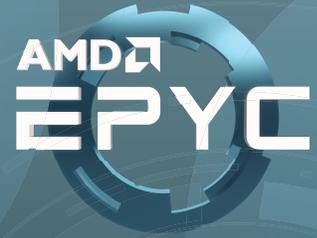


AMD and Couchbase Power the Engagement Database for Today's Massively Interactive Enterprise



August, 2018

High Performance: Cores, Memory, I/O

The AMD EPYC SoC brings a new balance to the datacenter. Utilizing an x86-architecture, the AMD EPYC processor, brings together high core counts, large memory capacity, ample memory bandwidth and massive I/O with the right ratios to help performance reach new heights.

Flexibly match core count to the workload

Match core count with application needs without compromising processor features. EPYC's balanced set of resources means more freedom to right-size the server configuration to the workload.

Dedicated Security Processor

AMD EPYC's dedicated security processor manages secure boot, memory encryption, and secure virtualization on the SoC itself. Encryption keys never leave the processor where they can be exposed to intruders.

Highly Scalable: Scale-up or Scale-out

Scale-up or scale-out, AMD and its ecosystem partners offer high-performance network connectivity options for applications at massive scale.

Couchbase: The World's First Engagement Database

Couchbase liberates the full potential of data at any scale, across any channel or device, engaging with customers to drive a more meaningful relationship.

Built for Change – at Scale

Couchbase supports millions of ever-richer customer interactions while responding to ever-changing business requirements.

Always On, Always Fast

Couchbase delivers consistent high performance at cloud-scale around the clock

AMD EPYC: Certified with Couchbase

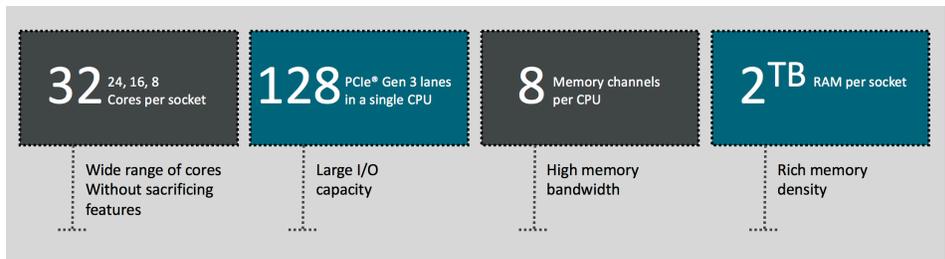
The PartnerEngage program is designed to help reduce risk and implementation cost through joint testing and validation ensuring the optimal functioning of Couchbase products.



AMD EPYC™ Processor Meets the Needs of Today's Datacenter Workloads

Designed from the ground up for a new generation of solutions, AMD EPYC implements a philosophy of choice without restriction. Choose the number of cores and sockets that meet your needs without sacrificing key features like memory and I/O.

Each EPYC system-on-chip (SoC) can have from 8 to 32 cores with access to incredible amounts of I/O and memory regardless of the number of cores in use, including 128 PCIe lanes, and access to 2 TB of high speed memory per socket.



EPYC's innovative architecture translates to terrific performance at a low cost. More importantly, the performance you're paying for is appropriate to the performance you need.

Storage intensive workloads can utilize the plentiful I/O bandwidth with the right number of cores (avoiding overpaying for unneeded power), while compute-intensive workloads can make use of fully loaded core counts, dual sockets and plenty of memory.

Couchbase: maximizing the customer experience at cloud-scale

Digital innovation is transforming the way we shop, communicate, work together and socialize. Every interaction from every source becomes a data point that must be captured, stored analyzed and understood in order to build a world-class customer experience; an experience that is itself a primary competitive differentiator.

Couchbase understands the need to deliver extraordinary customer experiences and has architected a system that:

- is agile enough to adapt to changes in trends and user preferences,
- creates more responsive and context aware customer experiences,
- enables a seamless experience across platforms, channels and devices,
- easily supports exponential growth in users, data and operations at low cost

Interactions, Experience and Engagement are the New Digital Differentiators

Digital innovation has irrevocably changed the way we communicate, collaborate, shop, and socialize. Entering via websites, or armed with multiple devices and powerful apps, consumers, at any time of the day or night and from anywhere in the world, now demand consistently better experiences from the brands seeking their attention.

The EPYC Advantage: Performance - The AMD EPYC SoC brings new balance to the datacenter. The highest core count yet in an AMD x86-architecture server processor, large memory capacity, bandwidth and I/O density are all brought together with the right ratios to help performance reach new heights.

As a result, the need for superior customer engagement has itself become a major driver of digital transformation. The ability to deliver exceptional experiences has become the single most important differentiator for enterprises today.

Conventional analytical or transactional databases are not able to deliver rich customer engagement at scale. By their nature, analytical systems are backwards-facing, while transaction systems are focused on the actual moment of purchase. Yet today, that purchase, depends on an increasingly lengthy, and increasingly complex sequence of interactions which need to be executed flawlessly in real time.

Further, the number of interactions is increasing, and not just the total number, but the number of interactions per transaction is going up. Making these interactions satisfying turns browsing into purchasing; and following up these transactions with richer and uniquely personalized experiences achieves more profitable customer engagement throughout the lifecycle of the customer relationship.

The EPYC Advantage: Outstanding performance and scalability – both scale-up and scale-out. AMD and its ecosystem partners offer high-performance network connectivity options for massive scale-out systems such as Apache™ Hadoop® and Cassandra™

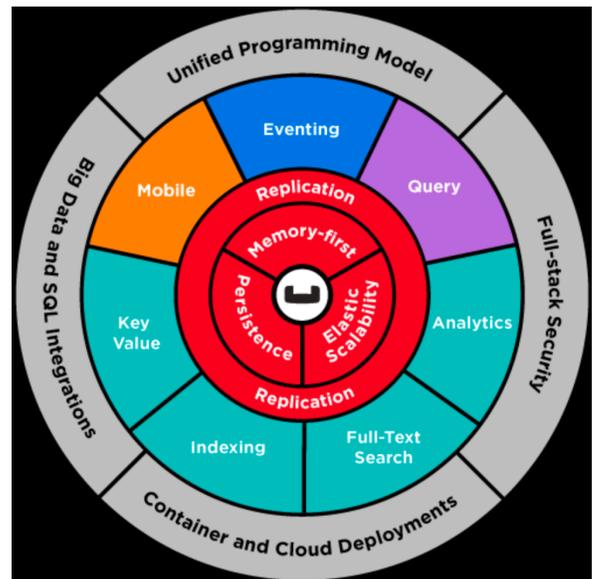
AMD has partnered with leading software and server vendors to create certified reference architectures for customers to demonstrate strong performance, lower risk and to help reduce implementation cost.

Couchbase Server

Couchbase Server is a scale-out NoSQL database whose core architecture is designed to simplify building modern applications with a flexible data model, N1QL - a powerful SQL-based query language for JSON, and a secure core database platform that provides high availability, scalability and performance.

Couchbase Server is specialized to provide low-latency data management for large-scale interactive web, mobile, and IoT applications. Common requirements that Couchbase Server was designed to satisfy include:

- Unified Programming Interface
- Query, Search & Analytics
- Mobile, IoT, Big Data & SQL integrations
- Scale-out architecture
- Memory-first architecture
- Full-stack security
- Container and Cloud deployments
- High Availability



The Couchbase Data Platform provides simple, uniform and powerful application development APIs across multiple programming languages, connectors, and tools that make building applications simple and accelerate time to market for applications.

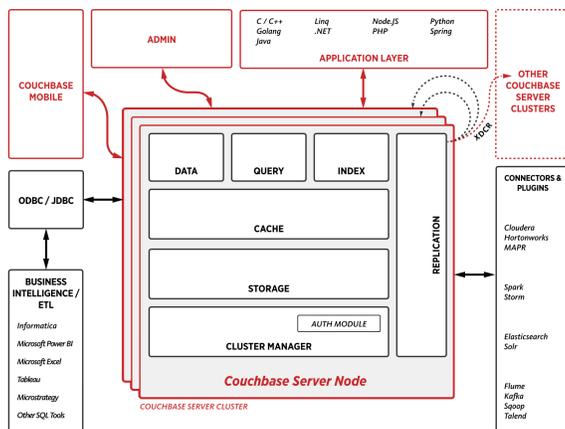
Couchbase is extremely straightforward to deploy and manage. Features such as replication are built in and happen automatically. Topology changes happen transparently without needing changes to the application or other Couchbase nodes. Each Couchbase Server node consists of completely identical software, drastically simplifying automation.

The entire cluster is managed through a single administrator console that offers single-click cluster expansion and rebalance. Even highly sophisticated technology, such as cross-datacenter replication, can be configured with a single click in the Couchbase Web Console.

For cloud-native applications and container-based deployments, Couchbase has introduced the world's first autonomous NoSQL database for Kubernetes. The Couchbase Autonomous Operator for Kubernetes enables cloud portability and automates operational best practices for deploying and managing the Couchbase Data Platform. It sets a new standard for Kubernetes in production by allowing enterprises to seamlessly deploy, monitor, and optimize their Kubernetes-orchestrated database applications both on-premises and in public cloud environments.

High Availability Architecture

All operations in Couchbase can be done while the system remains online, without requiring modifications or interrupting running applications. The system never needs to be taken offline for routine maintenance such as software upgrades, index building, compaction, hardware refreshes, or any other operation. Even provisioning or removing nodes can be done entirely online without any interruption to running applications, and without requiring developers to modify their applications.



Couchbase Server's built-in fault tolerance mechanisms protect against downtime caused by arbitrary unplanned incidents, including server failures. Couchbase Server replicates data across multiple nodes to support failover. Ensuring that additional copies of the data are available is automated to deal with the inevitable failures that all large distributed systems experience. All of this is done automatically without need for manual intervention or downtime.

Security

Securing customer data is a must-have, both from a compliance and from a basic data access perspective. Couchbase Data Platform provides secure data everywhere – on the wire, on the device, in the cloud, and in the data center.

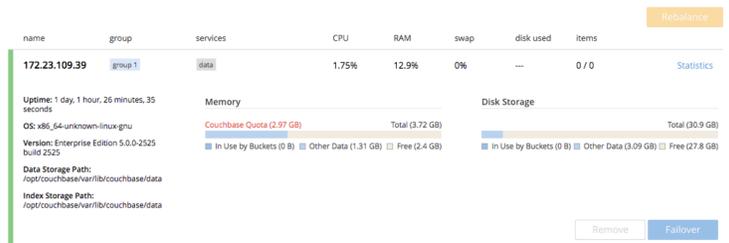
Couchbase Server supports multiple authentication mechanisms for administrators and applications accessing the cluster. Application read/write access is defined at a granular level enabling different data sets to have different degrees of authorized access.

Couchbase Server supports end-to-end Secure Socket Layer (SSL) traffic from applications to clusters, between nodes in a cluster and between clusters. Couchbase works with a variety of disk based encryption systems providing disk, file-level and application-level encryption.

The EPYC Advantage: Security - AMD EPYC features the industry's first dedicated security processor embedded in an x86-architecture server SoC. The processor manages secure boot, memory encryption, and secure virtualization on the SoC itself. Encryption keys never leave the system where they can be exposed to intruders.

Cluster Management

Couchbase Server provides a comprehensive Management UI to visualize, monitor, and manage the individual nodes of the cluster as well as overall cluster status and statistics. Additionally, the REST-based Admin API allows developers to directly query and integrate Couchbase administration and management functionality into their existing tools.



The Couchbase Cluster Manager runs on all of the nodes of the cluster and orchestrates cluster-wide operations, including: cluster topology and node membership; data placement; topology map change communication; centralized management, statistics, and logging; and connection authentication.

Reference Architecture for AMD EPYC and Couchbase

The reference architectures for AMD EPYC processors and Couchbase provide options for the performance and scalability requirements needed to maximize the investment in Big Data Analytics.

AMD EPYC's ability to provide a no compromise single-socket solution ensures you are only paying for the processing power the application needs. A single-socket server has all of the I/O and memory bandwidth available in a dual-socket server without the extra cost

For high-performance applications, AMD EPYC-based dual-socket servers offer phenomenal core density.

The EPYC Advantage: Flexibility - Match core count with application needs without compromising processor features. EPYC's balanced set of resources means more freedom to right-size the server configuration to the workload.

These reference architectures offer the foundation for creating custom configurations that meet unique application demands with the various storage and connectivity options to choose from our leading server OEM partners.

No Compromise Single-Socket		Versatile Dual-Socket	
Couchbase Nodes: scalable to hundreds		Couchbase Nodes: scalable to hundreds	
CPU	1 x AMD EPYC 7601, 7551, or 7501*	CPU	2 x AMD EPYC 7451 or 7401*
Cores/Threads	32/64	Cores/Threads	24/48 per CPU, 48/96 total
Memory	128/256 GB (supports up to 2 TB)	Memory	128/256 GB (supports up to 4 TB)
Network	10/25/40/100 Gigabit Ethernet	Network	10/25/40/100 Gigabit Ethernet
Storage: OS	2 x SSDs or 2 x HDDs	Storage: OS	2 x SSDs or 2 x HDDs
Storage: Data		Storage: Data	
High Performance	4-8 x NVMe drives or 8-12 x SAS/SATA SSDs	High Performance	4-8xNVMe drives or 8-12 SAS/SATA SSDs
Performance	24 x SAS/SATA HDDs (SFF)	Performance	24 x SAS/SATA HDDs (SFF)
Capacity	12-16 x SAS/SATA HDDs (LFF)	Capacity	12-16 x SAS/SATA HDDs (LFF)

*other AMD EPYC 7000 series processors are also supported

Conclusion

Versatility and agility are among the most important requirements in modern datacenters. The AMD EPYC system-on-a-chip (SoC) enables organizations to deploy systems that precisely meet today's needs while positioning themselves for tomorrow's requirements.

Couchbase is designed to simplify building modern applications with a flexible data model, N1QL - a powerful SQL-based query language for JSON, and a secure core database platform providing high availability, scalability and performance. Couchbase delivers an excellent developer experience and easy administration while also providing outstanding performance at scale, whether in the cloud, in a container, on-premise or on an edge device.

Together, AMD and Couchbase empower the development of modern data applications that implement solutions to a diverse set of business problems with high-performance processing and cost-effective solutions that are perfectly sized for current needs and easily scalable as your business grows.

For more information about AMD's EPYC line of processors visit: <http://www.amd.com/epyc>

For more information about Couchbase visit: <http://www.couchbase.com/>

For more information about the Couchbase PartnerEngage program visit: <https://www.couchbase.com/partners/find-a-partner>



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