time Shift: Off All Calls

Alert Alert History

Alerts created

ADD SMART ALERT



# Smart Alerts on Slack



**Instana** APP 4:41 PM

New issue observed by Instana

## Erroneous call rate is higher than normal

Erroneous call rate is higher than normal

### Entity

mew (Service)

### Severity

Warning

### Metric Value

0.0687

### Threshold Value

0.04

### Metric Name

errors

### Metric Unit

PERCENTAGE

[Open in Instana](#)

New issue observed by Instana

## Calls are slower than usual

Calls are slower or equal to 13 ms based on latency (90th).

### Entity

wa-prod (Application)

### Severity

Warning

### Metric Aggregation

P90

### Metric Unit

MILLIS

### Metric Name

latency

### Metric Value

115.0

### Threshold Value

115.0

[Open in Instana](#)





# Real User Monitoring

## Who is watching the weather?



# Who is watching the weather?

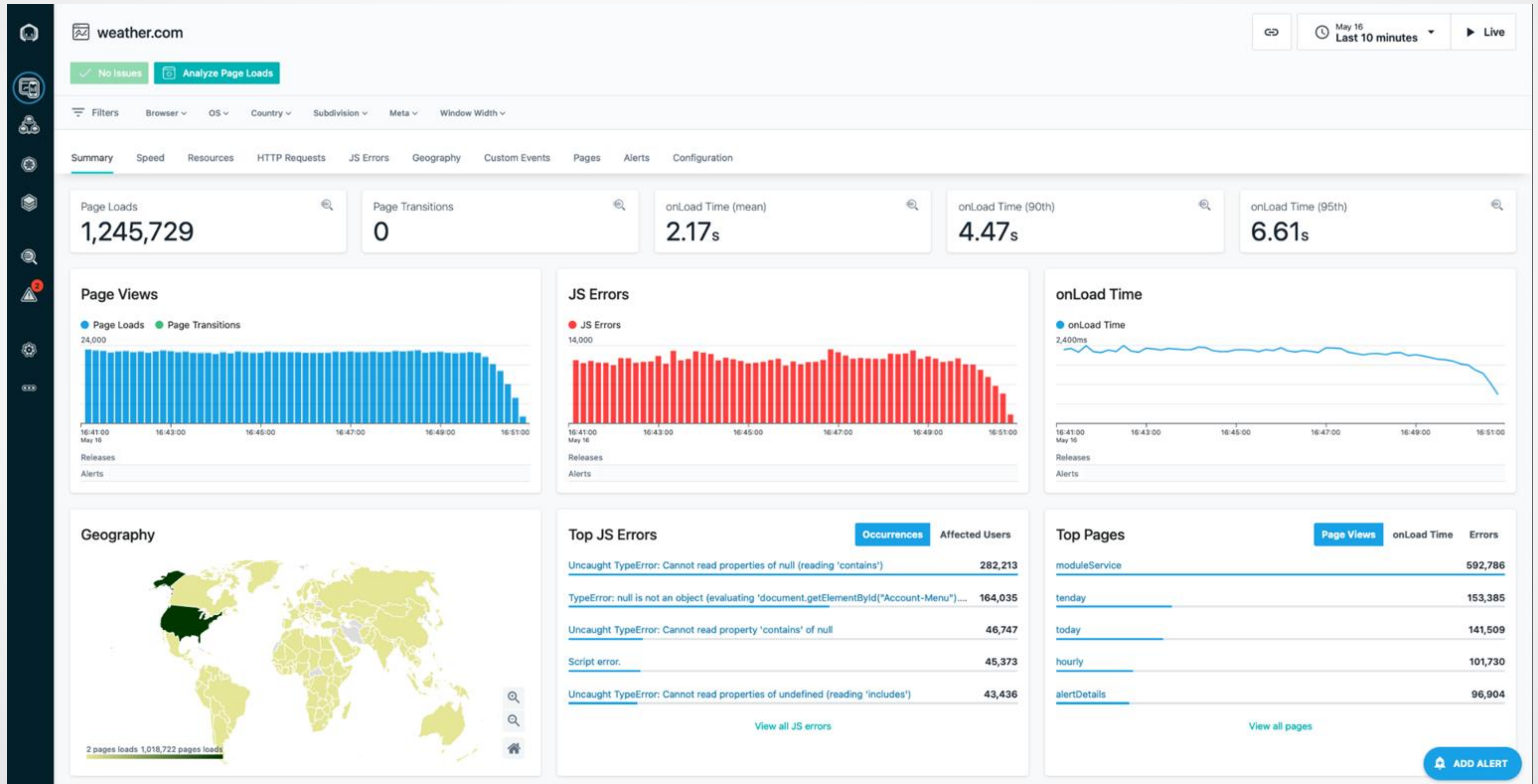
- RUM Replacement Evaluation
  - Compared New Relic, mPulse, Catchpoint and Instana
- Took us awhile to get RUM working on Instana
  - Development dependency and competing priorities delayed launch
- Monitor websites and iOS flagship app
- Picked up not only basic metrics but even our custom metrics without intervention

A woman with dark hair and glasses is sitting at a wooden desk in an office, looking down at a tablet computer. In the background, there is a large window with a clock on the wall and a potted plant on the desk.

## Real User Monitoring

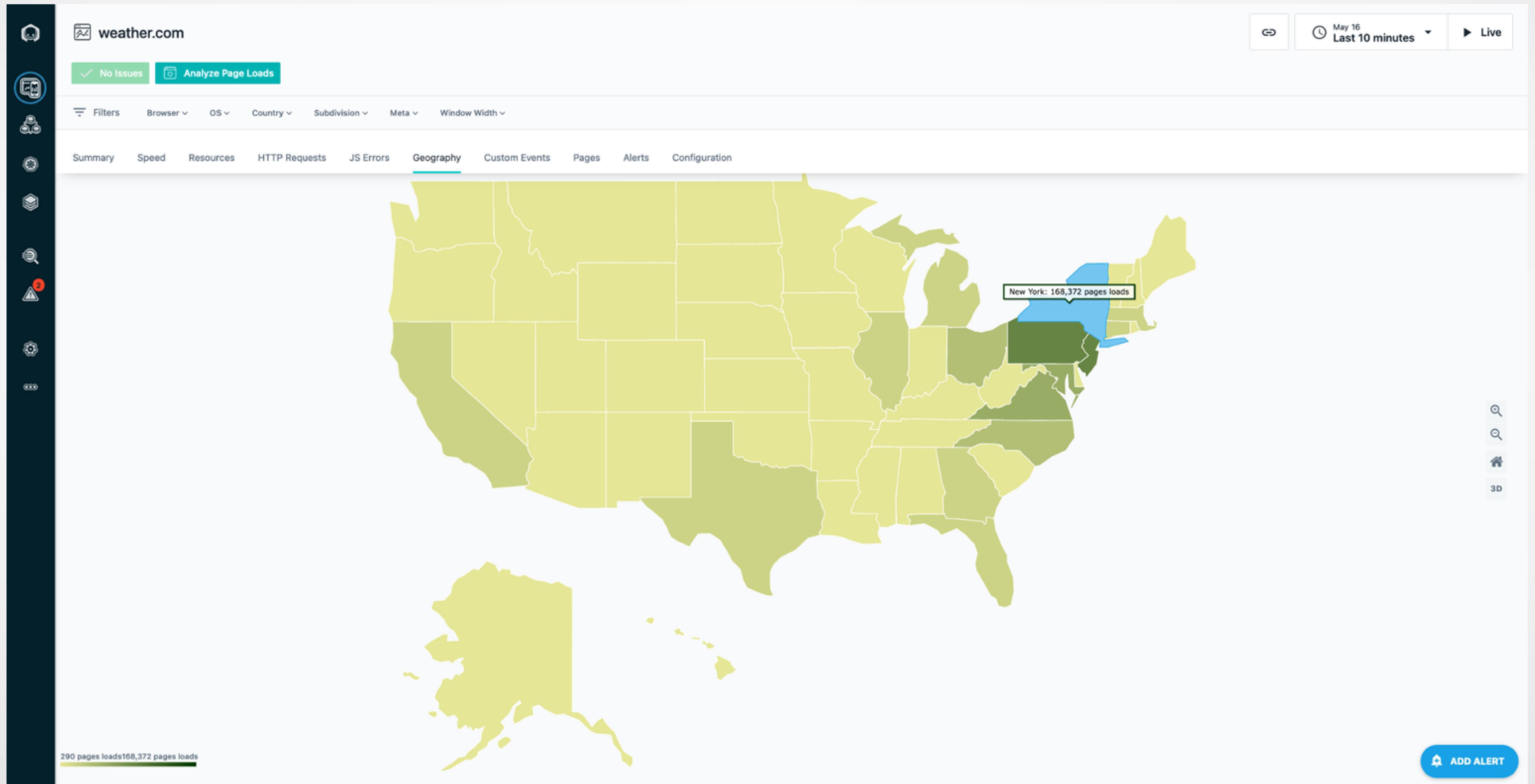


# Real User Monitoring





# Real User Monitoring





# Kubernetes

Not sure why it is not used more



A man with short brown hair and a beard is sitting at a desk in a dark room. He is looking at a large computer monitor. His hands are clasped together near his chin. The room is dimly lit, with the primary light source being the screen of the monitor. The background is dark and out of focus.

































































































































































# *Kubernetes*

## Not sure why it is not used more

- Used to get a view of our Cluster/Nodes/Pods
- It gives the same information as our Prometheus/Grafana views, but for whatever reason, DevOps team uses Prometheus/Grafana
- It is a really good view, but just missing something from wider adoption
- Could use a Sum feature



# Kubernetes

Kubernetes										
<div><div></div><div>May 20</div><div>Last 5 minutes</div><div>Live</div></div>										
<div>ClustersNamespaces</div>										
Name ↑	Namespaces	Nodes	Services	Pods	Deployments	Deployment Configs	DaemonSets	StatefulSets	CronJobs	Health
 insights-prod-east (cluster)	 20	 5	 149	 301	 36	 0	 14	 5	 0	✓
 insights-prod-south (cluster)	 19	 5	 125	 274	 33	 0	 13	 5	 4	✓
 nonprod-insights (cluster)	 22	 6	 54	 144	 33	 0	 14	 6	 9	✓
 wa-non-prod (cluster)	 20	 7	 98	 304	 81	 0	 13	 5	 2	✓
 wa-prod-east (cluster)	 14	 5	 56	 161	 44	 0	 13	 3	 1	✓
 wa-prod-south (cluster)	 14	 5	 56	 158	 44	 0	 13	 3	 1	✓
 wx-dev-001 (cluster)	 26	 23	 205	 748	 113	 0	 14	 42	 9	✓
 wx-nonprod-wdc04-1 (cluster)	 88	 54	 659	 2,257	 527	 0	 21	 105	 21	✓
 wx-prod-001 (cluster)	 19	 43	 146	 1,631	 85	 0	 13	 37	 2	✓
 wx-prod-002 (cluster)	 17	 33	 120	 1,488	 77	 0	 12	 32	 2	✓
 wx-prod-007 (cluster)	 17	 39	 122	 1,606	 78	 0	 13	 32	 2	✓
 wx-prod-008 (cluster)	 17	 41	 121	 1,629	 78	 0	 13	 32	 2	✓
 wx-prod-dal10-1 (cluster)	 79	 90	 164	 3,228	 105	 0	 20	 33	 9	✓
 wx-prod-dal12-1 (cluster)	 79	 90	 163	 3,247	 104	 0	 20	 33	 3	✓
 wx-prod-sjc03-1 (cluster)	 79	 90	 160	 3,225	 101	 0	 20	 33	 3	✓
 wx-prod-sjc04-1 (cluster)	 79	 104	 160	 3,459	 101	 0	 20	 33	 3	✓



# Distributed Tracing

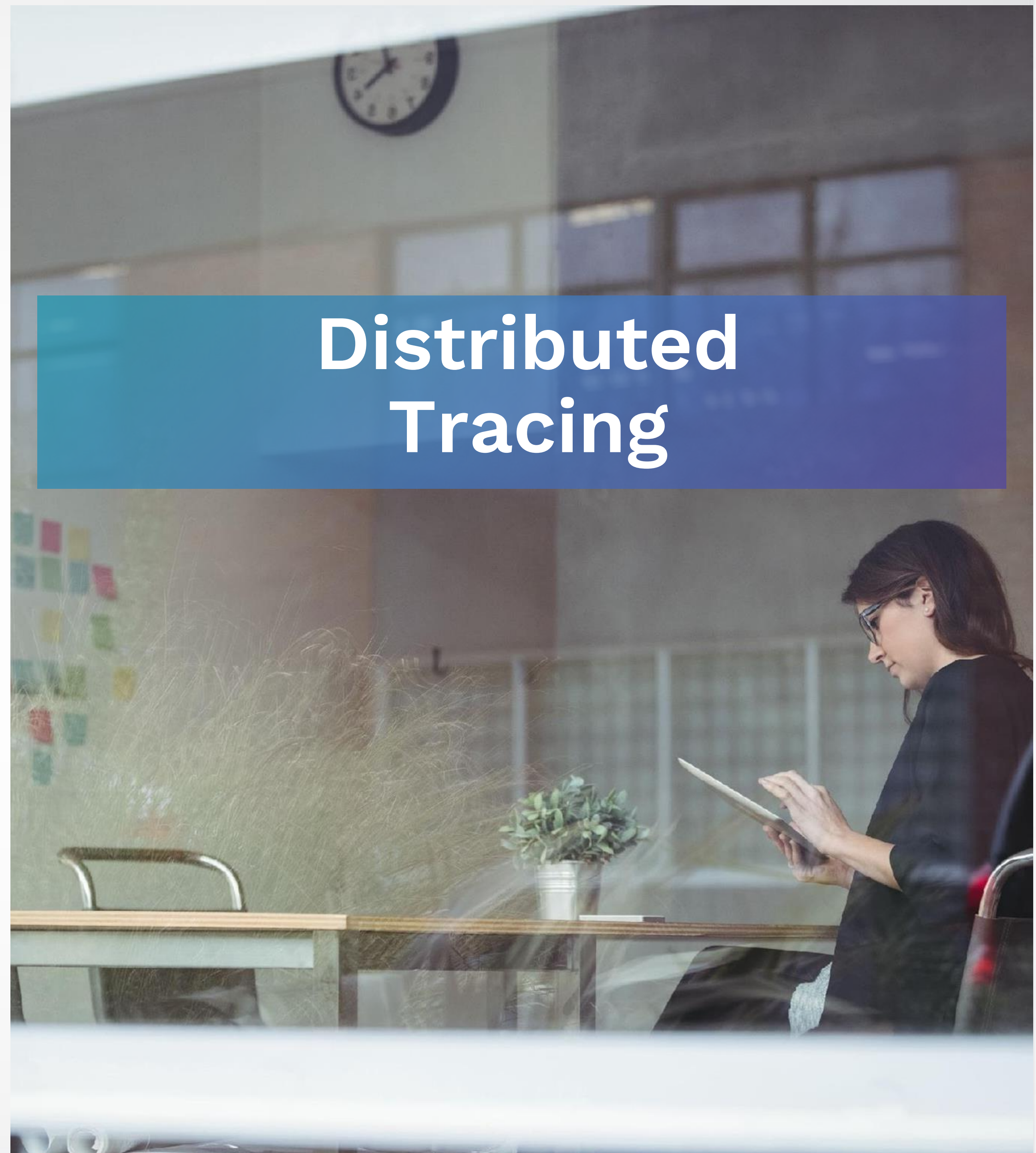
Our service touches how many others



# Our service touches how many others

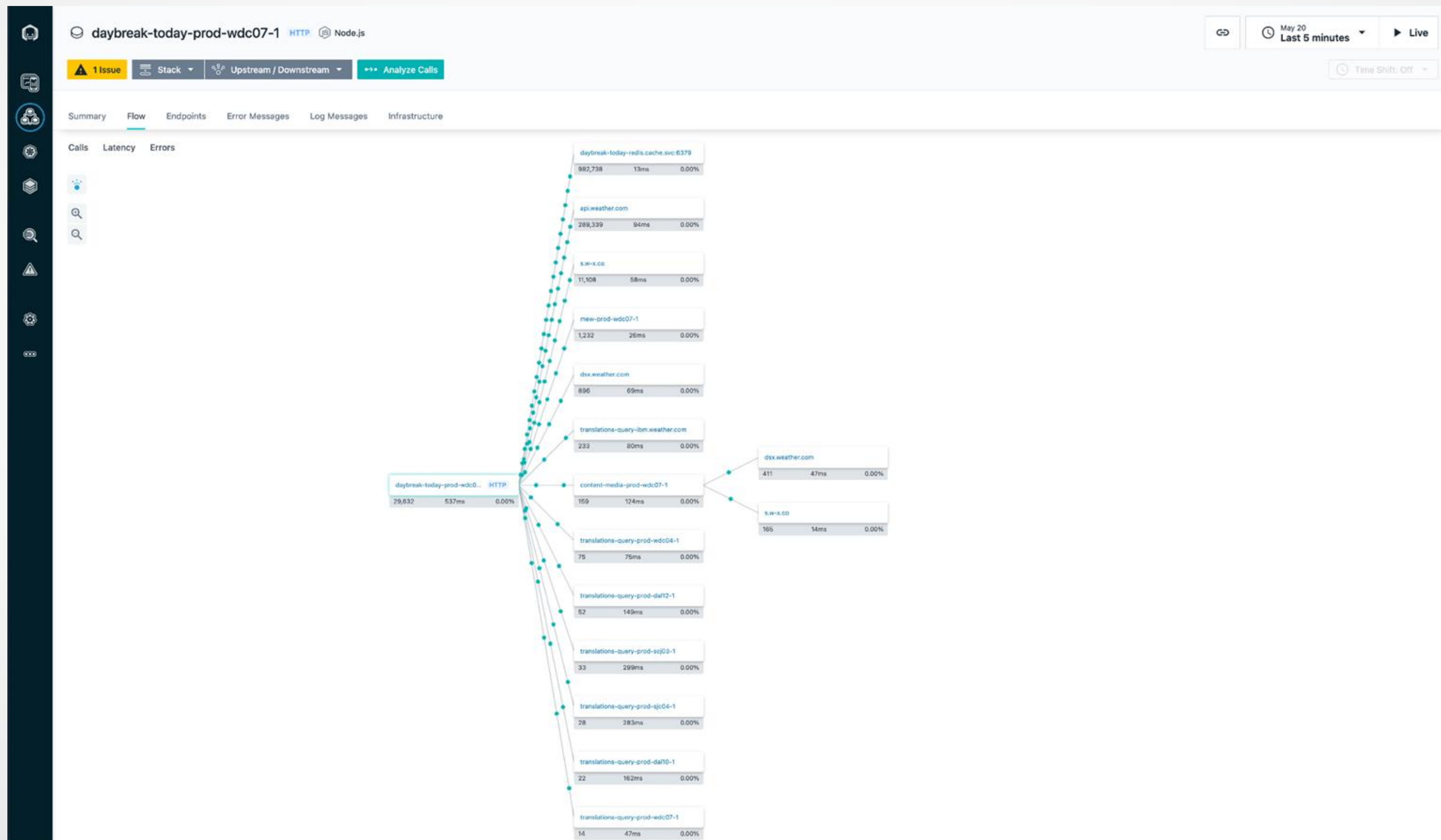
- Last feature to be installed
- Development dependency and competing priorities delayed launch
- Was able to troubleshoot most issues prior to launch
  - This gave us a better view of interdependencies

## Distributed Tracing





# Distributed Tracing





# Conclusion

- Instana agent/sensor installation was not difficult
- Instana provides a lot of metrics out of the box
- Watch your use to make sure you are sized properly
- Review your metrics/output before setting up alerting
- Smart alerts may take some tweaks to reduce the noise
- When migrating, there are some long tails that will need planning
- Don't be afraid to enable features and let them organically grow



# Thank you for your time

@teaton 



# Q&A

