Siebel 99 on NUMACenter 5,000 user test

Executive overview

November 10, 1999

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1.0 Overview

Implementing Siebel enterprise applications in a large-scale sales, marketing and service environment demands a flexible and scalable infrastructure that is able to support the requirements of business both now and in the future, including the introduction of new e-business models.

IBM NUMA-Q® has established a Siebel Competency Center to determine the exact infrastructure requirements for the complete Siebel Application Suite. The first task performed by this group was to stress test the new Siebel 99 Call Center Application on IBM's NUMACenter™ hardware. This ambitious test was designed to exploit the inherent scalability of IBM's NUMACenter platform to scale the Siebel application to levels that had never been achieved before.

The key objectives of the test were:

- To gain expertise in how to optimize NUMACenter to support the Siebel 99 application
- To provide feedback to Siebel engineering on the performance characteristics of Siebel 99
- To produce detailed system-sizing guidelines for NUMACenter for the Siebel 99 Call Center module to enable IBM to contractually assure system performance

In developing this stress test, it was critical that "real world" think times and typical call center operations were used as part of the scenarios. The danger of any stress test is that it becomes a "marketing benchmark" focused on meeting a desired performance number—not in providing a realistic representation of the customer's environment. The team focused on targeted call center operations so that these results would be an accurate measure for call center customers.

Unsurpassed results were achieved for performance and scalability of a call center application. Runs were made simulating up to 5,000 call center agents performing one of five transactions in a two-minute time period—for a total of 150,000 calls per hour. This was achieved with an average (mean) response time of one second per database transaction. Analysis of these results demonstrated that scalability beyond this level of agents would be readily achievable.

As a result of this rigorous testing of Siebel 99, IBM NUMA-Q is able to offer performance assurances for Siebel 99 deployments. For optimized Siebel platform configurations, email teamsiebel@sequent.com.

2.0 Solution architecture

The Siebel application is implemented using a layered, n-tier architecture approach for maximum flexibility and scalability. Siebel supports a range of client types including:

- Connected Client
- Thin Client for Windows
- HTML Thin Client
- Remote Client

The client type or types used determine which layers of the n-tier architecture run on the desktop device and which on the server. In addition, some Siebel processes are always resident on the server. Windows NT® is the operating system of choice for the application server and scalability is achieved by deploying a number of Windows NT servers. The database, however, has to run on a single system and so Unix is the preferred choice here due to its inherent scalability, performance and proven ability to support large databases.

NUMACenter is the ideal platform to support Siebel deployments as it allows the application server, database server and storage layers to be provided within a single system environment.

3.0 Test

Test scenario

The test scenario for this exercise was a simulation of a large 'business to consumer' organization with an inbound call center handling both sales of products and customer care. The simulated environment had a customer base of one million customers. Against this system, IBM NUMA-Q simulated call center agents taking random calls from the customer base. Representative call center operational data was used to define the transaction types and the relative frequency, or "weight," to accurately characterize a real call center's workload. The business transactions and relative weighting is shown in table 1.

A simulated Agent 'Think-Time' was set so that, on average, each call center agent handled a complete call every 2 minutes; a call rate that would exceed the expectations of any call center manager. This simulation proved that the environment could support 150,000 calls per hour.

The tests were conducted with 2,000, 4,000 and 5,000 concurrent call center agents.

Transaction #	Description	Weight
Transaction 1	Customer call generates an opportunity. Agent does customer lookup by customer name. Query is performed to retrieve customer data and Agent proceeds with steps to generate an opportunity. This includes associating a contact and a product with the opportunity.	30% weighting
Transaction 2	Customer changes to personal details. Agent does customer lookup by customer name. Query is performed to retrieve customer data and Agent proceeds with steps to change a customer address detail.	1% weighting
Transaction 3	Customer requests a quote for a product. Agent does customer lookup by customer name. Query is performed to retrieve customer data and Agent proceeds to generate a quote from an opportunity (database is seeded with one opportunity per customer/account). Product for quote is selected from a list of some 27 available products.	20% weighting
Transaction 4	Customer generates a sales order from a quote. Agent does customer lookup by customer name. Query is performed to retrieve customer data and Agent proceeds to generate a sales order from a quote (database is seeded with one quote per customer/account).	10% weighting
Transaction 5	Customer makes a service request. Agent does customer lookup by customer name. Query is performed to retrieve customer data and Agent proceeds with steps to generate a new service request.	39% weighting

Table 1

System under test

The test center was a NUMACenter with the following configuration:

Application Server Node

NUMACenter N320 Quad with:

4 x Intel® Pentium® Xeon™ processor 400MHz/1MB cache

4GB Memory

2 x 9.0 GB Hard Disk

Windows NT 4.0 SP4

Oracle SQL*Net 2.3.4.x

Siebel Server 99 build 5.0.2

Database Server Nodes

2 x NUMACenter M320 Quad each with:

4 x Intel Pentium Xeon processor 400MHz/1MB cache

4GB Memory

DYNIX/ptx 4.4.5

FacetWin 2.0

Oracle SQL*Net 2.3.4.x

Oracle RDBMS 7.3.4.x

Storage

2 x Clarion DASS storage sub-systems

Storage Interconnect

2 x Fiber channel switch

4 x Fiber channel bridges

System Interconnect

1 x Cisco 5000 switch

4.0 Siebel 99 test results

The results from the tests are summarized below. The figures show the average load on the system once it reached a steady state.

The results show that the Siebel application was easily able to support the 5,000 call center agents using connected clients on the NUMACenter platform. The linear scalability shows that no bottlenecks in either the Siebel application or the NUMACenter environment are evident. This was achieved with an average (mean) response time of one second per database transaction.

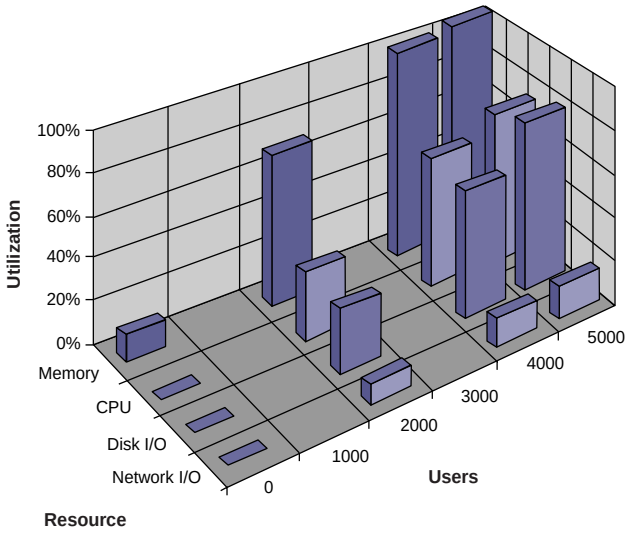

Figure 1

Users	CPU (Pentium Xeon)	Memory (MB)	Disk (I/O's per second)	Network (kB/sec)
0	0.00	500	0	0
2000	2.10	5142	142	1680
4000	4.24	7676	319	3360
5000	5.32	8186	443	4200

Figure 2

5.0 Summary

No two installations are identical and any simulated test, such as the one presented here, may not match a customer's production environment in all aspects. A range of factors that were either not modeled or simply used differently in the test scenario can impact sizing. These range from simple operations such as assignment routing through to system integration overhead of accessing legacy systems.

However, by modeling a large environment with a very high transaction rate, IBM has captured the baseline data for the very highest performance levels. And, by supplementing this high-volume test with a series of smaller scale tests, IBM can determine very accurate system sizing for customer-specific requirements.

This configuration service is available through IBM NUMA-Q's Siebel Competency Center. This center has been established to be able to provide highly optimized configurations of its NUMA family of servers to address specific business needs. Whether it be 24x7 availability for a multi-site call center or sales force automation for tens of thousands of sales executives around the globe, IBM can provide the exact infrastructure for customer needs. Furthermore, because of the rigorous testing that has been undertaken by the Competency Center, IBM NUMA-Q assures the performance of these configurations.

For optimized Siebel platform configurations please call 1.888.561.INFO (U.S.) or +1.503.578.4836, or e-mail teamsiebel@sequent.com.

Produced by:
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11-99
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DB-11050