Phégda joins hands with Intel to build Cloud in A Box appliance to help Telecom Operators’ CRM cloudization construction

Challenges

CRM (Customer Relationship Management) report system encounters bottleneck in terms of processing capacity and horizontal extension

CRM report system in Telecom Operator’s IT architecture is the core of CRM system, bearing the display service of all kinds of comprehensive data at the front desk of business office; its service feature belongs to the mixed type of OLTP and OLAP, i.e., including short query service (personal service, etc.) and long complex query service (service charge list and prepaid calls query, etc.).

Case Study

“In the process of creating a new generation of data center, it has been an important move for Telecom Operator industry to migrate the application system from expensive and closed UNIX platform to economical and flexible Linux platform in order to optimize IT architecture and promote IT change in recent years. Under the condition of continuous normal business operation, Phégda has realized seamless migration of CRM (customer relationship management) service system to PBData Database Platform; this solution is specifically designed for core database scenario, provides enterprises with fusion cloud platform with high performance and high availability for database service and assists enterprises to minimize TCO and simplify IT operating maintenance. PBData Database Platform which is based on Intel® Xeon™ processors E5 v4 product family and Intel® solid state disk S3510 series provides the system with powerful vector operation processing capacity and realizes the efficient and stable data operation; on the premise of helping users to realize autonomous control, it resolves the huge pressure brought by mass data to user’s CRM system. In the future, Phégda will continue to cooperate with Intel, the leader of global information industry, to create a new chapter for Telecom Operators’ IT architecture innovation!”

Previously, CRM report system adopts 2 sets of IBM RISC servers plus stored traditional SAN architecture to bear Oracle RAC respectively, one is used for production environment and the other for disaster recovery environment; between the production bank and disaster recovery bank, IBM PPRC storage replication technology is used to realize data-level disaster recovery.

With the rapid development of mobile services, CRM report system encounters bottleneck in terms of processing capacity and horizontal extension. Since the service data of CRM report is established on a monthly basis, the data is relatively big when accumulated to the end of each month; at the same time, accompanied by the normal service peak at the end of each month, timeout is frequent upon batch query of CRM front desk for large data volume, which has a strong impact on use perception. CPU utilization of database host adopting IBM RISC server is basically used up, posing great challenge to system stability. With the rapid growth of data volume, the centralized storage extension ability is limited, the database space can only be maintained by relying on regular cleanup.
The concurrent capacity of resource center is seriously insufficient

Resource center is responsible for adaptive control of global CRM channel, realizes the loose coupling of service logic and access channel as well as centralized and unified control of service rules related to access channel; it is the control hub of CRM system.

Previously, the resource center adopts 2 sets of HP RISC servers plus stored traditional SAN architecture to bear Oracle RAC respectively, one is used for production environment and the other for disaster recovery environment; between the production bank and disaster recovery bank, HP CA storage replication technology is used to realize data-level disaster recovery.

With the continuous development of mobile services and extension of peripheral system, as the control hub of CRM system, resource center’s pressure skyrockets. On the one hand, the demand for links of database surges, gradually increasing to about 10,000 from 5,000 links per node at the initial stage of access; the use of RISC server memory has exceeded the safety line and it can’t bear link transfer after single point of failure (each node is required to bear 20,000 links). On the other hand, the access to trans-CRM center service needs channel resource scheduling, the database concurrent processing capacity of original architecture in rush hours has tended to a bottleneck (SQL concurrent execution efficiency declines seriously), characterized by instant performance jitter for middleware cluster, or the faults such as white screen at the front desk in severe cases.

Solution

In view of the user requirements, Phegda provides PBData Database Platform which is specially designed for core database scenario, migrates CRM report system from expensive and closed UNIX platform to economical and flexible Linux platform, improves the system performance and reduces application delay. PBData Database Platform solution, based on Intel® Xeon™ processors E5 v4 product family and Intel® solid state disk S3510 series, provides the system with powerful vector operation processing capacity; by using SmartCache intelligent caching technology, it provides flash memory level I/O processing capability, significantly reducing the system delay and speeding up the program execution of CRM report system and greatly improving the system performance. PBData Database Platform, based on open x86 fusion architecture, is compatible with a variety of mainstream databases at the same time, and can realize pre-verification, tuning, end-to-end one-stop deployment and site-wide unified visualized monitoring; compared with the traditional architecture, it can provide enterprises with integrated fusion cloud platform featured by high performance, high availability, high cost performance and convenient management.

CRM report system adopts 2 sets of PBData Database Platform V2400 (2 compute nodes + 5 storage nodes) instead of 2 sets of original traditional SAN architectures; between the new production bank and new disaster recovery bank, Active Data Guard (called ADG for short) is used for data synchronization.

Resource center adopts 2 sets of PBData Database Platform V2400 (2 compute nodes + 3 storage nodes) instead of 2 sets of original traditional SAN architectures; between the new production bank and new disaster recovery bank, Active Data Guard (called ADG for short) is used for data synchronization.

Technical Superiority

Intel® Xeon® processors E5 v4 product family

Intel® Xeon™ processors E5 v4 product family is specially designed for two-way servers, with the kernel and cache 20% more than the products of previous generation; it can support faster memory, contains integration technology and can obviously speed up key workloads such as database transaction and vector operation. This series of processors have Intel® quick path interconnection (QPI) technology, can bring quick and flexible system communication
ability and achieve QPI speed up to 9.6GT/second per channel. Intel® Xeon™ processors E5 v4 product family also integrates Intel® Resource Director Technology, and it can provide more in-depth visibility, and control and share the platform resources to realize more intelligent arrangement.

**Intel® solid state disk**

Intel® solid state disk DC S3510 series, by virtue of its low total cost of ownership, high reliability and powerful data protection, are intelligent systems which can optimize data center and cloud and run read-intensive applications (such as guide, Web server, operating system, operational database and analysis, etc.). With up to 500/460 MB/second read/write throughput speed and up to 68,000/20,000 4k/second random read/write input/output operations (IOPs), Intel® solid state disk DC S3510 series have greatly improved the performance of data center. The applications, through 99.99% of time and 500 μs maximum reading delay, benefits from 55 μs typical delay. By combining high performance with low typical activity power consumption (less than 5.6 watts), Intel® solid state disk DC S3510 series meet the harsh demand of data center with low total cost of ownership, and are best for server or application upgrade.

**Users Benefits**

**High performance under high concurrent applications**

PBDATA Database Platform, based on Intel® Xeon™ processors E5 v4 product family and Intel® solid state disk S3510 series, in combination with RDMA link technology and SmartCache smart caching optimization, provides powerful I/O processing capacity and helps system to achieve top-speed response.

- The problem of original system in the aspect of high concurrence query timeout in service peak at the end of each month has been thoroughly solved, system concurrence response ability is enhanced, the use perception of front desk of business office is significantly increased.
- The CPU utilization of database host decreases from 100% to below 20%, system stability is effectively improved.
- After the service is migrated to PBDATA Database Platform, single node can support more than 30,000 database links, easily guaranteeing the demand for links of database with high availability when single point of failure occurs.
- SQL concurrence efficiency decline problem of original architecture in rush hours is effectively avoided; the bearing capacity of system is greatly improved.

**Business continuity is fully guaranteed**

PBDATA Database Platform, based on multi-replica fault-tolerant mechanism of sharding data, provides strong guarantee for system integrity and service continuity by making use of high performance of Intel® Xeon™ processors E5 v4 product family.

**Linear growth of memory property realizes optimal cost effectiveness**

By virtue of Scale-at-will, PBDATA Database Platform realizes multidimensional elastic extension, and its performance takes on approximate-linear increase with capacity, easily satisfying the requirement of increasing service volume without hardware bottleneck. For CRM report system, according to the current service increment forecast, the database storage space can satisfy the use demand over the next five years, perfectly solving the problem of extension bottleneck.

**Visualized unified management is convenient and economical**

PBDATA Database Platform provides site-wide unified visualized console SmartMon to provide global topology and comprehensively monitor computing, storage, caching and network status; it can make the problem diagnosis deep into SQL level and provide high-accuracy fault response ability; the deployment and operating maintenance costs are reduced by more than 60%.
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Conclusion

Phegda PBData Database Platform provides users with “Cloud in A Box appliance+open hardware+support universal database” reliable solution, easily supporting online service migration and helping users achieve rapid transformation and upgrading of fusion architecture. Relying on the robust kernel of the new generation of Intel® Xeon™ processors E5 v4 product family and the high reliability of Intel® solid state disk S3510 series, PBData Database Platform supports quicker vector calculation, can significantly speed up database transactions and provide strong guarantee for the data integrity and service continuity. In the tide of migrating the system from UNIX platform to Linux platform in Telecom Operator industry, PBData Database Platform solution provides a stable and efficient CRM cloudization platform, breaks through the traditional SAN “centralized+closed” architecture, breaks through CPU computing power bottleneck of IBM RISC servers, reduces the total cost of ownership of system and opens up a new path for CRM system cloudization development in Telecom Operator industry.

Solution Provider: