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TUNGSTEN CLUSTERING™

For MySQL, MariaDB and Percona Server

Benefits & Configurations
A Technical Overview

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Tungsten Clustering
For MySQL, MariaDB & Percona Server

What Is It?

Tungsten Clustering is the only complete, fully-integrated, fully-tested MySQL HA, DR and Geo-clustering solution running on-premises and in the cloud combined with industry-best and fastest, 24/7 support for business-critical MySQL, MariaDB, & Percona Server applications.
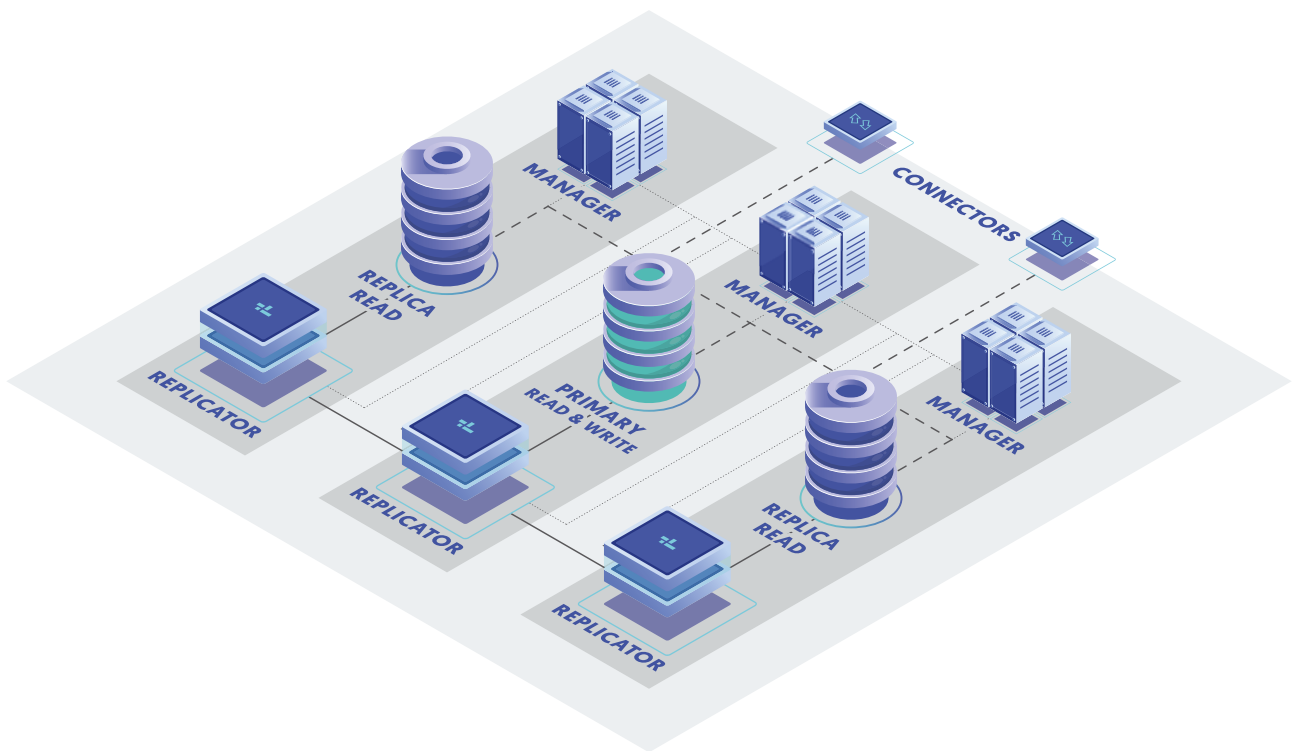
What Does It Do?

Tungsten Clustering allows enterprises running business-critical MySQL, MariaDB & Percona Server database applications to cost-effectively achieve continuous operations on a global scale with:

- Commercial-grade high availability (HA)
- Geographically redundant disaster recovery (DR)
- Global operations with geographically distributed multi-primary

Our Clustering software makes it simple to:

- Create database clusters in the cloud or in your private data center
- Keep the data available even when systems fail
- Focus on your business and applications instead of DBA/SysAdmin tasks

A Tungsten cluster provides a full suite of clustering features, including:

- Intelligent load balancing
- Rapid, automated local failover
- Multi-primary, multi-site deployments

Who Uses It?

How Can Your Organization Benefit From Tungsten Clustering Software and Services?

Industry Best 24/7 MySQL Customer Service

- Highly Qualified 24/7 support. Our support engineers 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 3 minutes
- MySQL uptime measured in months or years
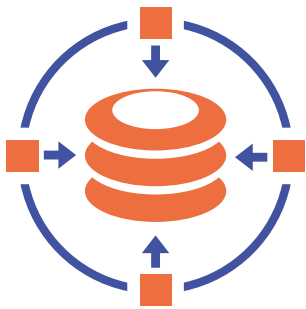
Full MySQL Support, No Application Changes

- Deploy and configure MySQL clusters in minutes
- Not a "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 encrypts all in-flight traffic
- Native MySQL support means easy and complete migration of your data and applications

Continuous MySQL Operations

- MySQL High Availability and Disaster Recovery solution providing redundancy within and across data centers
- Immediate failover for maximum availability and data protection of business-critical MySQL applications
- Site-level (HA) and cross-site (DR) failover ensures application availability
- Reduce MySQL recovery time from hours or days to mere seconds
- Tungsten Dashboard provides graphical view and management of all Tungsten clusters

Zero Downtime MySQL Maintenance

- Upgrade hardware, software and data without taking applications offline
- MySQL compatibility means seamless migration of your data and applications

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 to any specific cloud provider
- Withstand node, data center, zone or region failures or outages

How Can Your Organization Benefit From Tungsten Clustering Software and Services?

Tungsten Clustering Benefits & Configurations — A Technical Overview

Geo-Scale MySQL

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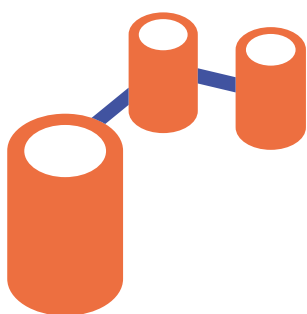
Most Advanced MySQL Replication

- Built in Global Transaction ID (GTID)
- Replicator is cluster aware; can change roles between extractor/applier as required by cluster events
- Provides data replication statistics in real-time
- Integrates with our stand alone Tungsten Replicator, for real time replication into analytics and data warehouse targets, like AWS RedShift, Hadoop, Kafka, and Vertica.
- Extract once, eliminates the need for ETL when replicating into analytics.
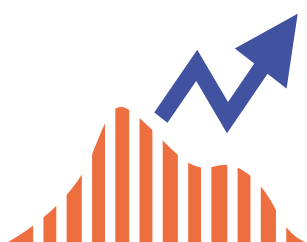
Cost Savings

- 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 costs, even during maintenance (zero-downtime maintenance operations)
- Reduce DBA time spent on admin and recovery operations, lowering your costs while increasing reliability

Tungsten Clustering Core Components

Tungsten Clustering includes four core components for data replication, data connectivity, cluster management and cluster monitoring:

Tungsten Proxy™ — Intelligent MySQL Proxy

Tungsten Proxy (aka Tungsten Connector™) is a proxy service that sits between your application server and your MySQL database. The proxy routes connections from your application servers to the data sources within the cluster, automatically and intelligently distributing and redirecting queries to each data source, locally and globally, according to load balancing and availability requirements. It scales read queries via query inspection and other methods. Application and active users do not disconnect during MySQL primary failover events.

Tungsten Manager™ — For Automatic MySQL Clustering Operations

Tungsten Manager is responsible for monitoring and managing a Continuent Tungsten clustering solution. The Manager acts as both a controller and as a central information source for the status and health of the data service as a whole.
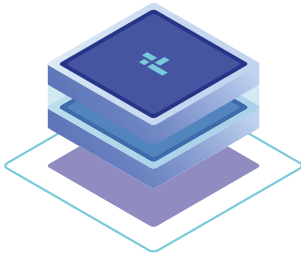
Tungsten Replicator™ — Advanced MySQL Replication Services

Tungsten Replicator is a high performance replication engine that supports MySQL, MariaDB, and Percona Server. The Replicator is responsible for moving the MySQL events from the primary to the replicas. Key advanced features like filtering and parallel apply allow for granular control of the replication pipeline. In addition, the Tungsten Replicator supports data movement outside the cluster to various analytics and big data targets such as AWS RedShift, AWS Aurora, Hadoop, Kafka, MongoDB, and Vertica.
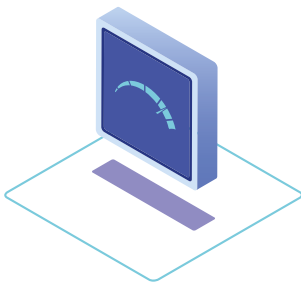
Tungsten Dashboard™

Tungsten Dashboard provides a graphical monitoring and management interface for your Tungsten clusters with the convenience of a web browser or iPad. Tungsten Dashboard allows an admin to quickly see the status of all clusters and take action if necessary with a simple point and click tool.

Single Site Tungsten Clustering Solutions

Standalone MySQL HA Cluster

Tungsten Clustering with one (1) primary + two (2) failover/read replicas
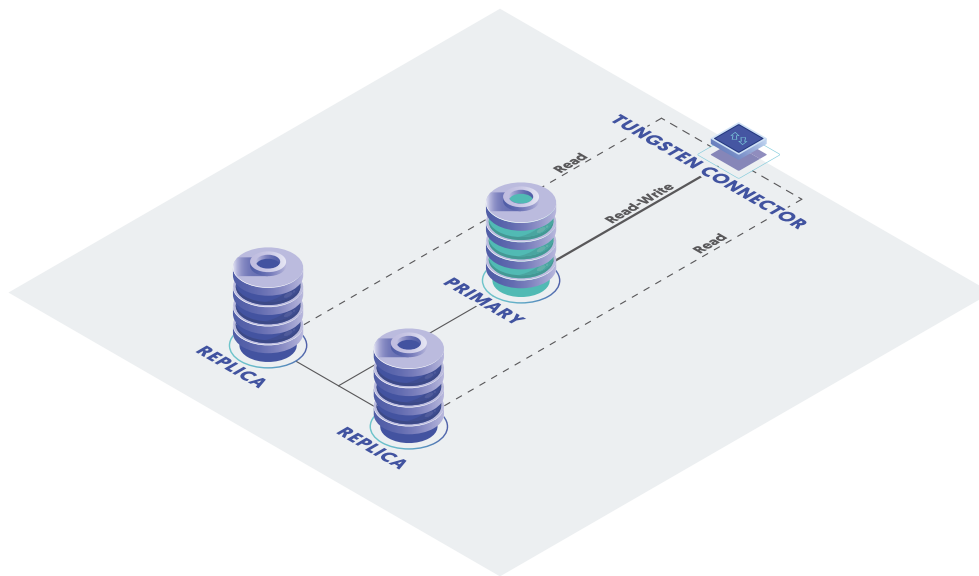
The Tungsten Clustering HA configuration is designed for sites that strive to ensure constant availability. The standalone cluster is the basic building block which provides easy high availability to your applications without requiring any changes. This topology ensures the ability to perform maintenance on any database server and still maintain an environment capable of HA failover at all times.

Tungsten Clustering is an ideal solution for SaaS providers with Pod Architecture. It provides an excellent HA solution with infinite scalability. Just by adding more clusters, SaaS providers can serve more customers.

MySQL HA Cluster with Read Scaling

Tungsten Clustering with one (1) primary + four (4) or more failover/read replicas
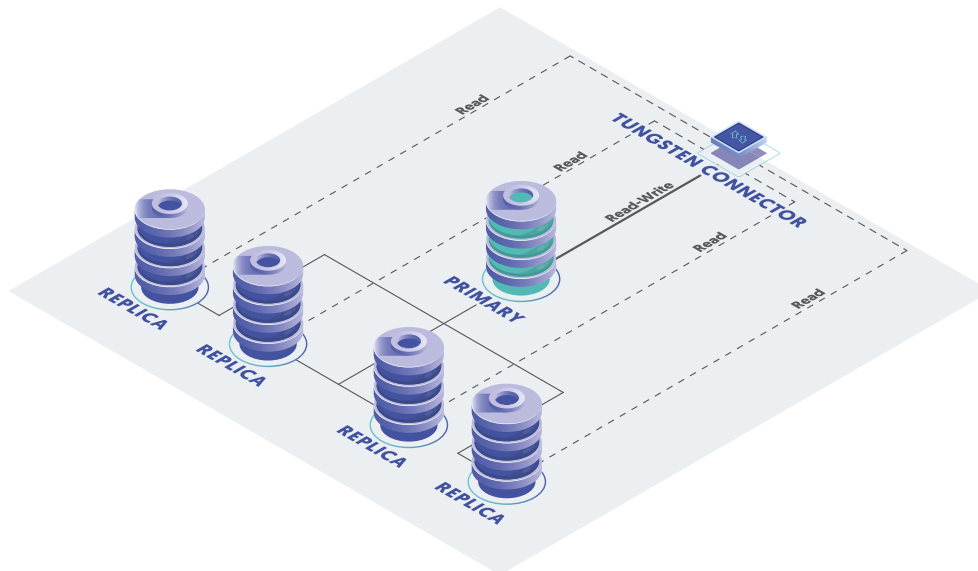
Tungsten Clustering HA with Read Scaling is ideal for sites that require HA and read-scaling for enhanced performance under peak loads. Tungsten Clustering enables the use of the replica nodes to support additional read traffic without impacting cluster performance. Media and consumer web sites should consider this option.

Tungsten Clustering with extra read replicas is for the business-critical MySQL applications with high read/write ratio.

# Geo-Distributed, Multi-Site Tungsten Clustering Solutions

Summary

Geo-Distributed, Multi-Site Tungsten Clustering is simply a "cluster of clusters", using the basic standalone cluster and extending the managed mesh to additional sites or regions. You may span across Cloud providers (multi-cloud), and can even integrate on-premises hardware with Cloud-based instances (hybrid-cloud).

MySQL Primary/DR Geo-Cluster

A "Cluster of Clusters" where one cluster contains the single active, writable Primary. All other clusters and nodes are passive and read-only. Typically two or more Clusters.

Primary Cluster: one (1) primary + two (2) failover/read replicas
DR Cluster: one (1) relay + two (2) failover/read replicas
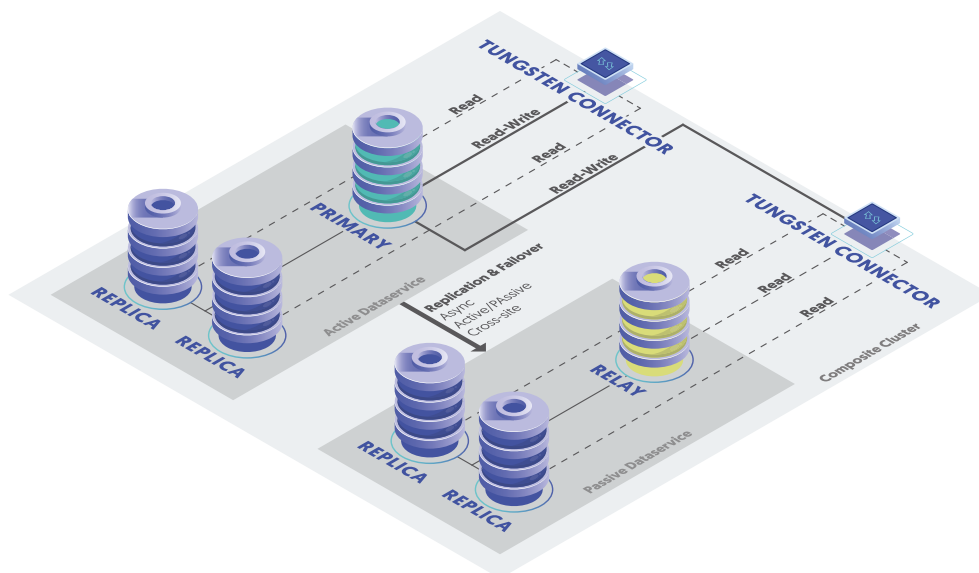
In the Tungsten Composite Active/Passive Cluster topology, there is a single writeable primary node across all sites, and all writes are directed to that primary.
The Connectors are multi-site aware and will automatically react to a site failover. Replication flows in one direction only, from the current active Primary cluster to the passive DR cluster(s).
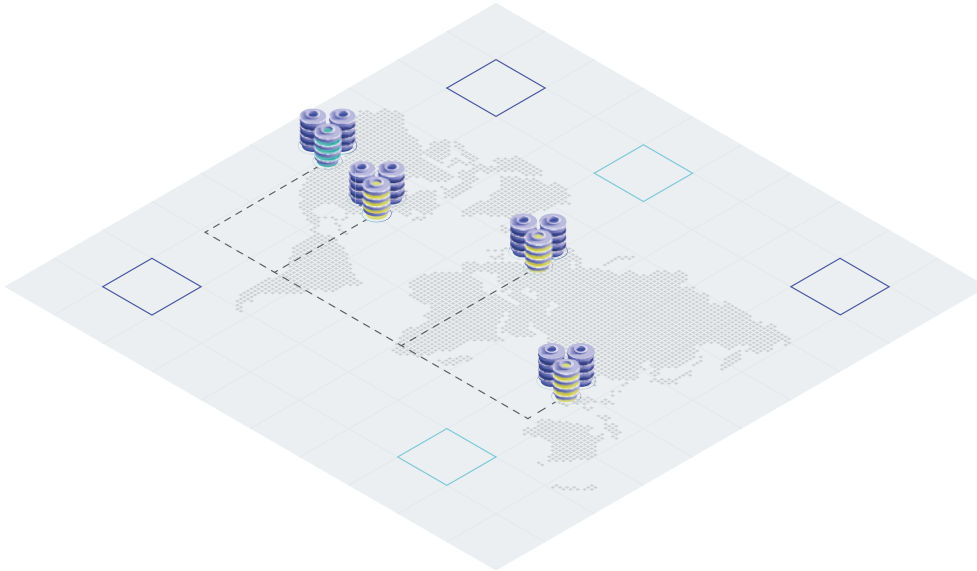
This topology provides a highly-available local operations and an active failover site that is also available for reads. It is well-suited for customers who seek the highest level of HA, with the ability to operate applications on both sites, without application changes.

The Active/Passive Tungsten Clustering solution is for SaaS providers, e-commerce companies, financial services providers, gaming companies and telco providers who are seeking five-9s availability for their business-critical and mission-critical MySQL applications.

MySQL Active/Active Geo-Cluster

A "Cluster of Clusters" where all clusters contain a writable Primary. Typically two or more Clusters.

Active Cluster: one (1) primary + two (2) failover/read replicas
Active Cluster: one (1) primary + two (2) failover/read replicas
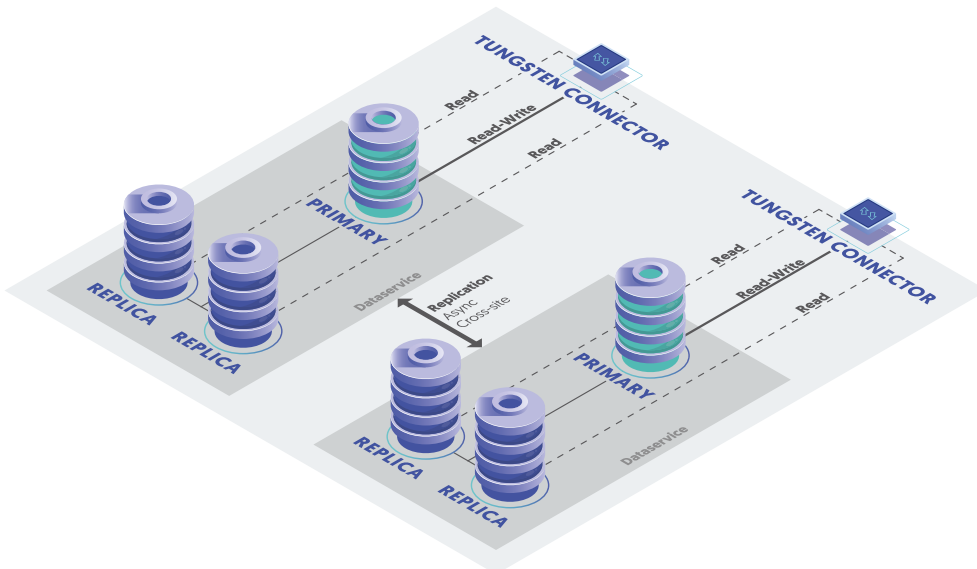
In the Tungsten Active/Active Cluster topology, there is one writeable primary node per cluster, and all writes are directed to that primary by the local Connectors.
The Connectors are able to use any other site in the event of a local outage; both sites are write-able at all times, and each cluster replicates from all other member clusters
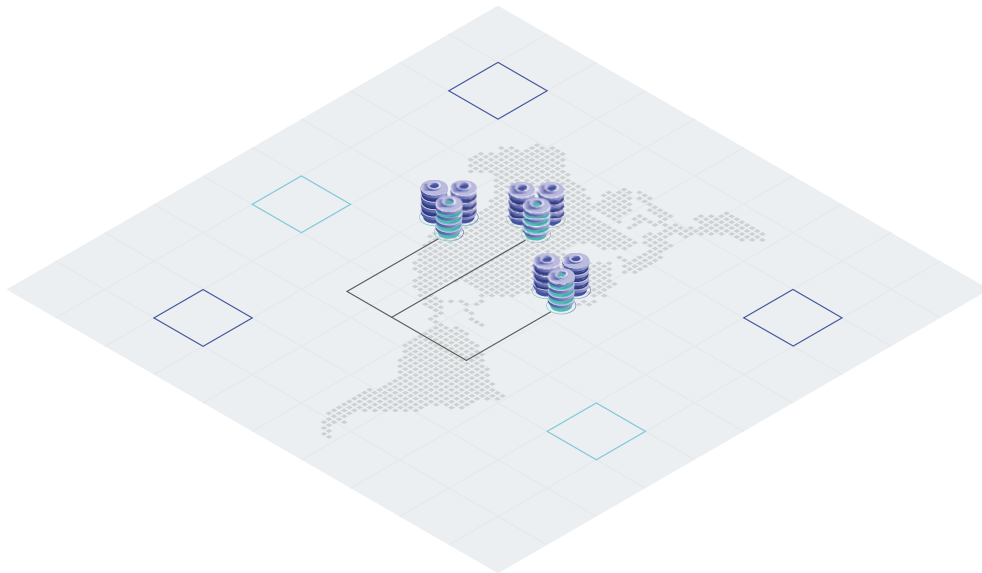
This topology links highly-available clusters across sites to enable constant availability for updates in two locations separated by high-latency networks.

The Active/Active Tungsten Clustering solution is perfect for those business-critical and mission-critical MySQL applications that require lower latency for local updates while still needing to maintain completely geo-distributed data sets for Disaster Recovery needs. It is recommended for SaaS applications, credit card payment gateways, or online services that must always be available for business.

About Continuent

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

Established in 2004, we provide geo-distributed high availability on-premises, hybrid-cloud, and multi-cloud environments with our Tungsten Clustering and Tungsten Replicator products. We also offer industry-leading, 24/7 MySQL & MariaDB support services to ensure continuous client operations.

Our customers are leading SaaS, e-commerce, financial services, gaming and telco companies who rely on us to cost-effectively safeguard billions of dollars in annual revenue, including Adobe, Carfax, F-Secure, Garmin, Marketo, Modernizing Medicine, Samsung, Riot Games, Stitcher, VMware and Vonage.

For more information on our products and services, please visit www.continuent.com, email us at sales@continuent.com or call us at (800) 270-9035, and follow us on Twitter @Continuent.