



Research Note

**NonStop offers the lowest TCO
in its class for complex
mission-critical applications**

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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 Information Technology (IT) industry as a user, vendor, and more recently, as an industry commentator. Richard has over 25 years of experience with HP's NonStop platform, including eight years working at Tandem Computers followed by just as many years at InSession Inc. and ACI Worldwide.

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 community blog and you can follow him at www.itug-connection.blogspot.com, as well as through his industry association and vendor blogs, web publications and eNewsletters.

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Abstract

Over the course of the past twelve months, in the writing of opinions papers I received material from several sources about the performance and costs of HP NonStop servers. Some of this material was verbal, some arrived via email and other material was gleaned from public sources, including web sites and news releases. And even more material arrived after the opinions papers had been completed. What is provided in here represents the sum of this material and is being provided to complement references made throughout both papers and is intended to simply support closing observations that were provided.

This Research Note addresses the Total Cost of Ownership (TCO) that covers the cost of acquisition, and ongoing operations (made up of all costs associated with maintenance including DBAs, System Administrators, and all other related expenses) of HP NonStop Servers compared with equivalent clustered Oracle RAC servers and other servers designed specifically for the very highest availability level – according to IDC level 4 definition*. However, it does not cover the costs associated with facilities, the powering of the facilities, or any cooling that may be required. The research is based on customer interviews, published pricing data from Oracle.com, HP NonStop Server and Software List prices from NonStop Enterprise Division and IDC.

It is also very important to note that in this Research Note, unplanned outages have not been covered. Customers should quantify the true cost of unplanned downtime specific to their own operating environment and measure the impact of a down database server on their business. Again, anecdotal evidence gathered at the time of writing the opinions papers highlighted that one securities company calculated the cost of unplanned downtime to their operating environment to be \$3M per business day whereas a manufacturing company calculated the cost of similar outages resulting from unplanned downtime to be as high as \$1M per hour.

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*IDC level 4 definition

Highest availability level

HP NonStop, as a key component of the HP Mission-Critical Converged Infrastructure, is designed specifically for the very highest availability level.

According to the IDC Level 4 definition, that means NO interruption of work, NO transactions lost, and NO degradation in performance. Absolutely, positively, 100% availability. Mission critical now takes on a whole new meaning.

Availability Level	IDC Definition
AL 4	<ul style="list-style-type: none">• Transparent to user• No interruption of work• No transactions lost• No degradation in performance
AL 3	<ul style="list-style-type: none">• Stays online• Current transaction may need restarting• May experience performance degradation
AL 2	<ul style="list-style-type: none">• User interrupted, but can quickly re-log on• May need to rerun some transactions from journal file• May experience performance degradation
AL 1	<ul style="list-style-type: none">• Work stops• Uncontrolled shutdown

Source: IDC Worldwide and U.S. High-Availability Server, 2011-2015 Forecast and Analysis

HP Integrity NonStop Servers

"The market has inflated the term 'mission critical'. At the highest level, it means more than a major inconvenience. It can mean business failure."

"AL4 defines fully fault-tolerant servers, in which redundancy of components, combined with special software, ensures that processing will continue, even if there is a failure in a single hardware component in one area of the system."

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In the preparation for opinions papers I have written on the HP NonStop server, including references to the value provided today with NonStop SQL/MX (SQL/MX), I had an opportunity to conduct several interviews with companies running SQL/MX as well as other SQL implementations. When it came time to write the first opinion paper "NonStop SQL: The path to the always-on, easily administered, out-of-the-box clustered, database server!" one data point that stood out for me was the need for teams of DBAs to oversee effective running of Oracle, an observation that led to me making the following quote:

"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."

On the other hand I noted in the same opinions paper how different the situation was at AOL, a significantly larger enterprise. "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!"

The need for less staff, and the impact this has on the cost to own, and then as a part of the TCO, made its way into the second opinion paper I wrote, "Why more corporations today depend on HP Integrity NonStop mission-critical servers!" The availability of an integrated "stack" from the hardware through the operating system and into the relational database management in support of SQL/MX, resulted in less contention, easier management of the clustered database and support of mixed workloads all leading, as I wrote at the time, for me to observe how "Mission-critical, customer-facing, applications continue to rely on NonStop. Even as the platform available today offers so much that is new, it has never veered away from providing

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the highest levels of availability and near-linear scalability of any server on offer in today's marketplace. And yet, NonStop remains an affordable option – with hardware, operating system, database and applications packaged as part of a well-integrated stack.”

Less DBAs, less complexity – a better availability signature with near-linear scalability – and yet business still demands change. And at the heart of their request is the requirement of business for solutions that cost less – at the time of purchase and through a typical five-year maintenance and support cycle.

In the preparation for these opinions papers I not only had the opportunity to interview customers but to see the results of comparative tests run on a variety of platforms, including NonStop and Oracle. When factored in, the support costs of software, the software license fees, and all the hardware required, and then compared to equivalent NonStop server configurations, the Oracle RAC and Exadata systems were nearly twice as expensive – in some instances, even more.

When it came to the software itself, many of the utilities and tools so heavily-relied upon by Oracle DBAs are a part of the SQL/MX offering on NonStop – an integral part of the product offering. This too results in considerable savings immediately at time of purchase as well as over the five years of required license and support fees.

But it is the greatly reduced hardware costs that prove difficult to ignore. In easily-repeatable tests, when it came to comparing HP NonStop with Oracle RAC / SUN Server, the NonStop enjoyed a greater than 2.2x lower cost of ownership where a single node (16 processors / 64 cores with comparable main memory and disk storage) was tested and enjoyed a greater than 2.7x lower cost of ownership when a cluster of 8 nodes (again, each node 16 processors / 64 cores with comparable main memory and disk storage) was tested. For each test, no extraneous middleware was included in the price calculations, simply the operating systems and all the required software in support of a clustered database engine but it did include the licensing, as well as the cost of support, for five years.

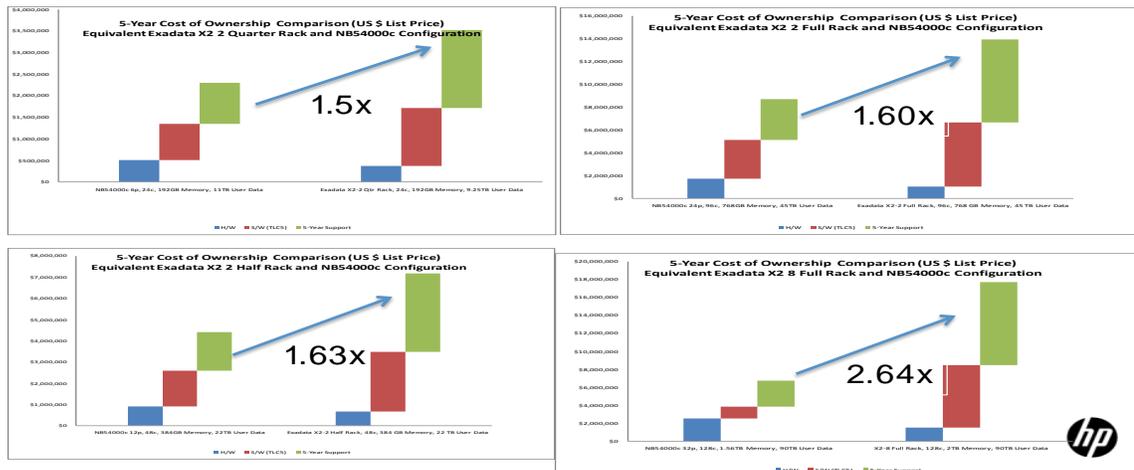
When these tests were repeated against much larger databases – those typically associated with what required Oracle Exadata, NonStop enjoyed a greater than 1.60x

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lower cost of ownership. For these results, a NonStop system of 24 processors and 96 cores with 768 GB of main memory and 45 TB of user data was evaluated alongside an Exadata X2 (2 Full Racks) 96cores, 768GB of main memory, and 45 TB of user data. When repeated on like configurations, but involving the smaller, half and quarter racks (of Oracle), almost the same lower cost figures were attained, but moving to larger configurations the pendulum swung even more favorably in NonStop's direction.

From the reports that tabled these tests, the following summarizes the comparisons that can be made between NonStop SQL and all four Exadata configurations that were tested:

HP NonStop beats Oracle Exadata on Cost to Own



Again, when looking at the data that is within the above charts, that all comparisons reflect the total cost of acquisition and haven't been made simply on the basis of hardware – this includes all the hardware, software (including the OS), as well as support for five years.

Needing fewer DBAs is a great starting point for NonStop. Letting these DBAs benefit from an integrated HW / SW stack, lessening the need for them to do as much as their counterparts and producing a far simpler environment to oversee ensures there's less potential for errors and mistakes to find their way into the system. But having significantly cheaper platforms as well represents the kind of change business continues to demand.