



NonStop SQL

The path to the always-on,
easily administered,
out-of-the-box clustered,
database server!

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About the Author

Richard Buckle is the founder and CEO of Pyalla Technologies, LLC. He has enjoyed a long association with the IT industry as a user, vendor, and more recently, as an industry commentator.

Richard has more than 25 years of experience with the NonStop platform, including eight years working at Tandem Computers followed by just as many years at InSession Inc and ACI Worldwide. Prior to entering the Tandem and NonStop marketplaces, Richard had spent two decades working with IBM mainframes including those manufactured by Plug-Compatible Manufacturers (PCMs) in the 1980s.

Well known to the user communities of HP and IBM, Richard served as a Director of ITUG (2000-2006), as its Chairman (2004-2005), and as the Director of Marketing of the IBM user group, SHARE, (2007-2008). Richard provides industry commentary and opinions through his blog and you can follow him at www.itug-connection.blogspot.com, and he regularly posts to LinkedIn groups that track developments across the HP NonStop user community.

Publications in which Richard has appeared include Australian ComputerWorld (1980s through to the 1990s) as a columnist, writing Buckle's View; Compaq and later HP magazine Connection (2000 through to today) as a columnist, Real Time View; and the TandemWorld.Net e/Newsletter (2008 through to today). Richard has also produced many feature articles for many of these publications.

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Forward

Even in the most favorable economic climate, businesses need to control costs and increase efficiency. In today's more challenging business environment this has become a key factor for the survival and success of enterprises of all sizes. CIOs want innovation and not maintenance at the top of their IT \$'s spending list. NonStop SQL, the database engine integrated with the HP NonStop Server platform, delivers significant "out-of-the-box" benefits that customers can exploit with minimal effort.

Customers do not have to trade-off between linearly scaling their database platform to handle growth in their business volumes, or the 24x7 availability required by global enterprises, or even to restrict users to do certain database actions at certain times of day. Neither must customers consider compromises between lower costs of database ownership and the higher costs of database administration. Today, customers get all of this with NonStop SQL to support their demanding, always-on environments. And CIOs have started to wrap their heads around it.

In this article, written by Richard Buckle, a notable blogger and longtime IT and database specialist, learn what is unique about NonStop database and how some customers are using it to meet the ever evolving requirements of their businesses.

Ajaya Gummadi
NonStop World Wide Database Product Manager
HP

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Executive Summary

From “baby-boomers” who demanded ATMs that were always accessible, to “generation x” who wouldn’t leave home without their smart-phones and PDAs, to today’s “generation y” who pull information and entertainment from a variety of channels and expect an “always-on” world, there’s no let-up in the demand for servers of the caliber of HP NonStop Servers. Information will remain at the heart of all of these usage scenarios, no matter the age or demographic involved, and the HP NonStop Server platform remains important when it comes to providing always-on, cost-effective support of companies’ databases.

Deeply rooted in OnLine Transaction Processing (OLTP) the HP NonStop server has proved to be THE OLTP machine and yet today, with attention focused on Database Management Systems (DBMS), OLTP is all about databases. With the broad acceptance of real time access via ANSI-standard Structured Query Language (SQL) commands, directed at the Relational DBMS (RDBMS) prevalent today, the proven design of HP’s NonStop SQL/MX (NS SQL/MX) with hardware and software working together is once again underscoring the NonStop server as THE real database OLTP machine!

Competing product offerings have, for many years, highlighted their ability to address OLTP but have fallen short as volumes have risen and the user population expanded globally; it requires a lot more than what is normally provided with SQL product offerings to ensure round-the-clock access to mission-critical applications pulling information from today’s databases. The key to the timelessness of the NonStop design rests in the tight integration of the hardware platform, operating system (OS) and middleware.

In the latest advertising campaigns, Oracle has finally begun to understand what it really takes to be the real database OLTP machine; it’s marketing messages repeat what the industry first heard from Larry Ellison at Oracle OpenWorld 2010, “if you engineer hardware and software to work together, you get a much better overall system and the overall user experience is better.” With this epiphany, Oracle appears to have finally understood the value proposition of NonStop and the value it has

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been providing for so many years and is ready to follow in the footsteps of the OLTP Leader of the last three decades!

This paper explores the challenges facing CIOs and the difficulties they will have in continuing to fund resources. In particular, special attention is given to the escalating costs associated with ongoing database administration. The scope of DBAs responsibilities and the activities they pursue on platforms apart from NonStop is examined in the following sections. A number of successful deployments on the HP NonStop server are highlighted before the paper ends with commentary on how beneficial integration of NS SQL/MX with the OS and the hardware, working first time right out-of-the-box, is proving to be, and of the contribution this makes in better controlling the human and monetary resources needed for the servers themselves, the DBA, and ultimately the company's IT as a whole.

Expressed even simpler, from the customers and vendors interviewed came the consistent message: implementing NS SQL/MX today allowed them to reduce the number of servers required (saving on license fees), helped them exploit the ability to run mixed workloads (and not need to ever take the system offline) because of NS SQL/MX being integrated with the OS and the hardware, and helped them trim the number of DBAs needed to maintain the environment.

The applications may be changing, but the underlying requirements of being always available and continuously delivering quality performance, for all types of workloads, has remained unchanged. NonStop SQL remains the leader of THE OLTP Database Server pack, a circumstance only now being acknowledged by formidable participants in the database marketplace. For these reasons, NonStop SQL is being embraced globally by CIOs looking to take out complexity and associated costs, and

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*Larry Ellison
CEO
Oracle Corporation*

Oracle OpenWorld 2010

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meets the demands of both their users and business.

The intent of this paper is to show you the gaps and frailties that customers have already uncovered in product offerings other than NS SQL/MX and to help you avoid similar pitfalls for your new apps, or apps requiring a refresh due to end-of-life or merger and acquisition (M&A) activity, or myriads of other reasons. With NS SQL/MX, so many companies have come to benefit from a product that is making the lives of those engaged in its oversight less stressful and where greater attention can be paid to business pursuits more directly tied to the corporation's bigger priorities.

CIOs brace for rise in database resource costs!

If the status quo is to be disrupted and NS SQL/MX deployment more greatly leveraged, what is taking place within companies to fuel such change? It has only been in recent times that industry analysts have begun to recognize that companies are reviewing the amount of attention that they have been paying to their data: the way it's stored, accessed and kept available around the clock, 24 X 7.

Implementations that may have piloted well often prove expensive as additional software license fees climb with the subsequent scale-out. Once robust configurations developed in support of these pilot projects that had looked good initially, become fragile with the added complexity required to handle production volumes. Applications go down, networks break, clusters become choke-points, and the IT budget quickly disintegrates.

Today's Chief Information Officers (CIO) may not talk openly of their hopes for a quick fix perhaps even something as simple as waving a wand, and having all of their issues resolved. However, under constant pressure to pull business-critical information from ever-expanding databases, some of them may be wishing for such an option. Of course, little of this surprises the NonStop community who are familiar with large populations of users generating ever increasing volumes of data.

Achieving linear scalability while retaining good performance on a platform that is the industry's most available, remains a unique attribute of the NonStop architecture, while popular SQL implementations, such as Oracle and SQL-Server, struggle to scale-out effectively, there's little negative impact on NS SQL/MX from similar pursuits.

However, none of the problems with these popular SQL implementations has escaped the attention of industry analysts that track database implementations nor have these analysts been shy about predicting difficulties ahead for the adherents of the more popular implementations. Respected industry analysts from Forrester, Gartner and IDC, as well as knowledgeable publications such as Computerworld, all support the notion that growth will continue to trend up, databases will get bigger, more complex and command even more resources, and that the difficulties facing CIOs will only get much worse.

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In a February 13th, 2011, Forrester Research Inc.'s blog feature "The Nastiest Performance Bottleneck Is Often The Database", by principle analyst Mike Gualtieri,

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But, with increasing scale, the solution to bottlenecks becomes your ability to scale horizontally."

*Mike Gualtieri
Principle Analyst
Forrester Research Inc*

targeting application development and delivery professionals, we read of how "many applications access a relational database such as DB2, My SQL, Oracle, or SQL Server. More often than not, I have found that the hardest performance problem to solve is the database bottleneck." Gualtieri then suggests that "the problem with relational database is that you can't just add another server and double your pleasure. The reason: Relational databases do not scale horizontally ... the database bottleneck is often the nastiest to solve. But, with increasing scale, the solution to bottlenecks becomes your ability to scale horizontally."

Computerworld journalist Lucas Mearian relied on the Gartner Group as the source for his November 2nd, 2010 article "Data growth remains IT's biggest challenge, Gartner says", and he referenced the Gartner survey carried out between June and August of 2010 that involved IT staffers from 1,004 large enterprises in eight countries. Quoting Naveen Mishra, principal research analyst at Gartner, Mearian wrote "as the global economy begins to revive in 2010 and organizations start to shift focus to a return to growth, IT organizations will be challenged to support the various growth initiatives. Vendors wishing to tap into this reopening market should propose infrastructure solutions that are high in efficiency and offer scalability as the demand grows, thus helping the companies to prepare for a return to growth."

IDC published a report in May 2010 "The Digital Universe Decade – Are you Ready?", by IDC analysts John Gantz and David Reinsel, and this dramatic explosion in

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information was depicted in a highly graphical manner. “Last year, despite the global recession, the Digital Universe set a record. It grew by 62% to nearly 800,000 petabytes. A petabyte is a million gigabytes. Picture a stack of DVDs reaching from the earth to the moon and back.” Perhaps even more graphic were their observations about the growth in 2010 when they proposed that “This year, the Digital Universe will grow almost as fast to 1.2 million petabytes, or 1.2 zettabytes.” Following this trend and looking only as far as the next decade, they concluded “This explosive growth means that by 2020, our Digital Universe will be 44 TIMES AS BIG as it was in 2009. Our stack of DVDs would now reach halfway to Mars.”

In one of the more famous Disney films, Fantasia, in the musical piece “The Sorcerer’s Apprentice”, Mickey Mouse, with the wizard absent, quickly descends into total chaos as he attempts magic unsupervised. With only partial knowledge of how to control the animated objects around him, he watches despairingly as their numbers grow exponentially. Eventually Mickey loses control of the brooms as they continue to multiply to the point where the magician’s house faces total ruin and it is only saved upon the return of the magician. But today, CIOs need not feel like they are in a Disney movie – there have been many advances and accessing data has been reduced to developing SQL queries that can be efficiently processed and can be readily optimized in a way that supports thousands, of queries being processed concurrently.

Forrester and Gartner, both, acknowledge performance and scalability issues now dominate, as does improving the way in which databases can be monitored, accessed and managed! It is the recognition that simply maintaining the status quo will prove difficult to justify and change will be driven not by cavalier or otherwise reckless CIOs, insensitive to the needs of the corporation all the while being tossed from wave to wave, but rather by CIOs reaching out for solutions that can keep up with their business needs.

There’s no escaping the value that comes from a well implemented modern SQL database and there’s no escaping the benefits that a company gains when the SQL platform selected is as available, scales as effectively, and where the total cost of ownership (TCO) is as well defined as is the case with NS SQL/MX. For the NonStop

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community this is well understood and they have come to depend on NS SQL/MX at the heart of their operations, but to others within IT the HP NonStop server remains little more than a dim glow on their radar screens.

DBAs can barely keep up!

If the image of CIOs adrift in mountainous seas, tossed from one “crisis” wave to the next, all the while trying to avoid sinking is something we can relate to then perhaps the Database Administrator (DBA) is in a similar vessel. While CIOs struggle to manage IT budgets against rising hardware and software costs, when it comes to the database, funding the DBA runs a close third. For many of the more popular SQL products, it requires teams of DBAs, sometimes running in shifts, to ensure a stable, manageable database is kept available to service customers and business partners around the clock.

While reports have been written documenting the hidden costs of staffing the DBA function, they have been produced by vendors and lack independently verifiable facts. However, from the interviews I have conducted there is clearly a sizeable commitment to DBA resource among companies where IT provides critical infrastructure support for the business. Even as hardware pricing benefits from commoditization and as software increasingly capitalizes on open source initiatives, the cost of IT staffing continues to climb, representing the biggest component of most IT budgets, and the portion allocated in support of the DBA role shows no signs of abating. Any opportunity for the CIO to trim staff, particularly when it comes to DBA resources and especially where these reductions come from better-optimized and performing database implementations, is a consideration the CIO cannot afford to take lightly.

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At a Spanish healthcare data center, where there is a two-node cluster of HP ProLiant servers, each with 16 cores, running Linux and Oracle Real Application Clusters (RAC) Release 10.2.0.3, there's a full-time team of five specialist DBAs responsible for the oversight of the gigabytes of SQL database. In my interviews with customers a two node cluster proved to be a typical implementation, and even though Oracle professes to support as many as 100 nodes very few sites manage to expand beyond two. The Spanish healthcare database is sizable; there are more than 1,700 tables, more than 3,000 indexes (of which, half are well used), and tables that have rows extending for several gigabytes.

Monitoring response times is the primary task undertaken by the DBAs and they are very aware that in a year's time, as the number of users and queries continues to grow, the team will have their work cut out for them to ensure the queries to the SQL database satisfy agreed upon service levels. Gathering statistics consumes considerable DBA resources, but it is important to collect this data as it has an impact on the query plans that SQL depends upon. However, even with the aid of Oracle's tools, it can take a lot of effort to chase down and identify expensive queries.

Even as its business focus continues to evolve, AOL Inc. has a history of running enormous Petabyte databases and through the years has utilized products from many vendors. In former times the vendors represented included Sybase, Oracle, IBM as well as HP, but today this rich diversity has been reduced to just MySQL and NS SQL. When it comes to managing databases, other than those on the NonStop servers, AOL retains a formidable team of DBAs who spend a lot of time manually tuning the data and processing across their server farms. With an unpredictable processing load in the production environment, and a test environment with only a limited capability to model the dynamic nature of production processing, AOL's DBAs are constantly migrating data and fine-tuning load balancing to address data skewing and latency issues. Tuning has become an inescapable part of their daily routine.

From the server's hardware and disk storage subsystems, to the operating system itself, on up through the platforms low-level access methods and audit, logging and recovery features, at every turn the DBA faces compromises and trade-offs when it

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comes to tuning a SQL database. Whether it's simple maintenance or more complex modeling to cater for growth; trouble-shooting because of user input errors and unexpected resource locks; monitoring performance, running statistics, and updating query plans, there's no let-up in the demand it places on DBAs. Perhaps central to what drives much of the activity of the DBA is the underlying problem that the SQL database instance is but one of many technology "layers" the DBA needs to be aware of. Even with the tools on offer today, there's still much that simply relies on the judgment calls of skilled DBAs.

The out-of-the-box benefits are a direct reflection of how well-integrated NS SQL/MX is with the rest of the NonStop platform. Frans Jongma, Master Technology Consultant and a member of the HP NonStop Advanced Technology Center (ATC), has written a number of papers about NS SQL/MX, and observed "from the many years of working with NS SQL/MX and the product offerings from other vendors, I have seen first-hand how the tight integration between the HP NonStop server, its operating system, and NS SQL/MX has greatly reduced the system management engagement that otherwise would have been required." Jongma then added, "Whereas on other implementations, DBAs and system managers need to synchronize their activities which require them to speak the 'same language' which is not always the case."

Jongma was to later add, "The 'cluster-in-a-box' that is today the HP NonStop server doesn't require any cluster network configuration be done and ensures consistent performance even with mixed workloads. And then we haven't even mentioned the implied fault-tolerance and linear scalability of the server, database and applications!" Every NonStop server shipped today, as a consequence of this design, is a cluster-in-a-box and no additional software licenses or complex configuration of NS SQL/MX is required to achieve clustering, and this contributes materially when it comes to retaining its competitive pricing advantage over competing SQL database options. For new customers, there's reassurance that once installed, even this 'cluster-in-a-box' will work right out-of-the-box and at no time will the HP NonStop server ever penalize its users for leveraging the NonStop fundamentals.

Scott Randall, a NonStop Consultant and Trainer and the Chairman of the Connect

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community's NS SQL/MX Special Interest Group (SIG), observed "Working with the NonStop community for nearly 25 years I've witnessed an intriguing fact, that NS SQL/MX requires fewer DBA resources than other platforms. Many sites are supported by as little as one or two DBAs and often they cover for Systems Managers as well - NS SQL/MX DBAs have more time to devote to forward looking improvements and application enhancements that might otherwise fall through the cracks if all their time is spent elsewhere."

From the customers and vendors interviewed, who had deployed Oracle, Sybase, SQL-Server, and NS SQL/MX (with the results summarized later in this white paper),

"Maintenance? Truly, we can run reorgs, statistics, splits, column adds, etc. all without taking anything down. It's the NonStop fundamentals!"

*Rob Lesan
DBA
AOL Inc.*

the one clear message communicated was how little DBA resource is truly required in support of NS SQL/MX when compared to other comparatively-sized deployments. This is consistent with Randall's observations: others also see the financial savings when deploying NS SQL/MX.

There is no hiding the value that comes from having an integrated hardware, OS, data storage, middleware, etc. stack, nor can the flexibility this ensures be ignored. "I think ease-of-management is a valid argument," said Sami Akbay, CEO, Altibase, Inc, and formerly VP of Marketing, GoldenGate Software. "Having fewer systems instead of 'fragmented'

infrastructure is something that favors the NonStop SQL offerings!" Just as importantly and highly valued by DBAs supporting NS SQL/MX is the ability to run mixed workloads as a byproduct of this tight integration without, for instance, competing resource management schemes. "We update statistics and query plans on a monthly basis, for most objects and we do it on the fly!" AOL's DBA, Rob Lesan, confirmed before adding "maintenance? Truly, we run reorgs, statistics, splits, column adds, etc. all without taking anything down. It's the NonStop fundamentals!"

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The most expensive resource of all when it comes to SQL databases is the DBA resource and many companies cannot consider throwing more DBAs at problems. Perhaps the biggest testament of all came from AOL's Rob Lesan, one of only two DBAs that the corporation retains to support a NonStop database across half a petabyte of disk storage driven at some 100,000 plus tps, who had the time to spend with the NonStop user community at user events around the globe! How was it possible for a global operation of the size of AOL to let half their DBA resource out of the office! When CIOs more fully realize that there are implementations that demand less of their IT resources, as is the case with NS SQL/MX, it begins to be recognized and when evaluations are pursued, the NS SQL/MX begins to shine a lot brighter on the radar screens!

Companies value the NonStop database

Why would a corporation consider foregoing the platform they have relied upon for many years and consider migrating to something far removed from their former allegiances? Why would they consider changing their applications to access a different SQL database? How brightly would a solution have to shine before its capabilities prove too hard to ignore and make dumping the status quo worthwhile? In these times when averting risks is a mantra for most CIOs, why would they consider pursuing NS SQL/MX?

These questions are not new to the product managers within NonStop. According to Ajaya Gummadi, NonStop World Wide Database Product Manager, HP, "NonStop SQL/MX delivers significant 'out-of-the-box' benefits that customers can exploit with minimal effort, these include: unequaled levels of data availability and performance for the most demanding applications with very large databases; scalable architecture to support ever-increasing workloads; and productivity improvements to allow developers to migrate their applications to NonStop SQL/MX. Database maintenance is the bane of many CIOs – these issues persist and have worsened with the explosive growth in data, becoming the leading cause of unplanned database downtime for competing clustered database platforms. And that is why more and more customers are turning to NS SQL/MX as they try to open up and standardize

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their database solutions while controlling their IT costs.”

Capitalizing on the NonStop always-on, 24 X 7 availability, as well as the benefits that come with the ability to run mixed workloads, a large global bank based in the east of the Americas wanted to have complete awareness of every customer’s touch points with the bank, no matter the channel the customer elected to use. Simply expressed, it was important for the bank to know everything about the customer whenever they approached a banking officer for anything. This required substantial changes to how data was collected and stored – consistency was an important element as was security and protecting the privacy of every customer. After prototyping on the HP NonStop server, using NS SQL/MX, the bank elected to standardize on NS SQL/MX and today, every application no matter the platform (including the IBM mainframe) relies on the information stored in the NS SQL/MX database.

The tight integration between the operating system of the HP NonStop server and the SQL/MX relational database management system supports the mixed workloads that the bank exploits routinely for everything, from routine maintenance, changing the version of the software, migrating to new hardware platforms, are all undertaken while the database is online. Whether carrying out splits, partitioning even re-indexing, as well as running statistics for use with query plans, it all can be performed with the database online – a highly critical requirement of the bank. Since customers can access the bank’s services at any time there really isn’t a good time to take the database offline. Other databases were considered and, for a time, much of the data was stored on the IBM Mainframe, but none of these alternate offerings could support the mixed workloads with the level of availability the bank deemed mandatory, and that came from deploying NS SQL/MX. What is really impressive

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with this customer deployment is that it is among the first to completely rely on the NonStop database as the primary repository for all customer information for all banking products.

AOL had been a customer of HP for many years, having been first introduced to NonStop in the '90s as AOL outgrew Stratus; and today they utilize two locations with 63 NonStop systems, each with 16 CPUs and with 128 x 73Gb of (mirrored DASD) per system for half a petabyte of disk space (mirrored) in total. More recently, the HP NonStop BladeSystem offerings have arrived and the count is now up to 13 BladeSystem servers. Scalability has always been a concern for AOL and extracting the most value from the least amount of equipment is paramount to the success of their business.

When the 40 Sybase instances that supported AOL's Authentication application creaked and groaned, with some billion plus rows in the database split to handle transaction response times mandated, a Proof of Concept (PoC) utilizing just the NonStop's system and storage "white space" (the headroom that remained from earlier applications being deployed) was enough for the AOL team to see that proceeding with running the Authentication application on NonStop was feasible. "A goal of 80 msec response time was set, and at the time no competing solutions came in with less than 120 msec even when given access to a lesser row table)" Lesan described the early participants of the PoC.

"Obtaining a 10 – 12 msec response time from NonStop with all billion rows loaded and available proved too much for some (evaluators) and paved the way for a quick adoption!" Today AOL runs NS SQL/MX processes with NonStop SQL/MP (NS SQL/MP) tables, created by an earlier version of the SQL database, a common occurrence within the NonStop community and the easiest way to accommodate external access via ODBC / JDBC drivers without changing any existing applications. As observed earlier, even with the addition of this new application, there are only two DBAs overseeing the dual-site installation – a truly remarkable compression in terms of both systems and DBA resources.

Leveraging availability, scalability and the ability to run mixed workloads tells only

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part of the story. Developing something new to capitalize on an emerging business opportunity was what led a large credit / debit card processor, based in the United States, to install NS SQL/MX. The company has been relying on the HP NonStop platform for several decades, and had invested in NS SQL/MP, but had recently completed an evaluation of NS SQL/MX. Working with HP's in-house experts, the ATC, out of Cupertino, California, the evaluation process gave them sufficient knowledge that they were able to implement a brand new fraud prevention application using NS SQL/MX.

"We set up the Fraud Prevention application for a client," responded a manager associated with the project, "and they can now run a number of models so that policies, rules, profiles, etc. can be evaluated. The capability is proving extremely

valuable for this client and we expect to be able to market this feature to other clients in the future! We are always looking at ways to expand our business and this is proving to be a major contribution". The ease with which the database could be set up and the minimal DBA resource required, led this manager to argue that NS SQL/MX "ruled out consideration of implementing their latest application on any solution other than NonStop."

"The ease with which the database could be set up and the minimal DBA resource require ... 'ruled out consideration of implementing their latest application on any solution other than NoNStop.'"

*Data Center Manager,
(Large credit / debit card processor)*

For Boeing subsidiary CDG, keeping a tight leash on database costs was important. CDG is responsible for tracking and maintaining accurate and current parts data for all Boeing commercial aircraft worldwide. CDG produces Illustrated Parts Catalogs and

other related parts data and technical publications for the entire Boeing fleet of nearly 12,000 commercial jetliners in service worldwide. Just think about the hundreds of thousands of parts and items involved in this data management task – accounting for every panel, wire, nut and bolt that goes into the assembling of a

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single aircraft, including the passenger airliners that so many of us depend upon on a regular basis, and their cargo-carrying equivalents. It's hard to imagine all the pieces required to assemble such a complex engineering pursuit. During the life of any one model, parts and sub-assemblies may change. All of these changes and modifications also have to be reflected in the data set for every individual plane.

CDG has to ensure that as each plane is delivered to an airline or aircraft operator, it is accompanied by a complete and accurate set of schematics and parts lists. This critical information is imperative for maintaining the aircraft and ensuring the safety of all who fly. A spokesperson for CDG noted, "CDG has relied on the HP NonStop server to store these vast databases of parts information for many years, and we have implemented SQL/ MX. With the demands that are created with each new aircraft, the size of the database has grown considerably. We wanted to be able to run the database server 24X7 with limited DBA resources committed to the NonStop server. The close integration between SQL/MX and the operating system has been beneficial, and will help CDG meet its goal of keeping required DBA resources to a minimum."

It's always encouraging to watch new customers come to the NonStop platform, particularly when they are attracted by almost all of its previously mentioned attributes – scalability, availability, mixed workloads, and costs. There is news now coming out of the Asia Pacific region of a Japanese Securities firm that selected NS SQL/MX. In a thoroughly modern deployment, the corporation is running the NonStop system as a database server, supporting a very large network of Java clients that access NS SQL/MX via industry-standard JDBC calls. The company's objective is to have NO downtime for their users because should the database server ever go down, their users cannot analyze stocks or monitor trades.

Database availability was their biggest issue. The Japanese securities company was also very concerned about the ongoing costs of clustered database administration. Running both Sybase and Oracle, the company has completed the migration away from Sybase and is now live with a much better availability and lower TCO than they previously had experienced with any other clustered database environment. The Oracle database is in the process of being migrated, a project that should be

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completed shortly. After migrating their Sybase database servers to NonStop, the customer is very delighted with the throughput that they are achieving (2000 tps or 20,000 SQL statements per second being pushed to NS SQL/MX from 10,000 concurrent users multiplexed over 2000 JDBC connections), the online manageability features of NS SQL/MX, and the availability of their environment after they migrated their database server to NonStop.

There is also a government department in the Asia Pacific region that had a requirement to ingest large amounts of data on a daily basis with feeds occurring throughout the day. The data was also subject to complex business intelligence query workloads and have regular batch jobs run against it throughout the day as well. The application had been running for some time on a competitor's platform but as data volumes grew rapidly, performance became problematic. Modeling had shown that it would be impossible to sustain projected input loads with any database already in use within the department and they queried HP as to whether it would be feasible on NS SQL/MX.

Assured of the scalability and the capability to support mixed workloads, the department embarked on building a new environment utilizing NS SQL/MX. Today they have three 16 processor systems supporting 100 terabytes of direct storage with another 200 terabytes on external arrays and process millions of transactions daily. This is to say that the department has a single database distributed over these three systems – one table spanning all three nodes! Perhaps most importantly of all, the total NonStop staff employed includes two DBAs, and just a single system administrator and a single technical manager.

All of these companies have demonstrated significant financial and productivity gains through deploying NS SQL/MX. As spectacular as it was to shut-down 40 instances of Sybase, probably more exciting for the AOL CIO was the savings generated from ending some 40 Sybase license agreements, as well eliminating any need for the 40 servers where Sybase had run; the NonStop database being able to run in the free "white space" available within the NonStop servers already installed, and with the DBA resource on hand.

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Many CIOs are finding out, just as Mickey had found as he addressed the performance bottleneck while attempting to clean house, dramatically increasing the resources on hand may not produce the results expected. And it's not just about increasing the number of SQL instances, or increasing the number of partitions, or throwing more nodes at a cluster. Unless the implementation of SQL has been designed to scale seamlessly from the outset, this is not an attribute that can be easily plugged in later, and the users of NS SQL/MX today have all seen first-hand the benefits that come with NS SQL/MX.

NonStop SQL/MX rewards its adherents

There is really no magic when it comes to the success of NS SQL/MX and to what companies are beginning to discover about its value proposition. There was only the realization that with NonStop, the original architects had "got it right!"

In a recent exchange with Randy Meyer, Director of Product Management, Strategy & Technology, this was presented in no uncertain terms as he began with: "From the early beginnings of NonStop, the platform was a cluster – there had to be two or more processors to provide fault tolerance. The degree with which subsystems and operating systems interacted – the access methods with the storage processors with the operating system where file and database audits and logging resided all tightly integrated – ensured that our NS SQL/MX implementation could leverage it all! It was as available as the OS out-of-the-box and, just as importantly today, it could scale right along with everything else the NonStop OS supported."

Meyer then went on to add: "By design, NonStop systems could be maintained without being brought down and as a result, changes can be made to the NS SQL/MX instance without taking it off line. Mixed workloads proved just as easy to address as the internal workload balancing that was part of the NonStop OS, and are an essential component in ensuring work is uniformly spread across all processors, aiding NS SQL/MX in minimizing potential conflicts."

"NonStop is 'THE OLTP machine' and OLTP is all about databases now, if you ask

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anyone who isn't old-school," according to Altibase Inc. CEO Akbay. "OLTP is the type of database optimized for transactions. Should NonStop make itself the 'real OLTP machine' centered on its database offering, from a positioning perspective it would be in excellent shape! Where HP excels with NonStop, when it comes to solving your database problem is the way it works for most companies' right out-of-the-box. Shopping for Oracle, for instance, is like shopping at Home Depot whereas shopping for HP NonStop is more like buying a house. As long as HP delivers the houses that people want at the locations (markets) that people want to purchase, NonStop will continue its success!"

In the above quotes from Meyer of HP and Akbay of Altibase, a very strong message is communicated. NS SQL/MX leveraged the NonStop fundamentals of availability, scalability, data integrity right out-of-the-box and that, in so doing, presents a very strong argument in favor of much broader use by customers and vendors alike. The NonStop community has been very aware of these properties of NonStop and of NS SQL/MX and it's beginning to become apparent to a new generation of IT as they start to consider alternatives.

Solutions providers have often been wary about leveraging other vendors' solutions, particularly when these solutions are specific to a single platform. When it comes to the NonStop server, its infrastructure and middleware offerings can be off-putting at first, suggesting that perhaps there is a need for an investment unique to the platform. However, with NS SQL/MX, the NonStop platform possesses a database solution that is indeed ANSI standard with support for client access using popular ODBC / JDBC interfaces. Are vendors really willing to pursue any such investment?

ElectraCard Services (ECS) was one vendor who ported their payments processing product offerings to NonStop. "When we first developed the ECS product suite on Unix, we elected to go with Oracle as it was the market leader and extended a great deal of depth and operability to the application," responded Ramesh Mengawade, CEO of ECS. "When it came time to consider porting to other platforms the move was fairly straightforward given our architecture and foundation; the move to NonStop platform was easier than expected given our NonStop Services and Consulting heritage. NS SQL/MX was the obvious choice given our strong philosophy of

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continuing on an open technology platform.”

There are a lot of changes under way within the payments processing industry where partnerships and allegiances have been changing and where changing technology continues to present challenges. “When it comes to providing payments platforms to the financial services industry, there are only a small number of alternatives suitable for consideration. With the help of the consultants at HP’s ATC in Cupertino, California, we were able to adapt our source code so that the database (SQL) calls we had been making to Oracle could be made to NS SQL/MX. It turned out to be not an onerous process and today we enjoy having a single code base that is supported on both Unix and NonStop, Mengawade added before concluding with “and the HP NonStop is one of them – we couldn’t ignore the Market and with NS SQL/MX as part of our solution, HP considers us one of the most modern implementations in the marketplace today!”

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*Ramesh Mengawade,
CEO
ElectraCard Services*

The costs of supporting the growth we are now witnessing is becoming more difficult to manage, and when it comes to human resources very few companies, even the largest, struggle to come to terms with the commitment to DBAs that popular database products demand. Even as these database platforms scale poorly, so too are these companies struggling to scale their DBA resources.

Yet, among the companies dependent upon SQL databases there are those who appear to be managing some of the largest installations imaginable with minimal DBA resources – content providers serving the internet world, the largest credit /

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debit card processors, even those keeping track of every part on the world's largest airplanes. As business has grown and as the demands of their own clients have risen, these users have been able to effectively scale up with NS SQL/MX unhindered by the need for more DBAs. The companies referenced in the previous section are all supported by just one or two DBAs.

Conclusions

Some companies may have lost sight of the value that comes with the HP NonStop Server platform. In solving the difficult problem of fault tolerance to the degree it has today with modern, open NonStop servers, HP's engineers provided us with a server that not only is highly available, but can scale well past any other architecture – the loosely-coupled, shared nothing, massively parallel processing capabilities of the HP NonStop server remain unique to this day. It's not that anything has changed – this is what it always has done. In the March, 2011, issue of Road and Track, a popular magazine among car lovers, there was a review of the latest Porsche 911 – a car very few people would have an issue describing. It's an iconic car that changes little, year to year.

When Porsche introduced the latest model in its 911 line of cars, the Road and Track journalist commented about the growing trend to bring to market new cars that reflected the designs of yesteryear, but then added "yet the next 911 is anything but retro. Its design ethic never left anywhere, so there's nowhere to which to return." When a product benefits from good design fundamentals, as has always been the case with NonStop, then its relevance for users transcends time – it's never old! It's timeless!

In a recent email exchange with Jim Tomaney, the General Manager, Europe of FSS Technologies, and a true Gen-X father, after spending an afternoon with his Gen-Y son watching videos downloaded from a service supporting video on demand, effectively summarized one future for the HP NonStop platform. The service providing access to video had been interrupted several times much to the chagrin of his son who had grown up in a world expecting everything to work, all the time, to

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where Tomaney suggested “no matter how clever we get with multi-channel customer interfaces and access routes, the Gen Y consumer is as expectant on quality as Gen X”

Tomaney then went on to observe “in fact more so, as he expects everything to work that way, not just payments. So while the industry gets seduced by payments started on my iPhone APP and completed at the ATM, or similar, we'd better stay focused on RAS - Reliability, Availability, and Scalability - because consumers demand it. That means, in the context of (my video film service), context management is a NonStop application.

In 2011 your online film service, your iPhone application for buying a cup of coffee from Starbucks, or your Near Field Communication (NFC) enabled Android to do mobile payments all need to be as robust as a 1980s ATM system - is there still a place for the NonStop server? As of today few if any of these applications rely on the NonStop Server platform, but as Tomaney mused, for how much longer? Can you ignore deploying NS SQL/MX for the oversight of the information processed? I think you are going to find that there are more places for NonStop servers than ever before imagined!

When I wrapped up the interview with Altibase Inc.'s CEO, Akbay, at first I was unsure of his observations concerning the transition of OLTP away from being focused on just the transactions being processed and onto the real time maintenance of the databases they support. I just hadn't connected the dots in this way. But as the interviews with customers and vendors continued this connection became a lot more apparent. Yes, OLTP is all about databases and NonStop remains the premier OLTP machine. And with NS SQL/MX and the capabilities it demonstrates, there's little to argue about when it comes to the value it provides, and it surprises few that this has become the envy of so many software executives, even of Larry Ellison!