SCALABLE COMMUNICATION FOR WEB APPLICATIONS BY USING WINDOWS AZURE SERIVE

[1]T.Geethika ,[2]Sk.Sunaina,[3]Jaladi.Vinusha
[1,2,3]M.Tech Computer Science Students
KLUniversity, Guntur, Andhra Pradesh, India

Abstract:

Cloud computing has emerged as a ideal platform for deploy scalable web-applications. But at the same time they give up data consistency. However, many applications cannot give any data inconsistency scalable transaction manager which guarantee ACID properties for multi-item connections issued by Web application, even in the attendance of server failure and network partitions. We execute this approach on top of the two main families of scalable data layers: Bigtable and SimpleDB. Performance evaluation on top of HBase (an open-source version of Bigtable) in our local cluster and Windows Azure Table Storage Service in the Windows cloud shows that our system scales linearly at least up to 40 nodes in our local cluster and 80 nodes in the Windows cloud.

Keywords: **Scalable,cloud computing, Web applications, Transactions**

Introduction:

The extensive reputation of Cloud computing as a favored platform for the operation of web applications has resulted in an huge number of applications affecting to the cloud, and the enormous victory of cloud service providers. Due to the rising number of web applications being hosted in the cloud, and the increasing scale of data which these applications accumulate, procedure, and serve up scalable data management system form a decisive part of cloud infrastructures**.**

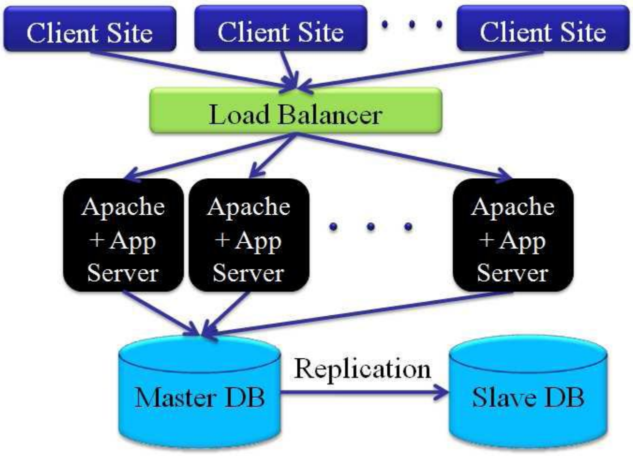

Figure 1: Typical Software Stack for Web Applications

The scalability and high accessibility properties of Cloud platforms though approach at a price. Initially, These scalable database services allocate data query only by primary key rather than sustaining secondary-key or join queries. Next, these services give only feeble reliability such as ultimate data consistency: any data keep informed become visible after a limited but un deterministic amount of time. As feeble as this reliability possessions may seem, it does allow to build a wide range of useful applications, as established by the profitable success of Cloud computing platforms. Though, a lot of additional applications such as expense and online public sale services cannot afford any data inconsistency. While primary key- only data admittance is a relatively minor problem that can often be accommodate by good data structures, it is necessary to provide transactional data consistency to support the applications that require it.

A transaction is a set of queries to be execute atomically only on reliable view of a database. The main test to support transactional guarantee in a cloud computing atmosphere is to give the ACID properties of Atomicity, Consistency, Isolation and Durability with no compromise the scalability property of the cloud. Though, the underlying cloud data storage services provide only ultimate reliability. We address this inconsistency by create a secondary provisional copy of the application data in the transaction managers that grip consistency.

We exhibit the scalability of our transactional database service using execution. The data models of Bigtable and SimpleDB, communication are allowable to access any number of data items by primary key at the granularity of the information line. The listing of primary keys access by an operation must be known clearly before execute the transaction. This means for instance that variety queries are not support inside a transaction.

We appraise our trial product under a workload derived from the TPC-W e-commerce benchmark. We implemented Cloud TPS on top of two different scalable data layers: H Base, an open-source replica of Big Table, organization in our local cluster; and Simple DB, organization in the Windows Cloud . We show that Cloud TPS scales linearly to at least 40 LTMs in our local cluster and 80 LTMs in the WindowsCloud. This income that, according to the values of Cloud computing, any raise in workload be able to be accommodate by provisioning extra servers.

2 RELATED WORK:

2.1 Data Storage in the Cloud

The simplest way to store ordered data in the cloud is to organize a relational database such as MySQL or Oracle. The relational data model, classically implement via the SQL language, provide huge elasticity in accessing data. It supports complicated data access operation such as aggregation, range queries, join queries, etc. RDBMSs support communication and warranty strong data reliability. One can simply deploy a classical RDBMS in the cloud and thus get sustain for transactional reliability. Though, the elastic query language and strapping data reliability avert one from partition data mechanically, which is the key for presentation scalability. These system rely on duplication technique and therefore do not carry additional scalability development compare to a non-cloud operation.

On the other hand, a new family of cloud database services such as Windows Azure,Google Bigtable , Amazon SimpleDB, Yahoo PNUTS, and Cassandra, uses easy data models based on quality value pair. Request data are organized into tables, of which each is a compilation of data items. Data items are typically accessed through a “GET/ PUT” interface by primary key. Additional difficult data access operations, such as range queries in Simple DB or data item scanning in Big table, are limited within a table. None of them supports operation crosswise numerous tables, such as join queries. This data model allow such systems to panel application data into any number of tables efficiently.

2.2 Windows Azure Table Storage Service:

The Windows Azure calculate service can run many different kinds of applications. A main objective of this platform, however, is to support applications that have a very large number of concurrent users. Reaching this goal by scaling up—running on bigger and bigger machines—isn't possible. Instead, Windows Azure is planned to support applications that scale out, running multiple copies of the same code across many commodity servers.

To allow this, a Windows Azure appliance can have numerous instances, each executing in its own virtual machine (VM). These VMs run 64-bit Windows Server 2008, and they're provided by a hypervisor (based on Hyper-V) that's been modified for use in Microsoft's cloud. To run an application, A developer accesses the Windows Azure portal through her Web browser, signing in with a Windows Live ID. She then chooses whether to create a hosting account for running applications, a storage account for storing data, or both. Once the developer has a hosting account, she can upload her application, specifying how many instances the application needs. Windows Azure then creates the necessary VMs and runs the application.

It's important to note that a developer can't supply her own VM image for Windows Azure to run the platform itself provides and maintains its own copy of Windows. Developers focus solely on creating application that run on Windows Azure.

The goal of Microsoft's Windows Azure is to provide this Part of the larger Azure Services Platform.Windows Azure is a platform for running Windows applications and storing data in the cloud. Figure 2 illustrates this idea.

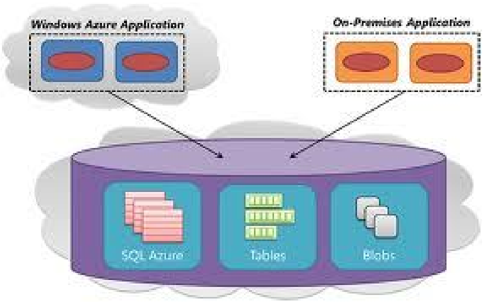

Figure 2: Windows Azure Application

3.ACID Properties:

Each of the property is discuss separately. We then talk about the membership mechanism to assurance the ACID properties even in case of LTM failure and network partition**.**

Atomicity

Atomicity refers to the ability of the DBMS to guarantee that either all of the tasks of a transaction are performed or none of them are. Atomicity states that database modifications must follow an "all or nothing" rule. If some part of a transaction fails, then the entire transaction fails, and vice versa.

Consistency

The Consistency property ensures that the database remains in a consistent state, despite the transaction succeeding or failing and both before the start of the transaction and after the transaction is over.

Isolation

Isolation refers to the requirement that other operations cannot access or see the data in an intermediate state during a transaction. As discussed above, the Isolation property can helps to implement concurrency of database.

Durability

Durability states that once a transaction is committed, its effects are guaranteed to persist even in the event of subsequent failures. That means when users are notified of success, the transactions will be persist, not be undone and survive from system failure.

4.Conclusion:

Web applications require strong data consistency for their accurate implementation. Even though the high scalability and ease of use property of the cloud make it a good platform to host Web satisfied, scalable cloud database services simply supply comparatively weak consistency property. This article shows how one can sustain strict ACID transactions with no compromise the scalability property of the cloud for Web applications. Windows Azure provides large database service to the providers and host these web applications these platform is for running windows applications and stores in the cloud.

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