

# AMAZON RDS + SIGNALFX INTEGRATION

## What is Amazon RDS?



Amazon's Relational Database Service (RDS) is used by 47% of companies on AWS as a fast, secure, and cost-effective component of a modern cloud infrastructure. RDS provides six familiar database engines, including popular open-source options like PostgreSQL, MySQL, and MariaDB. Like other AWS services, RDS makes it easy to manage capacity and scale into thousands of requests per second and terabytes of data under management.

## Limitations of Amazon CloudWatch

Amazon CloudWatch is the default service Amazon provides to monitor RDS, but it has many known limitations. First, it lacks advanced analytical features such as calculated fields and dynamic alert thresholds. More powerful analytics help you monitor and alert on the most meaningful information.

Second, databases are often part of a complex system, and you often need to correlate metrics across your stack to solve problems or identify service-level trends. To get a complete view, you'll also need to send custom metrics and events, which can take extra work to instrument and configure.

Third, you occasionally need to look back to see changes over time and to put patterns and issues into a meaningful context. This requires visibility from a month or even a year ago. CloudWatch only gives you two weeks of retention for your metrics data, which often isn't enough to discern what's a normal change from a performance concern.

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Connect SignalFx to AWS

 AWS Autoscaling	 AWS CloudFront	 AWS EC2	 AWS ECS	 AWS ElastiCache	 AWS EBS
 AWS ELB	 AWS OpsWorks	 AWS RDS	 AWS Route 53	 AWS SNS	 AWS SQS

## Monitoring Amazon RDS

SignalFx provides real-time monitoring and intelligent alerting on AWS metrics as they stream from RDS, aggregated with metrics from the rest of the services in your environment, retained

for 13-months to see changes over time. You also get a built-in Amazon RDS monitoring dashboard right out of the box so you can see the metrics that matter to performance without guesswork or painful trial-and-error.

### Amazon RDS Metrics

# DB Instances	# DBs by Class	Engine Names for All DB Instances
Read IOPS	Read Latency	Read Throughput
Write IOPS	Write Latency	Write Throughput
CPU Utilization	Database Connections	Network Receive Throughput
Network Transmit Throughput		

**CLUSTER HEALTH:** If you have a distributed database, you should be aware of whether each instance and your cluster as a whole are healthy. While Amazon has the ability to track availability of each instance, a better health indicator will say whether instances are responding to requests in an expected time and without errors. Realistically, if your queries take longer than they should, you're not getting enough value out of the database. More importantly, from a product perspective, high latency on your queries is not only indication of possible ill database health, but also of a bad end-user experience for your application. So it's important to also think of availability metrics in the context of higher-level strategic policies.

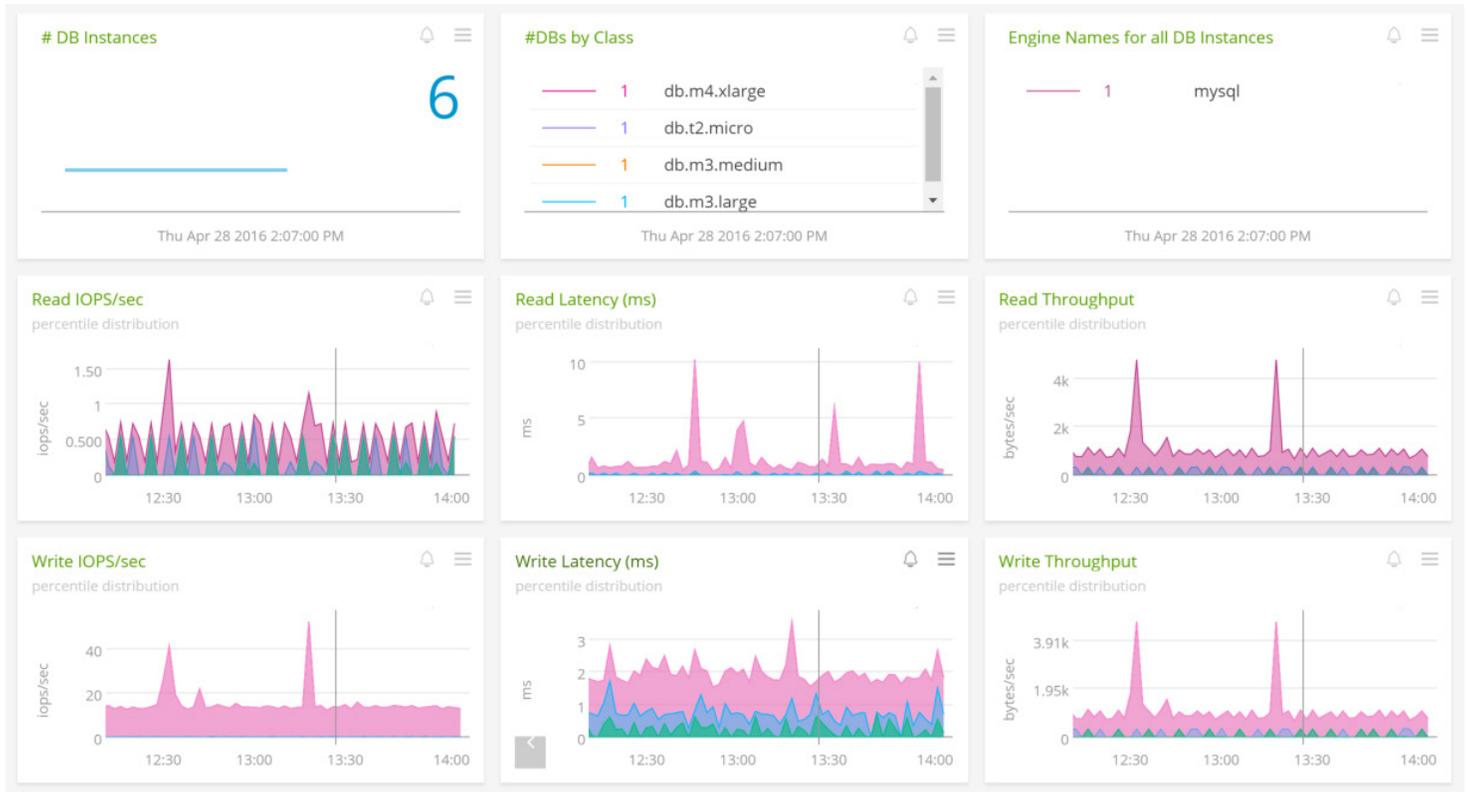
**RESOURCE USAGE & SYSTEM ERRORS:** Databases can become unavailable due to hitting limits on resource usage, including the table size limit in MySQL, the max number of database connections allowed per instance, and capacity constraints during periods of peak demand. You should also check your database error log in the RDS console for clues about errors that are internal to the database. A misconfigured schema or an out-of-sync cluster could also make the database appear unavailable. Watching your error rate after making schema or cluster changes can highlight this kind of issue.

**RDS & DATABASE LIMITS:** RDS databases include limits from RDS as a whole and for each specific database engine. For example, RDS databases include limits on the maximum number of database connections per instance and the maximum table size. To optimize performance, consider whether your database is heavier on reads (select) or writes (insert, update, delete). If it's heavy on reads, you might benefit from taking advantage of indexes, read replicas, materialized views, or upstream caches. If your database is heavy on writes you may benefit from removing slow indexes, table locking, and foreign key constraints. Adding additional shards or partitions and using asynchronous replication can also be more performant.

## Monitoring Amazon RDS with SignalFx

**PREDICTIVE CAPACITY MANAGEMENT:** On its own, CloudWatch only provides basic data rollups like min, max, average, sum, and data samples. Like most other metrics monitoring systems, CloudWatch alerts are limited to static thresholds, which can easily become a source of dreaded false-positive alerts. SignalFx can use calculations to trigger alerts on service-level patterns, so you're notified with enough time to fix an impending issue well before it affects performance or availability. For example, SignalFx's built-in dashboard for RDS automatically uses trend analysis to determine disk space and the number of days of capacity you have left. Schedule time to provision more capacity with plenty of runway or fire, an alert when remaining capacity hits a practical point of intervention.

**AGGREGATED METRICS ACROSS THE STACK:** Databases rarely operate in isolation, which is why troubleshooting and capacity planning often require you to correlate behavior with your other systems. While CloudWatch is good at collecting data from AWS systems, it doesn't easily correlate data from your applications and other in-house systems. With validated plugins for a wide range of data sources, you can correlate Amazon RDS with metrics from your open-source microservices, as well as custom app components and on-prem systems for a service-level view of your infrastructure in production.



## About SignalFx

SignalFx is the most advanced monitoring and alerting solution for modern infrastructure. Our mission is to help cloud-ready organizations drive high levels of availability in today's elastic, agile, distributed environments. With SignalFx, development and operations teams gain a real-time view of, interact with, and take action on the infrastructure and application metrics that matter. We have enterprise customers including Yelp, Cisco, Zuora, and Hubspot and thousands of users analyzing billions of metrics every day. SignalFx was founded in 2013 by former Facebook and VMware executives, launched in 2015, and is backed by Andreessen Horowitz and Charles River Ventures.