Multi-Region AWS Aurora

A comparison of AWS Aurora & Continuent Tungsten for building a geo-scale, multi-region MySQL cloud back-end

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Welcome!

"Continuent, the MySQL Availability Company"

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Introduction

Continuent, the MySQL Availability Company, provides solutions for continuous operations enabling business-critical MySQL applications to run on a global scale with zero downtime.

Agenda

This webinar will have three parts, and is expected to last no longer than 30 minutes:

- Overview of Amazon Aurora cross region
- Common challenges when using Amazon Aurora
- How can multi region MySQL deployments be improved?
- Q & A

Please note this live webinar is being recorded.

Webinar Goals

We will explore how to deploy Geo-Scale MySQL* with the following design criteria:

- Local rapid-failover, automated high availability
- Geographically distributed, low-latency data with a single consolidated view
- Fast local response times for read traffic
- Ability to deploy MySQL masters in multiple regions
- No changes to application code
- Complex schema changes while keeping applications available
- Avoid provider lock-in

** MySQL is understood in a broad context, including MySQL, MariaDB, Percona Server, RDS MySQL, RDS Aurora and Google Cloud SQL*

Aurora Multi-Region

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Aurora Key Benefits

- Not MySQL, but MySQL 5.6/5.7-compatible
- Read Replicas
- Distributed file system
- Cross-Region Replication within AWS
- Promote remote read replica to standalone DB cluster
- Fast, in specific scenarios

Aurora Cross Region Replica Requirements

- Source Aurora cluster
- Enable binary logging on the on the source Aurora cluster (quite a few settings to change)
- A VPC in the target cluster
- Database Subnet within the VPC (be sure you're familiar with VPC's and subnets, a lot of issues are caused here)
- Subnet should be public-accessible if machines outside of the network will access the Aurora instance!

Limitations using Aurora

- Master is single region only
- Failover disconnects application
- Long failover times (> 30 seconds)
- Innodb engine only
- Application must be read/write aware
- All data stays in AWS
- Database maintenance and schema changes will cause application outages
- Proprietary and not open source

How Do We Make It Better?

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Review: Webinar Goals

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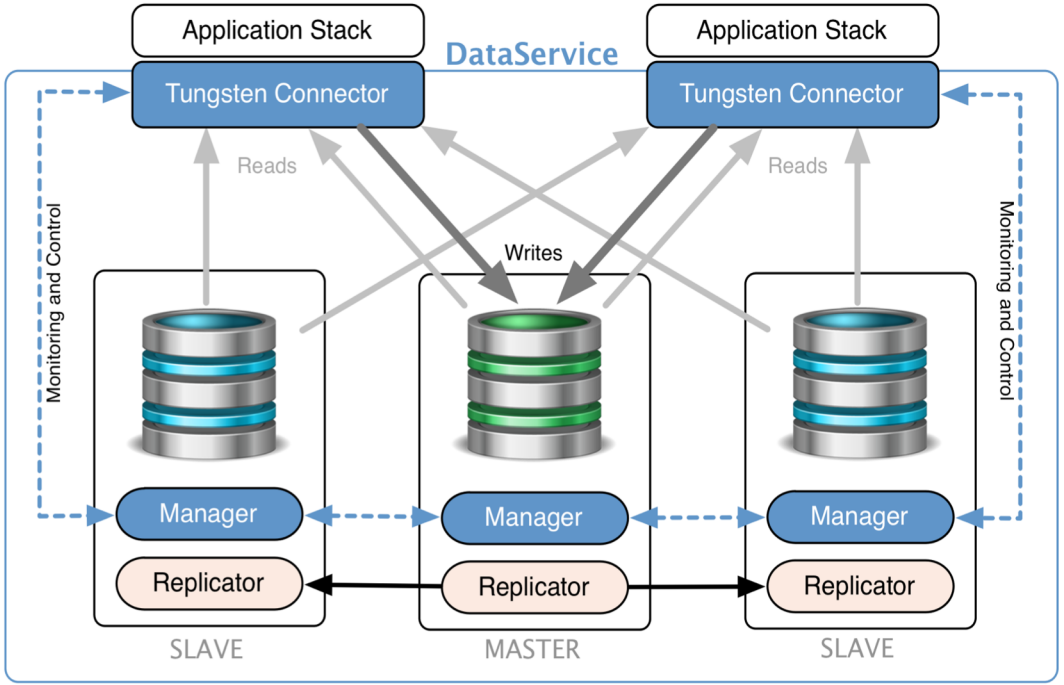
Tungsten Clustering



Continuous MySQL Operations

Zero Downtime MySQL

Multimaster MySQL

Geo-Scale MySQL

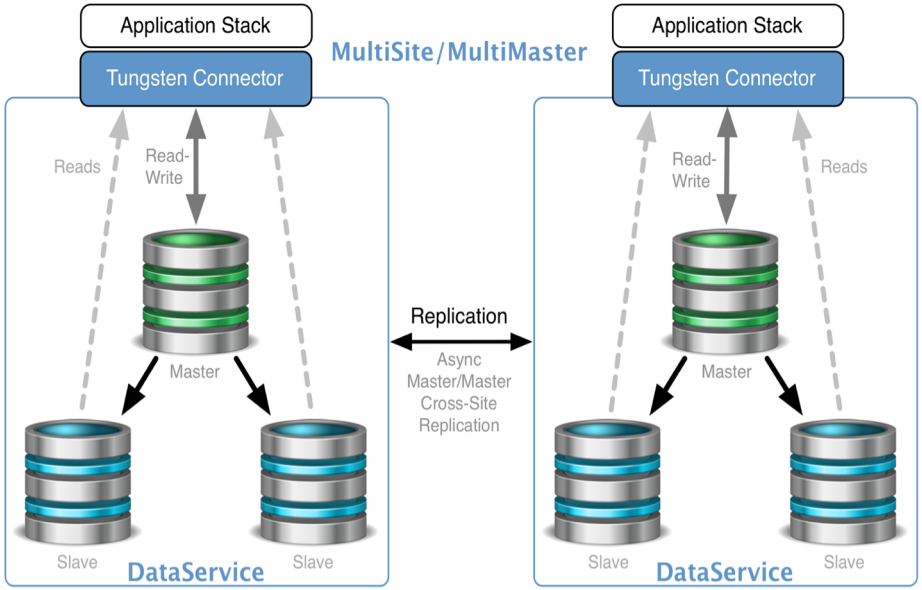
Hybrid-Cloud and Multi-Cloud MySQL

Intelligent MySQL Proxy

Most Advanced MySQL Replication

Full MySQL Support, No Application Changes

Tungsten MultiMaster Clustering



Active/Active Composite MultiMaster Cluster

Scale to multiple Cloud Regions or datacenters

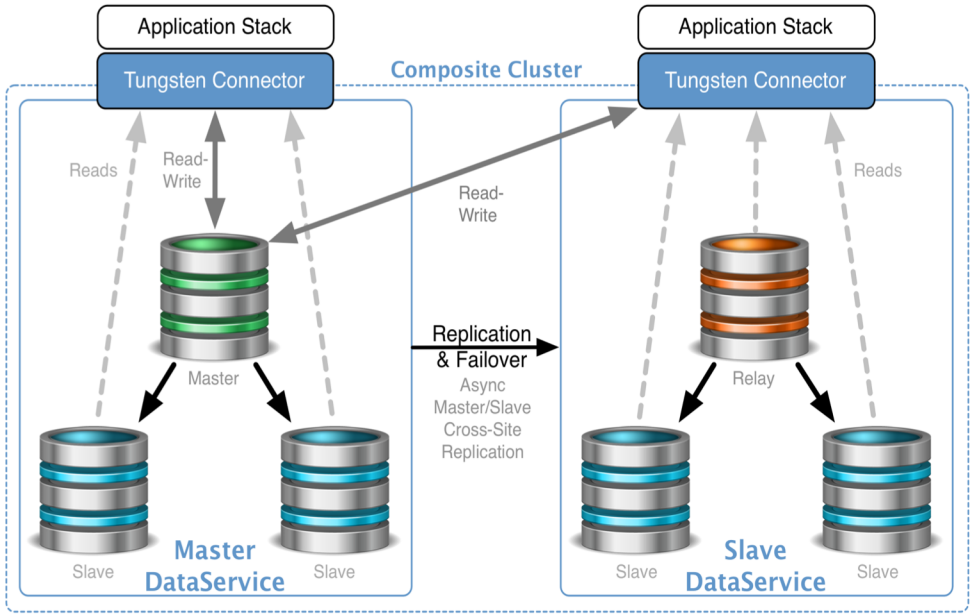
Platform-agnostic means you can span vendors and create hybrid topologies using any combination of cloud, VM and/or bare-metal servers

Active/Passive or Active/Active

Control all clusters from any node

Move the write primary from site to site with a single command when in Active/Passive mode

Tungsten Composite Clustering



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Active/Passive

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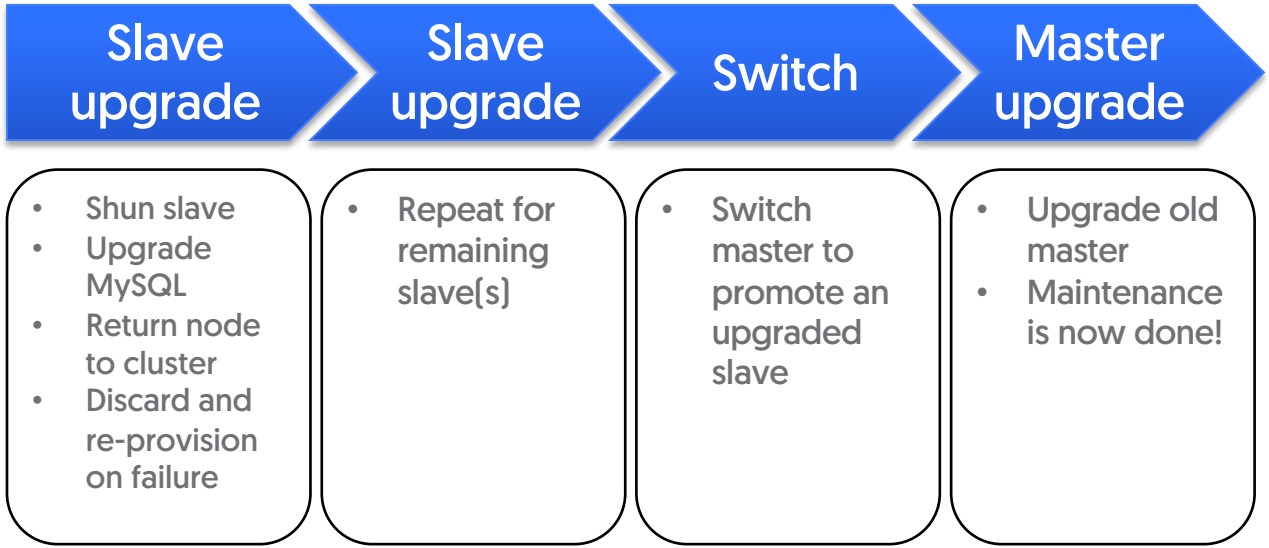
Zero Downtime Maintenance



Continuent Tungsten Key Benefits as compared to Aurora

Aurora	Continuent Tungsten
Not MySQL, but MySQL 5.6/5.7-compatible	Supports all MySQL versions (including Percona Server and MariaDB)
Read Replicas	Replicas available for auto read/write split, fast failover
Distributed back-end file system	Local filesystem, full access to local databases
Cross-Region Replication within AWS	Replicate to any cloud, on prem, or combination with multiple masters
Auto maintenance and interruptions	Zero downtime maintenance

Tungsten Dashboard View

Tungsten Dashboard

Clusters | Tools | Help

All Clusters 5 | Policy Not Auto 0 | Not Ready 0

Filter by name | Filter | Clear

All Clusters

Auto-refresh: Off

Last refresh (server time): Tue, 05 Mar 2019 17:02:43 -0500

COMPOSITE — global — Status: Ready — Policy: Automatic — Type: CompMS — Connections: 1/37 — Unlocked

Node	Role	DS State	Conns	Archive	Repl. State	applied	relative	Seqno	minStored	maxStored	pipelineSource	Dataserver	Actions
db10	**relay**	**ONLINE**	**0/0**	**-**	**ONLINE**	**0.364**	**0.412**	**18011**	**0**	**18016**	**thl://db5:2112/**	**ONLINE**	
db11	slave	ONLINE	0/0	-	ONLINE	1.039	1.045	17981	0	17981	thl://db10:2112/	ONLINE	
db12	slave	ONLINE	0/0	-	ONLINE	1.037	1.049	17981	0	17981	thl://db10:2112/	ONLINE	

SLAVE — global/apac_north_1 — State: ONLINE — Policy: Automatic — Type: Slave — Connections: 0/0 — Coordinator: db10 — Unlocked

Node	Role	DS State	Conns	Archive	Repl. State	applied	relative	Seqno	minStored	maxStored	pipelineSource	Dataserver	Actions
db7	**relay**	**ONLINE**	**0/0**	**-**	**ONLINE**	**0.55**	**0.585**	**18128**	**0**	**18128**	**thl://db5:2112/**	**ONLINE**	
db8	slave	ONLINE	0/0	-	ONLINE	0.893	0.924	18058	0	18062	thl://db7:2112/	ONLINE	
db9	slave	ONLINE	0/0	-	ONLINE	1.016	1.019	18069	0	18072	thl://db7:2112/	ONLINE	

SLAVE — global/emea_north_1 — State: ONLINE — Policy: Automatic — Type: Slave — Connections: 0/0 — Coordinator: db7 — Unlocked

Node	Role	DS State	Conns	Archive	Repl. State	applied	relative	Seqno	minStored	maxStored	pipelineSource	Dataserver	Actions
db1	**relay**	**ONLINE**	**0/36**	**-**	**ONLINE**	**0.601**	**0.636**	**18343**	**0**	**18348**	**thl://db5:2112/**	**ONLINE**	
db2	slave	ONLINE	0/0	-	ONLINE	0.362	0.391	18107	0	18107	thl://db1:2112/	ONLINE	
db3	slave	ONLINE	0/0	-	ONLINE	0.203	0.217	18091	0	18091	thl://db1:2112/	ONLINE	

SLAVE — global/us_east_1 — State: ONLINE — Policy: Automatic — Type: Slave — Connections: 0/36 — Coordinator: db1 — Unlocked

Node	Role	DS State	Conns	Archive	Repl. State	applied	relative	Seqno	minStored	maxStored	pipelineSource	Dataserver	Actions
db4	slave	ONLINE	0/0	-	ONLINE	0.545	0.547	18122	0	18126	thl://db5:2112/	ONLINE	
db5	**master**	**ONLINE**	**1/1**	**-**	**ONLINE**	**0.061**	**0.061**	**18184**	**0**	**18185**	**/var/lib/mysql**	**ONLINE**	
db6	witness	ONLINE			⊘							⊘	

MASTER — global/us_west_1 — State: ONLINE — Policy: Automatic — Type: Master — Connections: 1/1 — Coordinator: db4 — Locked

About Continuent

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About Continuent

Continuent, the MySQL Availability Company, provides solutions for continuous operations enabling business-critical MySQL applications to run on a global scale with zero downtime.

Continuent provides geo-distributed MySQL high availability on-premises, in hybrid-cloud, and in multi-cloud environments.

Continuent customers are leading SaaS, e-commerce, financial services, gaming and telco companies who rely on MySQL and Continuent to cost-effectively safeguard billions of dollars annual revenue.

Continuent's database experts offer the industry's best 24/7 MySQL support services to ensure continuous client operations.

Proven Team

The core Continuent Team has been building data service solutions since 2004.

In 2014 VMware acquired ‘old’ Continuent, the best-of-breed DBaaS company, to offer their own DBaaS for vCloud Air.

‘New’, independent Continuent was spun off from VMware in 2016 after VMware changed its cloud strategy.

In 2019 Continuent is ready to launch an all-new Tungsten Cloud, extending and expanding the functionality of Continuent Clustering in to the Cloud

Proven Solutions

Our solutions handle billions of transactions per day and support businesses with billions of dollars in combined revenue:

Adobe
Bluefin Payment Systems
CARFAX
Clarity Security
Clarivate Analytics
CoreLogic
ebay
FT FINANCIAL TIMES
F-Secure
GARMIN
leonardo
Marketo
MODERNIZING MEDICINE
MOTOROLA SOLUTIONS
NCR
YOOX NET-A-PORTER GROUP
NEWVOICEMEDIA
Riot GAMES
SAMSUNG
SCRIPPS
SYNACOR
telna
tyfone
UDP Beyond Billing. Prioritize | Optimize | Capitalize
vmware
Zappos.com

Continuent Tungsten Solutions

Tungsten Clustering

Tungsten Clustering allows enterprises running business-critical MySQL database applications to cost-effectively achieve continuous operations with commercial-grade high availability (HA), geographically redundant disaster recovery (DR) and global scaling.

Tungsten Replicator

Tungsten Replicator supports real-time data replication from MySQL into AWS RedShift, Cassandra, ClickHouse, Elasticsearch, HDFS, Kafka and Vertica to derive insight from analytics for better business decisions and increase revenue.

** MySQL understood in a broad context, including MySQL, MariaDB, Percona Server, RDS MySQL, RDS Aurora and Google Cloud SQL*

Tungsten Replicator

Tungsten Replicator, the core underlying technology for Continuent Tungsten, supports data replication from MySQL sources to AWS RedShift, Cassandra, ClickHouse, Elasticsearch, HDFS, Kafka and Vertica.

The same, proven replication mechanism supports data replication from clustered MySQL databases to high-performance NoSQL and data analytics engines

Derive insight from big data for better business decisions

Create new revenue opportunities with already existing data

Tungsten Key Benefits

Continuous MySQL Operations

- MySQL High Availability and Disaster Recovery solution, which provides redundancy within and across data centers
- Immediate failover for maximum availability and data protection of business-critical MySQL applications
- Reduce MySQL recovery time from hours or days to mere seconds
- Dashboard provides graphical view and management of all globally distributed MySQL clusters

Zero Downtime MySQL

- Site-level and cross-site failover ensures application availability
- Upgrade hardware, software and data without taking applications offline
- MySQL compatibility means seamless migration of your data and applications

Tungsten Key Benefits

Multimaster MySQL

- Multiple geographically-distributed write masters can provide higher availability due to lack of failover between sites
- Lower-latency response times for reads for co-located application servers

Geo-Scale MySQL

- Load-balance MySQL read operations across multiple slaves, locally and globally
- Geo-distributed MySQL clusters bring data close to your application users for faster response times
- Easily add more MySQL clusters as needed for unlimited scaling, both locally or across the globe

Hybrid-Cloud and Multi-Cloud MySQL

- Deploy in the cloud, VM and bare metal environments
- Mix-and-match on-premises, private and public clouds (incl. Amazon AWS, Google Cloud and Microsoft Azure)
- Easy, seamless migration from cloud to cloud to avoid vendor lock-in in any specific cloud provider
- Withstand node, data center, zone or region failures or outages

Tungsten Key Benefits

Intelligent MySQL Proxy

- Provides intelligent traffic routing to a valid MySQL master, locally and globally
- Scale read queries via query inspection and other methods
- Application and active users do not disconnect during MySQL master failover events

Most Advanced MySQL Replication

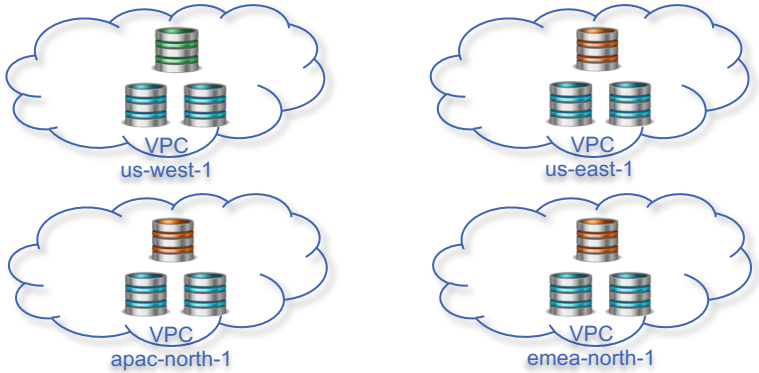
- Filter and transform your data in-flight
- No more ETL, get real-time data feeds into your analytics
- Replicate directly into popular analytic repositories: AWS RedShift, Cassandra, ClickHouse, Elasticsearch, HDFS, Kafka and Vertica
- Unlimited real-time transactional data transfer to eliminate escalating replication cost of ETL-based alternatives

WHY: Significant Benefits

Geo-scale, Availability, Disaster Recovery

Low-latency, geo-distributed data access with a single consolidated providing fast response times for read traffic and local, rapid-failover automated high availability.

Simple administration, system visibility and stability also help create high return on investment.



Tungsten Key Benefits

Cost Savings

- Use the free open-source MySQL for your business-critical needs
- Optimize costs by selecting the most cost-effective cloud environment(s) at any given time
- Eliminate downtime risks and associated cost, also during maintenance (zero downtime maintenance operations)
- Reduce DBA time spent on admin and recovery operations, lowering your costs while increasing reliability.

Full MySQL Support, No Application Changes

- Deploy and Configure MySQL clusters in minutes
- Not 'MySQL-compatible" solution. Use any of your off-the-shelf MySQL, MariaDB and Percona Server versions
- Support for all modern MySQL (5.x through 8.x) and MariaDB (5.x and 10.x) versions and features
- SSL support for all in-flight traffic
- Native MySQL support means easy and complete migration of your data and applications

Tungsten Key Benefits

Last, but not least...

Industry-Best 24/7 MySQL Customer Service

- Highly Qualified 24/7 support. All support team member have 15 or more years of MySQL DBA and Site Reliability Experience
- 24/7 support comes with 1-hour SLA, with response times for urgent requests averaging less than 5 minutes
- MySQL uptime measured in months or years

Recap

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With Continuent, you get...

- Revenue protection
- Revenue upside
- Real-time data
- Lower TCO
- Stellar 24/7 customer support

Adobe · Bluefin Payment Systems · CARFAX · Clarity Security · Clarivate Analytics · CoreLogic · ebay · FT Financial Times · F-Secure · GARMIN · leonardo · Marketo · Modernizing Medicine · Motorola Solutions · NCR · YOOX NET-A-PORTER GROUP · NEWVOICEMEDIA · Rovio Games · SAMSUNG · SCRIPPS · SYNACOR · telna · tyfone · UDP Beyond Billin (Prioritize | Optimize | Capitalize) · vmware · Zappos.com

Next Steps

Sign up for a private demo for your team, setup a POC, email us at sales@continuent.com

Learn more at your own pace

- Training and webinar library at www.continuent.com/videos/
- White papers at www.continuent.com/white-papers/
- Read the documentation at http://docs.continuent.com/

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