CloudDBAppliance

European Cloud-In-Memory Database Appliance with Predictable Performance for Critical Applications

Pitch Presentation

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Overview

CloudDBAppliance aims at **creating a European Database Appliance** providing:

- An ultra-scalable operational database
- An in-memory analytics engine that works over the operational data
- Running on the new Bullion HW
- Integrated with data lake infrastructure

Features

CloudDBAppliance exhibits some **key features** for being used in the cloud:

- **Scalability:** It scales up to any size in terms of number of cores, 1000+
- **High availability:** It provides active-active replication to deliver zero downtime
- **Multi-tenancy:** Multiple users can run over the same database appliance with performance isolation
- **Dynamic reconfiguration:** It continuously reconfigures itself to maximize performance

Scalability

- The **new Bullion** can reach in its maximum version **796 cores** and **140 TB of memory**
- The database can **scale up** linearly to use all the cores and all the memory
- No **single-core bottleneck**
- No **contention**

Multi-Tenancy

CloudDBAppliance is architected to be **multi-tenant** at two different levels:

- **Hardware Isolation:** The Bullion can be configured to be partitioned. Each Bullion partition is hardware isolated
- **Software Isolation:** It becomes possible to allocate cores and memory to different tenant that will run on different instances of the database

High Availability

CloudDBAppliance provides **high availability** by means of:

- **Active-Active replication:** Two appliances work in parallel and are at every single instant up-to-date thus, tolerating failures with zero downtime
- **Geo-replication:** Replication can be performed across data center, therefore, tolerating data center disasters
- **No synchronization bottleneck:** Unlike existing solutions the system does not introduce any bottleneck for replica synchronization
- **No synchronization overhead:** The replication algorithm is really lean avoiding the large replication overheads introduced by existing solution resulting in a very efficient solution

Dynamic Reconfiguration

LeanXcale will support **dynamic reconfiguration** enabling:

- Moving a database instance from one server to another without stopping anything. This will allow to move cloud customers to a machine with the closest size to their needs in a dynamic way
- Dynamic load balancing. It enables to fully utilize the hardware by balancing the load across the multiple server instances running within the Bullion

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