NetApp Solution for Couchbase

Key Benefits

- Maximize uptime of Couchbase cluster through superior availability
- Realize better performance during data rebuilds
- Consolidate storage management across environment
- Save on storage capacity by reducing vBuckets replication factor
- Easily and simply create, delete, and expand volumes and volume groups
- Encrypt your data with no performance impact
- Rest assured with world-class NetApp® AutoSupport®

The Third-Platform Challenge

The third platform—billions of social media interactions, mobile application users, and Internet of Things devices, all contributing to the accumulation of big data—is upon us. This has spawned a technological challenge beyond the limitations of relational databases to solve. To analyze and derive actionable information from this big data, developers are building distributed and vastly scalable three-tier cloud applications on the Couchbase NoSQL platform. These applications are becoming more intrinsic to day-to-day operations because they improve customer experiences and reduce operational costs across industries as diverse as retail, telecommunications, media, entertainment, healthcare, financial services, and energy.

Limitations of initial deployments

Although NoSQL proofs of concept and initial deployments were generally small in terms of both compute and storage requirements, these deployments are now growing in storage capacity and performance requirements as well as visibility and importance to the overall organization.

Often initial deployments rely on the use of internal drives within the servers along with network-based replication to provide a redundancy layer, but there are several disadvantages to this architecture as it scales to meet additional demand:

- Storage management becomes complex and lacks flexibility.
- Reliability and performance under failure conditions can cripple day-to-day operations.
- Processing power and storage requirements cannot scale independently to address business needs.
- Network costs and complexity increase due to replication and failure redistribution models.

The Solution

The all-flash E2800 and EF560 storage solution combines robust, full-featured storage management software; a bullet-proof array chassis; and the most recent solid-state disk innovations to provide superior technological and business value. These storage systems have a proven record of five-nines or greater reliability and a heritage of excelling at diverse workloads.

The NetApp EF560 delivers submillisecond access latency and up to 825K IOPS. It scales to 384TB and can deliver 12GBps of throughput. Additionally, this exceptional performance is only negligibly affected during disk failures due to the implementation of Dynamic Disk Pools (DDP). This also means faster recovery from disk failures for your Couchbase mission-critical applications.
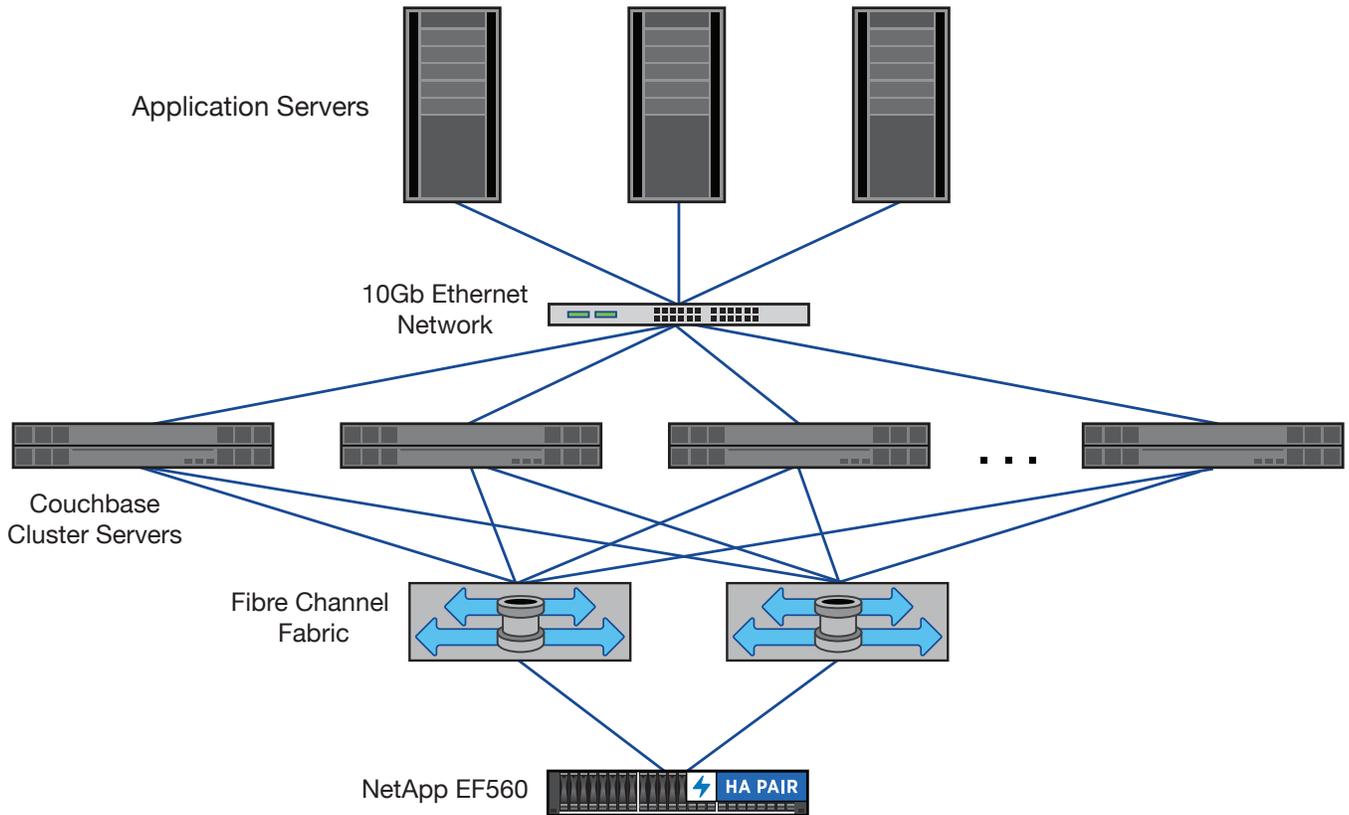
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Couchbase

Solution design partner

Figure 1) NetApp EF560 for Couchbase deployed as Fibre Channel SAN storage.

Two Architectural Deployment Alternatives

For high-performance and low-capacity NoSQL requirements, the all-flash E2800 and EF560 solution can be deployed as a Fibre Channel SAN (Figure 1). Alternatively, for larger capacity needs, they can be deployed using a multiple high-speed direct-attached scale-out architecture (Figure 2).

Due to the highly available nature of the all-flash E2800 and EF560, replication requirements can be reduced while still providing maximum uptime to the Couchbase cluster and ultimately to the end user. With the superior DDP technology, performance degradations in the environment due to disk failures or rebalancing after adding capacity can be mitigated if not eliminated entirely.

Simplified storage management with a centralized user interface is offered, allowing new volumes, volume groups, or DDPs to be created easily and provisioned immediately for use by the Couchbase cluster servers. In addition, existing volumes, volume groups, and DDPs can all be increased in size dynamically in order to provide additional capacity and/or performance as required for the Couchbase environment. Simplified storage management means less time-consuming repetitive tasks for administrators and more savings for the overall operation.

The NetApp all-flash E2800 and EF560 provide significant advantages over internal drives for demanding Couchbase NoSQL workloads, including exceptional storage management capabilities, excellent and consistent performance, five-nines reliability, high availability, and low latency.
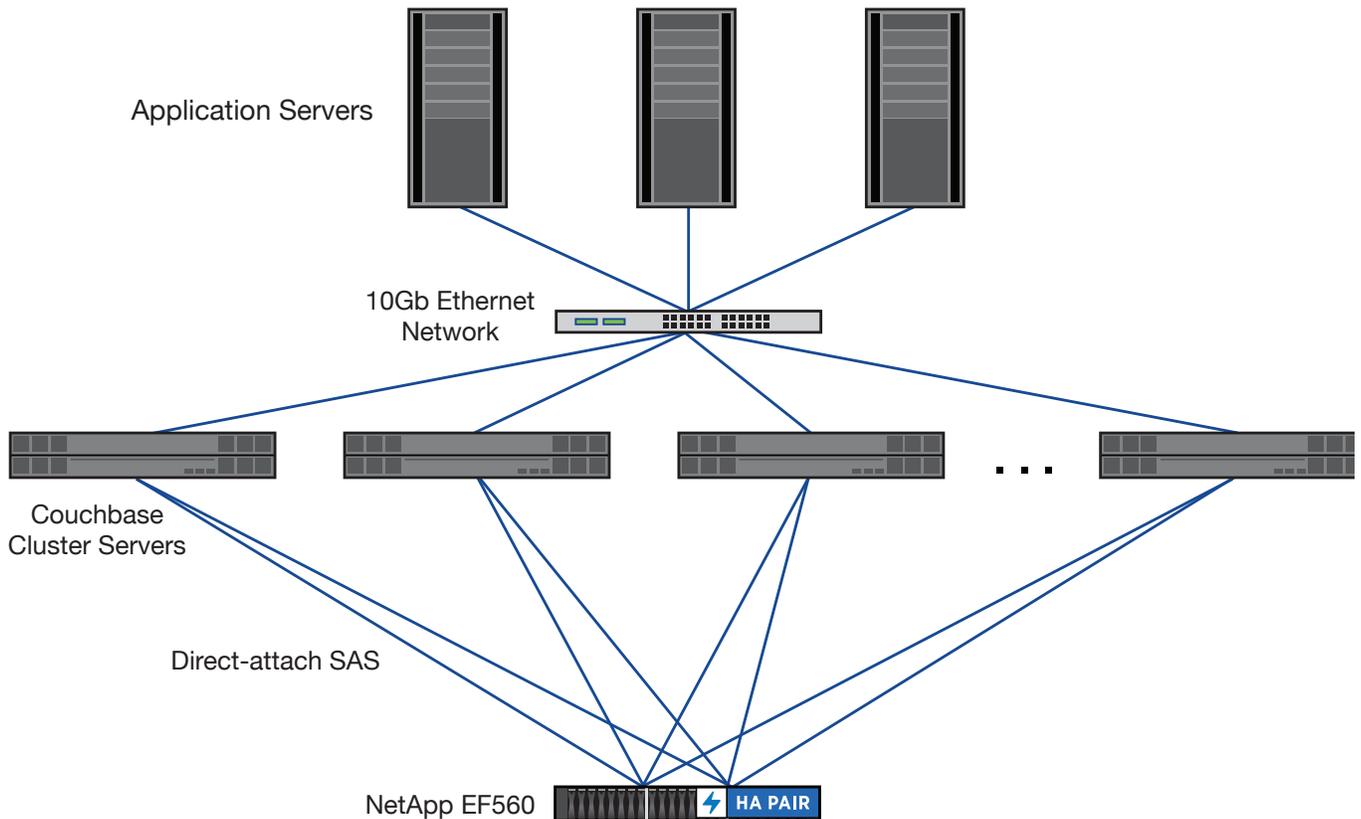
Figure 2) NetApp EF560 for Couchbase deployed as direct-attached storage.

About Couchbase

Couchbase delivers the world's highest performing NoSQL distributed database platform. Developers around the world use the Couchbase platform to build enterprise web, mobile, and IoT applications that support massive data volumes in real time. The Couchbase platform includes Couchbase, Couchbase Lite—the first mobile NoSQL database, and Couchbase Sync Gateway. Couchbase is designed for global deployments, with configurable cross data center replication to increase data locality and availability. All Couchbase products are open source projects.

About NetApp

Leading organizations worldwide count on NetApp for software, systems and services to manage and store their data. Customers value our teamwork, expertise and passion for helping them succeed now and into the future.

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