



SOLUTION BRIEF

Considering a Fully Managed DBaaS Offering For Your Business?

**COMPARING PERCONA MANAGED DATABASE SERVICES
AND AMAZON AURORA**

At Percona we understand that our customers are looking for the best database solution at the right price. We actively support and encourage this mission and work closely with our customers to ensure they select the most suitable database technologies and cloud providers to meet their business needs.

For many businesses, [Amazon Aurora](#) is a great option. Aurora is a MySQL and PostgreSQL-compatible relational database engine built specifically for the cloud. It combines the speed and availability of high-end commercial databases with the simplicity and cost-effectiveness of open source databases. Aurora can be significantly cheaper than traditional database vendors.

However, despite all these great features and benefits, there are still some tasks that you should take responsibility for, to ensure that you are getting the best possible performance from your data. This is where Percona can make a difference.

Considering Your Options

Percona has a deserved reputation as an unbiased champion of open source database solutions. Our significant open source software expertise means we understand how databases work, how we can make them better, and what they fundamentally can and can't do.

Many of our customers utilize Amazon Aurora, and many others are considering making the leap. Our experience working with customers on Aurora has provided us with some insight into common misconceptions of what Aurora can and can't provide to their users.

One of the thorniest issues is the concept of having a fully-managed database service, and what this means in real terms.

What is a Fully Managed DBaaS Solution?

*The definition of **fully** is: completely or entirely; to the furthest extent.*

In the database world, this includes hardware and infrastructure, software updates, operational functions, troubleshooting of infrastructure and software, and performance tuning.

Many people believe that Aurora is a fully managed database solution and no further input is required from them. However, although some of the elements mentioned above are met, they are not all met, so businesses should still conduct analysis and oversight to ensure their database on Aurora is properly optimized and performant.

[Percona Managed Database Services \(PMDS\)](#) is a flexible managed database service that delivers exceptional, enterprise-grade expertise across a variety of high-performance enterprise database environments. PMDS gives you affordable in-depth technical expertise on demand. Our expert DBAs keep your database running at peak performance, whether on-premises or in the cloud so that your engineering team can focus on your core business.



Amazon Aurora and Percona Software - A Comparison

Amazon Aurora

Aurora ticks most boxes from an operational management perspective. Aurora offers endpoint availability, automated backups, automated software updates, automated node provisioning, and automated recovery of nodes.



In order to take advantage of these features on Aurora you have to switch to a proprietary datastore - Amazon Aurora. This can result in limitations for some businesses as Aurora's latest 2.07.0 version is a fork of MySQL 5.7 Community. This means you need to pay careful attention to their [release notes](#).

If you look at the release notes for Aurora, you will notice that many upstream bug fixes are not included in subsequent Aurora releases. This is because Aurora is a true fork of MySQL and so does not automatically integrate upstream fixes. Instead, Amazon has to choose to spend time and money testing and developing QA cycles and then including these bug fixes in its latest version.

When you sign up to Aurora, you are effectively locked into their proprietary, integrated database software version. At the time of writing, Amazon Aurora's latest compatible MySQL release was 5.7 2.04.5.

This means they are missing the following MySQL 5.7 code features:

- Group replication plugin
- Increased page size
- InnoDB buffer pool loading at startup
- InnoDB full-text parser plugin
- Multi-source replication
- Online buffer pool resizing
- Password validation plugin
- Query rewrite plugins
- Replication filtering
- CREATE TABLESPACE SQL statement

Percona Software

[Percona Server for MySQL](#) is Percona's free and open source software version of MySQL Community. Percona software is regularly updated to reflect the latest community version features and includes many additional free enterprise-level features.



PERCONA
Server for MySQL

- MyRocks storage engine
- Additional information_schema tables
- 400+ more global performance and status counters
- Audit logging
- Encrypted Built-In InnoDB Tablespaces
- Hashicorp Vault KeyRing storage
- Thread pooling
- And more...

Percona provides hotfixes to software, which eliminates or minimizes the impact of bugs.

Percona is passionate about open source software and is anti-lock-in. This means our free software is 100% compatible with the community versions and you can move your database whenever you want, for whatever reason, without restriction.

Key Feature Comparison

Operational Functions

The operational functions of a DBA are generally the most easily observed and noted but are often the least difficult and least important metrics measured.

| Operational Functions | | |
|---|--------------------------------------|---|
| | Amazon Aurora | Percona |
| Endpoint availability | 99.99% SLA or 50 min a year downtime | Custom - up to 99.999% SLA or 5 min a year downtime |
| Automated backups and restores | ✓ | ✓ |
| Automated software updates/ patching | ✓ | ✓ |
| Automated new node provisioning | ✓ | ✓ |
| No-touch self-healing and recovery | ✓ | ✓ |
| Automatic major upgrades, schema changes, and conflict resolution | ✗ | ✓ |
| Hotfix availability | ✗ | ✓ |

Key:

✓ Yes

✗ No

* Yes, Optional with additional cost

Application and Performance

Although less visible than the operational tasks detailed above, the below tasks are critical to ensure you have a well-designed and maintained database. This is crucial as your application is only as good as the underlying data.

This is where Aurora and Percona begin to diverge in their definition of “fully managed”.









Amazon Web Services (AWS) will troubleshoot infrastructure issues and basic database related issues, but they do not have the expertise to troubleshoot the complex issues between the application and the database that can cause extended downtime. Downtime can result in revenue loss, low customer satisfaction, loss of customer confidence, and in some cases, even regulatory fines.

In this situation, you need an expert DBA to performance tune your database, rather than just sizing up your




instance which will cost you more and often won't solve the root cause of the issue.

AWS can help you identify and tune your slow queries to optimize performance and minimize the load on your server, but they don't offer schema design best practice advice. Any Aurora optimizations are a result of an automation tool. When customers run into trouble slow queries, or poor database performance, etc they can contact Amazon's support line, but AWS Support Engineers are only trained and focused on addressing issues specific to the AWS environment.

In contrast, Percona's advice and recommendations come from a dedicated open source database expert. Solving complex database issues is a core focus for Percona. We strive to be the best in the industry and help our customers achieve their ideal outcomes.

| Application and Performance | | |
|--|---|---|
| | AWS | Percona |
| Performance tuning |  |  |
| Query tuning assistance |  |  |
| Slow query identification |  |  |
| Schema design and best practice advice |  |  |

Key:

-  Yes
-  No
-  Yes, Optional with additional cost











Architecture and Design

Ensuring that your data architecture is properly designed to handle your specific requirements, and can scale effectively, is crucial to the success of your business. A poorly-designed database reduces business growth, incurs expensive work to re-design and tune, and may shorten the lifespan and usability of your infrastructure and database.

AWS will assist with database architecture in and on AWS services, but it will not assist outside of AWS services.

Percona routinely develops highly-scalable, performant, and well-maintained databases for our clients, regardless of their infrastructure provider. We are renowned in the market as database software experts. Our DBAs continuously improve your database environment by implementing technical reviews to ensure your environment is performing optimally, handling expected growth, and is cost-effective.

Through analysis and optimization, Percona have reduced companies AWS spend by as much as \$500,000. We want you to spend less time and money on your databases, and more time and money on your business.

| Architecture and Design | | |
|---|---|---|
| | AWS | Percona |
| High availability strategy and documentation assistance |  |  |
| Data recovery strategy and documentation assistance |  |  |
| Instance sizing assistance |  |  |
| Security assessment |  |  |
| Scaling and partitioning advice and assistance |  |  |
| Integration and expertise on industry standard tools |  |  |

Key:



Yes



No



Yes, Optional with additional cost

Monitoring and Troubleshooting

The ability to monitor critical events such as database outages, maximum connections, and replication issues is crucial to the success of an application.

AWS offers customers a basic level of monitoring and alerting. Unless you pay for an enhanced service, they do not provide detailed metrics monitoring, which helps with early identification of issues and offer insight into your database environment, ensuring you can achieve optimal performance.

Most importantly, AWS does not offer complex database troubleshooting. This is where many companies get themselves into trouble.

When you have a difficult-to-identify, complex, MySQL issue, you need to fix it quickly, and get your database back into production. Businesses often have to resort to paying an outside consulting firm to provide a solution. Percona frequently encounters and solves these issues for our customers.

In fact, Percona Managed Database Services often identifies an issue, fixes the issue, and restores database functionality before you even know there is a problem. We will alert you and keep you informed of the situation, but historical metrics show lightning-fast resolution, which means most customers are unaware of the issue until after it's been fixed.

| Monitoring and Troubleshooting | | |
|--|-----|---------|
| | AWS | Percona |
| Basic monitoring and alerting | ✓ | ✓ |
| Comprehensive metrics and performance data | * | ✓ |
| Application troubleshooting | * | ✓ |
| Root cause analysis | * | ✓ |
| Slowdown Mitigation | * | ✓ |
| Auto-scale instance | * | * |

Key:



Yes



No

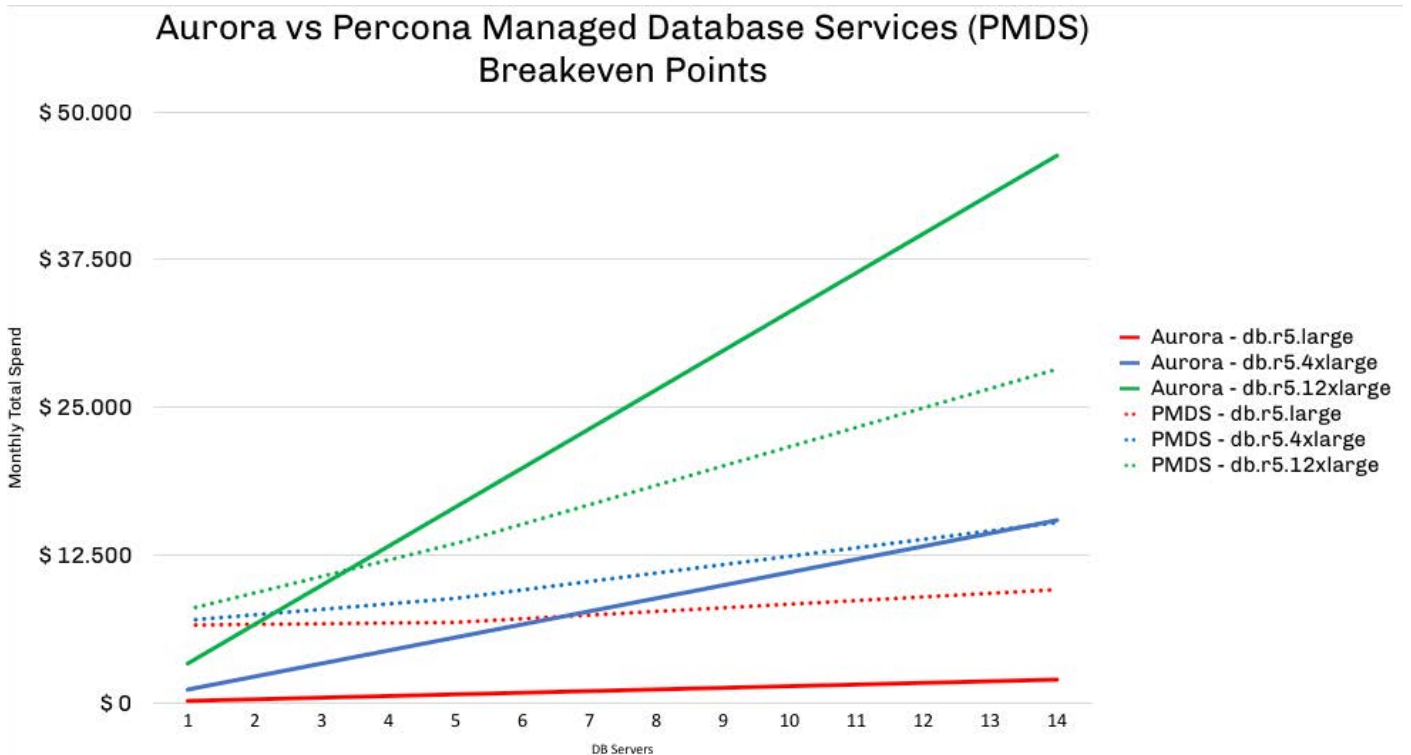
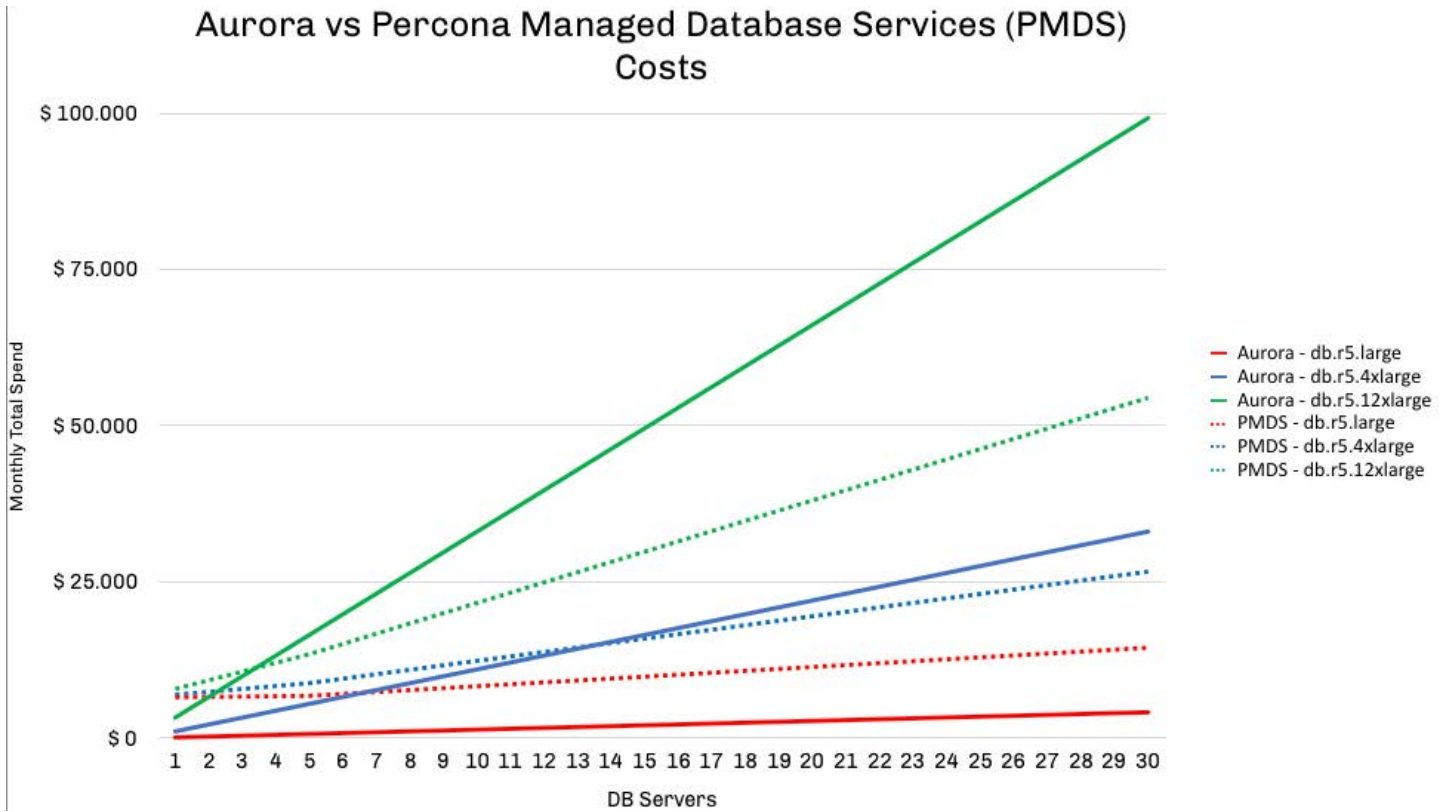


Yes, Optional with additional cost

Cost Comparison

To compare the costs of these fully-managed DBaaS solutions, we have made the following assumptions:

- All instances are hosted on AWS and are:
 - Reserved
 - 1-year contract
 - No payment upfront
- All instances for PMDS are AWS EC2 pricing for db.r5.large, db.r5.4xlarge, and db.r5.12xlarge (PMDS can work with any infrastructure including on-prem solutions)
- Aurora pricing does not include additional support
- Does not include ingress/egress traffic or additional storage costs - it is assumed that these will be equal regardless of RDS or EC2 infrastructure
- Percona Managed Database Services pricing includes the total cost of ownership for services and hosting of a single environment



As shown in the graphs above, all pricing is linear in growth as servers are added onto either option. For small (sub r5.large) database workloads Aurora is an extremely cost-effective solution that scales well.

However, when large database instances are involved the constant markup for Aurora begins to stand out. At the r5.12xlarge size, the break-even for total cost of ownership of a fully managed solution with Percona is two servers. With environments deployed at a massive scale, this can translate to tens of thousands saved per month.

The markup for Aurora is constant, regardless of instance size. This means you pay more for the Aurora platform the larger your instance size, even though the value remains identical to a smaller instance. There are no additional features or functionality unlocked by larger instance sizes.

Percona Managed Database Services takes into account the number of instances when pricing, not the instance size. This can offer an extremely cost-effective and scalable solution for large scale deployments. In between the extremes of small and large database environments, there is an area where both solutions are attractive from a pure cost perspective. However, when viewing the total cost of ownership, Percona Managed Database Services clearly adds more value for the same spend.

Conclusion

After comparing various aspects of the offerings that **AWS** and **Percona Managed Database Services** provide, it is clear that AWS misses some of the significant features that ensure a truly fully managed service.

As a managed database solution, Amazon Aurora provides excellent automation for the database itself but has gaps in application performance, architecture and design, and monitoring and troubleshooting.

From a price perspective, Amazon Aurora is extremely cost-effective in smaller environments with in-house DBA expertise. In larger, more complex environments, Percona Managed Database Services offers significant cost savings over Aurora.

In conclusion, if you have smaller servers and existing DBA support, then Amazon Aurora may be a good choice for your business. However, if you require a true, fully managed service, Percona Managed Database Services provides world-class support and offers a less expensive option as your business grows.



Contact Us

Percona Support services are accessible 24x7x365 online or by phone to provide assistance with issues and help you keep your database running optimally.

We can provide onsite or remote Percona Consulting for current or planned projects, migrations, or emergency situations. Every engagement is unique and we work alongside you to plan and create the most effective solutions for your business.

Percona Managed Services can support and help you manage your existing database infrastructure; whether hosted on-premise, or at a co-location facility, or if you purchase services from a cloud provider or database-as-a-service provider.

To learn more about how Percona can help, and for pricing information, please contact us at +1-888-316-9775 (USA), +44 203 608 6727 (Europe), or email us at sales@percona.com.