HP NonStop systems

as you haven't seen them before

Deployed in support of mission-critical applications in manufacturing and distribution, telecommunications, retail and wholesale banking, transportation and entertainment

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<u>About the Author</u>

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 over 25 years of research 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, as well as four years at Golden Gate, now a part of Oracle.

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 as well as through his industry association and vendor blogs, web publications and eNewsletters. You can follow him at www.itug-connection.blogspot.com and at ATMmarketplace.com as well read his editorial, Musings on NonStop, published monthly in Tandemworld.net

Introduction

The strength of NonStop systems has always been its support of real time, mission critical, transaction processing, starting out with an application built on a fault tolerant system continues to be the simplest way to assure its availability. In the IDC Analyst Connection Mission-Critical Business Applications: The Need for Always-On Servers, published November, 2013, IDC Group Vice President and General Manager, Enterprise Platforms, Matthew Eastwood, observed how, "always-on requirements significantly affect business organizations and the IT departments that support those businesses. When downtime is not an option, organizations are increasingly turning to fault-tolerant systems to keep their business up and running."

The presence of NonStop systems in the Financial Services Industry (FSI) and the Telecommunications Industry (Telco) is widely known and account for a large percentage of the HP NonStop systems population. Today nearly anyone who uses their credit or debit card will have their transaction pass through at least one NonStop system. This is true too for mobile devices' whenever users are transacting business via smartphones or tablets, at some point these transactions will likely pass through a NonStop server. In fact many readers will become aware of the availability of this opinion paper following a text message to their smartphone or tablet and, in all likelihood, a NonStop system will have played a part in breaking the news. Such is our confidence in our always-on mobile devices that scant attention is paid to the mechanics of such informational transmissions, and yet, society holds little appetite for such transfers failing to occur for any reason.

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> Matthew Eastwood
> IDC Group Vice President and General Manager, Enterprise Platforms

"As users spend more time online, IT services must be available around the clock. Windows for planned downtime become increasingly difficult to manage, and users are unwilling to accept unplanned downtime," IDC's Eastwood wrote. "Downtime of any kind results in a loss of confidence and competitive advantages in the marketplace." However, FSI and Telcos are not the only market segments that benefit from leveraging NonStop systems. For nearly four decades wherever any loss of application availability comes with unpleasant consequences, a fault tolerant solution has been preferred, and through the years it has been the HP NonStop system that has prevailed. Whether it's in support of manufacturing, transportation, distribution and even entertainment, NonStop systems continue to find a home.

As someone who travels a lot, it never ceases to surprise me just how often I encounter a process that can be traced back to a NonStop system. Furthermore, it's equally surprising to find the industries where I first practiced IT are just as receptive to NonStop, despite the diversity in the marketplace. From my formative years when I trained on mainframes at a steelworks, to where I learnt networking and distributed systems at a container shipping company, to where I first encountered the complexities

of relational databases at a leading heavy industry tractor company, similar companies around the world continue to depend on NonStop systems. Whether I am catching a plane, renting a car, purchasing a rail or bus ticket, eating a pastry, or watching a pay-for-view TV program, there's an instance somewhere on the planet where this will involve NonStop.

Every one of these industries values availability, knowing all too well that they can suffer from a "loss of confidence and competitive advantages in the marketplace." It was the newspaper industry that popularized the expression, 'Stop the presses!' and as a third generation newspaper man, I know firsthand that the option to stop the presses has long gone. According to the HP brochure, [For industries that never stop. HP NonStop. Because customers never wait](link), available from the HP web site, the message is very clear – marketplaces today are just too fragile to tolerate outages and systems must be capable of operating 24 X 7. "That means NO interruption of work, NO transactions lost, and NO degradation in performance. This is where the timeless value of HP NonStop servers comes into play."

As the HP brochure highlighted, "Many industries, such as financial services, telecommunications, retail, manufacturing, and healthcare, are leading the way in delivering a continuous business environment—and HP NonStop continues to be the platform of choice for industries that never stop." Always-on requirements affect business organizations, as we have already read, and this is no longer solely the need of FSI and Telcos. Anywhere expectations have been set that a product will be delivered on time requires an always-on system embedded in the process and the NonStop system continues to satisfy this most elementary of business expectation. And this part of business has lost none of its cache, no matter the market segment it addresses.

The path to leadership; the growth of non-traditional markets

To attain a position of leadership then a product, service or practice must demonstrate outstanding characteristics valued by the community it serves, and to do so over a long period of time. Leadership is not attributed to something delivered once, but rather, is a measure of quality and consistency earned with years of experience. HP NonStop systems have spent four decades providing innovative solutions to companies that chose to build applications atop fault tolerant systems.

In the always-on world we live in everyone is connected and our expectations have evolved to where we expect our computers to be as readily available as a phone company's dial-tone. In fact, it is a source of frustration when this is not the case – increasingly, stories about outages are becoming the fodder for the nightly news. No business today can 'sell down for maintenance' and hope to remain in business; acceptance of HP NonStop systems has

> **Raw Materials Processing**
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> **One of the world's largest steel producers, providing solutions for the automotive industry, elevators, escalators, and much more, these many at-risk processes are dependent on the presence of NonStop.**

come about because they simply work, and keep on working even as they support the goods and services upon which we depend.

Perhaps the biggest surprise for many Chief Information Officers (CIOs), as they look beyond the deployment of NonStop at FSI and Telcos, is to see other industries where NonStop systems have become the preferred system of choice. From distribution to manufacturing to raw materials processing, NonStop systems ensures companies can produce a never-ending flow of products.

There is likely to be no better example of a raw materials processor than a steelworks and no greater visual impact conveyed than watching molten steel accidently spilling onto a factory floor. Across a steelworks, it is constant movement where, to the uninitiated, imminent disaster appears to be inevitable. And one of the world's largest steel producers, providing solutions for the automotive industry, elevators, escalators, and much more, these many at-risk processes are dependent on the presence of NonStop.

Needless to say, to anyone who can appreciate the organized chaos that is today a modern steelworks, there's a very real cost to downtime. Without timely input, continuous processing can be disrupted and for this reason and in order to avoid costly mishaps, IT simply has to stay online. For this steel producer however, more than a thousand application processes are handled on just four HP Integrity NonStop servers including: resource management, scheduling and production control – from initial chemical testing of minerals through melting and forming of raw steel, to production of the finished product – HP NonStop is fully engaged with every process involved.

> **Order Processing**
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> **"With IT, we must realize a system capable of delivering the wide range of Yamazaki products on time and without fail to our customers. We will pursue our mission by leveraging HP Integrity NonStop servers with their unrivaled reliability and flexibility."**
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> Ikuo Ishige,
> Manager, Computing Center,

The use of NonStop now and in the future isn't limited to Europe. In Japan there's manufacturing of quite another type that truly whets the appetite. In this example NonStop is controlling ordering, processing and distribution of food items and ordering volumes that surpass even the largest steelworks manufacturing. Yamazaki Baking processes orders for 18 million items per day. Highlighted in a case study available from the HP web site, it includes numerous quotes around their use of NonStop systems. "Customer needs, as well as logistics, change by the minute. But not our mission," said Ikuo Ishige, Manager, Computing Center, Yamazaki Baking Co., Ltd. "With IT, we must realize a system capable of delivering the wide range of Yamazaki products on time and without fail to our customers." And yes, Ishige added, "We will pursue our mission by leveraging HP Integrity NonStop servers with their unrivaled reliability and flexibility."

From steel coils to hot cookies – the flexibility of NonStop to provide innovative solutions across a diverse range of industries as demanding as raw materials processing is a surprise to many. Spilt steel awash a factory floor is as valuable as baked goods arriving after a store has closed and while all similarities might end there, the value of NonStop to each company cannot be ignored. In a globalized economy it is not surprising that convergence of communications, control systems, power, and information technologies are spilling onto the shop floor in the form of Manufacturing Execution Systems.

Such convergence seems inevitable to those familiar with NonStop systems and there is the potential for even more opportunities to arise as the need for machines to communicate directly to other machines continues to proliferate.

The changes fueling increased adoption!

Reference any source and you will read that continuous production is a flow production method used to manufacture, produce, or process materials without interruption. Furthermore, continuous usually means operating 24 hours per day, seven days per week with infrequent maintenance shutdowns. Manufacturers dependent upon continuous production need to be supported by systems that operate 24 x 7 and depend on HP NonStop systems for the same reason as do FSI and Telco companies. Continuous production is every bit as mission critical as an ATM withdrawal or an important text message.

One of the largest manufacturers of premium cars relies on HP NonStop systems; in fact at least two NonStop systems are present in every plant worldwide. Through Programmable Logic Controllers (PLCs), NonStop systems control every device on the shop room floor - robotics to conveyer belts to printers. Custom applications run on the NonStop servers that control every aspect of building a car, from design and configuration, through materials management, assembly and final delivery to dealer. If the production control system is down, it costs the company $1M an hour.

> **Manufacturing**
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> **One of the largest manufacturers of premium cars has at least two NonStop systems in every plant worldwide.**

The presence of NonStop systems at their factories, for many years, is just another example of NonStop systems timeless architecture. Watching all that transpires along an assembly line it is like watching a well-choreographed ballet. Every bolt arrives as it is needed, every subassembly is on hand and matches preselected options, and every rotation of an automated mechanical spanner or drill electronically recorded for future reference.

However, it's not only the auto industry where every nut and bolt must be catalogued and where the content of every item that is built is filed in perpetuity. More extreme, for many in IT, are the mandates for the aircraft industry where the upkeep of a finished aircraft is as important as its manufacture process. While a car owner may overlook an

occasional oil change, no exceptions for any airline are tolerated when it comes to the safety of the aircrafts they operate. When it comes to one of the largest commercial aircraft manufacturers, it's applications on the NonStop that ensure not a nut is overlooked or a bolt misplaced.

Long considered the premier supplier of commercial and military aircrafts, this large American aircraft manufacturer produces Illustrated Parts Catalogs and other related parts data and technical publications for its entire fleet of nearly 12,000 commercial jetliners currently in service worldwide. Just thinking 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 single aircraft – can overwhelm the imagination of even the most seasoned travelers. During the life of any one aircraft model, parts and sub-assemblies may change and all of these changes and modifications have to be reflected in the data maintained for every plane.

> **Transportation**
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> **well-known companies.**

In speaking with an HP source I learned that, "They have modernized their former solution based on COBOL programs accessing a mix of Enscribe files and an SQL/MP database. In what amounts to being a showcase for NonStop products, the customer now has a SOAP based application accessed by 'fat clients' running on Windows. NonStop iTP Web Server, NS SOAP, TS/MP all are part of the transaction path as the Windows clients access critical business logic written in C with a new SQL/MX database." This aircraft manufacturer can now better leverage the programming skills already in place, simplify the operational management of the applications via standard interfaces, and integrate   HP NonStop servers within their enterprise.

We drive cars and we fly on planes but for many of us, particularly in larger metropolises, it's likely to be about trains. When it comes to Europe, there are multiple national rail networks meeting the needs of a large percentage of Europe's population, and they rely on solutions deployed on NonStop systems. Specifications developed in one country have been picked up by several others even as the original operation now supports more than a dozen other countries as a service provider. Should you ever need to make reservations for your family vacation anywhere in Europe, it is NonStop that will help you through the process.

From well-heeled Londoners to first-time visitors, anyone wanting to travel by rail and needing to look-up a route, or check a fare is interacting with a NonStop system. Functioning as a trade association for UK's numerous national rail operators, this company depends on NonStop systems to front-end the participating rail operators, allocating tickets and seats for each rail segment and route. The applications provide access to time tables, seating availability and pricing, and when the appropriate service is selected the NonStop systems will connect with the appropriate rail operator.

On the other hand, when travelling in the United States and your preference would be to

enjoy a bus ride, a prominent national bus operator runs NonStop. As with the train operators in Europe, modernization continues and last year the migration to HP NonStop Integrity BladeSystems was completed. When it comes to software and user access, this bus operator supports browser access to applications on HP NonStop systems via industry standard Web services.

Whether it's planes, trains or automobiles, NonStop continues to be at the heart of the operations for many well-known companies. Our choice in transportation will often be dictated by location as well as financial wherewithal, but even in industries with margins that are as polar opposite as luxury cars are to metro transit systems, the value of NonStop is recognized worldwide. And it's not just a continuation of the past with older technology living out its days; modernization programs have been completed with inexpensive commodity hardware being deployed, open languages, libraries and tools being utilized and industry-standard databases being populated with critical information that together represents technology as leading-edge as can be found anywhere in IT.

The diversity being showcased by these companies is a reflection of the value being placed on systems well suited to the continuous, 24 x 7 operations that underpin their business. Continuous operations are at the core of their requirements and the modernization that has taken place has opened many companies' applications on NonStop systems to round-the-clock access from anywhere in the world. Convergence may be how we best describe a confluence of technologies but it's every bit as applicable to the way consumers assemble travel itineraries, rely on air travel and even check on

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the quality and reliability of automobiles. When alternate offerings so often come with 'use-by dates', it's refreshing to realize just how productive running solutions on HP NonStop remains. It's hard to imagine any reference to 'continuously in motion' as well as 'operating 24 hours per day, seven days per week' that doesn't bring to mind the presence of NonStop systems.

The opportunity … to solve business problems

It is easy to visualize all that transpires in a steelworks or on a car manufacturer's assembly line. It's also likely that the trains, planes and automobiles already referenced may have at one time or another been a part of our travel plans. These industries are all highly visible and as diverse as their demands may be, we can appreciate their need for solutions that support the continuous operations and yet companies today look for value and of late, value has been trumping 'simply doing more with less'.

According to Gartner Research Vice President, Richard Fouts, in an April 7, 2014, commentary, "At the heart of value, lies the price/performance ratio, a measure of how much performance you offer for each unit of price. If you deliver more performance, at a

similar or lower price than your competitor, you become the value leader." The expansion of HP NonStop systems presence in markets apart from FSI and Telco is a result of this value being realized; when it comes to true round-the-clock processing NonStop is without peer.

Ships generate revenues when they are at sea steaming between ports. Lying at anchor is time that is lost; revenues are only produced when ships are on the move. Shipping companies expect timely turn around when in port and nowhere is this more critical an operation then when it involves containers. "The container shipping business is fascinating and complex, and when it comes to running a container terminal, there's just too many ways you can mess up generating negative press," said an HP source involved in the implementation.

Entertainment

Ensuring television content reaches the right audience, when they need it, is central to this company staying in business.

As one of the better hybrid solutions utilizing HP NonStop systems implemented to date, this port operator processes container ship manifests on HP Integrity with HP-UX platforms before passing relevant information to NonStop systems to create the models for the following day's work; where exactly are the containers to be loaded and how many containers need to be moved elsewhere before they can be loaded is a jigsaw puzzle of monstrous proportions.

"When you think of a container ship, it is pretty similar to any other industry that relies on a conveyer belt, containers are loaded onto the ship at one port and unloaded at another port – any disruption of the service can have significant impact," said the HP source. Loading vessels of another kind, and yet where the image of the conveyer belt still holds true, one of America's leading food service distributors to restaurants, healthcare and hospitality facilities, government operations, and educations institutions relies on NonStop systems. Ensuring timely delivery of perishables to a broad constituency is the prime objective of this company and the HP NonStop system accepts incoming orders, produces pick lists, tracks fulfillment and coordinates the shipping. All the while, this food service distributor is experiencing growth as the customers they serve continue to expand.

When 'continuity of service' matters it often relates to deliveries of another kind, entertainment. How many of us recall television program interruptions due to time constraints or equipment failures? As the industry switched from landlines to satellites, and from analogue tape to digital video direct-to-disk recording, one of the world's leading providers of digital television services (to nearly 40 million customers across America and Latin America) turned to HP NonStop to better support their content distribution. Today this company handles customer service calls, maintaining an enterprise view of all customers as it pulls data from billing systems. If you order a cricket telecast or a movie on demand, you access NonStop.

In discussion with middleware vendor, Integrated Research (IR), the America's head of sales, Jay Horton, told of how IR has, "Helped them with several system upgrades since 2007 when they were running HP NonStop S76000s and S88000s. Today they run

multiple 16-processor HP Integrity NonStop BladeSystem NB56000c, powered by the latest Intel® Itanium® processor 9500 series , in support of production, test and development." Yet, again, ensuring television content reaches the right audience, when they need it, is central to this company staying in business.

Supporting companies that have the potential to generate headlines whenever services are disrupted, for any reason, is seeing continuing innovative usage of HP NonStop systems. Trying to drive home in rush hour as trucks block the highways, waiting to be loaded with containers lifted from a ship, is every bit as annoying as arriving at a restaurant only to find the menu partially unavailable or having nothing to watch on television. The quality of our lives can quickly deteriorate when our routines are disrupted. We may not always be able to visualize the processes involved, as they are complex, but the fallout from failure leaves little to the imagination.

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> Richard Fouts
> Gartner Research Vice President

Perhaps distributing digital media as entertainment may not be considered the same as other distribution models, but the need to be on time and without fail is every bit as important to their clientele. Yet no matter what is in the distribution channel – from bulky containers to fresh food and much-needed electronics to a popular cable program, the challenges remain the same. To these companies engaged in distribution, it is every bit as mission-critical as moving money, completing a phone call or pouring liquid steel into an ingot. To suggest distribution occurs without movement likewise makes little sense; distribution is the very essence of movement and without reliable IT infrastructure such as these companies have today with NonStop systems, there would be considerable discord amongst the populace and few would want to face the negative press that would surely follow.

You may not have known, but now you do!

The success of HP NonStop can be traced back to the original design, and the recognition that in an always-on world the original fault tolerant architecture of NonStop is every bit as valuable today as when it first appeared. However, modern NonStop systems bear little resemblance to their predecessors forty years ago as the proprietary components have been replaced with commodity items and what makes up the integrated hardware and software stack features open interfaces and industry-standard middleware. Solutions built for other platforms can be readily ported to NonStop systems and nowhere has this been more visible than when it comes to manufacturing, transportation, distribution and entertainment industries.

However, it continues to be about choice as companies seek balance between reliability, performance and price and yet this too is reflected in the decisions that have been taken by many of the companies already referenced. There's a developing trend towards two-tier architectures and this is becoming increasingly visible in HP roadmap presentations. The acceptance of modern languages, including Java and C/C++, is more than noticeable as are the broader use of NS SQL/ MX. The early uptake of NSASJ, the equivalent to industry-standard JBoss on HP NonStop systems, is also helping cement a stronger future for NonStop systems. As client access is increasingly coming from public clouds, even as the business logic and databases are beginning to migrate to managed cloud services within the data center, NonStop systems will soon be seen straddling these two environments potentially taking up residence within the data center's private cloud. Of course, this will lead to even greater demands for standardization in the future and where the plans for NonStop to support the Intel® Xeon® x86 architecture will help.

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> Pauline Nist,
> GM Enterprise Software Strategy
> Intel Corporation

On May 31st, 2005, representing the NonStop global user group, ITUG, I was in Copenhagen for the launch of the Integrity line of servers featuring processors from Intel for the first time. Coinciding with the event, Intel ran a full page advertisement in the Wall Street Journal, "Intel welcomes NonStop", and a banner-size copy of the advertisement was hung from the rafters in the exhibition hall. After a history that featured first the use of custom chips and then MIPS RISC chips, embracing Intel has proved critical for NonStop systems continuing success in the marketplace.

Today, almost a decade later, we have heard the news of the plans for NonStop to support the Intel x86 architecture and as IT begins a further transformation – embracing a two-tier architecture where clients access applications from the cloud and the business logic and data reside in a managed services cloud within the bounds of the data center – it's more critical than ever for NonStop to continue to lean on the expertise of Intel.

According to Pauline Nist, GM Enterprise Software Strategy at Intel Corporation, who is well known to the NonStop community, "When it comes to Intel's expectations as to which businesses will relish NonStop on x86 the most – existing customers or new customers - it will likely be a little bit of both," Pauline began. "As an observation, existing and new users alike really value the NonStop architecture and having it support x86 simply ensures its longevity." The continual movement of Intel's roadmaps isn't lost on the NonStop community and the presence of NonStop on these roadmaps isn't lost on users and vendors alike.

Nowhere is this recognition more succinctly communicated than when I raised the topic with Integrated Research General Manager – Products & Alliances, John Dunne, immediately after the announcement. In posts and commentaries to numerous publications, Dunne proved quick on the uptake about the importance of this announcement. "With the architecture moving to a mainstream chipset, as is the case with the x86, NonStop won't fall off the 'chipset cliff' as Itanium reaches end of life" As important as support for Java and frameworks, such as NSASJ, the commitment HP is making to NS SQL/MX and the determination to drive down costs, the decision to partner with Intel and to support Intel's x86 architecture bodes well for NonStop systems, and even as roadmaps everywhere continue to evolve, this is a degree of stable continuity every CIO can support.

Management Summary

For a high-roller in Las Vegas wanting extra funds to continue gambling, there is a HP NonStop system at one of the largest casino operations on the strip, which will notify those dolling out the cash to increase the high-roller's line of credit. For anyone looking to get out of town, one of the largest car rental companies in the world will turn to their NonStop system to ensure a car will be ready for pick up at the time required. Should renting a car not be an option, then a seat on a cross-country bus line or train can be purchased that will be processed on a NonStop system. And should you use a credit or debit card or make a phone call - this too will invoke transactions on a NonStop system. So many products and components are on the move that oftentimes it is overlooked just how aggressively NonStop is moving to remain the premier solution in real-time, mission critical, transaction processing.

While it's well known that NonStop systems underpin the applications relied upon by the FSI and Telco industries, the vendors serving these industries know that the success of NonStop in other markets serves them well. They may have a big piece of the pie, but as the size of the pie continues to grow, then others will be encouraged to consider NonStop and their business will grow accordingly. None of this was lost on newly appointed VP & GM Americas, Lusis Payments Inc., Brian Miller. "Of course, we applaud the value of NonStop in other market segments," said Miller. "At Lusis we are committed to payments and we understand the value NonStop provides to this community. Having said that, it's equally well understood that NonStop finding traction among users in other markets is a big plus for NonStop and a development that sees a greater commitment to NonStop across all of IT – and that makes our job selling solutions on NonStop a whole lot easier."

Matthew Eastwood, IDC Group Vice President and General Manager, Enterprise Platforms, referenced earlier in this paper also makes a valid observation that reflects on the success of NonStop systems supporting customers apart from FSI and Telcos. "For many years, IT has been pressured to reduce complexity and lower delivery costs through consolidation and standardization - open system design and standardization and the resulting independent development paths for hardware and software are in the best interest of virtually all datacenter workloads. IDC has long believed that a strategic fit exists between server platform and workload. Understanding this relationship can help

IT organizations target hardware solutions to their businesses more effectively and efficiently."

Manufacturing, transportation, distribution and entertainment all convey a sense of movement. These market segments also convey a need for unfettered access and universal continuity of process from computers such as NonStop systems. When it comes to NonStop systems they too are as much on the move as any conveyer belt, gantry crane or a delivery truck. The fact that NonStop is widely accepted in industries as diverse as these is further testament to the diversity of applications NonStop systems can support and the knowledge that as many companies are completing modernization programs that include NonStop systems speaks volumes about the unique value proposition of NonStop. This can only add to the longevity of NonStop, and after forty years, there seems to be no end in sight as to how long NonStop will continue to meet the needs of all these companies. When it comes to use-by-date, NonStop missed being stamped, and for this, a community considers itself well served as it keeps on moving ahead!