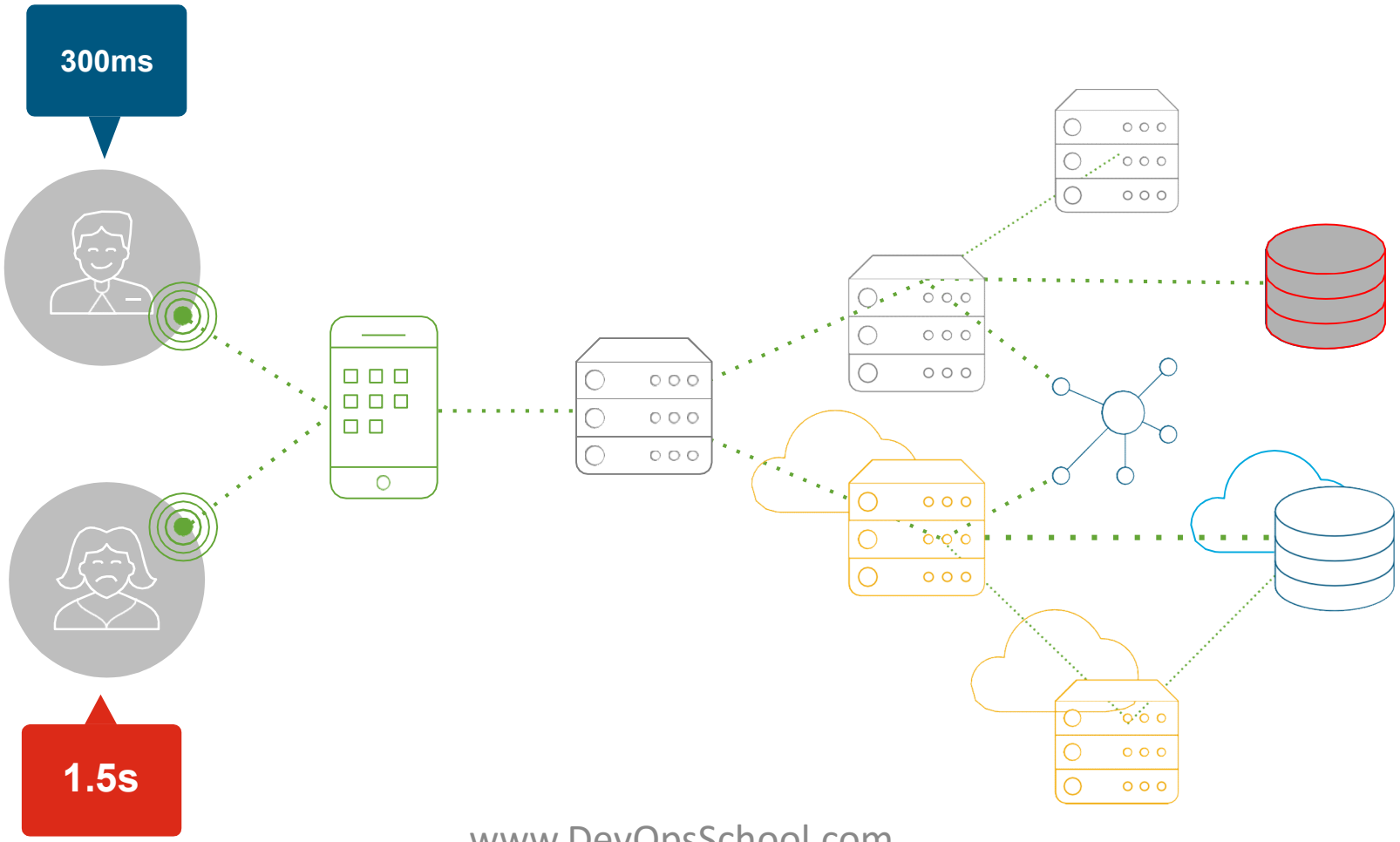
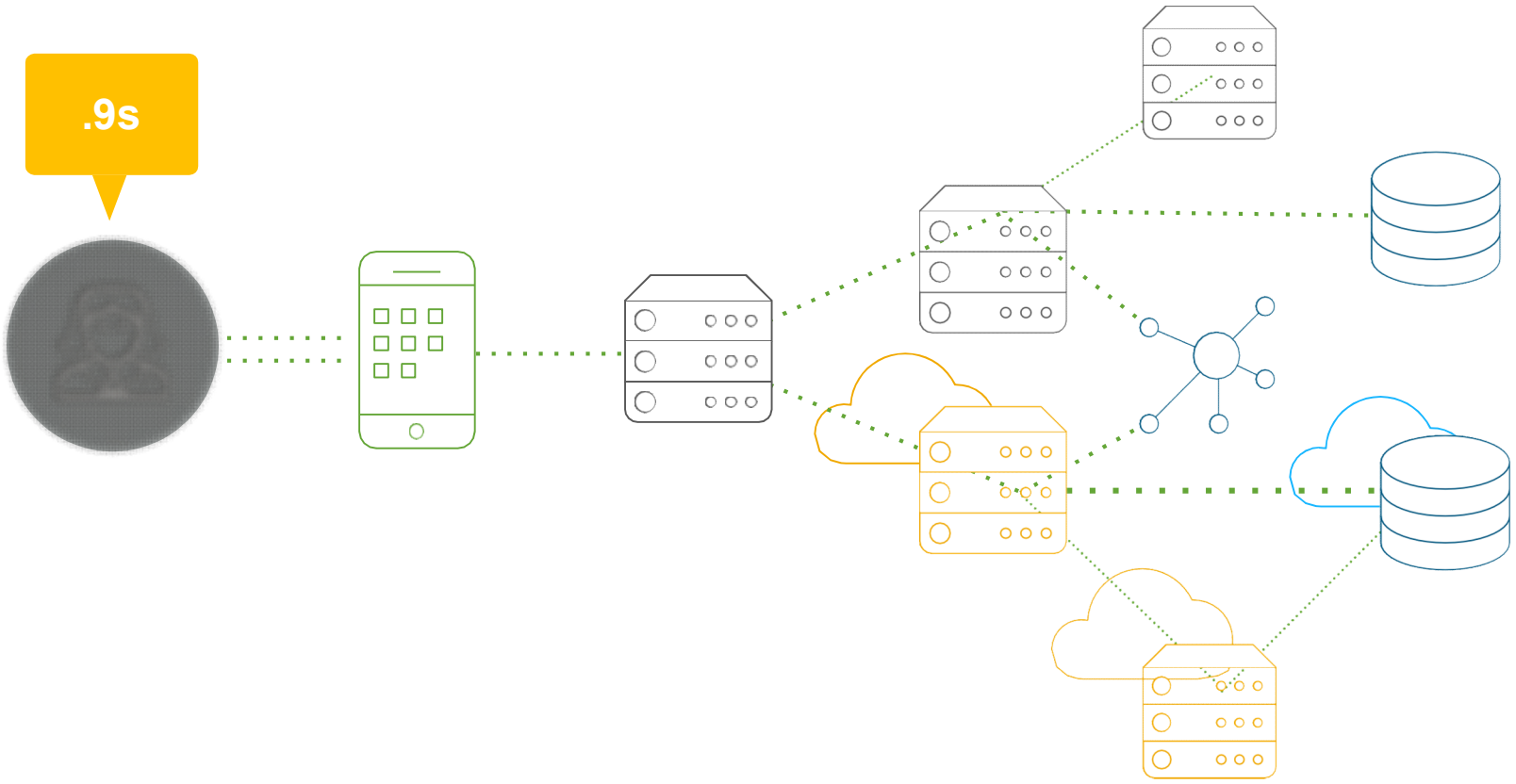
Datadog APM

Rajesh Kumar
www.DevOpsSchool.com

ASSESSMENT	YES	NO	NOT SURE
Are we measuring real end-user experiences on our website today?			
Are we meeting customer SLAs?			
Is our app delivering consistent response imes across users and geographies?			
Do we have under-performing regions? Do we have a web performance plan in place to correct those problems?			
Is our site delivering a consistent user experience, regardless of browser type?			
Do we know how our website response time and availability compares with our competition?			
Can we quantify how third-party technology and services such as ad networks and payment processes are impacting our site's performance?			
Can we monitor and troubleshoot problems for our mobile app using the same APM tool we use for our web applications?			

Why is monitoring hard?


300ms
1.5s

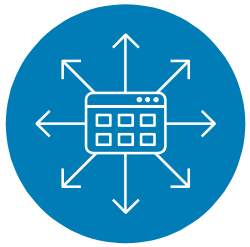

.9s

Lots of Data Sources

Mobile
SDK

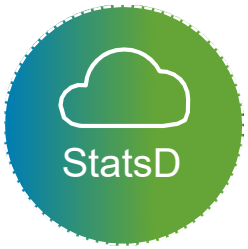
Browser
Agents

Synthetic
Users

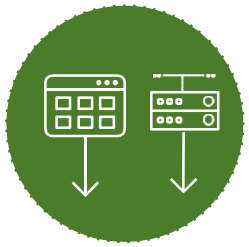


Application
Agents

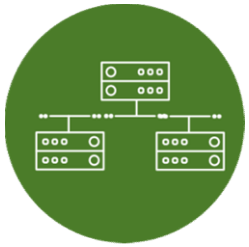
Infrastructure
Agents



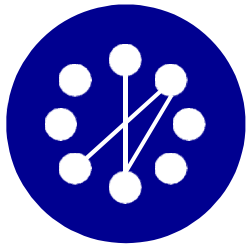
Cloud & Custom
Metrics



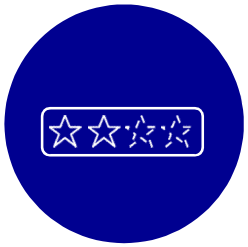
Logging / Machine Data



Wire Data



Synthetic
Infrastructure



Social & Contact
Center

Why Performance is very critical?

1. A 1-second delay in response time can reduce conversions by 7%, page views by 11%, and customer satisfaction by 16%
2. More than half (51%) of online consumers in the US said that site slowness is the top reason they would abandon a purchase
3. When online service fails, 75% of consumers move to another channel, which can lead to millions of lost dollars

What is APM?

Application Performance Monitoring (or APM) gives you grouped views of your application's performance trends for quick and easy diagnosis of performance problems.

What is APM?

Application Performance Management or APM is a set of **methodologies** and **practices** for **monitoring** and **managing** complex software applications.

What is APM?

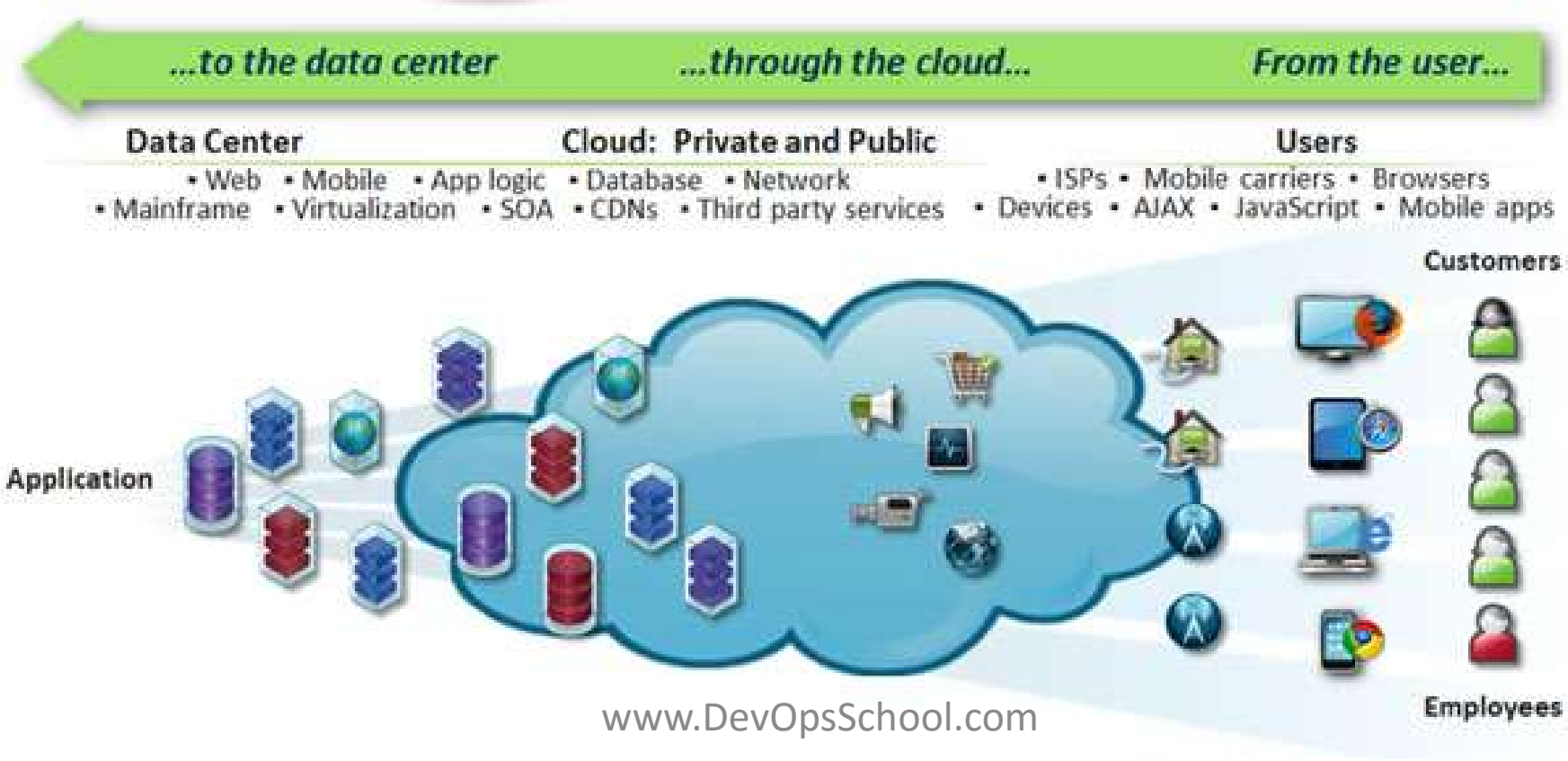
APM helps you understand and improve the relationships between your applications, your customers, and your business.

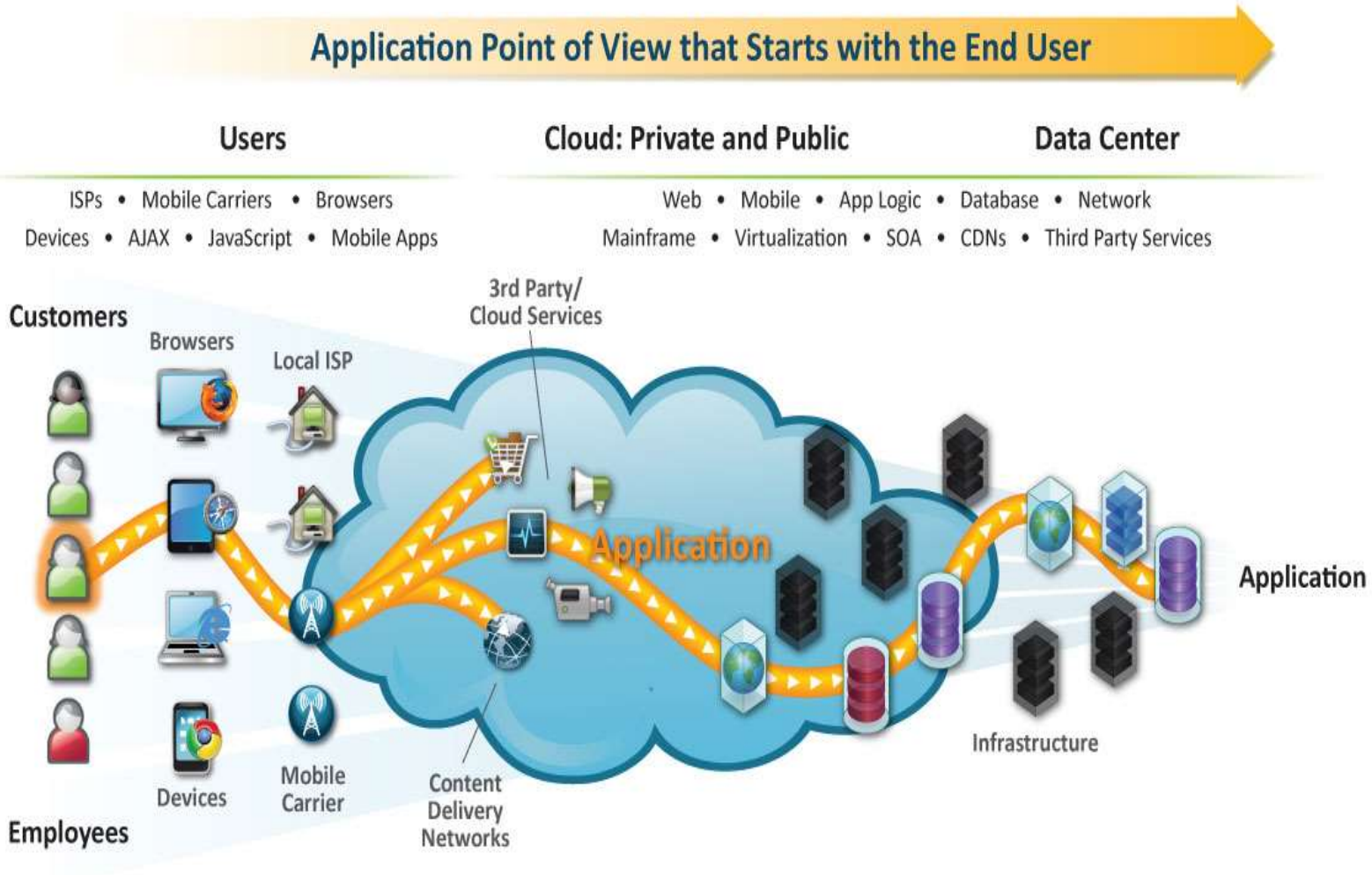
What is APM?

Application performance monitoring is the strategy and practice of

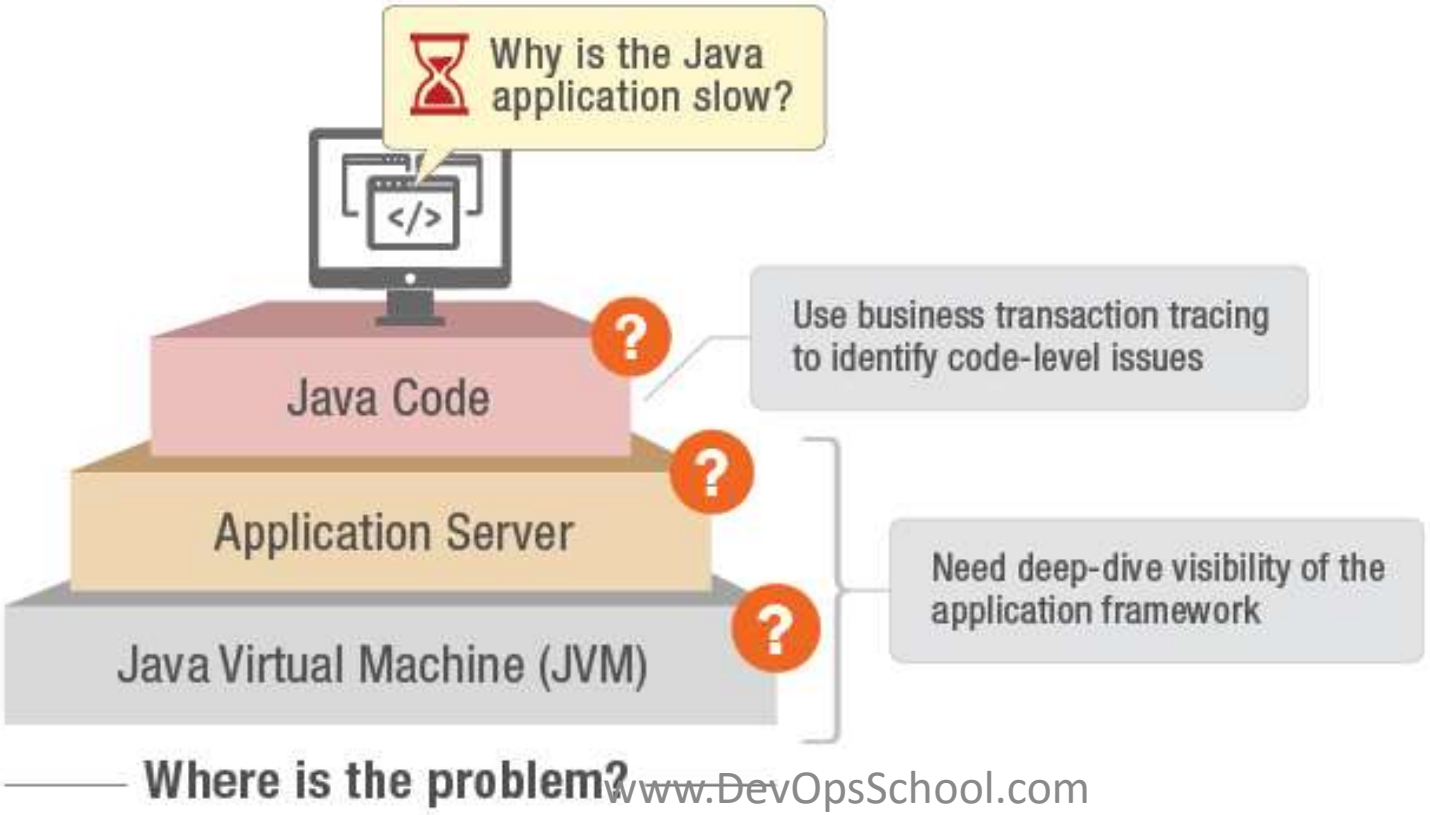
- Continuously monitoring and tracking
- The performance of business applications and the user experience of end users as they access the applications
- To understand trends, Isolate anomalies, and
- Get actionable insight for problem resolution and code optimization.

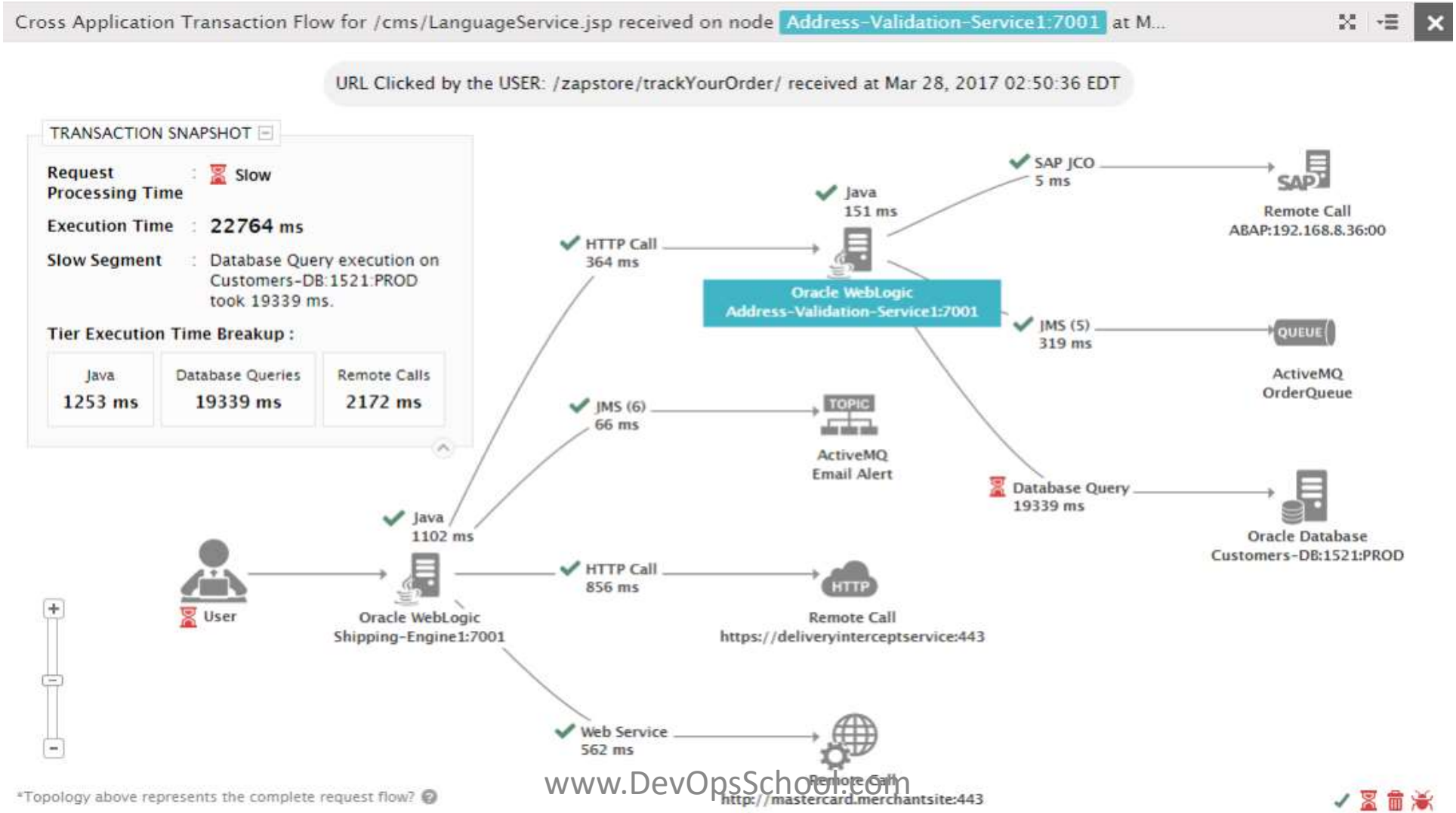
Why APM?





Why APM?





Methodologies to Obtain data

Agent Based Solution: This is a solution where you have a piece of software, or an agent if you will, injected within an Application. It will report back on what this application is doing internally along with complex metrics. The negative aspect though of having one of these agents is it will incur some overhead onto your application but the visibility you gain is priceless and the overhead is minimal.

Agentless Based Solution: This is a solution where instead of directly monitoring the Application you analyze its surroundings. This would be ideally gathering all the information within a data center. This is generally done by spanning ports and analyzing the packet level information (for the paranoid, it does not analyze the Payload!). Unlike the agent based approach you have no overhead, but you do get constrained in terms of the amount of data you obtain.

Methodologies of how we monitor?

Real User Monitoring: RUM is the notion that with the evolving complexity of modern day computing in order to truly identify performance you must go all the way back to the end user. This involves going all the way through the delivery chain(like the figure above) back to the data center and having all the metrics associated with those transactions.

Business Transactions: BT's make our lives easier. The purpose of BT's is to take all the data collected and aggregate them into high level concepts. It draws many similarities to a Select statement from SQL. For example if the business wants to look at the revenue per item, an APM tool would find the methods which return these values and make these metrics. The amount of data collected can be scary so BTs simplify this data and make it translatable to any dialect in the corporate world.

End goal of APM is simple

- Automatic reports
- Alerts, and
- Warning signals

1. when your response time of your transactions start increasing, red flags are waved;
2. when a transaction starts failing, a developer already knows of the issue because the APM team has reported on the trending data.

APM Selection Criteria

- Platform/Language support - Does it support Ruby, Python, .Net?
- Developer Familiarity
- Ease of Use - setup -> diagnostics -> fix
- Integration Support - HipChat/Slack/Jira/GitHub/Chef/Puppet
- Pricing

What is Datadog?

Datadog Application Performance Monitoring (APM or tracing) provides you with deep insight into your application's performance - from automatically generated dashboards for monitoring key metrics, like request volume and latency, to detailed traces of individual requests - side by side with your logs and infrastructure monitoring.

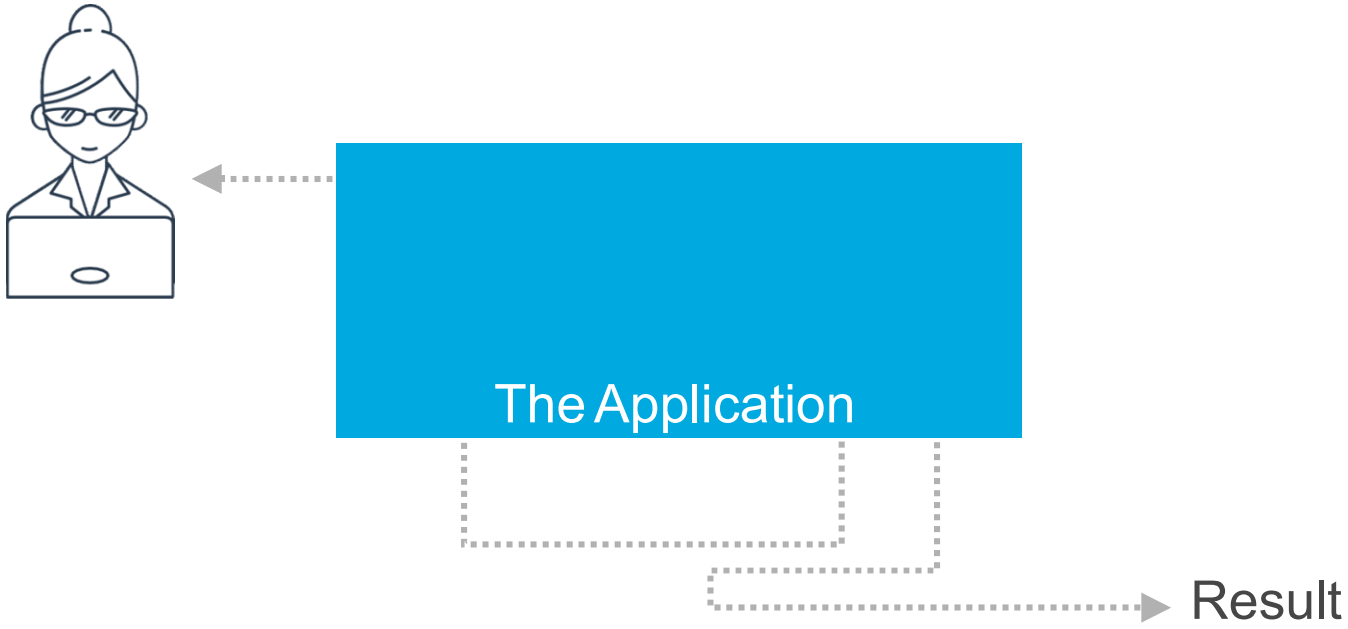
When a request is made to an application, Datadog can see the traces across a distributed system, and we can show you systematic data about precisely what is happening to this request.

Competitors

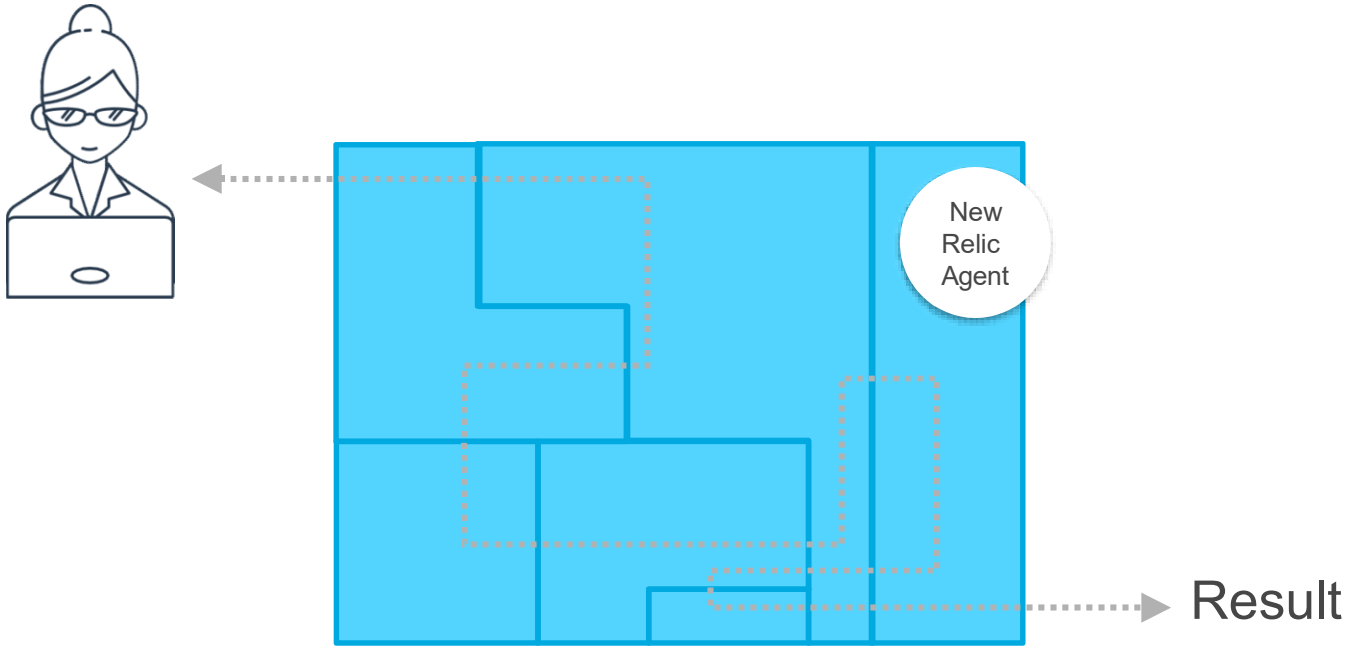
- Appdynamics - Enterprise focus, no Ruby/Python SDK support
- Compuware - APM, DynaTrace and Gomez
- IBM, HP, Dell, Microsoft
- Splunk, Logstash
- Systems Monitoring: Gomez, Pingdom, Nagios
- Real User Monitoring: GTMetrics, Google PageSpeed

What is a transaction trace?

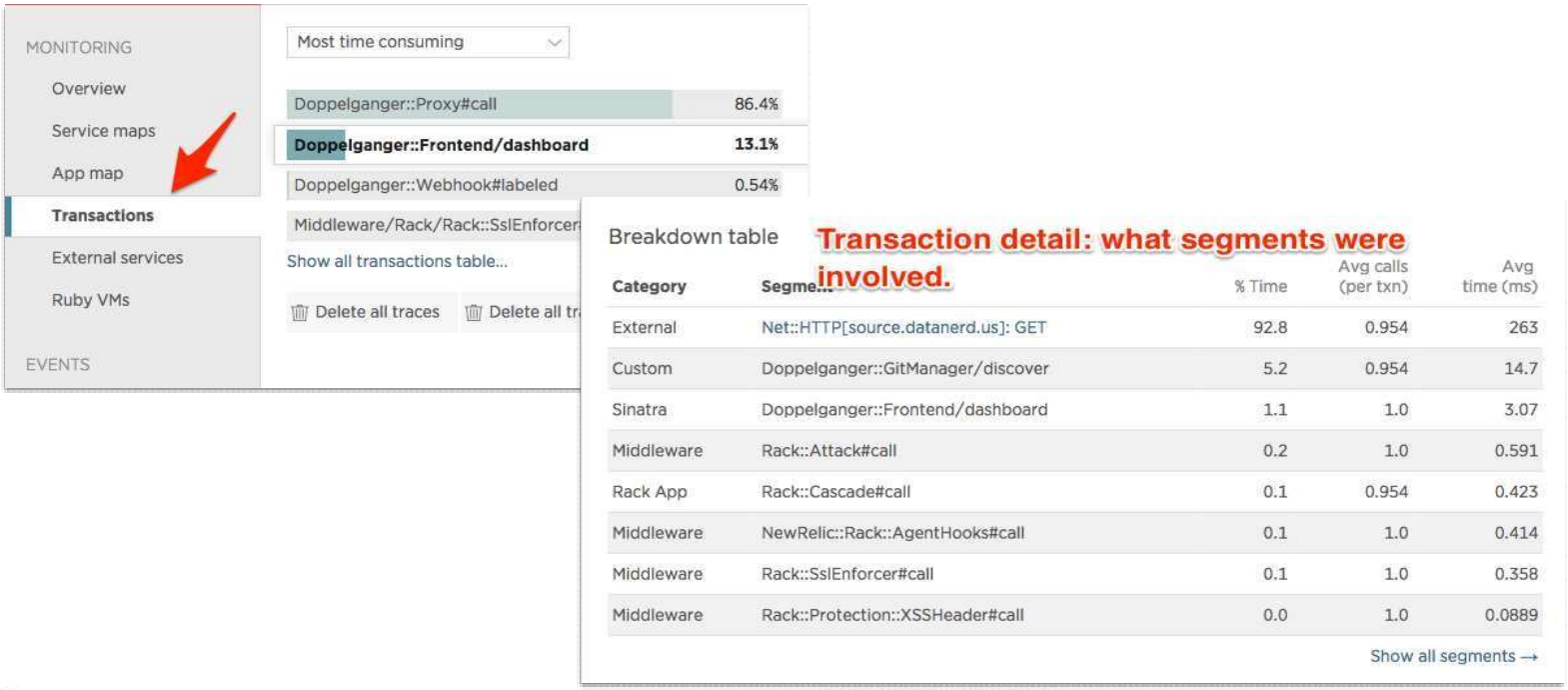
Traces: How Did an Application Arrive at a Result?



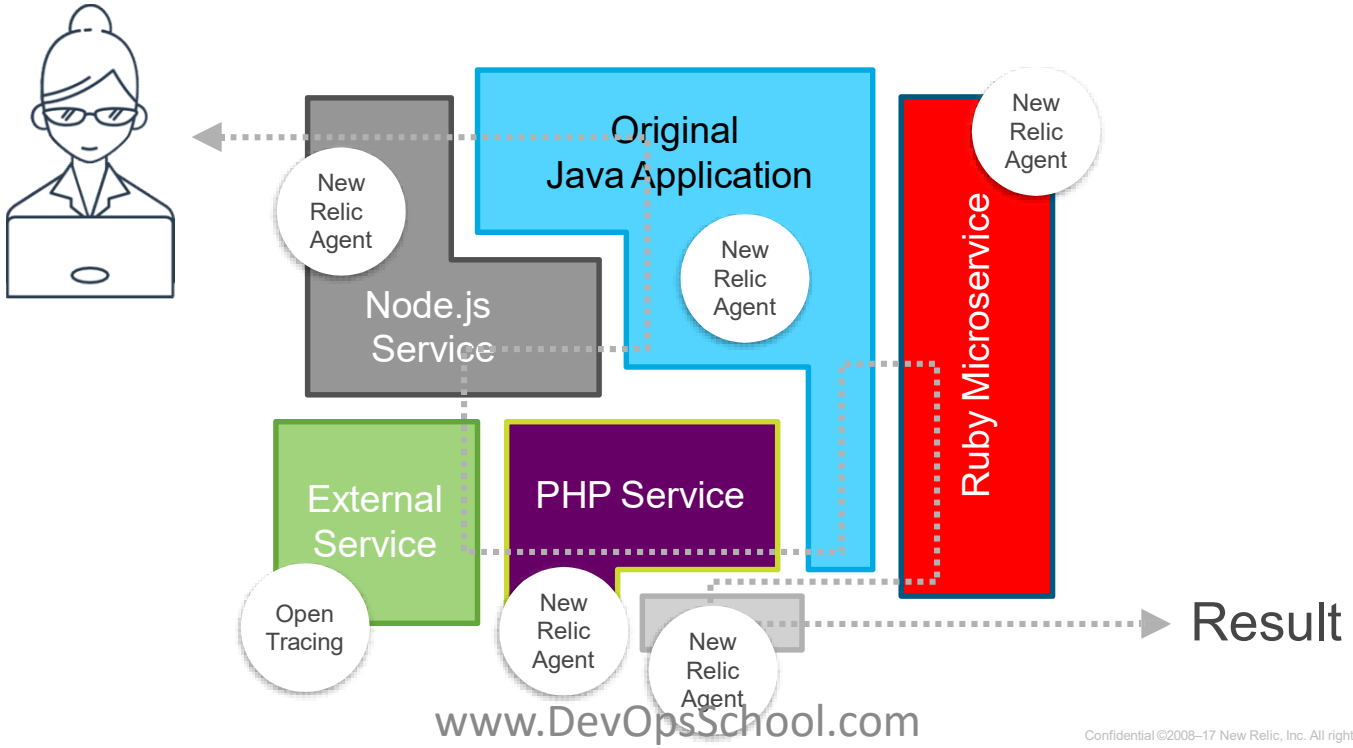
Tracing Provides Information on Which Segments of an Application Were Involved in a Result



Transactions Are a Central Part of New Relic's Product and Help Developers Diagnose and Troubleshoot Many Problems Without Guessing.

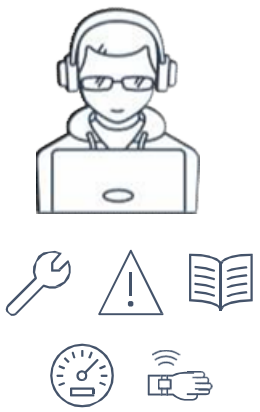


With Microservices, Applications ("Monoliths") Get Broken Up Into Smaller Pieces.
The Traces *Now Go Through Multiple Programs.*



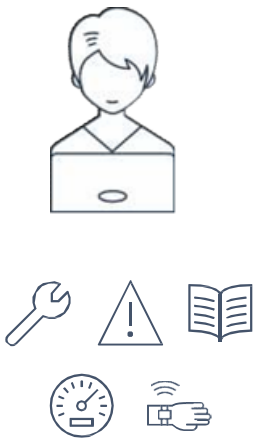
To answer operational questions, teams define their own metrics, logging, and alerting practices.

Operations



Backend

Frontend

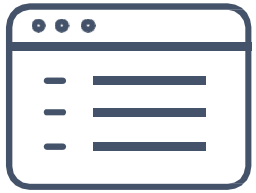


Important operational data becomes siloed by service, app, or infrastructure type.

Operations

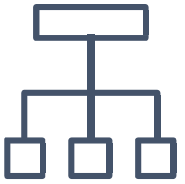
Infrastructure Metrics

Backend



Java application logs

Frontend



Application Traces

New Relic consolidates operational data to answer hard questions *across* teams, apps, and platforms.

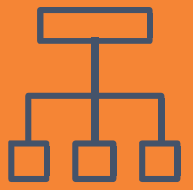
Operations

Infrastructure Metrics

Backend

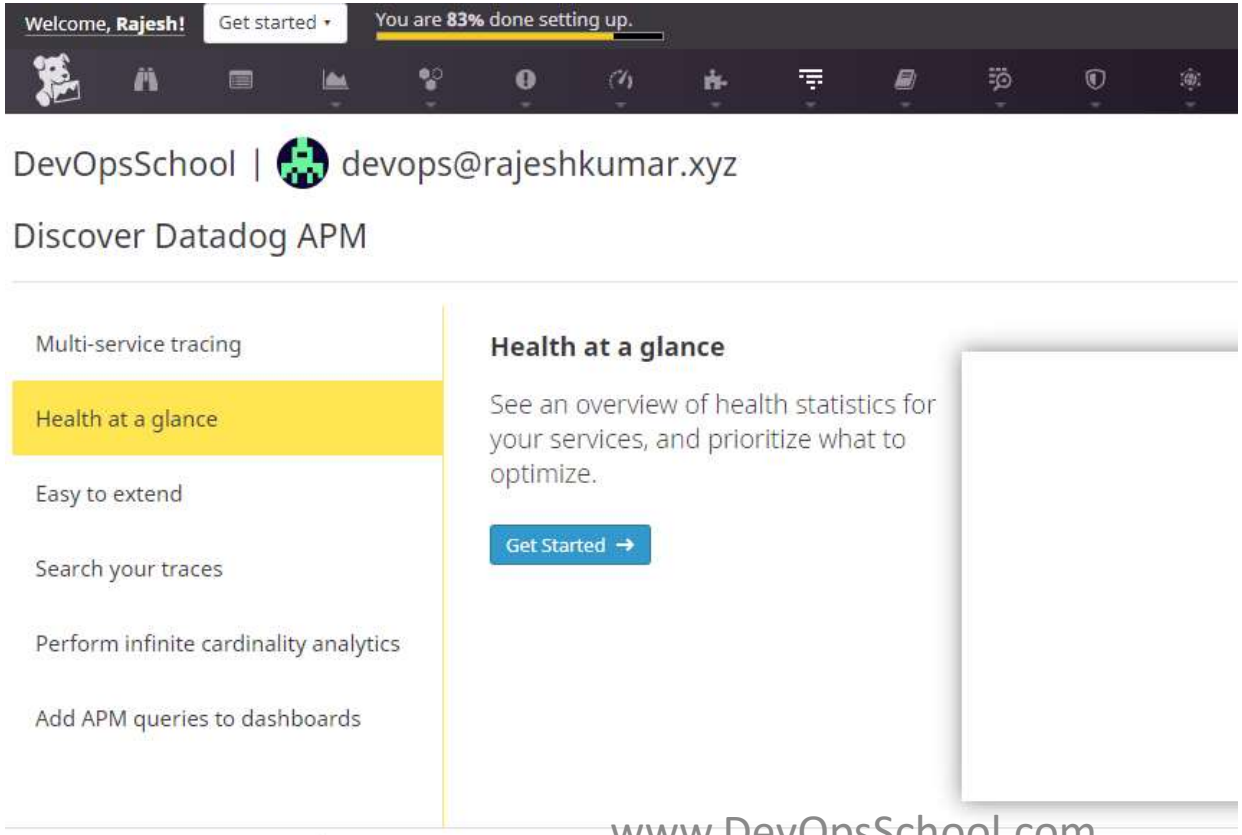
Java application logs

Frontend



Application Traces

Datadog: Get Started



APM Setup & Docs

Getting Started | Analyzed Span Estimator | Docs | Help

Where are your traces coming from?

Host-Based
Datadog Agent on the same host as application

Container-Based
Docker, Kubernetes, ECS, Fargate

Additional
Lambda, Heroku, Cloud Foundry

Host-based setup will take about 5 minutes to complete

1 Install Agent

The Datadog Agent is used to send traces from our tracing libraries

Datadog APM relies on the standard Datadog Agent to send traces. For each host you'd like to instrument with APM make sure you have the agent installed. Please refer to these instructions for more information about the installation process.

2 Choose your Language

Each language has unique steps and configuration.

Java | python | Ruby | GO | node | Microsoft .NET | php | C++

APM Setup & Docs

Getting Started | Analyzed Span Estimator | Docs | Help

Where are your traces coming from?

Host-Based
Datadog Agent on the same host as application

Container-Based
Docker, Kubernetes, ECS, Fargate

Additional
Lambda, Heroku, Cloud Foundry

Container-based setup will take about 7 minutes to complete

1 **Choose your Environment and Application Language**

Please choose your environment and application language, as the steps for setting up

Which environment is your Datadog Agent is running in?

docker | kubernetes | Amazon ECS | AWS Fargate

APM Setup & Docs

Getting Started | Analyzed Span Estimator | Docs | Help

Where are your traces coming from?

Host-Based
Datadog Agent on the same host as application

Container-Based
Docker, Kubernetes, ECS, Fargate

Additional
Lambda, Heroku, Cloud Foundry

Setup will take about 7 minutes to complete

1 **Choose your Platform**

Each platform has unique steps and configuration.

AWS Lambda | HEROKU | CLOUDFOUNDRY | Other (GAE, AAS)

Questions?