connect
Your Independent HP Business Technology Community

# The Connection

A Journal for the HP Business Technology Community

# The World of NonStop Partners

## Hellenic Bank Web-Enables Its Legacy NonStop Applications

Bonus Partner Insert Inside

January – February 2015 { Volume 36, No. 1 }

# XYGATE Data Protection

## All the benefits of SecureData™
## No application changes

Secure Stateless Tokenization
Format Preserving Encryption
Standards Based AES
Stateless Key Management

XYPRO
Mission Critical Security

Voltage
security

Learn more at
**xypro.com/XDP**

# Get In-Depth Monitoring of NonStop Systems.

# At Some of The Industry's Most Intelligent, No-Sweat Prices.

**ALTERNATIVE THINKING ABOUT SYSTEMS MONITORING:**

Alternative thinking isn't just about constantly monitoring your applications and systems.

It's about alerting you to issues and even fixing them – automatically – based on your specific business goals.

HP's NonStop Availability, Stats and Performances product (known worldwide as HP ASAP) provides automatic monitoring of your system and application objects, keeping you aware of the status of your processing environment at all times.

With HP ASAP, you can set goals that alert you if problems occur. You can also link goals to corrective actions such as initiating repairs or restarting failed components – automatically.

While many monitoring solutions track a few dozen system attributes, HP ASAP lets you monitor thousands simultaneously. What's more, ASAP consumes very few CPU cycles.

Now, you'll know instantly when CPUs are too busy, when disks switch paths, when applications are not performing well, or when there are a myriad of other problems that NonStop ASAP can isolate and resolve.

HP ASAP. For 10 years, the smart, affordable way to keep NonStop servers running non-stop.

**Technology for better business outcomes.**

HP NONSTOP ASAP

- Monitor applications, system & network resources
- Set user-defined goals
- Receive alerts via clients, events, email & mobile
- Automate recovery actions
- Monitor and resolve issues quickly and easily

Contact your HP representative or partner for a FREE 60-day trial.
Visit www.hp.com/go/nonstop/ASAP

# Replicate 100% of Your SQL/MP Database DDL Changes.

# With 0% Headaches, Hassles or Human Error.

ALTERNATIVE THINKING ABOUT DATABASE REPLICATION:

## Introducing HP NonStop SDR: the industry's only off-the-shelf solution for replicating changes made to the structure of your SQL/MP databases.

How many hours per month does your staff spend making tedious database structural changes? What are the costs of inevitable human error?

What if there was a way to automate database DDL replication to eliminate these headaches, hassles and costs?

Enter: HP NonStop SQL DDL Replicator (SDR) – the industry's only solution for automated SQL/MP DDL database replication.

Only NonStop SDR ensures that after performing DDL operations – creating a table, adding a column, or moving a partition – changes will automatically be replicated and implemented at the correct point in the audit stream.

Now, routine changes no longer require downtime. And best of all: Since everything's automated, the risk of human error is eliminated.

Which means you can "set it and forget it" – while you reduce downtime, remove risk, and free up your staff for much more important work. And what's not to love about that?

Technology for better business outcomes.

HP NONSTOP SDR

- Automatic replication of NonStop SQL/MP DDL operations
- Designed to work seamlessly with NonStop RDF
- Minimal setup or operator management
- Essential NonStop fault-tolerant design
- Supports DDL replication for non-TMF-audited tables

Contact your HP representative or partner for a FREE 60-day trial.
Visit www.hp.com/go/nonstopcontinuity

# Table of Contents




## The Connection

*The Connection* is the official magazine of Connect, an independent, not-for-profit, user-run organization.

**Kristi Elizondo**..... Chief Executive Officer
**Stacie Neall**..... ...Managing Editor
**Kelly Luna**.....Event Marketing Manager
**Keith McLemore**..... ...Membership Director
**Janice Reeder-Highleyman** .....Editor at Large
**Dr. Bill Highleyman** ..... ...Technical Review Board
**Joseph Androlowicz**
**Thomas Burg**
**Bill Honaker**
**Justin Simonds**
**Joseph A. Garza**.....Art Director

We welcome article submissions to the *The Connection*. We encourage writers of technical and management information articles to submit their work. To submit an article and to obtain a list of editorial guidelines email or write:

*The Connection*
E-mail: sneall@connect-community.org
Connect
P.O. Box 204086
Austin, TX 78720-4086 USA
Telephone: +1.800.807.7560
Fax: 1.512.592.7602

We accept advertisements in *The Connection*. For rate and size information contact:
E-mail: info@connect-community.org

To obtain Connect membership and *The Connection* subscription information, contact:

Connect Worldwide, Inc.
P.O. Box 204086
Austin, TX 78720-4086 USA
Telephone: +1.800.807.7560
Fax: +1.512.592.7602
E-mail: info@connect-community.org





*The Connection* (ISSN 15362221) is published bimonthly by Connect. Periodicals postage paid at Austin, TX. POSTMASTER: Send address changes to *The Connection*, Connect Worldwide, Inc., P.O. Box 204086, Austin, TX 78720-4086 USA.




## 2015 Connect Board of Directors

PRESIDENT
**Henk Pomper**
Plusine ICT

VICE PRESIDENT
**Rob Lesan**
XYPRO

PAST PRESIDENT
**Steve Davidek**
City of Sparks

SECRETARY»TREASURER
**Glen Kuykendall**
Xerox

DIRECTOR
**Michael Scroggins**
Washington St. Community College

CHIEF EXECUTIVE OFFICER
**Kristi Elizondo**
Connect Worldwide

# Connecting for success... NonStop partners and you.

With a strong ecosystem of best-of-breed ISVs and technology partners delivering HP Integrity NonStop solutions, our customers benefit by having fault-tolerant choices for a changing world.

**Explore** the products and services our partners can provide.

**HP Integrity NonStop.**
When availability matters.

**Make it matter.**

For more, go to **hp.com/go/nonstop**

# News from HP's NonStop Enterprise Division

## NonStop Ecosystem/New Partners

For 40 years, enterprises have trusted HP NonStop to power their most mission-critical applications. One reason is the strength of the NonStop ecosystem, and it's broader than you might think. With NonStop, you're not just buying one of the most reliable servers on the planet. You're buying a solution to a business problem that includes hardware, software, tools, management practices, and support. In this issue of The Connection you'll learn more about the partners that add value to the NonStop portfolio.

When you think about the ecosystem, Solution Partners immediately come to mind. HP maintains relationships with ISVs that deliver best-of-breed solutions running on NonStop technology. Some of these relationships span decades, while others are relatively new. Regardless, they share a passion for enabling customers to achieve the highest performance, agility, and return on IT.

In Financial Services, HP NonStop and our partners help financial institutions manage, transform, and optimize complex retail and wholesale environments, and enable innovation such as new payment channels and emerging Internet and mobile technologies. In Communications, we support many of the most business-critical applications such as billing, real-time charging, policy, customer care, and ER, and network-critical functions such as messaging, HLR, and HSS for advanced mobility management. In Manufacturing and retail, NonStop and our partners enable efficient production control such as improving visibility into the manufacturing operations and performance, making assembly lines trimmer, and restoring continuous availability across the manufacturing cycle. At the retail point-of-sale (POS), we connect the largest retailers with card issuers to ensure that payment transactions are always there. In Healthcare and public sector, we deliver the highest level of availability and data integrity for healthcare providers, disease control, emergency responders, and national security. With integrated software solutions, NonStop reduces risk, enables rapid response times, and ensures that you can focus on the situation at hand. We also provide cross-industry solutions for infrastructure management, security, data management, and service management.

The common denominator in all of these solutions is a shared focus, by HP as well as our best-in-class NonStop Partner ecosystem, on enabling customers to reduce complexity, achieve more flexibility, and drive business agility. Together, our powerful ecosystem helps customers achieve their business outcomes.

HP NonStop infrastructure partners provide additional value to customers with technology solutions for connectivity, security, middleware, storage, and data replication, as well as information services, operations management products, and research services. We work collaboratively with partners in our Advanced Technology Center, and their feedback is a critical component of the development process. The most recent example is the HP Integrity NonStop X, where we had 36 partners successfully beta testing the product. For more information on who some of the more active partners are in all these areas see Karen Copeland's article "The World of NonStop Partners" and the follow-on blog that includes pointers to many of our key partners and their Welcome to 2015 messages.

Of course, no mention of the NonStop ecosystem would be complete without mentioning HP Services. HP Technology Services for HP Integrity NonStop Servers offer flexible choices that span the entire technology lifecycle—so that customers can rely on the precise level of assistance they need every step of the way. HP can help build an infrastructure that is reliable, highly available, responsive and rooted in proven best practices. We offer a support experience that is proactive, personalized and simplified. We simplify the support experience with straightforward service-levels, a single point of contact, and leverage connected products to help optimize performance and address issues proactively. Our Technology Services complement HP technology to give partners a true end-to-end solution.

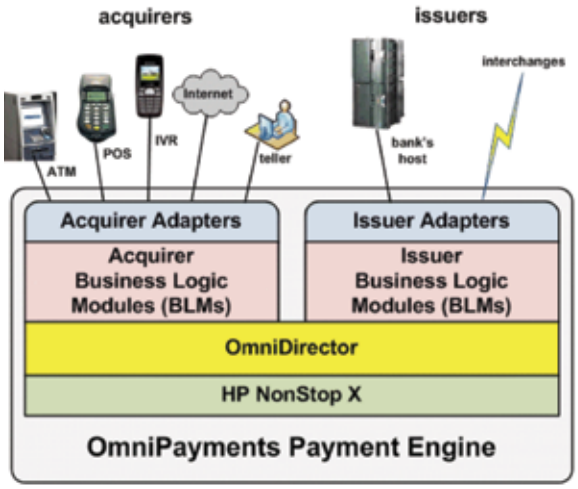
Over the past few months my team and I have had the opportunity to speak with many of you at the Connect Technical Boot Camp in San Jose, HP Discover in Barcelona, and other events in the UK, Singapore and India. Your feedback is incredibly valuable as we continuously strive to deliver the NonStop solutions you need to run your business. We want to hear from you, so let us know what you think by joining us at upcoming HP and User Group events, engaging with the Connect community, or reaching out to your HP sales representatives.

Randy Meyer
Vice President & General Manager,
HP Mission Critical Systems

Special Feature Brought to You by

OmniPayments

# OMNIPAYMENTS FINANCIAL TRANSACTION SWITCH NOW LIVES ON NONSTOP X




Talk about a commitment to NonStop. OmniPayments Inc. became the first HP NonStop partner to take possession of the new NonStop X server. NonStop X runs in a 100% "standard hardware" HP x86 blade system, in which the individual blades communicate with each other via the high throughput, low latency Infiniband. NonStop X is expected to significantly exceed the performance capabilities of the current Itanium NonStop servers and their proprietary ServerNet fabric. Plus, other applications running on Linux and Windows now can be connected seamlessly to the NonStop environment. For OmniPayments Inc., the NonStop X acquisition enhances the company's ability to provide a high-speed, multi-platform solution for customers of its OmniPayments Financial Transaction Switch.

OmniPayments is a comprehensive architecture by which financial institutions acquire, encrypt, switch and authorize transactions across multiple input channels such as ATMs, POS terminals, kiosks, IVRs and the Internet. OmniPayments supplies a full set of functionalities to support payment transactions. Based on a modern Service Oriented Architecture (SOA), OmniPayments consists of several service modules. The critical payment components are built on NonStop.

At the heart of OmniPayments is its Payment Engine, which supports ATMs, POS terminals, transaction authorization, stand-in authorization, settlement, and card management, among many other functions. The Payment Engine runs on NonStop servers, as does OmniDirector, a rules-based routing engine, and the OmniAuth Preauthorization Engine, whose services remove a significant processing load from issuing banks. OmniAuth enables transaction screening before financial authorization by an issuing bank is invoked.

Other less critical OmniPayment modules run on Red Hat Enterprise Linux (x86 RHEL). The OmniOffender system monitor and the OmniDash business monitor offer 24/7 real-time views of all OmniPayments functions. Another module, the Customer Experience Hub, integrates with the Payments Engine and is implemented via a "party model" database. This furnishes the power to fuse many products and customer services, including loyalty modules, customized bill payment modules, etc.

In the past, OmniPayments NonStop applications and the x86 RHEL applications ran on different blade systems. NonStop servers communicated over ServerNet, Linux applications communicated over Infiniband, and no intercommunication existed between the platforms. By placing the OmniPayments Financial Transaction Switch on NonStop X, OmniPayments will incorporate a NonStop X Payment Engine and the RHEL modules within the same cabinet. This will significantly increase OmniPayment's transaction capacity and will speed up the Customer Experience Hub.

OmniPayments is secure and uses tokenization to comply with PCI-DSS specifications. Its pricing model is based not on transaction volume but instead on a one-time software license. The result is huge savings!


## OmniPayments Inc.

1566 La Pradera Drive
Campbell, CA 95008 USA
PHONE: +1 408 364 9915
sales@omnipayments.com
www.omnipayments.com


### About Opsol Integrators and OmniPayments

OmniPayments is a switching solution for the financial industry. It is deployed on NonStop for the highest availability and offers customers all the requisite functionality to manage credit/debit-card transactions. OmniPayments is easily expandable to provide additional functionality when needed. It supplies complete security functions for every financial transaction that it handles, including encryption-at-rest and encryption-in-flight. OmniPayments will survive any single fault, requires no downtime for maintenance or upgrades, and supports a range of disaster recovery solutions.

# A Note from Connect Leadership

## *Does the suit make the man?*

If it does, then do the partners make the platform?

As NonStop professionals, we tend to hold our platform, and anything that touches it, to a standard many simply don't understand. Blue screen of death? Unacceptable. Bad driver? A joke. Applications and utilities that just stop working for no obvious reason? Unthinkable, but this is exactly what system administrators get on other platforms and they even pay for the privilege!

NonStop means a lot of things to a lot of people. We all know and depend on the availability, scalability and reliability of the platform AND the partners that provide solutions!

I have worked at quite a few HP Nonstop installations in my career and one thing is certain. We don't just expect the same level of quality and polish in every product, we demand it. The NonStop partners are the best in the business. They have to be. It only takes one failure to ruin them. We tend to be very hard on failure and second chances are about as frequent as unplanned outages. Look! A unicorn! Over there! Next to that guy wearing selling continuously available Linux solutions!

As NonStop professionals, we all tend to wear many hats. The bigger ones are NonStop related, but there are others. Due to the critical nature of services provided by the platform, we tend to find ourselves at the center of the enterprise where NonStop servers tend to hold the keys to many a kingdom and are commonly trusted with the most sensitive, business critical data. This means that anything that runs on or supports our platform must be held to the same, rigorous standards that we hold the platform to.

Again, this is where the absolute best partners in the IT industry enter the picture.

Many platforms offer a LOT of functionality. The kernel is required and strongly supported by every vendor. This is their bread and butter and they tend to care for it well as they know their reputation relies on it. HP is no different in this case. The core NonStop operating system and core components are supplied and supported by HP. NonStop wouldn't offer all it does without the best integration available on any platform. But this is where the similarities end.

Tandem knew early on where their core competencies existed and they chose to focus just on the things they considered to be core to their mission and allow others to build the remaining infrastructure as they saw fit based on customer demand. This methodology has been a boon to the many software and hardware partners that have had the opportunity to offer an amazing width and depth of solutions.

Now, with the move to the x86 platform, NonStop will gain even more visibility and our partners will have to meet an even higher standard as 7x24x365 becomes more of a necessity and less of a nice to have.

Do yourself a favor. Reach out to your HP NonStop partners on a regular basis and find out what is new. All of them work furiously at meeting customer needs AND looking forward to solving problems most of us haven't had time to consider. Keep those standards high, find out what is new (and new to you) and spread the word about the solutions you use and are happy with!

Heck, if you REALLY like something, why not write or present about it?

If 2014 was a crazy year for you like it was for me, 2015 is going to be certifiably insane with upgrades, updates and new functionality! Enjoy!

Rob Lesan, Vice President Connect Worldwide
rob_l@xypro.com

# ADVOCACY

## The NonStop Technical Boot Camp is a Growing Success

**Dr. Bill Highleyman** >> Chairman >> The Connection Technical Review Committee

Success is breeding success. The 2013 HP NonStop Technical Boot Camp was larger than the 2012 Boot Camp, and the recent 2014 Boot Camp outdid 2013 by a wide margin.


### The 2014 HP NonStop Technical Boot Camp

The 2014 Boot Camp was held from Sunday, November 16 through Wednesday, November 19 at the Hayes Mansion, a lovely setting in San Jose, California. It used to be a private home. Almost 500 customers, partners, and HP personnel from around the world met for education, peer networking, and the wonderful food and parties.

The Boot Camp featured two general sessions. In the first general session, Randy Meyer (Vice President and General Manager, Integrity Servers), Sean Mansubi (Vice President, Research and Development), Karen Copeland (Manager, HP NonStop Product Development), and Mark Pollans (Worldwide NonStop Product Manager) shared NonStop's future directions.

In the second session, NonStop's Wendy Bartlett, Thomas Burg of comForte, and Andrew Price of XYPRO discussed NonStop security issues and directions. Wendy presented the annual NonStop Availability Award. This award goes to a company that has excelled in availability practices and monitoring and has achieved an excellent availability history. This year the award went to – yes, once again – MasterCard.

The Boot Camp's first day, Sunday, featured six in-depth vendor seminars ranging from two to four hours. XYPRO, Voltage Security, WebAction, comForte, and Carr Scott described challenges in payment security, NonStop security, modernization, Big Data, and tokenization and presented solutions from their companies to meet these challenges.

Monday through Wednesday was devoted to breakout sessions. Almost eighty breakout sessions in all included customer and partner presentations, HP talks, vendor theaters, and Special Interest Groups (SIGs). Breakout sessions were organized as five parallel tracks with a sixth track dedicated to one-on-one meetings with NonStop developers.

NonStop partners were present in full force. The Boot Camp had 33 sponsors, and 32 of these NonStop partners had booths in the Exhibit Hall. The Exhibit Hall was open throughout the entire conference.

The 2014 Boot Camp benefited from a substantial increase in HP support. as compared to previous Boot Camps. In attendance were over 150 HP personnel from around the world. Even more impressive was that forty-six of the eighty breakout sessions (over one-half of all sessions) were presented by HP.

### Special Interest Groups

The Boot Camp hosted three Special Interest Group (SIG) meetings – the NonStop Open SIG, the Security and Audit SIG, and the NonStop SQL SIG.

#### NonStop Open SIG

The NonStop Open SIG was chaired by Bill Honaker of XID. Wendy Bartlett attended as the HP liaison. Fourteen attendees were present.

Bill sits on the Connect Advocacy Committee and spoke to the revitalization of the Advocacy program. Efforts are being made to strengthen the NonStop community's links to HP executives so that we can increase our value to Connect members. Most of the SIGs have set up LinkedIn groups for discussions among their members, and we are hoping that these groups will become a source of issues to be escalated to HP.

Bill gave an update on ITUGLIB. ITUGLIB hosts many useful contributed NonStop utilities. Utilities range from TAL and COBOL programs to open-source packages in modern languages like C++, Java and Python. NonStop-specific utilities are available only to Connect members, though open-source utilities are accessible to anyone. Bill's company, XID, has been hosting the ITUGLIB NonStop system. The system now has been moved to an OmniPayments facility in the Bay Area, and he thanked OmniPayments Inc. for taking over the costs of operating and maintaining the system. Connect's ITUGLIB Technical Committee (chaired by Bill) will continue to manage ITUGLIB.

Some of the most popular open-source utilities on ITUGLIB include OpenSSL, Floss, gzip, and Perl. Recent patches to ITUGLIB utilities have been made to correct the Heartbleed bug in OpenSSL and the ShellShock vulnerability in the bash shell. The ITUGLIB Technical Committee is planning enhancements to the user interface to make it more intuitive. Among those changes is a git repository for use by developers wishing to contribute open source packages to the library.

Among the issues that were discussed were the following:

- Provide input to the HP development groups as to what open-source utilities should be ported to ITUGLIB.
- Extend support for NSDEE (the NonStop Development Environment for Eclipse) to platforms other than Windows, such as Linux and Mac.
- Will ITUGLIB be x86 compatible? (the answer is Yes).
- How do we get more people to contribute to ITUGLIB?
- Define the configurations and dependencies to convert to NonStop.
- Create a formalized procedure for HP support.
- Provide shared memory for Java to require only a single copy of a Java routine for all JVMs on a NonStop system.
- Support open-source packages that use 'configure' scripts.

Bill manages the NonStop Open SIG LinkedIn forum. Join the forum to add your views to the discussions and to voice your concerns and issues on open-source topics.

## Security and Audit SIG

The Security and Audit SIG was chaired by Wendy Bartlett of HP. She is the SIG's HP liaison and substituted for the SIG leader. The SIG had been led by Lee Evans of Wells Fargo, but he has left that position. We currently are looking for a new SIG leader.

Twelve people attended the SIG.

Wendy reviewed the NonStop Security Hardening Guide, which focuses on Safeguard and user management. A breakout session presented by Wendy also described this guide (look for it in the session postings on the Connect web site – HP 19: "NonStop Security Hardening Guide Overview").

The current top security requests include:

- Better OSS audit filtering - hard to connect specific events with actual activity.
- Sudo support (allows users to run programs with the security privileges of another user).
- Samba upgrade and deeper port (Safeguard integration, EMS integration, LDAP client).

The timing of XYPRO version releases versus equivalent HP XYGATE version releases was discussed. Andrew Price of XYPRO stated that XYPRO carefully plans its releases to align with HP's schedule. XYPRO's two RVU products, XMA and XUA, are timed to dovetail into the RVU schedule. Thus, there will usually be a release of XMA and XUA each year in June for inclusion in the August RVU and in December for inclusion in the February RVU. XYPRO's two independent products, XSW (Compliance PRO) and XAC, are released as and when needed and are made available to HP's customers as soon as possible after they are made GA – usually within a month or so.

## NonStop SQL SIG

The NonStop SQL SIG was chaired by Ajaya Gummadi, HP's Product Manager for NonStop SQL and the SIG's HP liaison. Ajaya stood in for the SIG leader, Scott Randall of Randall Consulting, who was unable to attend the Boot Camp. There were twenty-eight attendees. The NonStop SQL SIG was the most active of all the SIG meetings, with a great deal of back-and-forth discussion.

### *2014 Requests*

Ajaya polled every attendee for concerns. The following issues were voiced:

*Top Issues with Votes*

- Maintain a repository of queries executing on the system with a unique statement ID, start and end timestamp, query text, etc. (15 votes)
- T2 driver should not ignore user credentials. (11 votes) (On the Roadmap for 2016)
- MERGE. (5 votes)
- Do not close cursors on commit transaction. (2 votes)
- Offload MX modules to reduce memory pressure. (Development is investigating shared query plans per CPU)
- Moving module files to production without SQL compile. (Use MXRPM tool. May need to extend similarity checks)

*Other Issues*

- Turn off Referential Integrity for out-of-order data for trusted replication processes.
- For SQL/MX Tables and Indexes, Measure returns 0 milliseconds for File-Busy when measuring FILE with SQL/MX Tables. This makes performance analysis for MX nearly impossible, as one doesn't know what each Table access costs. SQLSTMT looks OK so I can get the cost of each procedure call. (White Paper on User Defined Measure counters will be made available)

  Ajaya noted that if a customer wants to find out if a particular table or an index is a bottleneck, it is recommended that the following be done:

  - Use SQLSTMT counters to confirm if the statement is a bottleneck.
  - Use DISKFILE to see if in fact the particular file is very busy.
  - There is a way in Measure to map ANSI SQL names to Guardian names.
  - Caveat is that SQLSTMT consumes too much memory, so sometimes this makes Measure return warnings. The application does not handle these, and it may crash.
- SQL/MP (Mature supported product, no enhancements being made)

# Got 30 minutes? Then start MODERNIZING.

**SOAPam® can be up and running in less than 30 minutes and is so intuitive that you'll be exchanging data in no time.**

## SOAPam Increases Efficiency Throughout Your Business

- Access information on your NonStop, securely, from other platforms
- Receive orders placed by customers and business partners, directly on your NonStop
- Access external information from your Pathway applications
- Prepare for a zero-downtime migration

"We purchased SOAP/AM® Server and SOAP/AM Web Service Client... They have met our expectations and then some."

"SOAP/AM is easy to install, easy to use, and it is a pleasure. Night and day between it and NonStop SOAP."

## WHY SOAPam?

- ✓ *GREAT VALUE*
- ✓ *QUICK IMPLEMENTATION*
- ✓ *INTUITIVE*
- ✓ *SUPERIOR TECHNICAL SUPPORT*
- ✓ *RUNS IN GUARDIAN*

**Download a trial and get started now:**
**http://hub.am/1ngyjOJ**

**Scan to learn more about SOAPam.**

NuWave TECHNOLOGIES

- The Update Statistics default should be NO Recompile (or display a prompt similar to when altering DP Cache if programs will be invalidated).
- Catalog information should contain the type of Update Statistics most recently performed (probabilistic/simple).
- Display column numbers in front of the column names on an invoke statement.
- Alternatively, display column names as part of the index definitions in fileinfo.

Ajaya reviewed the outstanding requests from 2012 and 2013:

### *2013 Requests*

- Perl support. (DVD/DVI removed due to Linux driver now GA)
- Repartitioning tables in a single command vs. MODIFY one-at-a-time. (On the Roadmap with Modify Repartition Utility planned for 2016. Will allow both offline and online operations)
- MXOSRVR caching of similar queries - same access plan. (Use MFC)
- Input row-sets in Java for a WHERE clause. (Under consideration)
- T2 Java option for user credentials. (On the Roadmap for 2016 Release)

### *2012 Requests*

*2012 Requests Completed*

- Ability to UPGRADE to 3.x catalogs one at a time vs. entire system. (Included in R3.2)
- Better documentation on how to create v3100 SCHEMAs. (Documented in the SQL/MX Installation and Upgrade Guide on how to create down version schemas. The CQD CREATE_DEFINITION_SCHEMA_VERSION will help)
- Default schema versions for each release will be documented in Migration FAQs.
- PURGEDATA on tables with RI that are already empty. (Available since 3.1)

*2012 Requests on the Roadmap*

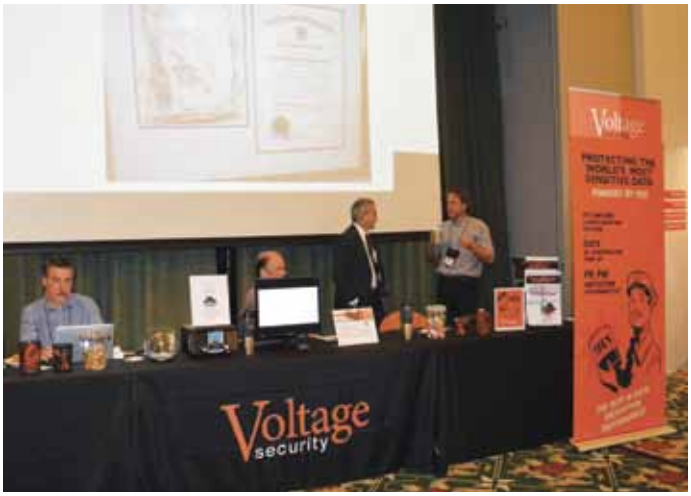
- MXCI HELP command online.
- Materialized Views.
- COMMIT EVERY option to reduce lock contention during batch.

*2012 Requests Carried Over*

- Materialized Views. (Controlled Availability for development use only)
- Update Stats preview option. Capture Stats without updating Histograms. (Post 2016)
- CQDs at the Query level instead of session or data source level. (CA in 3.3 / 1QCY 2015 Release)
- MXOSRVR Memory Sharing. The same statement cached over many MXOSRVRs.
- Removing/Dropping a column from a table. (Post 2016)
- Data Compression. (Post 2016 – need more customer inputs on how they would use it)
- User Modules names… Guardian is too short. OSS is all in one place. (Plan to enhance Guardian SQL/MX processes to use the OSS _MX_MODULE_SEARCH_PATH to find module files)

*2012 Requests – No Plans*

- NOWAITed SQL/MX I/Os. Inserts, Deletes, etc. from embedded C/C++.




## Summary

Every year, the NonStop Boot Camp grows more popular. Attendance is increasing, HP support is increasing, and content is increasing. Soon, we may be at the levels of the old ITUG Summits - 1,000 attendees or more. Be sure to add the NonStop Technical Boot Camp to your schedule next year.

*Dr. Bill Highleyman is the Managing Editor of The Availability Digest (www.availabilitydigest.com), a monthly, online publication and a resource of information on high- and continuous availability topics. His years of experience in the design and implementation of mission-critical systems have made him a popular seminar speaker and a sought-after technical writer. Dr. Highleyman is a past chairman of ITUG, the former HP NonStop Users' Group, the holder of numerous U.S. patents, the author of Performance Analysis of Transaction Processing Systems, and the co-author of the three-volume series, Breaking the Availability Barrier.*

# The World of NonStop Partners

**Karen Copeland** >> Manager, Worldwide Product Management >> HP NonStop Mission Critical Systems

Since the early days of NonStop computing, the founders of Tandem recognized that they couldn't do it alone. For the NonStop platform to be successful it needed a strong eco-system, built by people who believed in the power of parallelism and the need for fault-tolerant computing.

For decades, the NonStop platform has been welcoming new partners of all varieties to this eco-system and those of us lucky enough to have worked on this unique platform have come to acknowledge, respect and appreciate our diverse community and the talented people who stand behind NonStop computing. The NonStop eco-system is all about supporting you, our customers. It includes partner companies who provide solutions that run on NonStop as well as companies who provide tools and infrastructure products to help you make the most of your NonStop investment. The breadth of our eco-system is far reaching and the technical expertise amongst customers, partners and expert consultants is strong.

This is an eco-system that includes people who help organize large and local events all around the world to bring the NonStop community together to discuss customer business needs. Multiple times each year Connect helps HP and our partners reach out to customers through Tandem and NonStop Regional User Groups (RUGs) all over the world. HP recognizes the incredible value of these events, which create a place where we can gather to talk about NonStop's current product offerings, discuss industry trends and solve issues together. NonStop events feel like family reunions. While attending we get to reacquaint ourselves with colleagues who have become friends and, after the business meetings are done, share pictures of our kids on our cellphones over a glass of wine.

This month's issue of Connection Magazine is about "NonStop Partners" and what an amazing eco-system we have built around NonStop. Over the years, I've had occasions to work closely with many of our partners and seen them in action working with our mutual customers. What all of our partners and HP have in common is the high regard and closely aligned support we collectively provide to our NonStop customers around the world.

I want to take this opportunity to give you some sense of the breadth of product offerings that exist in our partner community and that are available to all of our customers. In doing so I have the happy problem that there are too many companies providing products for the NonStop platform around the world for me to enumerate them all. In many countries, there are local partner companies, working in the local language to provide solutions and tools on NonStop for customers in that country. While I will not be focusing on these types of partners, we do recognize that they are an important part of the NonStop community and often participate and help fund local regional user group meetings to bring NonStop customers together in their country. In advance, I want to say that if I don't happen to mention your company in this article, please don't take offense, write me and let me know and I'll be sure to acknowledge the good work you do when I have a future opportunity.

## Solutions Partners

Let's start at the top, with our partners who provide solutions. This includes companies like ACI, AJB, FIS, OpSol, CA, Lusis and BPC. These valuable partners provide solutions that many customers depend on to run their business. ACI in particular has been a close partner to the NonStop business for many years, providing solutions with BASE24 and BASE24-eps that are heavily used by Financial and Retail customers. FIS has offered its CONNEX payments solution as both a product and service for many years. OpSol is yet another long term partner who provides application solutions like OmniPayments to companies in both the Financial and Telco industries and helps them modernize their applications. Newer partners include Lusis, who now offers their TANGO solution on NonStop for the payments industry and BPC with SmartVista offering even more choices for banking customers. All of these partners and others help us keep the promise of what fault tolerant computing solutions can mean and make that a reality for your business.

Our community also includes partners who offer what we classify as infrastructure products – these products can range from a small tool managing a single aspect of the system, to massive manageability products, sophisticated system performance products or important security solutions. The products in this segment of partners span all layers of the NonStop integrated software stack.

## Manageability Partners

As an example, Idelji offers a product called Remote Analyst that allows customers to receive automated performance analysis reports about their systems by email. The customer's Measure data is processed in the cloud. ESQ offers manageability tools that don't require deep NonStop syntax knowledge, and that link into Tivoli as well as a whole range of products for every aspect of ATM management for banking customers. Integrated Research for many years has served customers by offering a comprehensive manageability suite with their Prognosis product. Blackwood Systems offers MOMI, an easy to use product for managing NonStop server performance. Many of our manageability partners also offer ways for you to monitor your system through cellphones or tablets. Monitoring and restarting a NonStop process while you're riding the train is a reality.

## Security Partners

Fault tolerance includes having a secure system where data is protected and customers can be confident in trusting their Mission Critical business to NonStop. Companies like comForte, CSP, Data Express, Greenhouse, CSP, Knightcraft Technology, Voltage and XYPRO today, all offer point products as well as comprehensive suites of security products and/or services to successfully help customers

implement security solutions ranging from monitoring system access to protecting sensitive data with tokenization so you meet the PCI Security challenges of your business. Voltage, XYPRO and comForte are now offering security tokenization solutions for databases on NonStop, which many customers may find interesting for dealing with PCI requirements around protecting sensitive data.

comForte fits into multiple categories, as in recent years they've grown from a security focused company to a full service partner offering solutions and products for NonStop that range from a terminal emulator, to SOAP Application modernization solutions, to Middleware, to Manageability solutions like TOP in addition to their security offerings.

## Database Partners

At the heart of NonStop systems is the NonStop SQL database, which holds data that is at the heart of most company's business. Partner companies like Carr Scott, Genus, Merlon and NexBridge provide tools and/or services to help you efficiently modernize, manage and administer your databases.

## Business Continuity Partners

The ultimate in fault tolerance is based on an architecture that replicates both the system itself and the application and database that run on the system to ensure that your business can withstand a disaster, whether it is something as simple as a power outage or a full-fledged natural disaster, without any downtime. The NonStop community luckily includes a number of companies who provide Business Continuity solutions and active/active solutions like Shadowbase from Gravic, GoldenGate from Oracle and DRNet from Network Technologies International. Replication needs to include both the data and the application environment, so complementary tools such as Carr Scott's AutoSync or TANDsoft's FileSync also are part of the equation.

## Data Protection Partners

In addition to products as sophisticated as active/active solutions, you also need to take simple data protection actions such as backing up data to tape. The world of tape is changing with more sophisticated virtual tape solutions than ever available to help you. Partners in this area include ETI-NET with BackBox, Tributary Systems with ViTAL, and Crossroads with SPHiNX. Virtual tape partners now offer the latest in data deduplication, saving storage and time by integrating with HP StoreOnce and similar solutions.

## Productivity Partners

Crystal Point, CAIL and RiverRock provide NonStop emulation and tools to optimize individual productivity. In addition, CAIL offers support for application modernization and security products. Companies like ITP Software Systeme GmbH with their ITP-Panorama product, NexBridge with Eclipse plug-ins and NCI (Network Concepts, Inc) provide products to help you be productive and efficient when working on a NonStop server to develop and sustain software intended to run on the platform.

## Communication Partners

Meanwhile companies like Tricom and Infrasoft offer solutions for communication with other servers. Infrasoft offers the uLinga product for IBM communication as well as a new cloud bursting solution, maRunga, enabling NonStop TS/MP applications to work in private or public clouds. Infrasoft's uLinga is available through comForte.

## Service Provider Partners

Our eco-system also includes large companies providing sophisticated services to the NonStop customer base. These are companies like SunGard, offering data protection, FIS with Financial services and Accenture with process and application services. It also includes companies who offer personnel in addition to products that work on your NonStop system – we're talking about experienced NonStop talent who can provide application development and modification, system configuration and support services. This includes companies like Advanced Application Modernization, Bright Strand, Canam Software Labs, System Integrators and others.

## NonStop Publications

The other part of our NonStop eco-system that we sometimes take for granted are those people who keep NonStop communication alive by getting information out to customers. I'm referring to publications like this, The Connection Magazine provided through the Connect organization, but also publications like "The Availability Digest", "Tandemworld" and "Real Time View". I want to take a moment to thank the people who work tireless to regularly bring these publications out. I'd also like to thank everyone who participates in passionate discussions about NonStop on LinkedIn.

## New Partners

The NonStop eco-system is always expanding and this year was no different. We've invited three of our newest partner companies to introduce themselves in this issue of Connection Magazine through brief articles about what they offer and why they have chosen the NonStop platform for their business. This is not an exhaustive list of our new partners, but a sampling of what some of these partners have to offer. **WebAction** provides new big data analytics for Big Data on NonStop, **3Qube** is a new startup that is focused on delivering data protection through backup in the Cloud and **Network Kinetix** is offering a new technology for taking action in real time based on immediate analytic analysis. We are happy to welcome these new companies into the NonStop family.

Since we cannot fit an article showcasing every partner into one issue of Connection Magazine, HP has set up a blog which contains links to blogs written by our partners all over the world. We are providing this as a service to make it easier for customers to learn about the solutions and products available now and get a peek at new things that our partners may be working to bring to market.

We encourage you to take a little break from the grind, have a cup of coffee and check out this latest HP Mission Critical blog that takes you on a trip to the world of NonStop partners.

**http://link.hp.com/u/16ln**

*Karen Copeland has worked in the NonStop business since 1983, holding individual or management positions in IT, Software Engineering, QA, Application development and Product Management. In her current position she is responsible for the Worldwide Product Management team for the HP NonStop platform.*

# Meet Some NEW NonStop Partners

## INTRODUCING

Well here we all are at the beginning of what will be a very exciting year for the NonStop™ User Community. In 2014 we celebrated the 40th (yes 40th) anniversary of the founding of Tandem Computers. Unbelievable! Many technologies don't last anywhere near 40 years (anyone still using a pager or watching Sony Beta-Max cassettes??), and yet customers continue to recognize the value of NonStop Systems and deploy them in their most critical business environments. Through two mergers, Compaq and HP, offering the finest fault tolerant systems available was uninterrupted, showcasing the importance placed upon these unique products.

And now, as we all look forward, we are on the horizon of an all new NonStop server, the NonStop X. Along with the current Itanium based servers, the NB and NS, the NonStop X will propel the platform into the next 40 years of success. Fantastic and congratulations from all the folks at 3Qube Technologies!

2015 will also be a pivotal year for 3Qube Technologies. Founded in early 2014, 3Qube is a sister company of Tributary Systems, an OEM supplier to HP NonStop for over 18 years. 3Qube's mission is to seamlessly protect, scale, and manage customer data, applications and infrastructure. And for 2015, we're very proud to introduce our all-NonStop system compatible infni Qube™!

### Now Some Facts:

| | |
|---|---|
| **75%** *of organizations face tape failures every year* | **64%** *of organizations need their data protected from natural disasters* |
| 62% *of organizations want to store data in a highly ecure environment* | **59%** *of customers want to eliminate single point of failure* |

Explosive increases in the quantity of data in digital format (i.e., email, faxes, application data, documents, and media files) are fueling small businesses and large enterprises requirements for data storage and backup technology like no other time in the history of the electronic age. Despite a sharp increase in affordability and availability of automated backup systems, many businesses still rely on unsecure tape or virtual tape devices and complex physical media retention strategies to backup and restore vital information.

Further, management may not fully appreciate the risk they take by neglecting backups in favor of "more important" issues. Any non-expert can observe that data loss frequently occurs even with an automated backup system in place. According to one survey, nearly one in four Enterprise to Midsized Customers reported that at least 20 percent of their recovery attempts fail. Cited as the primary cause for data loss: human error in the backup process or in the interchange and handling of physical tapes.

Plus, most enterprise datacenters maintain costly separate backup solutions for proprietary server platforms such as HP NonStop, HP OpenVMS, IBM PowerSystems and IBM Mainframes, adding risk of data loss through excessive complexity.

All the while, companies reduce staff while increasing their dependence on IT, requiring fewer employees to be more productive. As a result, even short interruptions to data access are intolerable. Most business decision makers and nearly all IT managers understand the need to protect data and ensure its availability. However, confusion exists over the best approaches to data protection and converged backup solutions.

Individual suppliers tout their own approach as best and the new normal in data protection and consolidation. However, often these are additional servers (usually employing either a Linux or Windows OS) dropped into the existing infrastructure to address only specific proprietary host platforms, when the optimal solution is a single cross-platform server. Also, Cloud based storage infrastructure must now be considered in any data backup discussion. The challenge is finding a sustainable way to build and maintain a data protection/ converged infrastructure strategy that encompasses all host platforms and storage technologies, and applies appropriate services to multiple data sets based on the data's criticality. In other words, "Intelligent Converged Backup Solution Methodology."

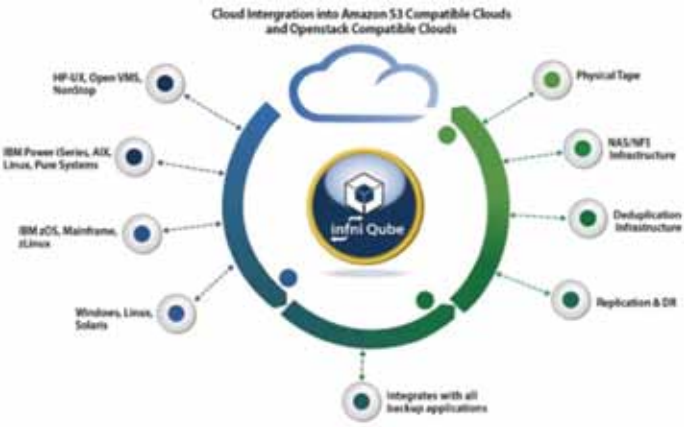
Not surprisingly, most discussions of backup solution methodology quickly and simply devolve into an either-or debate over tape versus disk (or virtual tape) and specific proprietary platform support. Storage array manufacturers promote disk-to-disk mirroring (between two or more arrays on the same raised floor) or WAN-based replication (copying data between disk arrays in two geographically separate locations across a telecommunications facility). Tape technology vendors note that as much as 87 percent of the world's data is still protected using their magnetic media. Then on top of the tape versus disk argument there's the issue of supporting proprietary versus open systems and Cloud based storage integration.

In actuality, both disk, tape, and in many cases Cloud are necessary and required, so what's really needed is a solution

methodology that incorporates all types of storage solutions, with accessibility to any host platform in a customer's IT environment.

## The Solution: 3Qube's All New infni Qube

infni Qube is a purpose built Cloud backup and data protection solution for high availability platforms. infni Qube was designed and built to allow NonStop customers to securely vault their mission-critical data to any Amazon S3 compatible Cloud including HP's Helion Cloud. But the real beauty of infni Qube is that the solution is so flexible it allows NonStop customers to also use the solution for local, inter-datacenter and private Cloud implementations simultaneously with vaulting to Amazon S3 compatible Cloud architectures. Furthermore, infni Qube will allow NonStop customers to have a single common Cloud backup target and allow backing up all open and proprietary platforms like IBM Mainframe and IBM Power Systems as well as Linux and Windows to a private or hybrid Cloud. infni Qube preserves NonStop fundamentals in the areas of Data Integrity, Scalability, Security and Reliability while meeting or exceeding data backup requirements for speed, capacity, and Amazon S3 cloud compatibility.




## Key Features

- Provides fully automated backup and restore operations
- Securely vaults data to HP Helion and all other Amazon S3 compatible clouds
- Integrated monitoring capabilities for industry leading reports, analysis, and capacity planning
- Implements data compression on disk cache and in the cloud
- Ensures data-at-rest integrity and security via AES 256 bit encryption for both disk cache and data in the cloud
- Transparent remote backup and restore features to satisfy off-site archival requirements
- Enables alternate site disaster recovery schemes
- User defined policies allow flexible data migration strategies
- Specifically designed for heterogeneous, multi-platform environments including proprietary platforms such as IBM® Mainframe, HP NonStop (Tandem), virtual environments etc.
- Customized configurations for higher availability and specific customer needs
- Supports physical tape to cloud data migration and consolidation
- Supports remote replication with latency management/ WAN optimization
- Connects to existing customer SANs, de-duplication solutions and backup applications

infni Qube offers a state-of-the-art backup storage consolidation platform, which can handle requirements from even the most complex environments. infni Qube implements a wide variety of data protection schemes and tape to cloud migration, thus eliminating the need to dedicate devices for specific backup purposes.

## Fully Automated Backup and Restore Operations

The technology within infni Qube brings a scalable, flexible, and high-throughput solution to backup and restore operations. No longer does operations staff need to monitor data movement.

infni Qube provides dynamic drive sharing, customer defined virtual tape policies, backup to local and remote sites or S3 compatible clouds, and a performance improvement over current backup methods.

## Multi-Platform Heterogeneous Environments

infni Qube emulates several standard front-end interfaces in which existing backup servers and applications can connect and control. Because infni Qube uses standard interfaces, backup servers can reside on nearly any platform and operating system in the market.

This includes all open platforms (x86 Intel® or AMD based systems) as well as IBM iSeries™ (AS400), IBM Power Systems™ (running AIX, Linux®, and i/OS), IBM PureSystems™ (running i/OS, AIX, Windows® and Linux) HP OpenVMS, HP UX, Sun® SPARC, and blade systems (running Windows, Linux and UNIX®). infni Qube also has custom developed interfaces for proprietary computing platforms such as IBM Mainframe (running zOS™ and Linux) and HP NonStop (Tandem).

## Remote Site Backup and Disaster Recovery

Off-site data storage is a necessary prerequisite in satisfying complete data backup and security. This can be accomplished by writing encrypted data to an S3 compatible cloud hosted offsite. Since the encrypted data is readily available in the cloud, restoring using infni Qube at a remote site can now be integral part of any disaster recovery plan, providing much faster data accessibility when compared to restoring from archival tape or even de-duped data from a Virtual Tape Library.

## Elastic Scalability

As backup requirements change, so too can infni Qube. Cloud backup allows immediate "on-demand" elastic expansion. Also, additional local disk cache can be introduced into the system, and throughput performance and higher availability can be achieved through the multi-node architecture. infni Qube will meet the needs of today and protect your investment by meeting a different set of needs tomorrow.

Want more information on the exciting new possibilities infni Qube offers? It's easy, just contact Jimmy Mathews at jm@3qubetechnologies.com, or call +1 817-354-8009. Email: info@3qubetechnologies.com; **www.3qubetechnologies.com**

***By Jimmy Matthews,*** *Chief Sales Officer, 3Qube Technologies*

# INTRODUCING

Network Kinetix
preData business assurance®

## Introduction

At Mobile World Congress 2015 (March 2-5, Barcelona), Network Kinetix will debut the world's first application set for NonStop X that enables customers to analyze and apply business assurance rules to situations and events as they form in the network – before they complete and exit as log records or transaction streams – so customers can set application-enabled policies and, based on the use case, control the outcome of the event itself while it is happening. *This is fundamentally different from analytical solutions that analyze streaming data sources to enable "real-time" data-driven decisions and actions.* **Network Kinetix delivers preData-driven analytics, and enables a predictable, measurable level of control and assurance over mission-critical business processes.**

PreData is a new paradigm that encompasses network activity and content as *it is being generated and not yet finalized* – while it is still in transmission – before it exits the network. By the time this data has become data streams, log records, or application events, it is too late to make decisions or take action that affect the outcome of that particular event. The preData approach with Network Kinetix moves the analysis directly to the formation of the event itself; business policies are applied before the data is completely finalized – with the result that enterprises can affect, assure, or control the outcome of the network activity for business assurance and revenue generating processes.

This has immense applicability and relevance to enterprises that rely heavily or entirely on networks and need to control revenue leakage, protect assets, generate net-new revenue pipelines, and successfully compete in the Internet of Things ecosystem.

Network Kinetix provides preData Business Assurance for the Internet of Things. Application demonstrations for Mobile Communications, M2M and mCommerce will be available at Mobile World Congress and upon direct inquiry to HP NonStop sales.

## Why use PreData when you can analyze 'data streams'?

Network Kinetix and a large mobile carrier conducting network fraud analysis on preData detected and prevented what would have been $1M USD in revenue losses in 24 hours. In contrast, with Big Data (post-event) analysis, the detection of this event resembles 'revenue loss analysis': where was the revenue lost, when and how? The fraud event would have been underway and the money already streaming out before detection began.

*"I didn't think anyone could have anything new for detecting telecom fraud – it's all been done before. But Network Kinetix does it differently and in a way that is innovative and effective. They detect it and they intercept it. It is disruptive." Rene Champagne, Director, Telecom Business Strategy HP, 2014.*

The field-proven telecom carrier success prompted the HP NonStop partnership: almost immediately, NKX solutions become mission critical to customers.

## Assuring & Controlling the Outcome

*Network data spans the Internet of Things: Mobile carrier signaling traffic, internet packets, POS transactions, video transmissions, mCommerce transactions, sensor data. Anything generated by or in a network, before it leaves the network.*

Business processing today occurs after the data has left the network. This is true even in streaming analytics environments, where the 'post-event' transactional or log data is simply continuously processed at the network edge before it is forwarded on. There is value in this data once it reaches the data center, as the explosion of Big Data tools for trending and data mining shows. (In fact, Layer (3) of the Network Kinetix architecture uses historical enterprise data to update a dynamic contextual scoring model for preData.)

Traditional post-event (streaming) systems detect events after they have happened (sometimes immediately afterwards); imagine the police never catching a burglar during a robbery, only showing up right afterwards to write a report.

Network Kinetix analyzes preData before any information exits the network, before events are actually 'closed' or 'completed': before they in fact, become 'data' as we traditionally understand it. In the case of the burglar above, PreData analysis detects any action (event) that indicates a robbery might begin. Detection of the 'robbery in formation' event enables authorities to interdict before it has completed, and prevent the robbery (change or control the outcome based on policies).

## Analogy

Many sports fans 'armchair quarterback' and yell furiously at the TV while sports commentators analyze the game. However, they cannot change the outcome of the game. Similarly, the data coming off a network and into an analysis engine or into a data center encompasses events that have *already happened*. No amount of processing, analysis, or 'quick response' is going to change the play on the field to affect the outcome of the game.

In contrast, the coach on the field gives instructions directly to the athletes. He is changing the strategy and his feedback as *each kick and each play unfolds*. His presence on the field (inside your network) is affecting the outcome of the game itself. The coach is preData.

### Don't armchair quarterback your business – get out on the field!

## Technology Overview

Originally designed for (and still available for Linux/Xeon), Network Kinetix quickly ported to NonStop Itanium and NonStop X, as many preData applications prove to be mission-critical: fraud and security, network operations, network QoS instrumentation, outage monitoring, and customer-facing applications.

The partnership was announced at NonStop Technical Boot Camp 2014 in San Jose where five preData Business Assurance applications were demoed on NonStop Itanium. All demoed solutions (both Itanium and X versions) are available for rapid, non-intrusive deployment to customer networks.

The Network Kinetix solution is three-layered, architected with highly parallelized SQL and C++ multithreading to form a high-performance grid scalable to any deployment (the fastest of networks, petabyte++ volumes) or customer topology. All layers deploy on industry-standard hardware and are designed for flexibility, fault tolerance and continuous availability.

### Layer (1) Ingest node(s):

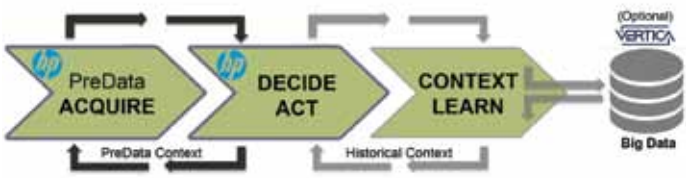
- Ingests all network preData (structured and unstructured) from any network source.
- Ingest node and mechanism is non-intrusive and non-disruptive to the network.

### Layer (2) Semantic and deductive reasoning node(s):

- Houses application logic; can contain multiple applications acting upon the same ingest preData source.
- Example: Layering fraud detection, network security, QoS and usage notification applications on the same incoming preData source to maximize customer ROI on deployment.
- Designed for maximum flexibility; customers can change analysis parameters/thresholds on the fly via user interfaces. The application itself can update analysis and PreData ingest rules in Layer (1) via learned/new conditions (see Layer (3)).
- Manages visualization and alerting/control instructions to any destination required by the application.

### Layer (3) Contextual/learning layer:

- Optional layer interfaces with Layers (1) and (2) through external Big Data lakes via open APIs if historical contextual reasoning and updating is required.
- Continuously updates logic and rules in Layer (2) based on the real world conditions being ingested in Layer (1) and the modeling and contextualization being applied against that logic.
- Example: Correlating the preData in mobile network fraud analysis against customer billing history to determine risk scoring in Layer (2), and updating Layer (1) to watch for newly relevant preData.
- *Network Kinetix will be demoing the integration of Vertica as a Layer (3) component at Mobile World Congress for next-step complex pattern detection and contextualization.*




Network Kinetix preData Analysis Architecture © 2015

Network Kinetix preData solutions are available on the following:

- HP NonStop Itanium
  - Enhance current deployments/infrastructure with new analytical applications
- HP NonStop X
  - NonStop fundamentals at a better price/performance point on a commodity platform.
  - Links all Network Kinetix preData layers with Infiniband for competitive performance infrastructure
- HP ProLiant
- Xeon/Linux

## Developing Analytical Applications

There are three paths to preData application development and deployment.

Network Kinetix has an existing suite of applications that can be rapidly implemented into most customer environments. These include applications for telecom fraud detection and proactive interception, subscriber billing services, network outage monitoring and notification, and network QoS instrumentation for optimization.

In the second case, Network Kinetix works with customers to build new solutions for preData analysis by adding application logic to Layer (2) and, if required, linking APIs to contextual historical data and models in Layer (3). This can be rapidly and iteratively trialed and deployed. The flexible architecture enables additional applications to be plugged into Layer (2) as incremental or net-new preData analytical needs are identified.

And finally, customers can develop their own applications within Layer (2) by utilizing a toolkit and APIs to enable deployment of rules and analytics quickly and easily.

## Deployment

Systems have been up and running in less than 4 weeks (and once onsite, online in hours), and providing immediate ROI and benefit.

### Non-intrusive & non-disruptive to the network

- No network reconfiguration required
- Does not affect, impact, or interrupt network
- No inline hardware probes
- Low cap- and op-ex vs. inline probes
- Seamless integration with existing NonStop implementations
- Quick integration/deployment with new NonStop implementations

*Inquire about running a trial of Network Kinetix preData applications on your current NonStop implementation or NonStop X upgrade.*

## Use Cases

Trial Evaluations are for a suite of applications for Mobile Communications/Telecom, M2M and mCommerce are available from Network Kinetix.

***Examples of use cases in these areas include:***

### Telecom:

- Fraud Detection/Proactive Interception
  - Revenue share fraud
  - Phishing & spamming, interconnect bypass
  - Misuse of network resources/authentication
  - Device cloning
- Network Operations
  - RAN instrumentation & automated optimization
  - Network core instrumentation & monitoring
  - Silent/dropped call
  - Network outage planning
  - Dynamic offload segmented by subscriber type
- CEM
  - Re-monetize OTT applications
  - ARPM instrumentation/optimization campaigns
  - Bill shock management/upsell
  - HVS services

*"Network Kinetix has allowed early fraud detection far before other systems, and identified several that other systems missed entirely." Chief Security Operations Officer, Tier-One Global Carrier, 2014.*

### M2M

- Detect power surges or failures in power lines & respond before fires or explosions
- Smart-grid: Consumer self-directed usage optimization
- Usage authentication and interception (e.g.: devices/SIMs)

- Device instrumentation & optimization

*"Within the Internet of Things framework there will exist critical sensors that will create mission-critical alerts. These are both context and time sensitive and Network Kinetix has a solution for detection and reaction." Justin Simonds, Master Technologist HP, 2014.*

### mCommerce

- BYOD payment systems
- Localization and personalization of offers
- Fraud detection/interception @ POS

## Conclusion

Network Kinetix and HP NonStop power a highly available, high performance analysis of preData inside customer networks to manipulate, secure, and control the outcome of business processes while the relevant data event is still in formation in the network and thus controllable. The greenfield opportunity for enterprises to play a leading role in the Internet of Things with this capability has measurable ROI and competitive advantage.

Join us at Mobile World Congress in Barcelona, March 2-5, 2015

Booth 8.OF17, across from Damm Bar | Interactive demos on NonStop X

Contact your NS rep

Or, contact Network Kinetix directly

Tissa Richards, CEO: +1.408.676.9116 | www.networkkinetix.com

## About Network Kinetix

Network Kinetix is headquartered in Austin, Texas, with offices in San Francisco, Latin America, and Australia. It was founded by leaders from Tandem Computers (multiple decades of senior leadership, field sales and technical design), enterprise software, data management, security, and telecoms innovators. With the explosion of the Internet of Things, the push of 'mobile' into so many verticals (mHealth, mBanking, mCommerce, mPayments) and enterprises reliant on network data, Network Kinetix recognizes that the only way to affect and control the outcome of critical business processes is to locate the analysis and decision-making where network information is generated: preData.

***By Tissa Richards,*** *CEO, Network Kinetix*

# INTRODUCING

# WebAction

## Helping You Gain a Competitive Edge with Streaming Big Data Analytics

Can the addition of rich context to your transactional data provide your company a competitive advantage? Are you currently being alerted to likely device failures before they happen using predictive real-time monitoring of your diverse and remote infrastructure? WebAction has partnered with HP to bring streaming Big Data micro applications that work in harmony with the HP NonStop ecosystem. When combining streaming Big Data and HP NonStop, no one is better at making all of your data available in real-time for targeted business logic than WebAction.

## About WebAction

The team at WebAction understands what it takes to create a secure, scalable, highly-available, enterprise-grade platform, with a background as executive management at GoldenGate software and WebLogic. WebAction founders have extensive experience providing data and applications solutions to Fortune 500 companies in order to maintain and support these mission critical NonStop environments.

WebAction is a real-time platform for building micro applications that generate continuous data insights. This unique combination of an agile development environment along with streaming data management and the capability to continuously deliver information will enable valuable new operational insights. Business users can now quickly react and adapt to constantly changing market conditions such as reassigning resources based on shifting activity, monitoring to assure that VIP customers do not experience inadequate service, and increased fraudulent activity in an area.

Unlike some other Big Data solutions, the WebAction platform focuses on simple and fast data acquisition with powerful real-time processing and analysis in a simple drag-and-drop development environment with a SQL-like query language. With built-in change data capture from SQL-MX, SQL-MP, and Enscribe

Our streaming data management engine continuously acquires, processes, and analyzes data from any source, including social feeds, industry feeds, log streams from servers and other hardware, change-data-capture streams, and HP NonStop. *This platform provides multiple delivery choices - so you can easily and quickly create dashboards, visualization, and set automated notifications -- providing continuous insights to what is going on within your infrastructure and other connected applications.* The highly scalable, end-to-end real-time platform is enterprise ready with all the security, availability, and reliability required by critical operational systems.

## WebAction and HP NonStop

The decision to partner with HP to support NonStop was an easy one for WebAction.

HP NonStop is the leader in continuous availability systems, and the most valuable data in the enterprise resides in NonStop. With the arrival of HP NonStop X, companies will continue to maintain this mission critical infrastructure vendor. WebAction makes new forms of Big Data accessible to NonStop and also makes NonStop data more accessible to applications in the Big Data ecosystem.

Our platform will acquire and manage any kind of data, structured, unstructured, and everything in between. Once the data is brought onto the platform, it is immediately available for use. Data types are assigned to the streaming data and the platform makes it easy to create windows on your streams and express business logic using a SQL-like language. Correlating multiple data streams and data sets is as simple as writing a SQL JOIN statement. This makes it easy to bring multiple different kinds of data together for a real-time view of everything in your enterprise.

WebAction brings a new dimension to NonStop, ***micro applications***. Access the data flowing through your NonStop systems with very low latency, and very little impact to the source NonStop system to build small targeted applications that react to changes in their environment in real-time. The most valuable data in the enterprise is now immediately and securely available for use by people in departments across the enterprise such as: operations, customer experience, marketing, risk, and supply chain. Because each micro application has a specific focus, they are quick to develop and deploy, and even faster to modify and build upon to suit ever-changing business requirements.

Micro applications are also meant to be small in scope, for example only correlating or enriching a few pieces of data to send to other connected micro applications. The power of the micro application comes not only from its surgical precision of solving a single problem, but also with scale. Complexity is increased by adding additional purpose-specific micro applications, each accomplishing focused tasks, rather than adding ever-deeper and more complex logic into a single code repository. The micro application methodology enables an application environment where building block micro applications can be added incrementally as the use case evolves. Micro applications keep specific business logic precise and allow for a "right tool for the right job" mentality when selecting, building, and modifying a gang of micro applications to be tailored to your specific use case.

## Use Cases

So what can be done with streaming Big Data in the context of NonStop? Some general themes come to mind as we think about use cases.

- Anomaly Detection: Pulling historical norms from data stores to compare against signatures of current events, triggering real-time alerts when issues arise
- Predictive Analytics: Analyzing real-time data streams to build predictions about future events. Predictions are refined as time progresses.
- Stream Filtering: Filtering by either removing data fields from a stream, or by shortening fields in a stream
- Stream Enrichment: Adding history or context data to make a piece of data more robust or otherwise actionable
- Stream Aggregation: Monitoring of specific data streams for specific events
- Stream Correlations: Combining 1-n data streams and data sets using specific data element, in real-time.

## WebAction Micro Applications

WebAction technology is being deployed to address real-world use cases, for instance:

Financial Services: A financial services company has used the WebAction platform for enhanced login security management. By reviewing the credentials a user provided to log into the VPN and comparing them to the same session credentials the user provided to log onto the order execution platform, the financial services company has added a layer of security. Currently, most IT infrastructures allow valid credentials at both levels, but do not compare whether they are consistent across systems (unless the same vendor provided both products). Two other use cases evolved out of this micro application, one to monitor internal failed login attempts by user ID, and the other is failed login attempts from specific IP address (regardless of the user credentials), all of this is now available to take action in real-time.

Financial Services: WebAction has built a micro application to recalculate the portfolio values of every margin account with every tick of the market, continuously assessing positions and margin calls. In a typical workflow, customer portfolio values are recalculated at the time of a trade or at the end of the day. Now the institution can take action to unwind an unfavorable position before the markets close for the day.

Financial Services: Our ATM application, a specific example of remote device monitoring, continuously monitors signals indicating potential failure of machine components and alerts technicians in real time. It also enables financial institutions to reduce costs by upgrading components as necessary rather than on a set schedule. The application correlates events across application, network, and other log streams providing predictive analytics in lieu of preventative maintenance.

Telecommunications: WebAction is monitoring live mobile operator Call Detail Records to ensure that the absolute best quality of service is provided to the carrier's VIP customers while roaming on other carrier networks. The CDR data streams are arriving in the carrier data center in real-time from all of the roaming partners, and of course each partner stream has a different data format. WebAction acquires all of these streams and parses out the relevant data and turns them into a uniform stream with common data definitions. Once the data is acquired, the streams are correlated in real-time with call error data streams and enriched with the VIP customer list. Now in milliseconds the carrier understands if one of their VIP customers has an issue with one of their roaming partners, and can take immediate corrective action.

Telecommunications: A WebAction partner has embedded the platform into their innovative mobile telecommunications product, monitoring customer experience management at the end-point device. Every device on this carrier's network is transmitting signal quality information in real time as it relates to mobile app usage. This information is acquired and aggregated in real-time by the WebAction Platform, offering immediate analytics and continuously persists to storage for after-the-fact BI reporting.

Data Center Monitoring: In a world where systems and services are being migrated to the cloud, how do we monitor those cloud services to ensure the required SLAs are being met? WebAction has built several private cloud monitoring tools that capture activity streams to monitor the most granular level of activity and present the data back in streaming dashboards. KPIs, like response times and activity, are tracked for every API call in real time giving a more thorough understanding of what is happening outside of the physical data center.

Retail Applications: Adding rich context to transactional data creates an opportunity for real-time marketing offers. Knowing what the customer is searching for is valuable data and the most significant marker of interest. When a consumer is shopping in the online store, deals for overstock inventory are offered before having to be heavily discounted or shipped back to a central warehouse for discount outlet processing.

## WebAction Benefits

Using the WebAction real-time platform allows companies to swiftly identify and act on perishable insights. Streaming data management, continuous delivery, and agile development are core to our offering and are all designed to make the business user more adept at capturing value from streaming data, including HP NonStop. Micro applications keep your business logic compartmentalized for ease of maintenance and transparency. Finally, the entire platform is blazingly fast because it all runs in-memory (with the exception of optional persistence to disk, of course). Companies can now respond to complex correlated events from across their enterprise, milliseconds after events occur. This capability opens new doors for automating real-time responses to all types of events or anomalies.

To find out more about WebAction use cases and deep technical information, visit our website: www.webaction.com and navigate to the Resources page.

***By Sami Akbay,*** *Executive VP & Founder, WebAction*

# A NonStop Success Story:

## Cass Information Systems Uses SOAPam® to Modernize Their Operations

**Gabrielle Guerrera** >> NuWave Technologies

Great companies achieve success because they focus hard on their core business and outsource onerous tasks like paying complex bills. However, for companies like Cass Information Systems, paying complicated bills is their core competency. In fact, they are the leading provider of payment services for the utility, telecom, financial and transportation industries. Cass leverages the latest technologies to ensure that their clients' bills are paid accurately and on time. In addition to processing the transactions, the company also provides management reporting to help its clients better manage expenses in their target areas.

Cass, like most NonStop users, relies on the NonStop platform to meet its stringent performance, scalability, and availability requirements. And on the software side, SOAPam Server and SOAPam Client (from NuWave Technologies) allow them to leverage the power of Web services on their NonStop systems. Jim Crowley, manager of the internal programming department at Cass, notes, "We are a technology-driven company, so it's important for us to have leading-edge solutions." SOAPam Server and SOAPam Client are two of those cutting-edge products.

Blending Environments and Exceeding Expectations

Several years ago, Cass embarked on an ambitious program to web-enable its NonStop applications. "We purchased SOAP/AM Server and SOAP/AM Web Service Client [now SOAPam Server and SOAPam Client] because we were confident they could help blend our Windows and NonStop environments, protect our IT investment, and enhance the efficiency of our operations," states Crowley. "They have met our expectations, and then some."

Tom Schaper, a project leader in Cass' NonStop department, offers a concrete example: "We routinely receive requests from users to accelerate payments on a given set of bills." In the past, to handle this request they would have had to write a custom program to extract (from their invoice file) and modify the specific set of bills. However, using NuWave's SOAPam products, Cass was able to build a browser interface that would communicate directly with programs running on their NonStop server. "Users now have access to the tools they need to perform these tasks quickly and efficiently," declares Shaper.

Using a browser interface to communicate with Pathway applications is one of the most common uses for SOAPam, but there are many other ways to benefit from Web services using the SOAPam suite. McKesson Corporation, the oldest and largest healthcare services company in the US, uses SOAPam to integrate order entry and tracking functions with their backend Pathway order processing application. In McKesson's case, as with many SOAPam users, they evaluated other solutions—specifically HP NonStop SOAP and an open source solution—before trying SOAPam. They had been trying for two or three weeks to install and demo a simple Web service, without success, before downloading SOAPam. They installed and configured SOAPam Server in three hours, and a *junior developer* with no knowledge of the NonStop environment successfully demonstrated a Web service client within six hours.

Another one of our customers uses SOAPam for many different purposes. SOAPam Server acts as a frontend internet portal for external clients in order to create foreign exchange transactions, capture third party SWIFT payments in numerous currencies, and allow account detail and balance inquiries. It is also used internally to access information from either a single instance or multiple instances of one of their mission-critical Pathway applications, in a single, modern user interface. This customer evaluated solutions from HP and Attunity, but found that the SOAPam products provide:

- An easy, secure interface in which to configure Web services
- Configuration of Web service methods using DDL
- The ability to wrap Web service methods within a TMF transaction
- Security using IP filtering and data encryption
- Conversion of Web service configuration into a WSDL, which can be accessed by external consumers
- Access to Pathway servers
- Server process that can be used to consume external Web service methods

Yet another example of how SOAPam can be utilized is to add new functionality to a NonStop server and its applications. One of our users in the energy industry provides a great use case. They were given a very tight deadline to develop a SOAP interface for sending data to a government website; they chose SOAPam to allow their NonStop applications to send SOAP messages to other systems, both internal and external to the company. They also replaced their existing file transfers with real-time interfaces, and this functionality allowed their non-critical NonStop servers to be seen as a standard platform that is in line with their corporate IT strategy. On top of that, SOAPam negated the need for them to install OSS, and so saved them on machine overhead.

As you can see, the benefits of web-enabling your NonStop applications are very broad. However, back at Cass, they are as clear as daylight: "Anyone with the proper authorization can access our NonStop services, run queries, or perform maintenance," says Schaper. "It significantly broadens the availability of our system to the user base." This access can be achieved from any platform, and yet is completely secure due to built-in security features like SSL and TLS, as well as optional IP filtering and user login. Today Cass' users are internal, but if there was a need, access to select services could easily be expanded to external users like business partners or customers, and as always, this access would be subject to strict security controls.

According to Jeff Hopkins, director of IT for freight services

at Cass, SOAPam also benefits new IT employees. "We realized that we had a confusing array of interfaces," he says. "We were presenting TACL, SCOBOL, various network-hosted applications, and our own portal. By creating web front ends, we can present a common, consistent interface to our users, making it possible for them to become productive much more quickly."

## A Little Like Windows

Cass, like our other customers, also investigated other middleware solutions before deciding to go with NuWave's SOAPam product set. "Using the other solution would have required us to purchase, install, and learn several packages," recalls Schaper. "Each package involved an investment in time, and a pretty steep learning curve. Once we had a short demo of SOAP/AM, we were able to use it within a half hour. It made the purchase decision very easy."

Indeed, to make things easy for our users, we've made download and installation similar to those of typical Windows® applications, as is the ongoing use of our products. Schaper clarifies:

> *"We can use SOAP/AM [Server] to expose existing NonStop server applications to the web without changing them at all. Using the SOAP/AM browser interface is very intuitive. The process of setting up a new Web service is as simple as answering a series of questions as it guides you through the process. It literally takes less than five minutes to set up and test a new Web service. All of this requires no changes to the NonStop application or its configuration, allowing us to leverage our legacy applications in new ways."*

For Cass, SOAPam Server and SOAPam Client have not only performed as advertised, they've also delivered some pleasantly unexpected surprises. Because they run the Guardian operating system, which has unique file structures, utilities, and commands, SOAPam gives users that are not familiar with the Guardian OS the ability to work with these files by presenting them in the familiar Windows Explorer file/folder structure. Schaper explains that once SOAPam is installed and running on the NonStop, all interaction with the product is accomplished via the browser interface. "This interface delivers security, functionality, and sophistication without the need to memorize commands or settings."

## SOA Made Easy

The service-oriented architecture (SOA) concept is a big part of the value proposition of NonStop, and many of you probably already use this method of development. SOA is a way for corporations to rethink the way in which they deliver services throughout the enterprise—a way to enhance business agility while protecting your existing IT investment. The NonStop platform lends itself well to implementing a service-oriented architecture. Existing NonStop server applications can be readily exposed as services, thereby modernizing the applications and increasing their value to the enterprise, without users having to reengineer them.

At Cass, services come into play in many areas. For example, they are used to match images of bills with associated electronic data. "All of the business logic is included in a Web service," says Crowley. "Then the interface, whether it's a browser or a desktop client, talks to the Web service to get its answers: decisions on security, bills that are available for processing, and so on. The web or desktop client deals only with the presentation, not the business-level decisions."

## The Future of Bill Payment

Cass strongly recommends NuWave's products to other NonStop users who want to modernize their applications or are on the cusp of implementing an SOA strategy. "You want an easy way in, and this is the easiest and most cost-effective way," states Schaper. "The learning curve is so minimal with SOAP/AM that you can be up and running quickly. You don't have that long investment in time and energy trying to get another solution to work. The product works right out of the box, and everything is designed for ease of use." Not surprisingly, Cass has big plans for SOAPam going forward. According to Hopkins,

"Some of the applications we have on the drawing board will provide interfaces to better manage security, improve system configuration, pay bills more quickly, monitor service level agreements, handle exceptions more smoothly, and accelerate or 'force' the payment of specific bills. It's all about giving users more visibility into what's happening on the NonStop system in a real-time fashion and pushing that out in a secure, standards-based interface that they're comfortable using."

Crowley's overall impression of NuWave as a business and a technology partner is overwhelmingly positive. "I'm impressed," he concludes. "NuWave has a great product. It's easy to use and requires very little training. We basically have two platforms: Windows and NonStop; and [SOAP/AM] allows us to blend the functionality contained in both of those platforms and make it one. It's been great—I really can't say enough about it."

*To learn more about SOAPam, go to:* www.nuwavetech.com/connection

*Gabrielle has been an employee of NuWave Technologies for five years and a regular contributor to The Connection for over a year. She is an enthusiastic young member of the NonStop community, and shares stories about the latest innovations in the NonStop space (from all vendors) on her blog, which can be found at www.nuwavetech.com/hp-nonstop-innovations.*

# Hellenic Bank Web-Enables Its Legacy NonStop Applications

**Chris (Smith) Anderson** >> President/CEO >> Crystal Point

Hellenic Bank, headquartered in the Republic of Cyprus, has been a long-time HP NonStop user. Its NonStop banking applications date back to the green-screen days and in the past required complex interactions between multiple screens in order for a teller or other employee to perform a single task. The bank wanted to provide its staff with new banking applications that exhibited a modern look and feel, that were intuitive and easy to use, and that could permit the incorporation of additional banking functionality.

Hellenic accomplished its goal by turning to AppViewXS from Crystal Point. Not only did the bank succeed in replacing its green screens with modern GUI interfaces, but it also web-enabled its legacy applications to support many additional functions. Today, Hellenic Bank's legacy NonStop banking applications can be accessed securely and reliably anywhere and anytime via a standard web browser.

A striking example of web-enabling these applications can be seen in the logon screen displayed in Figure 1:

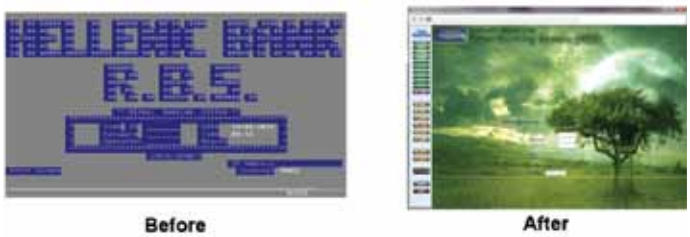



Figure 1: Logon Screen

## Hellenic Bank

Founded in 1976, Hellenic Bank Public Company Ltd. is the second largest bank in Cyprus. With over 1,400 employees and assets of almost nine billion euros, the bank not only weathered the recession of 2008 but also successfully passed the European Union Bank Stress Test. Satisfying the stress test is indicative of the bank's healthy financial position and reflects its ability to maintain strong capital adequacy even in the worst-case scenarios.

The bank offers a myriad of services to its customers. Its products include consumer and corporate banking, credit-card services, ATMs, mortgage loans, factoring, insurance, wealth management, portfolio management, investment banking, and brokerage services. It is listed on the Cyprus Stock Exchange.

## The Bank's Legacy Applications

Hellenic Bank operates two major applications on its NonStop systems – the Financial Banking System (FBS) and the Retail Banking System (RBS). Twelve different banking services are supported by these applications, including personal banking, business services, corporate banking, Internet banking, card/ATM services, and insurance services.

In the past, tellers and other employees of the bank accessed these services via Tandem 6530 terminals – dumb legacy terminals with "green screens." On the average, 800 to 900 staff members were logged on at any one time, with a peak load of 1,200 connections. A staff member often had to access multiple screens and combine the data from these screens to complete a task. The manual processing of requests could be confusing and error-prone.

Thomas Stylianou, Hellenic's head of Information Technologies, recognized that in order for the bank to maintain its competitive standing, change was needed in the area of customer service and via the incorporation of emerging technologies into Hellenic's banking applications. Its legacy banking applications suffered from several challenges:

- The green-screen interface was restrictive, confusing to learn, difficult to use, and error-prone. This affected the level of service offered to the bank's customers.
- Several new technologies, including signature verification systems and check-reading machines, could enhance the bank's processing of customer activities. However, incorporating these technologies into the legacy banking applications was prohibitive both in terms of cost and time.

Under Mr. Stylianou's leadership, the bank's IT Steering Committee embarked on a project to modernize Hellenic's legacy applications.

## Web-Enabling Its Legacy Applications

### The Search for a Solution

The Steering Committee examined several approaches to modernization:

- *Third-party banking applications* were considered. However, this approach was rejected because Hellenic Bank preferred the specific functionality of its own applications. It was important to the bank to retain control over functionality, ongoing maintenance, and enhancements.
- *A complete rewrite* would be too costly, would take too long, and was too risky.
- *Doing nothing* would not achieve the goals of the bank.
- *Opening the banking applications to the Internet* via web browsers and a web server appeared to be a viable solution. A web server could use the 6530 terminal interface of the NonStop server to access application services. The web server could provide browser-based screens that incorporated data from several green screens into common, intuitive GUI screens for the client PCs. The web server could integrate other systems into the information flow to the browsers.

The IT Steering Committee evaluated several products designed to web-enable NonStop legacy applications. After a thorough evaluation, the Committee selected AppViewXS from Crystal Point. AppViewXS is a web-server application that communicates between NonStop legacy services and browser-based client systems. The AppViewXS selection was based on several factors:

- Hellenic Bank had been a customer of Crystal Point for many years and had used its OutsideView product to deliver 6530 green screens to users.
- Prototyping indicated that AppViewXS could web-enable the NonStop applications with little if any changes to the NonStop legacy code, an extremely important consideration. No change in the core functionality of the banking applications would be required.
- AppViewXS allowed rapid and incremental deployment of new GUI screens, with no need for a "big bang" conversion. The web enablement could be accomplished in a controlled fashion, screen-by-screen, over any period of time.
- AppViewXS is a Java application. Therefore, new Java-based banking tools could be integrated easily into the data stream.
- AppViewXS requires very little programming effort. It is configurable via drag-and-drop controls and is extensible via a built-in scripting language.

## The Web-Enabled System

The use of AppViewXS to web-enable Hellenic Bank's NonStop legacy applications is reflected in Figure 2. The bank chose an Apache/Tomcat web server to host AppViewXS. Two such servers are provided for redundancy.

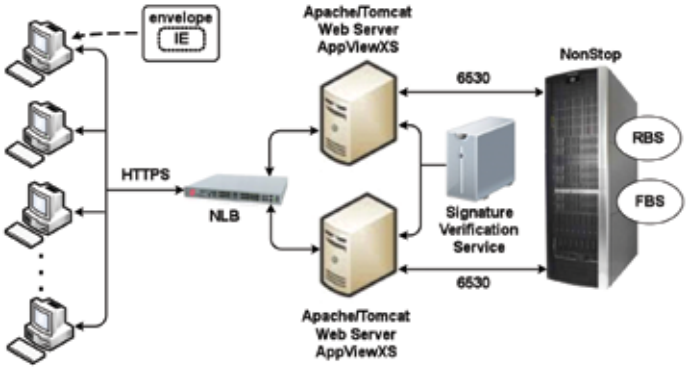



Figure 2: The Web-Enabled NonStop Legacy Banking Applications

AppViewXS communicates with the NonStop server as if the server were a collection of 6530 terminals. Via the 6530 protocol, AppViewXS can access and update any of the services provided by the RBS and FBS banking applications.

Via its configured services, AppViewXS responds to a user request by gathering the required information from one or more 6530 screens, creating the desired GUI screen, and sending the resulting GUI screen to the requesting browser. Likewise, GUI screens returned from the browser are parsed; and the data contained in the screens is used to populate appropriate 6530 response screens that are then sent to the banking applications.

Traffic flowing between the client PC browsers and the AppViewXS web servers uses the HTTPS protocol to ensure maximum security. Messages are compressed to optimize response times. During the logon process, the requesting browser's IP address is captured and placed in the logon screen. This allows the legacy banking applications to control access to the system and to determine the location and department of the user for routing of unsolicited messages requesting user action.

Browser traffic is directed to a Network Load Balancer (NLB), which distributes requests to the two AppViewXS web servers on a round-robin basis. Both web servers are configured to handle all of the browser traffic. Should one of the web servers fail, all requests are simply routed by the NLB to the surviving server. There is no single point of failure.

Since AppViewXS runs on its own web server, there is no additional load on the NonStop system. The only activity of the NonStop applications is to process 6530 screens just as they did before web-enabling.

The Signature Verification Service shown in Figure 2 is described later.

## Modifying the Browser Look-and-Feel

The bank wanted to hide the controls of the Internet Explorer browser that it was using in the client PCs to avoid confusion and errors on the part of the users. It therefore developed a C++ application to host the browser. The application acts as an envelope around the browser and removes all unnecessary IE information and buttons. Users see in their GUI screens only the data fields and controls that are important to them.

## Unsolicited Messages

A key challenge in the bank's use of web-enabling was that it had to send host-initiated unsolicited messages to users to direct them to take immediate actions such as authorizing a transaction. These messages were to appear in a special window at the top of the GUI screens. Unsolicited messages were not an issue with the legacy 6530 terminals, but such messages generally are not a capability of the Web. Pop-up windows are the closest thing, but they would hide active areas of the screen and would interfere with user activity.

In cooperation with the bank, Crystal Point integrated a custom program into AppViewXS to accept unsolicited messages from the NonStop applications and to insert them into the messaging windows of the GUI screens being returned to the user. A history function also was implemented to allow users to see previously received messages.

## Integrating Other Banking Tools

Many new and useful banking tools are now appearing on the market. The bank wanted to take advantage of these tools


Figure 3: Signature Verification Pop-up

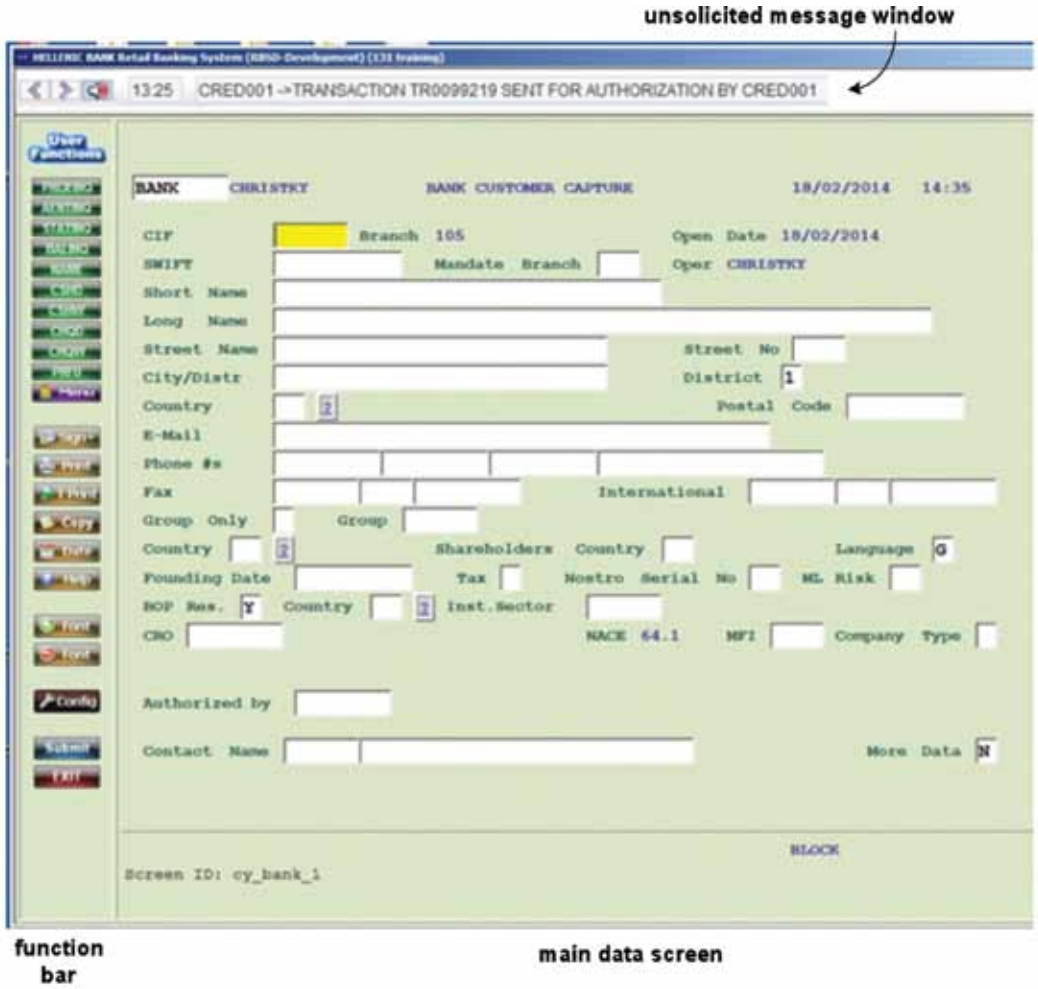



Figure 4: An Example of a Hellenic Bank Web-Enabled Data Screen

by integrating them into its banking applications. However, to modify its existing legacy applications to use these tools would require major coding changes. Such changes would be risky, expensive, and time-consuming.

AppViewXS provided a convenient solution to this conundrum. The systems hosting the new technologies can communicate with AppViewXS directly in the web browser. AppViewXS then can be configured to integrate these services into the screens sent by AppViewXS to the client systems.

The first such tool to be integrated was a Signature Verification System, shown in Figure 2. When a user at a browser requests a customer's signature, the signature appears in a pop-up window, displayed here in Figure 3.

Via the same AppViewXS-assisted process, the bank is now considering adding check-reading machines to its banking applications.

## The New User Interface

An example of the new user interface is shown in Figure 4. The interface comprises a main data screen and a function bar to the left of the data screen. At the top of the data screen is the window for unsolicited messages. Note the absence of Internet Explorer controls.

The function bar provides the following:

- User functions – The user can select ten favorite Banking System functions for easy access.
- Sign + sends the customer identification to the Signature Verification System, which returns the customer's signature.
- Print generates a document containing the contents of the screen and sends it to a printer connected to the user's computer. This can be used to create official documents such as Letters of Guarantee. The Print function takes advantage of AppViewXS' capability to pass data to a client browser without having to display the data to the user.
- T-Print generates a print-screen function of the current screen and directs it via the NonStop spooler to a designated printer on the Banking System network.
- Copy generates a document containing the screen contents and places the document in the Windows Clipboard for use by other applications such as Microsoft Word.
- Date pops up a calendar from which the user can select a date to be entered into a date field on the screen.
- Help provides a relevant online Help screen for the specific Banking System function being displayed.
- +Font/-Font changes the font size among five choices.
- Config allows the user to select background colors.
- Submit sends the information on the screen to the NonStop host.
- Exit terminates the application.

The screen background color can be changed to draw the attention of the user. Field colors can be changed to make them easier to read.

Right-clicking on the screen (left-clicking for left-handers) provides a windows menu that is context-aware of the application screen.

## Benefits Achieved by Web-Enabling

The bank realized several benefits by web-enabling its legacy banking applications:

- It reduced its training costs for new employees. The banking application interfaces are now much more intuitive.
- It reduced its support costs. Many enhancements now can be made in the Java-based AppViewXS application rather than having to modify legacy code in the NonStop system.
- It improved employee perception and satisfaction and increased customer service by providing intuitive, easy-to-use banking applications.
- It positioned itself to integrate future technology such as check-reading machines into the banking applications.

Constantinos Papadamou, Manager of Network, Systems & Technical Support, stated:

"The key advantages of this approach are a friendly, graphical interface for our employees. They have been asking for mouse capability, drop-down lists and the like in our core applications. Now we can make them happier and require less training while experiencing fewer errors and fewer help-desk calls."

## AppViewXS

AppViewXS is a Java application that web-enables a legacy system with little if any changes to the legacy code. It employs the legacy terminal interfaces of the system (Tandem 6530, IBM 3270, IBM 5250) to access the system applications, and it converts the interfaces to powerful and flexible browser interfaces for use by client PCs. AppViewXS' conversion between legacy and GUI formats is aided by a flexible drag-and-drop configuration utility and a powerful scripting language.

AppViewXS provides security over the Internet through the use of the HTTPS protocol. It can also encrypt traffic between the web server and the host via SSL or SSH2. AppViewXS can run on a variety of web-server configurations. Supported server platforms include Windows, Solaris/Unix, and Red Hat/Linux systems. AppViewXS can run on NonStop iTP, Apache, and Microsoft IIS web servers under Tomcat or IBM WebSphere. Compatible client browsers include Internet Explorer 5.0 or higher and Netscape Navigator 4.75 or higher.

Crystal Point (www.crystalpoint.com), formed in 1986, is headquartered in Bothell, Washington, U.S.A. The company offers a full range of host-connectivity solutions, from host-access products performing terminal emulation to solutions for rejuvenating, repurposing, and integrating multiple legacy applications.

## Summary

Crystal Point's AppViewXS solution allowed Hellenic Bank to web-enable its NonStop server-based FBS and RBS legacy banking applications. This modernized the bank's years-old legacy applications, with measurable improvements in functionality, accessibility, and security. The modernization effort was accomplished with no significant changes to the underlying legacy applications.

The result has been: (1) an enhanced experience for the bank staff via the new GUI screens, (2) the ability to incorporate new banking technologies, and (3) reduced support and training costs. The applications are easier to learn and trigger fewer technical issues. AppViewXS replaces the complex and confusing legacy green-screens with a browser-based modern, efficient, and intuitive GUI interface for the system's users.

*Founded in 1986 by Fred Stephens and Chris Smith Anderson, Crystal Point's first dos-based product emulated over 25 terminals. In 1990 Tandem contracted Crystal Point to develop the first GUI-based Tandem emulator for OS/2 and Windows, OutsideView. Our software solutions have now expanded by developing AppViewXS, our legacy modernization software tool.*

# SQLXPress

## Not just another pretty face

An integrated SQL Database Manager for HP NonStop.

Single solution providing database management, visual query planner, query advisor, SQL whiteboard, performance monitoring, MXCS management, execution plan management, data import and export, data browsing, and more...

With full support for both SQL/MP and SQL/MX

XYPRO
Mission Critical Security

Learn more at
**xypro.com/SQLXPress**


# How Does Failover Affect Your SLA?

**Dr. Bill Highleyman** >> Managing Editor >> Availability Digest

Service Level Agreements (SLAs) usually include a limit on the amount of downtime that is tolerable for an application. Each application typically has its own SLA requirements. The SLA may exclude certain types of downtime, such as for periodic maintenance (planned downtime). It may also apportion the downtime calculation over the number of users impacted. For instance, if an hour of downtime affected only half the users, then the outage counts as a half hour of downtime.

## Specifying Downtime

Often, rather than specify the allowable downtime, the SLA instead will stipulate the required uptime as a certain number of 9s. For instance, a requirement for an uptime of three 9s means that the application will be available 99.9% of the time. That is, the SLA will allow only 0.001% of downtime annually. This is equivalent to being down 8.76 hours per year.

The equivalence of uptime measured in 9s to downtime per year is as follows:

| | |
|---|---|
| Two 9s | 87.6 hours per year |
| Three 9s | 8.76 hours per year |
| Four 9s | 0.876 hours per year (52.6 minutes per year) |
| Five 9s | 5.26 minutes per year |
| Six 9s | 0.526 minutes per year (31.5 seconds per year) |
| Seven 9s | 3.15 seconds per year |
| Eight 9s | 0.315 seconds per year |

An easy way to remember this table is that five 9s equals five minutes. Multiply by factors of ten or divide by factors of ten to obtain approximate values for the other entries.

Field experience shows that today's systems offer inherent availabilities in the range of three to four 9s. Windows and Linux servers generally deliver availabilities of 0.999 to 0.9995. Fault-tolerant systems like HP NonStop and Stratus ftServers provide availabilities of 0.9999. This is not to say that the hardware or operating systems of these platforms have such availabilities. Platform availabilities can range in the six to seven 9s. Instead, it may be other factors that reduce availability – application faults, operator errors, power and cooling outages, etc.

## Improving Availability via a Backup System

Clearly, if an availability greater than the inherent system availability is required, there must be a means to continue operation in the presence of a system failure. This is often accomplished via a backup system to which application processing can fail over in the event of a production system failure. However, bringing the backup system online takes some time. How does that time affect the overall system availability? We explore this question below.

## Your New SLA

Let us consider an illustrative example. You head your company's IT department. Meeting the availability requirements of the application SLAs is your responsibility.

You are currently running your critical applications on a NonStop server. You are confident that your applications will exhibit high availability – after all, NonStop servers are fault-tolerant. They will survive any single fault in the system. Your experience is that your NonStop server will fail about once every five years and will take about four hours to return to service. This represents an average downtime of 0.8 hours per year or four 9s of availability.

Your company is launching some new mission-critical applications, the SLAs for which call for an availability of six 9s. This represents 30 seconds of downtime per year or 2.5 minutes of downtime every five years (our assumed mean time between failures, or MTBF). Clearly, you need a second system to back up your active production system.

## Active/Backup Systems


An active/backup system comprises two nodes – a production node and a backup node. The production node normally runs the application. The backup node may be performing other work, such as that used for development. Should the production node fail, application processing is moved to the backup node. This is called *failover*.


Will an active/backup system provide the availability required by the new SLA? Your applications are still up if the production node fails because the backup takes over. However, your applications are down if both nodes fail.

What is the probability of a dual-node failure? The probability that one node with four 9s availability will fail is[1] (1 – 0.9999) = 0.0001 = $10^{-4}$. The probability that both nodes will fail is $10^{-4}$ x $10^{-4}$ =

[1] Note that the exponent of the failure probability is the number of 9s of availability.

$10^{-8}$. Thus, the redundant system has an availability of eight 9s, easily meeting your new SLA. Right?

Think again. You can achieve eight 9s if the backup node can take over instantly. But it can't!

## Recovery Time


It takes a while for a backup node to take over processing. This is called *recovery time*. During the recovery, applications are down. Downtime becomes greater; availability becomes less. It is therefore imperative to reduce recovery time.

What must be done to bring up the backup node? Let's assume that the backup database has been kept up-to-date via data replication (tape backup can take hours to days to restore the database). The first step is to decide whether or not to fail over. What caused the production node to fail? Is it better to wait for it to get repaired, or will it be faster to bring the backup node online? This often requires a management decision and adds to the recovery time.

If the decision is made to fail over:

- Any work that the backup node is doing (such as development) has to be shut down.
- Applications have to be loaded.
- Networks have to be reconfigured.
- The database has to be mounted.
- The new production node has to be tested.

The above procedures describe a *cold standby*. Typical cold-standby recovery time is one to three hours.

Recovery time can be minimized by:

- preloading the applications on the backup node (this is called a *hot standby*).
- scripting backup procedures to minimize manual efforts (and errors).
- ensuring that the backup database is current and consistent (use a suitable data replication engine).
- practice, practice, practice.

By using these techniques, recovery time typically can be reduced to anywhere from ten minutes to one hour.

## Failover Faults


However, one other factor that affects the availability of an active/backup system is failover faults. A failover fault occurs if the backup node cannot be brought online. In this case, we have a dual-node failure.

There are many causes of failover faults:

- Backup failure – the backup node has failed, and no one noticed.
- Configuration drift – changes made to the active node did not make it to the backup node.
- Script error – a failover script was wrong or out-of-date.
- Operator error – an error was made in a manual part of the failover procedure.

Failover faults can be minimized by periodic testing. However, many companies consider this to be a risky and expensive procedure. Applications are down during failover testing. What if things go wrong, and the active node cannot be brought back online? As a consequence, failover testing is typically done during off-hours. In addition, the availability of all senior staff must be ensured in case the failover fails.

Because of these factors, failover testing is often not thoroughly performed. Some companies never test failover – they depend upon faith and hope.[2] Without periodic testing, failover faults are all too likely to occur and represent a serious impediment to high availability.

## An Availability Analysis

Let us analyze the impact of recovery time and failover faults on availability. We are going to use a little math, but we will keep it to a minimum. If you are mathematically challenged, ignore the math. You will still be able to understand the results.

In an active/backup system, there are three ways in which an application can be down:

- Both the active and backup nodes have failed.
- The applications are in the process of being recovered on the backup node.
- A failover fault has occurred.

Let us calculate the expected amount of downtime for an application. Let:

| | |
|---|---|
| *f* | be the probability of failure of a node. |
| *mtbf* | be the mean (average) time between failures for a node. |
| *mtr* | be the mean (average) time to recover to the backup. |
| *d* | be the probability of a failover fault. |

### Case 1: Dual-Node Failure

The probability that one node will fail is f. The probability that both nodes will fail is f x f = $f^2$:

probability of a dual node failure = $f^2$

In our example, a node has an availability of four 9s. Therefore, the probability of failure of a node is (1 – 0.9999) = 0.0001 = $10^{-4}$; and the probability of a dual-node failure is $10^{-4}$ x $10^{-4}$ = $10^{-8}$:

This represents an average downtime of 0.3 seconds per year or 1.5 seconds every five years (our assumed *mtbf*). Note that this is an average. With a nodal downtime of four hours, the system will be down for four hours every 72,000 years. Dual-node failures are not very significant.

### Case 2: Recovery Time

In our example, the active node fails once every five years (*mtbf*). Applications will be down during the time it takes to recover to the backup node (*mtr*). Therefore, the probability that an application will be down during recovery to the backup node is *mtr / mtbf:*

probability of being down during recovery = *mtr / mtbf*

Let us consider a recovery time of thirty minutes. We will

[2] An excellent counterexample is Mayo Clinic. On a quarterly basis, Mayo fails over and runs on the alternate system until the next failover time (switch-and-stay, a good best practice). As a result, Mayo achieves a recovery time of fifteen minutes and has virtually no failover faults. See Tackling Switchover Times, Availability Digest; October 2006 – http://www.availabilitydigest.com/public_articles/0101/tackling_switchover_times.pdf

be down thirty minutes every five years while applications are recovering to the backup node.

### Case 3: Failover Faults

In our example, the active node fails on the average of once every five years (*mtbf*). The probability that the active node has failed is *f*. The probability that there will be a failover fault when the active node fails is d. Therefore, the probability of a failover fault is the probability that the active node will fail AND the probability that a failover fault will occur:

probability of a failover fault = $f \times d$

In our example, the probability of the active node failing, *f*, is $10^{-4}$. Let the probability of a failover fault following the failure of the active node be ten percent (0.1). One out of ten failovers will fail. This means that there will be a failover fault every fifty years on the average. (Note that this implies that effective failover testing has not been done.)

Thus, the probability of a failover fault is $10^{-4} \times 10^{-1} = 10^{-5}$. This is five 9s. Five 9s is a downtime of five minutes per year or fifteen minutes every five years.

### Summary of the Analysis

To summarize the analysis, we have:

probability of a dual node failure = $f^2$
probability of being down during recovery = $mtr / mtbf$
probability of a failover fault = $f \times d$
probability of application downtime = $f^2 + (mtr / mtbf) + (f \times d)$

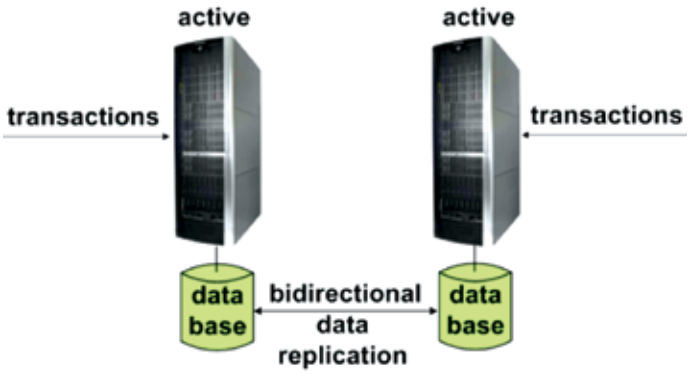
To summarize our example:

| | per five years |
|---|---|
| downtime due to dual-node failures: | 2.5 seconds |
| downtime due to recovery: | 30 minutes |
| downtime due to failover faults: | 15 minutes |
| total downtime | 45 minutes |

An average of 45 minutes of downtime every five years represents an availability of 0.99998.

We have reduced our average downtime from four hours every five years to 45 minutes every five years (good!). We have increased our availability from four 9s to almost five 9s (good!). We have missed our new SLA of six 9s (bad!).

So what can we do to meet our new SLA? The answer is an active/active system.




## Active/Active Systems

An active/active system has two or more nodes. Every node is actively processing transactions. Every node has the same view of the application database. Whenever a node makes a change to its copy of the application database, that change is immediately replicated to the other nodes in the system.

If a node fails, all transactions are routed to the surviving node (or nodes). Recovery time, *mtr*, can be as little as several seconds - typically, new connections and sessions must be established with the surviving node(s). However, *mtr* can be effectively zero if clients maintain sessions with all nodes.

It is known that all nodes are operational; after all, they are actively processing transactions. Therefore, there will be no failover faults; and d is equal to zero.

Returning to our expression for application downtime:

probability of application downtime = $f^2 + (mtr / mtbf) + (f \times d)$

Let mtr be fifteen seconds (the application is down fifteen seconds every five years during recovery time). d = 0 (there are no failover faults). f, the nodal availability, is $10^{-4}$. Then

$f^2 = 10^{-8}$
$mtr / mtbf = 9 \times 10^{-8}$
$f^2 + mtr / mtbf = 10 \times 10^{-8} = 10^{-7}$

This is an availability of seven 9s. Congratulations! We meet our availability of six 9s.

Another advantage of active/active systems is that there is no planned downtime. If nodal maintenance is required, simply shift all traffic to one node and upgrade the idle node. Then repeat this process for the other node.

Active/active systems provide true continuous availability. If a node fails, no one notices. If a data center blows up, no one notices.

## Summary

The availability of an active/backup system is strongly affected by recovery times and failover faults. These factors are eliminated with active/active systems.

If you require application availability in excess of five 9s, consider an active/active architecture. Active/active systems minimize recovery times and eliminate failover faults. There are many examples of active/active systems that have been in service for decades without an outage.

*Dr. Bill Highleyman is the Managing Editor of The Availability Digest (www.availabilitydigest.com), a monthly, online publication and a resource of information on high- and continuous availability topics. His years of experience in the design and implementation of mission-critical systems have made him a popular seminar speaker and a sought-after technical writer. Dr. Highleyman is a past chairman of ITUG, the former HP NonStop Users' Group, the holder of numerous U.S. patents, the author of Performance Analysis of Transaction Processing Systems, and the co-author of the three-volume series, Breaking the Availability Barrier.*

Connect Germany

G T U G

GO INTERNATIONAL

# IT-Symposium 2015
# 27 – 29 April 2015
# Conference & Exhibition

at the Marriott Hotel Munich, Germany






Connect Germany and GTUG Go International
The European NonStop „HotSpot“ 2015!

connect
Your Independent HP Business Technology Community

www.connect-community.de
**www.gtug.de**

GTUG
German NonStop User Group e.V.
Member of Connect Deutschland

# Partnerships Play More than a Supporting Role for NonStop

## - For many customers, it's partners' solutions that determine the very future of NonStop!

**Richard Buckle** >> CEO >> Pyalla Technologies, LLC.

One of the earliest memories I have of Tandem Computers is of its aggressive approach to partners. Working for a small networking start-up out of Raleigh, North Carolina, our sales team ran into an opportunity with the then Tandem field force and in short order we were introduced to Tandem's senior managers. It seemed only a short time later that Tandem Computers invested in our start-up and invited us to a user event in New Orleans – the timing was mid 1980s and it was one of the early ITUG gatherings. More impressive at the time was the invitation we received to join the Alliance program, which we did, and when the first volume of Alliance partners arrived we were taken completely by surprise over the size of this essential guide to partners.

Today, it's the HP NonStop system and it's a very different organization that is responsible for the NonStop systems we see deployed worldwide. However, what hasn't changed is my own enthusiasm for partners supporting NonStop and their day-in, day-out, commitment to the platform developing products and features on their own dime. The mix of solutions and middleware partners may be a lot different now, but the value they bring to the NonStop community is as important as it ever was. Expressed as simply as I can, forty years later, new NonStop customers still purchase solutions rather than a bare-bones NonStop system on which to implement a roll-your-own solution from scratch.

The ecosystem that now supports the NonStop community includes four distinct types of partnerships. Obviously the nature of the product often determines the type of partnership that develops, just as the value the NonStop team places on a market segment establishes priorities. No matter the relationship, the NonStop product roadmaps that NonStop product managers present seem to always include a slide with the logos of partners that continues to be just a sample and yet, always looks very busy. Even though I consider there being four types of partnerships involving NonStop, the boundaries can be fuzzy as vendors' positions are continuously evaluated resulting in regular shifts between the types.

The first type of partnership is easily recognized and can be best described as being competitive. It is usually associated with middleware and tools vendors and in every case they operate with minimal requirements for NonStop development or product management resources. Throughout the history of the NonStop system innovative companies have come up with products that simply overlap partially and in some cases, even completely, with products developed within the NonStop organization. On a few occasions a partner solution was created first while NonStop development hurried up to come up with the same solution. NonStop Soap is an excellent example of bringing a product to market well after partner products had arrived. No matter the product area, these companies continue to enjoy the prestige of being NonStop partners even as they work to replace incumbent NonStop products. Through the years, NonStop management happily references their presence as positive reinforcement that the NonStop marketplace is large enough to encourage such endeavors.

Having spent many years at Insession, which origins can be traced back to the development of ICE, an alternate offering to the then-dominant SNAX product, I can attest to how helpful NonStop product management and the support organization were to the company. The subsequent purchase of Insession by ACI Worldwide helped accelerate adoption of ICE so much so that as a steady stream of new features kept arriving in the marketplace, NonStop product management reached a state of equilibrium with ICE neither fully supporting the efforts nor condemning them. Indeed, it was with the encouragement of the then active product manager that ICE implemented support for X.25 over TCP/IP (XOT). However, even staunch supporters of NonStop today, such as IR and ESQ, were viewed as part of this group when they first released products back in the late 1980s.

> *"Looking at where we are today in our relationship with HP NonStop we couldn't be happier. We have select products on the NonStop price book in some markets, we work with NonStop product management and our architecture is in line with what they like to see, and yes, we work with the field for everything from hardware to sales assistance. I believe we wouldn't be where we are today without the considerable cooperation we have received through the years."*
>
> **Yash Kapadia – CEO OmniPayments, Inc.**

The second type of partnership is one that is welcomed by NonStop; strong independent companies supporting NonStop but completely on their own dime and as with the first type, needing very little NonStop technical resources, although their interaction with product management is greater. Primarily involving solutions vendors, this is a case of the more the merrier. Without solutions vendors whatever ecosystem NonStop sought to foster would not have amounted to much – and with only a very few examples during the forty year history to the contrary, the NonStop organization has steered well clear of developing solutions on their own. The short time ACI was a part of Tandem Computers being one example and the development work put into specialist products for the Telco marketplace being another.

While solutions vendors tend to develop their own user community, often holding their own events, it has been encouraging to see their return to NonStop user events and it was easy to see the likes of OmniPayments, Lusis Payments and

yes, even ACI (albeit in support of their middleware offerings) present at the most recent NonStop Technical Boot Camp. The value that solutions providers bring to the NonStop community cannot be emphasized enough and it is the expectation of HP executives that with the investment made to bring NonStop X to the marketplace, we will see a marked increase in the number of participants in this type of partnership.

Both, the partnerships that are competitive or independent (but cooperative, nonetheless) as described above, remain very strong litmus tests as to the strength of NonStop in the marketplace. Attesting as they are that the marketplace is large enough to reward their efforts, without their presence it would prove extremely difficult to attract others, competitive or otherwise. I have enjoyed considerable experience with companies squarely in this group and the open dialogue between NonStop and those constituents categorized this way was beneficial to all involved. Looking back at my time at GoldenGate, for example, was one case where at one level the competition was fierce and yet, when it came to addressing specific customer issues, NonStop was never reticent about recommending consideration of the GoldenGate product offerings. Watching the cooperation that has developed between WebAction and NonStop product management, as well as the Advanced Technology Center (ATC), is just one more recent example.

*"Right from the outset we involved the HP NonStop solutions architects and through them engaged the ATC. Specializing in real-time operation we not only differentiate ourselves from any other product offering associated with Big Data and analytics, we have brought the NonStop system in to play – effectively ensuring enterprise applications running on NonStop provide important information to Big Data stores and frameworks. The partnership we now have with the field personal we view as being critical to our success and we certainly do appreciate the access that we have to all of them."*

**Sami Akbay – Cofounder WebAction, Inc.**

The third type of partnership demonstrates a degree of sophistication that is only encouraged with the development of experience, indeed trust, over a long period of time. This too is a critical part of the ecosystem that has grown up around NonStop and includes those partners that have leveraged the products of other partners to ensure a better customer experience. Sometimes these relationships prove fleeting – coming together for just a single project – but others develop considerable strength over time. These types of partnerships are ones I have been involved in developing for many years and where I have had a modicum of success.

This type of cooperation between partners often starts when new technology or new vertical markets are tackled. Sometime it happens under the guidance of a traditional systems integrator as I have seen happening in the past and remains ongoing with the former EDS group. Now part of HP Enterprise Services (ES) and one of HP's four global business units, what was once EDS continues to be involved with NonStop systems in select projects – usually in support of governments as best as I can tell.

These partnerships often occur too when it comes time to demonstrate new product offerings and the immediate response from IR to add new functionality to Prognosis to monitor cloud bursting activity from NonStop in support of the InfraSoft maRunga cloudburst offering also comes to mind. Of late, DataExpress - moving files to where they absolutely have to be with a minimum amount of fuss and where some customers move literally hundreds of thousands of files - has elected to rely solely on the security offerings from comForte. Sometimes it is a shared vision but other times it's as simple as shared geography, but no matter the origins, this is one type of partnership I would like to see grow even stronger as there's no question in my mind that with thought and a positive dialogue, the whole can be much larger than the sum of the parts.

*"While there's no question about it, we are not a new partner as we have been in business for decades; however, what is new is that we are now upping our marketing efforts to coincide with security being the most-discussed topic today. Now that the HP NonStop OS ships with comForte SSL / SSH products, this makes our life a lot easier as DataExpress interfaces with these products and in so doing, removes any necessity for us to develop duplicate implementations. Leveraging the work of other longtime partners endorses both parties' development efforts and market presence and just makes sense to us."*

Michelle Marost – President, DataExpress

The fourth and final type of partnership involves a very close relationship between NonStop and a vendor. Where NonStop Product Management sees a product being well received in the marketplace, with the product becoming deployed, and where the product occupies a niche unaddressed by NonStop then the NonStop organization steps in and adds the product to the NonStop price book. This has advantages (credibility and essentially, endorsement) and disadvantages (potentially reduced revenues for greater effort) but, in general, where prospects and even customers want to limit their purchases to just that which is on offer from HP NonStop, such advantages outweigh any possible disadvantage.

From hardware to tools to substantial middleware offerings, NonStop has aggressively pursued such partner relationships over the past decade and for good reasons – there's as much NonStop technical experience outside of NonStop development as there is within NonStop development. The changes that NonStop has undergone since the initial acquisition by Compaq has dispersed a highly skilled community far and wide and more often than not, landed many of the skilled developers within the vendor community where today they continue to support the NonStop systems. A quick check among those vendors who attended the NonStop Technical Boot Camp highlighted just how many partners today have one or more products on the NonStop price book – comForte, Gravic, ESQ, to name just a few and yes, there's the potential for even more as NonStop X comes to market.

HP is also a portfolio company and partner products have been known to find support in adjacent divisions or business units and these too have proved beneficial often over long periods of time. Whether it's with a group like networking or storage, or the services business unit, and sometimes even at a country or Geo level, successful partnerships involving HP and a third party have flourished. One such partnership involving Tributary Systems is HP selling Tributary's tape drives, tape automation and backup management software under an OEM

supply contract. All tape products sold by HP for the NonStop platform have been sourced from Tributary for 18 plus years.

*"While HP NonStop does not resell our Storage Director backup virtualization platform (with many products from self-contained appliances to customized multi-platform implementations), HP Storage (formerly StorageWorks) sources Storage Director for attachment of their StoreOnce de-duplication."*

**Shawn Sabanayagam - Chairman and CEO, Tributary Systems, Inc.**

By the late 1980s the spine of the guide to Alliance partners was about an inch thick - almost unbelievable by today's standards and yes, I suspect there are still copies hiding out on the shelves of a couple of stalwart NonStop supporters. In comparison, today's offerings may not look as impressive but that doesn't tell the full story. Partners pushing deeper into cloud computing, providing greater participation with big data and ensuring modern programming platforms are readily available for NonStop users speaks volumes about where they perceive the future for NonStop will lie.

While the market for NonStop systems is very conservative by nature and often slow on the uptake of new technologies, the imminent arrival of NonStop X systems will likely see the market become more responsive to change – NonStop X represents a much better fit within data centers driven by standards, open solutions and commoditization and such technologies will be a key to NonStop thriving. The ecosystem surrounding NonStop today is very much alive and by the count of new faces showing up at the most recent NonStop Technical Boot Camp, there's every indication that the number of partners will grow and with the variety of products that these new partners will add to what's already available, there will be many observers and commentators more than ready to forecast another forty years of prosperity for NonStop!

*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.*

*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.*

*The quotes come from some of Richard's clients including HP, Integrated Research, comForte, DataExpress, WebAction, Inc., InfraSoft, and OmniPayments, Inc.*

# XID Software – A Quarter Century of 'Outside the Box' NonStop Success

**Bill Honaker** >> Chief Technology Officer >> XID Software, Inc.

Not long ago, a LinkedIn post by Richard Buckle started a fairly lengthy discussion about the variety of applications that have been built and deployed on NonStop systems. About that same time, my company, XID Software, celebrated our 25th anniversary in October. It struck me that over the years we have been involved in creating some unique solutions. I thought that many of you in the NonStop community would find them interesting. With the imminent release of NonStop X, the time is right for new 'outside the box' uses for this latest generation of NonStop!

XID got its name from a bit of Texas history as well as the location of our company. There were 10 of us that formed the company, and we bounced a lot of ideas around the table trying to name the new company. One of the partners recalled the story of the current Texas Capitol building, described here in a quote from Wikipedia:

> *"In one of the largest barter transactions of recorded history, the builders of the capitol (John V. Farwell and Charles B. Farwell), known as the Capitol Syndicate, were paid with more than three-million acres (12,000 km²) of public land in the "Panhandle" region of Texas; this tract later became the largest cattle ranch in the world, the XIT Ranch."*

The XIT acronym stood for "**X** (the Roman numeral Ten) **I**n **T**exas". So XID was named for the 10 partners as XID – Ten in D/FW. The original 10 partners were Dan Bartley, Mike Burress, Bill Fisher, Sid Goodpasture, Bill Honaker, Tom Hubert, Helen Kaszer, Dale Marsh, Ron Morris and Doc Wing.

Some members of the XID team in 2002

## MobilNet – Cellular Network Improvements

Between 1988 and 1990, a lot of the people that ended up forming the company were employees of another consulting firm, Structured Information Systems (SIS), on a project for a division of GTE called 'MobilNet', which was their cellular phone company at the time. (MobilNet was part of what is now Verizon Wireless). During the time we worked for them, we built 4 unique projects. At the time, the Cellular Phone Switches were standalone UNIX systems with only serial ports for commands (no TCP/IP). In that era, the predominant US WAN communications were X.25 based, using GTE Telenet switches.

The first application built was an 'Online Activation' application. For the first time anywhere in the US, it allowed a customer to walk into one of their stores, provide some basic credit background information and to walk out with a phone that would be active in 15 minutes. Prior to that, it typically took 2 weeks to get a phone activated. The NonStop application we wrote included a multi-threaded TAL 'singleton' Pathway server that connected over X.25 to serial ports for every switch in the Expand network, and would login and issue commands to assign the phone and activate it. The server handled commands and responses from different models of phone switches using command and response strings in a database.

The application also connected to a credit reporting company in Atlanta, GA. It sent credit info and received a score that was used to determine any required deposit prior to activation while the customer was in the store. In the process of testing this part of the application, two developers inadvertently affected their own credit ratings, and had to request that the credit company delete the hundreds of "credit history" requests!

The second application built was called 'Follow Me Roaming' and was the first ability to use a cellular phone outside your home city simply by dialing '*18' at arrival, and restoring normal service on return by dialing '*19'. This required the NonStop to connect to a second port for every switch in the MobilNet network to receive a stream of all billing records, monitored for the above 2 codes. Once an event was detected, it was written to a database. A background process reading this used the 'command' servers for both the 'away' city and the 'home' city to pick up configuration information from the phone's home switch, add that information to a temporary number in the away city switch, and forward calls to it. The service was so successful that MobilNet sold the service to other cellular providers. Until HLR arrived it was the only way to roam with your Mobile Phone in the US.

Another application allowed subscribers to keep their current phone number when changing providers to MobilNet. This was implemented with the previously built components.

The last application built for MobilNet was a centralized 'management' facility that gathered the detail records from all switches into a central SQL/MP database to create engineering trends, including bad trunk lines, poor cell antennas, etc. This was another instance of what we today call a 'Big Data' application, allowing engineers to repair equipment often before outages were noticed by subscribers.

## Starting XID

During the creation of this last solution, SIS management made some poor decisions about their relationship with GTE (as well as some other companies), and XID's founders could see that GTE and other customers would need help finishing projects. We formed our own company just as SIS was failing, and approached all these customers with an offer to support them through their current contracts. At the time, we felt we were only going to be in business for about 6 months until we found other jobs. The future would prove how wrong we were! All of the contracts we made to support these customers ended in successful projects. With that experience in our company resume, we were able to build relationships with these and other customers.

## ProSet – Sports Trading Cards

A Tandem salesman in Dallas sold a solution concept to his neighbor who owned one of the major Sports Trading Card companies, ProSet. The concept was to automate their call center, and he called on us to implement it. XID built an imaging workflow system to support the call center, and the application ran on a CLX system in their offices in Dallas. Thousands of handwritten letters per day were scanned in, stored for retrieval, and processed by this solution.

You've probably heard the 'Urban Myth' of a NonStop that kept going down at the same time of night without a good explanation, only to find that the janitor was unplugging it to plug in his floor buffer. I witnessed an instance of that really happening here!

## ComData - Transportation Permit Delivery

One of the next interesting projects that came along was for ComData, a company in Texas that provided financial and permitting services for private long-haul trucking companies. They already had a NonStop system using Pathway/SCOBOL applications for their call center. The center ran most of its permitting business over FAX. Typically, a trucking company would FAX in an application for a permit in the next state(s) a driver would be driving through. The call center would review the application, order a permit from the States (typically over FAX) and get the permit faxed back to ComData. The permit would be processed, stamped and annotated, and then faxed to a different truck stop for pickup by the driver. This required a room with dozens of fax machines, and people trying to manually route things around. The overall process was manpower-intensive, error-prone, and time-consuming. In addition, the faxed permits had to be stored in a warehouse for legal research later, also very labor intensive.

Based partly on our imaging experience at ProSet, XID submitted a proposal to ComData to modernize this system with an Imaging Workflow system, integrated with the existing order entry database. We created Windows 3.1 -based applications (it was the early 90's, after all) to handle fax modems (typically 4 per desktop) and to manage a Write-once-read-many (WORM) optical jukebox. We also created a desktop GUI app with a 19 inch graphic display to be used by the processing agents to manipulate the applications and permits, including a front end to the existing Pathway application. In the end, the savings eliminated most errors, and included the ability to process over 10,000 permits in a 10-hour day all in well under an hour. This was very important as late permits caused the drivers to waste valuable time sitting idle at a Truck Stop. It also provided the ability for the customer to close a couple of warehouses used to store FAX copies for legal research.

## Texas Instruments – IEF Port to NonStop

At Texas Instruments, XID provided most of the talent to Tandem for migrating TI's Information Engineering Facility (IEF, now a CA product known as CoolGen) Encyclopedia to run on NonStop. The code that was ported to NonStop was developed in C++ on IBM OS/2 machines. As the project progressed, XID worked closely with Tandem's C++ development team in Cupertino to make the C++ compilers functional, as all of the C++ utilities were in an early beta state. The embedded SQL code in the application, originally targeting DB/2, now accessed NonStop SQL/MP tables.

In a few places the NonStop required different code than OS/2, so the base code was modified to use compiler switches to select either the OS/2 code or the NonStop code. The final product of IEF included one executable module that exceeded the capabilities of the NonStop Binder product, so Tandem worked with XID to make the changes needed to successfully build it. When it was all finished, the complete NonStop IEF product took just over 18 hours to build, delivering over 1400 modules.

## TRW – Call Center Support

XID was a key contributor to an upgrade at TRW Credit Reporting (now Experian) to upgrade the call center application, supporting about half of the Credit Reports in the US at that time. The problem presented to XID required a solution that allowed TRW customer service representatives to access all credit report data for a single user while the customer was on the phone. This allowed the customer service reps to discuss the questions raised by the customer and make any necessary changes, or to request further information from the reporting entity (bank, credit supplier, etc.) to clarify and resolve the issue. This was imperative for TRW, because Federal law required them to either resolve issues within 72 hours from the initial customer contact, or remove the contested data items from the credit report. Since there were an unknown number of reports per customer, the server not only had to retrieve all the data, but also print the entire report, if requested. The final solution met all of TRW's requirements, including performance.

## Southwest Airlines – Critical Messaging and more

XID was called in to help Southwest Airlines with a small K1000 system that sat in the corner and 'kept failing'. We took on a 6-month support contract, while they planned to build and deploy a replacement, and we immediately set out to find the root cause of the failures (to lower our cost of this support). The applications were 2 message switches, one was a 'store and forward' system and the other was a 'deliver now' application with no persistence. These applications were used to deliver critical information (weather reports and flight plans), without which the planes couldn't fly.

We discovered that the applications were built by a company in the Northeast that had no NonStop experience. The programs didn't use typical Requestor/Server architecture, but instead opened each other and 'wrote' messages in both directions. Various 'timing bug' scenarios caused synchronization problems which the application couldn't handle. We fixed places where extra load caused program crashes and, after a short time, the application stabilized. The replacement was never finished. We supported the system for 9 years, until it was replaced by a newer, standards-based system.

Southwest asked us to propose a solution to replace their fixed-function, legacy terminals at all of the ticket counters and gates.

# Discover2015

## See you in Las Vegas

June 2-4

These interfaced with their reservations system, run for them by Sabre, over legacy protocols (an interface already used by their NonStop). They also printed tickets, boarding passes and bag tags.

They wanted to replace this with commodity hardware, including Windows desktops and a server at each airport, and a central server and database at HQ. We created a design for them that used a NonStop system at headquarters running SQL/MP, with store-and-forward transaction updates (via MQ Series) for the Windows Servers at the airports. They had communications outages between HQ and the airports, and some airports would sometimes lose power, so a store and forward functionality was critical.

They liked our design. However, a VP insisted that it would be less expensive for them to use Oracle for a database and to run it on HP/UX servers. They asked us to redesign it that way and implement it. After implementation, they realized that Oracle wasn't less expensive, and HP/UX's availability levels increased the need for the store and forward. But they still had to have the NonStop to talk to Sabre!

We delivered the project to them, including support for 'custom' programmed keyboards that looked like the legacy terminals they replaced (so their agents didn't need retraining), Windows printer drivers for the Ticket and Bag Tag printers, and (out-of-scope, at our cost) a Service Guard implementation. That system ran at every Southwest gate and ticket counter for about 9 years before it was replaced with the next generation of solutions.

## Hertz Rent-A-Car – Reservations System

Hertz Car Rental had used a 1970s-era Unisys mainframe for their reservations system for years. They had wrapped it in a robust, customized enterprise network called 'HertzNet', but the base platform was in dire need of replacement. In 2000, Compaq hired XID to design a replacement to run on NonStop. XID ported thousands of lines of legacy code from two different reservation systems from Unisys and HP/MPE systems to NonStop using SQL/MP. (MPE was approaching end of life during the project.) The ported batch code included thousands of lines of mostly undocumented code. One of the more unique challenges was a mysterious FORTRAN module that no one at Hertz knew anything about. It turned out that it was essentially a state machine, with data containing user defined 'decision programs' used to generate reports. We replaced it with a 'C' module without changing the user's program data.

Another part of the original application on Unisys was called the 'Message System', which passed messages around to diverse devices using various legacy communication protocols. Part of that application's audit log became a transaction record of each Rental, an early 'Big Data' implementation. Our replacement solution was 100 times faster than the original and delivered enough data to tax 'HertzNet'.

## USPS – Time Management

In the first decade of this century at USPS, they were still using a 1980s-era mag-stripe 'time clock' that used a custom asynchronous protocol to gather employee and vehicle usage. They connected to a group of dozens of Windows Servers around the country that gathered the time and forwarded it to a 'central' Oracle database. It had to meet Union-agreed contractual service levels. In each facility, they 'daisy chained' these terminals together, with a 'master' connected to a TCP/IP serial port converter. They wanted us to replace the hundreds of Windows servers with one central NonStop.

We built a solution for them to run on a 4-processor S-series at the USPS Advanced Technology Center. It would 'poll' these terminals to pull data back in, as the devices were designed to work only that way. The programs used the SQL/MX executor to store the data in a SQL/MP database (for reporting and replay capability), pass the data to an MQ server, and then pull it from there and send it via JDBC/ODBC to the Oracle system. Multi-threaded C++ programs were used to communicate with the time clocks, due to the legacy protocols required and the fact that the protocol converter could 'split' messages into separate TCP/IP packets. Java was used to read MQ messages and forward to Oracle. A separate, identical NonStop system at another USPS data center held a passive backup database using RDF for Disaster Recovery.

## Various Modernization Projects

In recent years, many of the projects we've worked on with 'old time' NonStop customers have mostly been to migrate their existing applications to 'more modern' development tools. These varied from standalone applications to JSP/JSF, J2EE or ASP .NET implementations. Unfortunately, most of these projects have resulted in a migration of the application to UNIX, Linux or Windows platforms. The availability of these, while within marginally acceptable limits, is nowhere near what we in the NonStop community have come to expect. Here's hoping that the NonStop X platform can be a catalyst to bring old and new customers to the true Enterprise platform we've known and loved for so long.

## Summary

Over the past quarter century, XID Software has been involved in a lot of projects for NonStop customers. Many of them have been 'outside the box', and as such were challenging, sometimes stressful, and always satisfying to deliver successfully. Best of all, they've been (mostly) built on the strengths found in 40 years of working on a NonStop platform that has helped anchor the highest availability of solutions n the world. With NonStop X about to arrive, this history of successes should encourage solutions providers to come up with creative ways to bring true 'Always On' availability to applications where it traditionally hasn't been used in the past.

I don't know about you, but I can't wait!

*Bill Honaker is a consultant with XID Software, Inc., serving the company as its Chief Technology Officer. He has over 30 years of NonStop experience as a Solution Architect, Performance Analyst, Systems Integrator, System Manager, Database Designer, and anything else our customers will pay us for. XID Software has been keeping its customers satisfied since 1989 by treating them as we would want to be treated.*

*Bill has been a volunteer with both ITUG and Connect since 1988, which partially explains his gray hair. In the past, he served as both editor and director for the Connection magazine, Treasurer in 1993 and 1994, Vice President in 1995, and as ITUG President in 1996. He currently serves as the President of the N2TUG Chapter of Connect, the moderator of the NonStop Open SIG, and the Lead of the ITUGLIB Engineering team.*

# Payment-Card Transaction Switching Via The Cloud

**Yash Kapadia** >> CEO >> OmniPayments, Inc.

HP NonStop servers are a mainstay for financial-transaction switches, which route payment-card transactions from ATMs and POS terminals for authorization to the banks that issued the cards. Several companies currently offer transaction switches on the NonStop platform. These switches are often operated by banks (the acquiring banks) to service their ATM networks and the POS terminals that they provide to retailers. Acquiring banks typically charge the merchant a fee for each card transaction that is processed.

Many large retailers have opted to purchase their own transaction switches in order to avoid the acquiring banks' transaction fees.[1] However, a mid-tier of retailers that would like to have their own switches cannot justify the cost and management of NonStop servers. To fill this void, OmniPayments, Inc. has introduced OmniCloud. OmniCloud is a NonStop-server cloud that can host financial-transaction switches for multiple medium-sized retailers at an affordable price.

## Financial-Transaction Switches

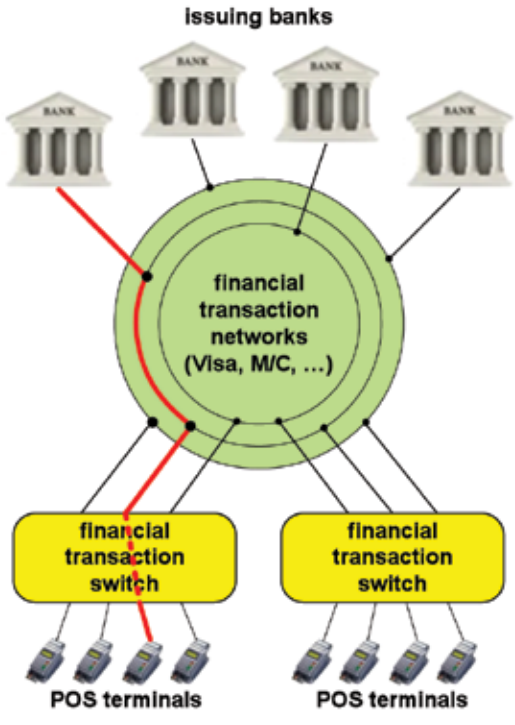
Before exploring financial-transaction switching in the cloud, let us review the basics of transaction switching.

### Financial-Transaction Networks

Every major credit-card company (Visa, MasterCard, American Express, Discover, etc.) provides its own financial-transaction network to send its payment-card transactions to the banks that have issued its cards (the issuing banks). The first six digits of the card number identify the issuing bank. In most cases, the first digit identifies the network to use (3 for American Express, 4 for Visa, 5 for MasterCard, 6 for Discover, and so on).

Each merchant's point-of-sale (POS) terminals are controlled by a financial-transaction switch (such as BASE24, OmniPayments, Lusis, or others). These transaction switches are often provided by a bank that also supplies the POS terminals to the merchant. In some cases, the transaction switches and POS terminals are owned by the retailer itself.

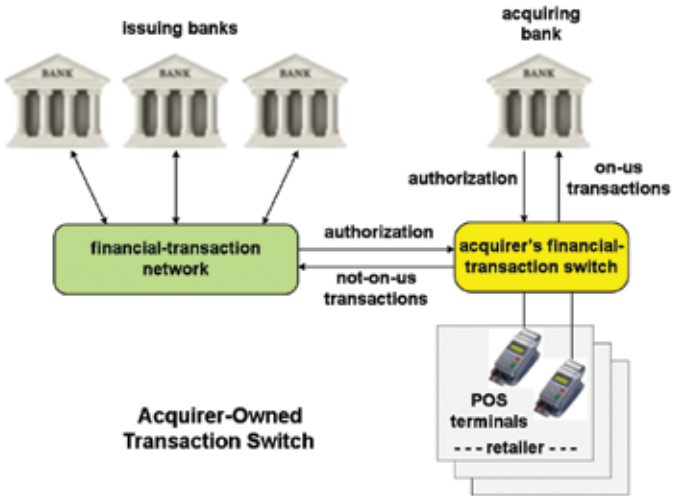
When a payment-card transaction is made at a merchant's POS terminal, the financial-transaction switch managing the terminal determines the type of card and sends the transaction over the appropriate financial-transaction network to the bank that issued the card. The issuing bank decides whether or not to authorize the transaction and returns an accept or a reject indication to the POS terminal.



Financial Transaction Networks

### Acquirer Financial-Transaction Switches

Most retailers obtain their POS terminals from a bank with which they maintain a merchant account or from an acquiring company that is associated with such a bank. The bank is known as the acquiring bank (the "acquirer") since it supplies the merchants with the POS terminals required to accept payment-card transactions.




The acquiring bank owns and operates a financial-transaction switch that routes payment-card transactions to the appropriate issuing bank for authorization. Payment-card transactions at POS terminals are sent to the acquirer's transaction switch. "On-us" transactions are those made by one of the payment cards issued by the acquiring bank and are routed by the switch to the acquirer for authorization. "Not-on-us" transactions are sent over the appropriate financial-transaction network to the banks that issued the payment cards (the issuers) for

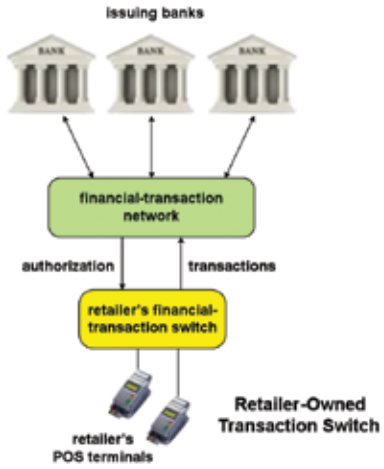
[1] See Casa Ley Upgrades to Active/Active OmniPayments, *The Connection*; January/February 2013.

authorization. An accept or reject notification is returned to the POS terminal from an issuer to authorize or deny the transaction.

### Retailer Financial-Transaction Switches

Numerous large retailers now operate their own financial-transaction switches, and many of these transaction switches use NonStop servers for high availability. However, others employ networks of Linux or Windows servers to reduce costs.

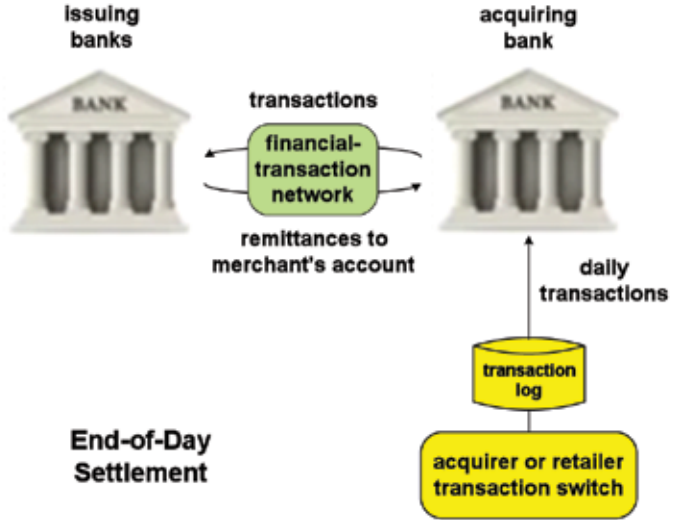
For a large retailer, the cost of purchasing and operating its own transaction switch is more than offset by the transaction fees that it otherwise would pay to an acquirer. The retailer still maintains a relationship with an acquiring bank, but this relationship is primarily for end-of-day settlement purposes.




As with acquirer switches, retailer transaction switches control the POS terminals of the retailer. However, in the case of a retailer switch, the acquiring bank is just another issuing bank so far as the transaction switch is concerned. Payment-card transactions are routed by the switch to the issuing banks via the appropriate financial-transaction network. The issuing banks return authorizations for follow-up POS-terminal actions.

### Settlement

Ultimately, a merchant's account held by its acquiring bank must be credited with the funds that the merchant is due from the payment-card transactions that it has processed. This is accomplished via the end-of-day settlement process.




As each payment transaction is successfully completed, it is logged by the transaction switch. At the end of the day, the transaction log is forwarded to the acquiring bank. The acquiring bank sends the transactions via the appropriate financial-transaction networks to the issuing banks. The issuing banks transfer the funds for the transactions to the acquiring bank, which credits the funds to the merchant's account. The issuing banks then bill their cardholders for the amounts of the purchases.

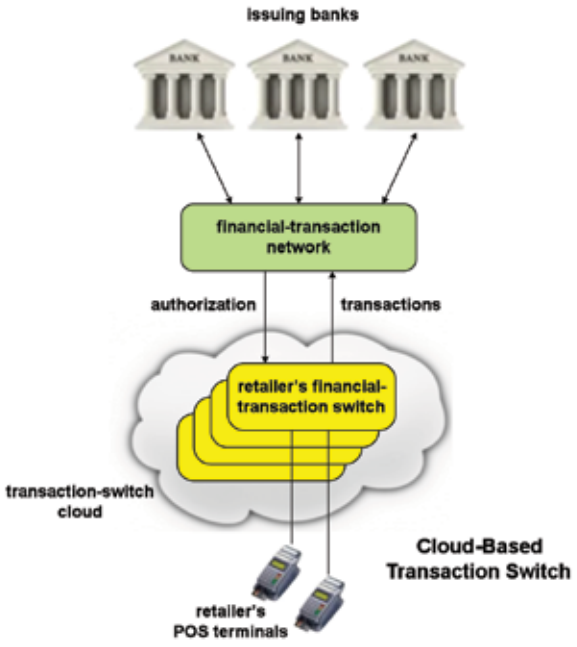
## The Dilemma for Mid-Size Merchants

As is the case with large retailers, many mid-size retailers (for instance, those that manage anywhere from 100 to 5,000 POS terminals) also would like to reduce their transaction costs by providing their own financial-transaction switches. However, the expense of purchasing stand-alone switches and then managing the switch operations does not justify the potential savings. There are many challenges that a mid-size retailer would face by operating its own switch:

- The hardware and software for the switch has to be purchased.
- A data-center-like facility, though perhaps small, must be created to provide the space and cooling for the system.
- A backup power source, such as dual-power providers or a backup diesel generator, must be configured.
- A transaction-switch outage will severely limit the retailer's ability to make sales during the outage. All sales will have to be cash-only transactions.
- A specially trained staff with high-availability IT experience must be hired to manage the system during the time that the retailer's stores are open. If the retailer is open 24x7, staff must be available 24x7 to ensure that the system is operating properly.
- In some countries, several non-traditional specialized services are desirable (see below). They must be provided as add-ons to many transaction switches.

## Financial-Transaction-Switching Clouds to the Rescue

Mid-size retailers are large enough to be concerned about transaction fees they pay to their acquiring banks, but they are too small to justify their own transaction switch. What is a mid-size retailer to do?



The answer is to turn to the cloud. If financial-transaction-switching services are offered by a cloud, the retailer has to pay only for the amount of CPU resources, storage, and networking that it uses – clouds are operated on a pay-for-use basis. A cloud service will provide backup systems so that a system outage will be recoverable immediately by switching the retailer to another system in the cloud, perhaps even at a different physical location. The cloud provider supplies all of the IT staff needed to manage the transaction switches running in its cloud, thereby allowing the retailer to focus on its business.

OmniCloud offers such cloud services.

## Specialized Services

Depending upon a retailer's needs and the expectations of its clientele, the retailer may need to provide certain special features that may not be supported by commercially available financial-transaction switches. These functions can be added to the cloud's transaction-switch applications. They include the following:

### Biometric Identification

In many countries, checks and credit cards are not widely used. Instead, transactions are generally paid via debit cards or cash. Debit cards are used at ATMs to withdraw cash and are used to pay for services and goods at POS terminals. Debit cards are protected by personal PINs; but the cards can be lost, and PINs can be stolen. Therefore, many people in these countries are reluctant to use debit cards.

To address this challenge, citizens can use their fingerprints instead of cards at ATMs and POS terminals. Fingerprints aren't forgotten, they don't get stolen, and they cannot be imitated by another person.

Some governments have added fingerprints to their national databases of all citizens.[2] Fingerprints are digitized via WSQ (Wave Scalar Quantization) technology for storage in the national databases. Rather than presenting a debit card for a transaction, the purchaser places his or her fingers on a fingerprint reader attached to the POS terminal or ATM. The fingerprint WSQ data is sent by the transaction switch to the national database along with some other form of user identification, such as a driver's license or a national identification number. If the fingerprint is valid, the transaction is routed by the transaction switch to the issuing bank for authorization.

In cases where there is no national database of fingerprints, those who wish to use biometric identification must register with a retailer. The retailer will verify the identification of the customer, will read his or her fingerprints, and will send them to the transaction switch. The switch will store the fingerprints in its database and thereafter will provide fingerprint validation before sending the transaction to the issuing bank.[3]

With biometric identification, no payment card need be submitted. The problem of lost or stolen cards and forgotten PINs has been eliminated.

### Two-Factor Authentication

Two-factor authentication is a method to increase the security of PIN cards. If a debit card is lost or stolen and its PIN is compromised (for instance, the cardholder has foolishly written the PIN on the card so that he or she will not forget it), a thief or a person finding a lost card can use it for his own purposes.

Mobile-phone two-factor authentication furnishes additional security for a PIN. When a cardholder uses his card and enters a valid PIN via the POS terminal, the financial-transaction switch will immediately send a one-time numeric passcode to the cardholder's mobile phone via an SMS message. The cardholder then enters the passcode into the POS terminal to complete the transaction request. If the person using the card is not the legitimate cardholder, he will not have the cardholder's mobile phone and will not be able to receive the passcode.

The transaction switch will invalidate a passcode once it has been used or after a certain period of time. In many cases, the use of two-factor authentication must be established in advance at the request of the cardholder.

### Preauthorization

A beneficial service that a financial-transaction switch can provide is preauthorization. Each transaction must be validated against an often complex set of rules before its execution can be authorized. The authorization process consumes valuable processing resources and requires the continual maintenance of authorization rules and parameters. The financial-transaction switch can apply many of these rules to a transaction, thus removing much of the authorization complexity from the acquiring bank and from the issuing banks.

### Individual Preauthorization

In some cases, it may be desirable to extend preauthorization services to individual cardholders. For instance, a business owner can establish charge limits for company cards he issues to employees. He can restrict how much each employee can charge for meals, hotels, cars, and airfares. Families can establish preauthorization rules for their cards. A father might set daily or weekly limits on the amounts that each of his children can charge. He can limit the use of a child's card to certain merchants or certain items. He has the ability to restrict the items for which a card can be used, such as prohibiting the purchase of cigarettes or alcohol.

### Chip Cards

In most countries, chip cards (cards containing a computer chip to enhance security) are commonly used; and they are now coming to the United States. It is imperative that the financial-transaction switch be able to handle the specialized actions required by a chip-card POS terminal and be compatible with the chip-card protocols used to transfer transaction information over the financial-transaction networks.

### Other Transaction Types

Purchasing items with payment cards is just one type of transaction that a retailer may have to handle. Other transaction types include:

[2] OmniPayments Provides Colombian Fingerprint Authentication, *The Connection*; July/August, 2013.
[3] OmniPayments Supports Colombia's Social Programs, *The Connection*; September/October 2013.

- *Topping off minutes for a mobile phone:* Many mobile-phone services do not provide monthly contractual minutes that are billed automatically to the subscriber. Rather, the subscriber must purchase prepaid minutes for his phone. When these minutes are used, he must purchase additional minutes. Often, minutes are purchased through retailers. The financial-transaction switch used by a retailer must route these transactions to the appropriate mobile-phone carrier for authorization and for inclusion in the subscriber's services.
- *Money Transfers*: In many countries, money transfers between individuals can be made through a retailer. The person sending the money gives the amount that he wants to transfer to a retailer. The retailer provides an identification number, which the sender forwards to the intended recipient. The recipient can then go to a retailer's store that is close to him and via the identification number receive the funds. The retailer's financial-transaction switch must pass such a transaction through the merchant's account at the merchant's acquiring bank and must ensure that the money is transferred reliably and seamlessly.
- *Payment Services*: Bills often are paid by mailed checks or via the Internet. However, in many rural areas, there is little in the way of banking services or Internet services. People in these areas may not even have bank accounts or payment cards. In such cases, a person can go to a retailer designated by a company and pay bills owed to the company by cash or payment card. The retailer's financial-transaction switch must be able to communicate with the company and ensure not only that the payment is accepted but also that a receipt is returned to the payer.

## OmniCloud

OmniPayments recently introduced OmniCloud. OmniCloud is not a general cloud offering for running customer applications. Rather, it is a Software as a Service (SaaS) cloud that specifically provides financial-transaction-switch cloud services via HP NonStop servers.

OmniCloud enables mid-size retailers to enjoy cost-effective switching services without the need to pay transaction fees. OmniCloud is a cloud version of OmniPayment's popular NonStop financial-transaction switch. Like OmniPayments, OmniCloud supplies a full complement of support and authorization services to a retailer, including the management of the retailer's POS terminals and the sending of transactions to issuing banks for authorization. Each transaction is transmitted over the transaction network that services the issuing bank. OmniCloud supports all international transaction networks (for instance, Visa, MasterCard, American Express, and Discover in the U.S. and PROSA and eGlobal in Latin America).

OmniCloud handles settlements for each retailer that is using the cloud services. All transactions are logged, and the transactions for each retailer are sent to the retailer's acquiring bank at the end of the day so that receipts can be deposited to the merchant's account.

OmniCloud provides continuous availability. It runs on fault-tolerant NonStop servers in an active/active mode. All transaction logs are replicated in real time to one or more other servers in additional physical locations in the OmniCloud so that if a server fails, the retailer can be switched immediately to a surviving server without the loss of any transactions. All further transactions from POS terminals that were being serviced by the failed server are switched over to the new server, which continues to provide switching for the retailer.

OmniCloud is secure. All data is encrypted in-place and in-transit. It complies with all PCI DSS requirements. In addition, OmniCloud is hosted on NonStop servers, which is unique today in cloud environments. NonStop servers are known for their high security and their extremely low vulnerability to malicious intrusion. They are used by most banks and retailers for critical applications.

OmniCloud supports a variety of special services, such as biometric identification, two-factor authentication, preauthorization, chip cards, mobile-phone top-offs, money transfers, and bill-payment services. In today's global environment, retailers require new services for globalization, security threats, and new standards (such as chip cards). With their transaction switches running in OmniCloud, mid-sized retailers can simply turn these services on or off as required.

Special consideration is given to mid-size retailers who have grown large enough to afford their own transaction-switching systems. OmniCloud can offer such retailers dedicated systems. These systems still run in OmniCloud, but they relieve the retailers of the purchasing and operational costs of obtaining their own systems.

OmniCloud is configured initially with multiple locations in the U.S. and in Latin America. Its pricing is intended to be attractive not only to mid-size retailers who would like to have their own transaction switches but also to those retailers who are currently operating Linux or Windows transaction switches. OmniCloud transaction-switching services start as low as $5,000 per month.

## Summary

Financial-transaction switches are used by acquiring banks to route payment transactions from the POS terminals that they have provided to retailers to the issuing banks for authorization. Many large retailers have opted to acquire their own financial-transaction switches to eliminate the transaction fees paid to their acquiring banks. However, many mid-size retailers would like to have the same opportunity, but they cannot afford to purchase and operate their own switches.

This option is now available to mid-sized retailers via OmniCloud. By configuring their transaction switches in the OmniCloud, smaller retailers can achieve all of the advantages of having their own transaction switches but at a fraction of the cost.

*Yash Kapadia is the founder and CEO of OmniPayments Inc., a leading HP NonStop System Integrator for Telco and Financial Services. Opsol's OmniPayments solution is used by Banks and Retailers for Base24 replacement. Yash and his team provide several products and remote managed services for NonStop customers. Yash can be reached at Yash@OmniPayments.com and +14086669927.*

# What Git Means to the NonStop Community

**Randall S. Becker** >> President >> Nexbridge, Inc.

## Preamble

*By the time the investigator was called, it was Tuesday, and forensic evidence was difficult to find. The production installation was scheduled at 2am, the previous Sunday. By the time the dust had settled, it was thirty hours later, and customers were not impacted, but nerves were shattered, and two managers and a director were cleaning out their desks. It was all going according to plan, and yet someone invoked the emergency 3am "Hero" procedure. You know, the one where Production Support sees something wrong and puts out a call for help from Development. It was just as well, because if the mandated process had been blindly followed to the letter, the result would have been far worse.*

*Here is how the situation set itself up: a new release was to be installed; the instructions were written down; visually checked; the software tested; pushed into the code repository; taken out of the repository; and installed. All according to the way of doing things here. But when traffic started flowing through the system, things went very badly. Purchases stopped being approved. Deposits were rejected, and ATMs were displaying "Happy Halloween" instead of ads for "Black Friday". It was lucky that someone noticed within seconds, and quickly called in the problem from the field. The release was rolled back, and other than one senior VP's pride being slightly bruised at having a purchase declined, no other customer was the wiser. Development was called, and you probably know the story from there.*

*What had gone wrong? According to the investigator, Process was followed to the letter, at least from the time the plan was created. Development had followed Process, and put code into the change repository properly. Operations had taken the code from the repository and installed it, but upon examination, the database update script had been omitted and some critical data was missing from the production environment, including the addresses of some of the devices, which caused… well, you know that story too. In this situation, just prior to the final release being built some weeks before, the testing group had split the release into code, configuration, and data scripts so that each could be tested in isolation. There were three separate tags, or change requests, associated with those. Somehow, one of the new tags was missed in the release plan, so by the time the release was installed, it was incomplete. And people lost their jobs.*

What you have just read was fiction, but based on all too true events. The root cause was not that the code repository had permitted the operation, nor that the testing group had designed new processes that were incorrect, or that anyone had failed to do their jobs, at least according to what was written down. It was that the new testing process, which was by all accounts a good idea, and the established, mandated and expected ten year old documented process were incompatible. The tragic part, for the people who were fired, and the bruised pride of the company's own executive who had to pay cash for his gas and Slurpee, was that the situation was entirely avoidable.

***The road to bad Process is paved with good intentions.***

## Managing Changes: The Intent

Software Configuration Management (SCM) is the practice of tracking and deploying changes in a complete, reliable, and repeatable manner. It is the cornerstone of legal and auditing requirements of the financial industry in much of the world. That is the intent, subject to interpretation of course. Software has never been just about programming languages, or the source code. It is also the complete bag of tricks that go with the software, including scripts, database changes, installation instructions, and recently, property files, XML configuration files, and server definitions. Repositories, or libraries, that we use to manage our releases, need to include it all - every last bit or we end up having to do extra work, like filing incident reports.

Where the *ad hoc* process designers thought they were making an improvement was to organize changes by job function – programs to one group, database changes to another. This improvement simplified and clarified the deployment for everyone, satisfying the requirements of separation of duties also mandated by the organization, but it created vulnerability. The new process took a single change with all of its hundreds of parts, which was intended to go forward to production as a unit, and split it. The result: something was missed. This omission was invisible to the Production Support Deployment team. They could not know.

In traditional SCM products, changes are tracked for every file. This article, for example, had roughly twenty revisions. Some products allow changes to be grouped into packages, releases, and tagged. But still, the changes are recorded for each individual component. This antiquated approach to version management allows files to be repackaged after they have been turned-over, and risks changing the intent of a delivery. In 2005, Linus Torvalds looked for an alternative for managing development of the LINUX Kernel by 250 developers (at the time) across much of the planet. To quote him: "Take CVS as an example of what not to do; if in doubt, make the exact opposite decision"[1]. And git was born.

The approach taken by git is to track changes as immutable items that span all of the involved files. You cannot split up a change, unless you go to a lot of deliberate and well planned trouble. And trouble is exactly what you will get. For LINUX, this addressed the same problem that our intrepid company

experienced, how to do you know what each developer intended if their changes can be split apart easily. For our community the implications to the processes we use are subtle, but highly impactful.

1. Developers identify everything associated with one immutable change as just that: a single version.
2. Creating branches to isolate what you are working on is not only a nice-to-have, it is easy and essential.
3. Testers should only take complete changes. Cherry picking what you want is fine, but this applies to changes, not individual files – unless the person who made the change intended the changes to a single file to stand on its own.
4. Never omit a file from a release if it is part of a change. If you need to omit it, get consent from the developers by having them create a change specifically for that purpose.
5. The build process needs to consider the change units in their entirety, not just individual object files.

## How This Effects Jobs Responsibilities

In the 1980s, there was a move to isolate testing and development responsibilities. This strengthened into the 2010s and will continue. But communication needs to improve in our community of high reliability and availability. The need to test components and changes as immutable units actually requires more communication. Testers need to let developers know what components are being tested and, in the case of retesting, how changes are organized. In turn, developers need to be clear about the intent and impact of their changes. Git provides the means where changes move forward towards production as a single unit. Reality does not always cooperate, and developers often have to *commit* (or *check-in, or submit*) their changes more than once while unit testing; fortunately, git solves this where other SCM products do not, with a built-in function made just for developers. Even numerous changes can be combined into one so that developers can organize changes together into one immutable package after all work is complete on a change request, by squashing the changes into a single merged version.

### *Remember this bit of git terminology, it will serve you well: Merge Squash*

In our community of high-reliability, combining separate changes from different developers into one single change package is a desirable approach. We have had to wait until git for this highly beneficial practice that prevents the very omissions that our case study illustrated.

## Branching: Good or Bad

When branching was first introduced to SCM, it was problematic. Because every file could be modified individually, and branched in isolation, the permutations and combinations of test cases grew with each file and branch a developer created. There was no way to easily manage the massive number of test cases an analyst would need to build to support branching. Because git very effectively contains branches to individual work packages (your branch, your change request), isolation testing aligns closely with branches and becomes very manageable. No longer do we have to fear branches.

## The Repository Lives Everywhere

Here is the rub, for us anyway. For eons, by technology standards, SCM products that ran on NonStop resided either on a development server, a production server, a QA server, or something not NonStop but backed up constantly. Git fundamentally changes the rules: the repository is everywhere and anywhere. It is on each developer's desktop, laptop, on the development server, in QA, and in production. That is how git was designed, and in order to get it right, you need to build process around this intent.

Figure 1 below is a sample process flow:

1. A developer commits a change in ECLIPSE which, by the way, has git built-in. This change includes code, Makefiles,

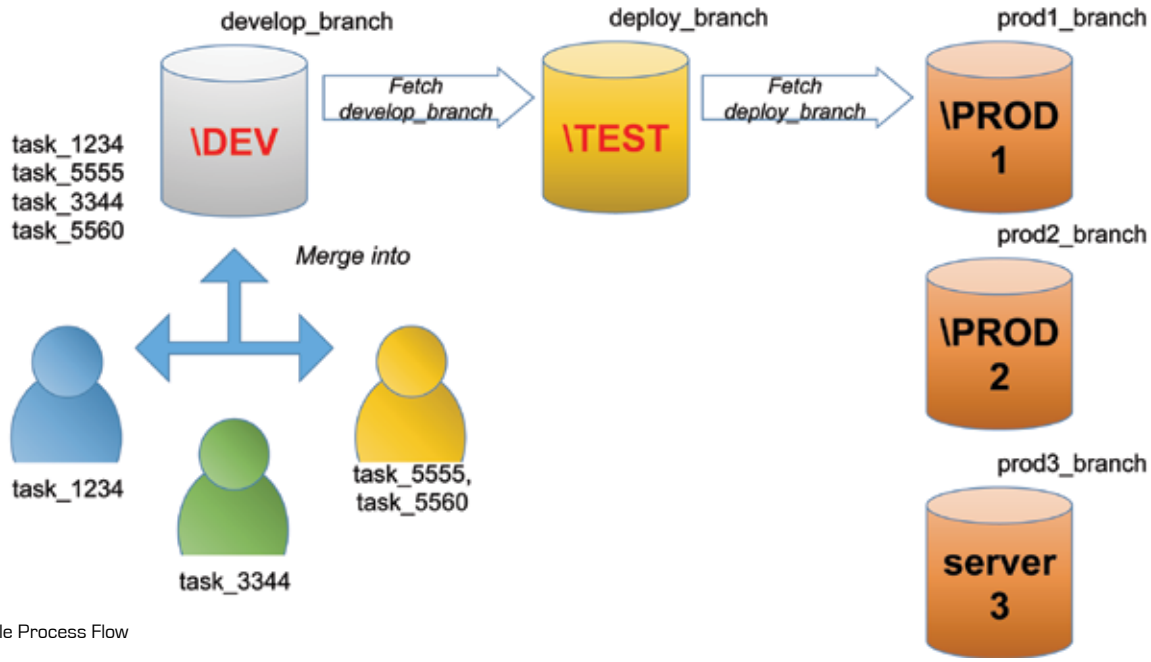



Figure 1: Sample Process Flow

ant or build scripts, XML, and supporting scripts. A new change is created in the developer's local repository – termed a *clone* of the repository – and is signed using their personal unique secure key. This identity will follow the change everywhere.

2. The developer pushes the change to a shared git repository on the development server. This server may or may not be a NonStop.
3. A change administrator approves the developer's change and merges it into the common development branch.
4. The testing group pulls the development branch to the testing repository. A build is done and tested. The release installation and fallback scripts also should be tested at this point.
5. The build is approved and committed to an approved tested branch. A release administrator merges this change, including the build and all components onto the deployment branch.
6. The deployment branch is fetched to the production repository, which contains a copy of that branch. The branch is pulled into the production environment and installed. Of course, it means you need to have git on each production machine, no matter the platform.
7. Deployment branches can be pulled (or pushed) back to the shared development repository for reference on what was installed where.

### *The movement of code should be completely automated and predictable - the hallmark of good Process.*

The movement of the code is entirely automated. Humans are involved when decisions to approve specific changes need to be made. When there are many production environments, step 6 is repeated. If there is a fallback required, a previous version on the deployment branch in production is pulled into the production area and reinstalled. To improve clarity, it is even acceptable to reverse the commit of the bad release from the deployment branch so that the HEAD of the branch is the one installed. There is a tremendous amount of flexibility in the actual workflows and procedures which are supported by git.

### *Git supports many possible workflows.*

## Audit and Security

Git would have made the investigator's job much easier. Changes that move from one repository to another retain their identities. Production Support can see exactly who made what change and for what purpose, at least if you comment your changes. Git even integrates through ECLIPSE, with defect tracking systems and code review systems.

Even more relevant for our community is that each repository can be, and should be, secured separately. Only the testing group should be able to pull changes into their repository from the development repository. Only production should be able to pull changes from the testing repository. The testing group could be allowed to pull history from production, and push that history back to development. Even more advanced security models are currently evolving so we should soon see additional approaches coming online.

### *Even Cherry Picking does not violate Git's law of immutable changes.*

But in a pinch, when the inevitable 3am *Emergency Hero Process* is invoked to deal with some unforeseen crisis, git's Cherry Pick function allows fully auditable individual changes to be rapidly deployed either from development or from production and then reintegrated into the normal process; regardless of what branch they were hiding on. But even the Cherry Pick does not violate git's law of immutable changes. It may be 3am, but you do not want to make things worse by leaving behind some critical part of the emergency fix that no one remembered to bring forward.

## Conclusion

Git is fundamentally different from other SCM solutions available for NonStop, and it is already on your desktop with NSDEE 4 as part of the ECLIPSE Juno package. You just need to hook it up to a repository. While all products provide file versioning of some kind, and some products provide packaging and release mechanisms, git supports immutable cross-file changes. Git will change the way we deploy solutions on NonStop servers, as it has in LINUX. Instead of guessing what files make up a change, we will know based on the complete and intact package. Combining packages by squashing them together further reduces the likelihood of omissions. As we get used to the new processes at our disposal, the 3am emails will shift to a more celebratory tone. And best of all, no one will need to be terminated.

### *If Git can manage LINUX, it can manage your application.*

As I am fond of repeating – often and usually standing on a soap box – if git can support workflows for the development and maintenance of the LINUX operating system kernel and hundreds of other applications spanning thousands of developers, chances are good that it can work for you. And finally, if you are going to build a Process, make it simple, sound, believable, and something people will follow because it makes sense. Do it not just because you tell them they have to do it that way. If you ignore the last bit, people will come up their own processes. It is inevitable and not really the kind of surprise you want to experience at 3am.

[1] Linus Torvalds (2007-05-03). Google tech talk: Linus Torvalds on git. Event occurs at 02:30. Retrieved 2007-05-16.

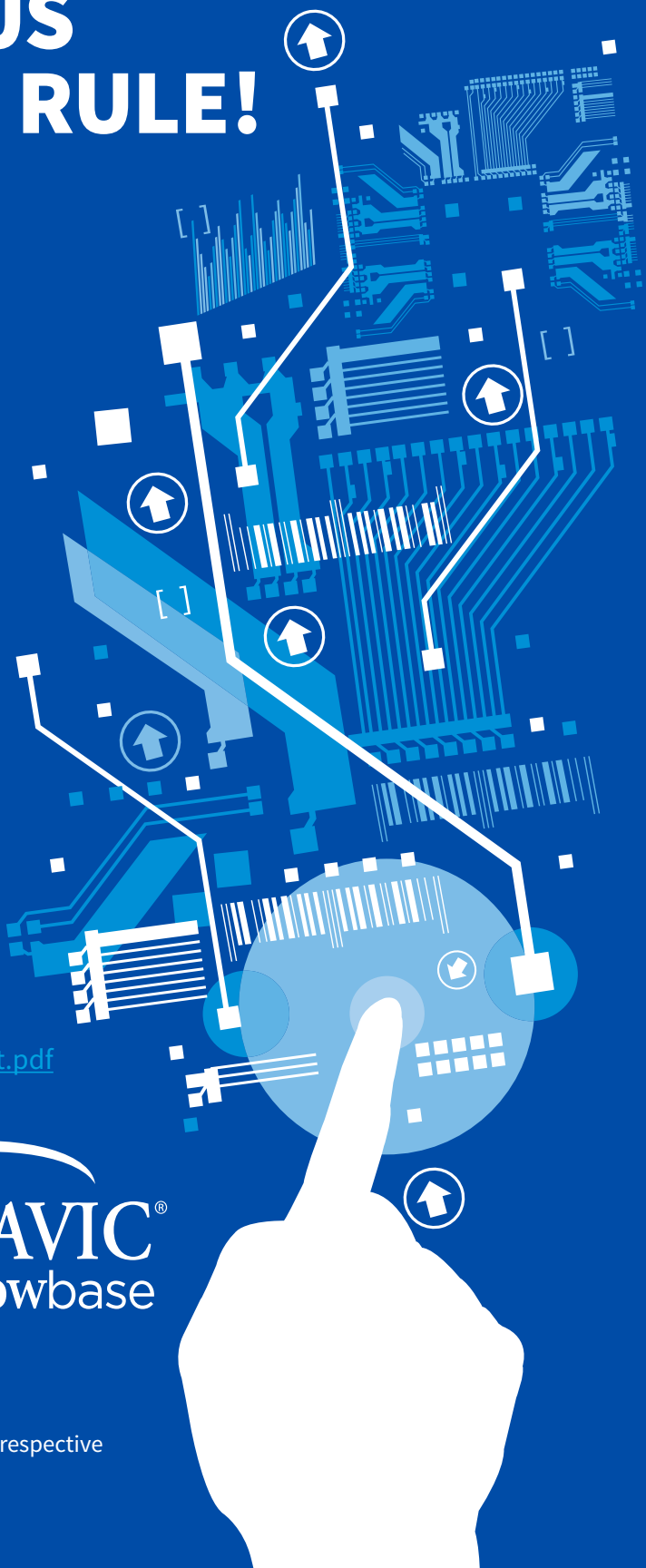
**Git for NonStop is available from ITUGLIB at http://ituglib.connect-community.org/apps/ituglib/HomePage.jsf.**

*Randall S. Becker is a speaker, author, and consultant on Process that delivers continuous availability. He has been an expert in Software Configuration and Change Management since 1989 and has spoken at many NonStop and community events.*
*Randall can be contacted at: +1.416.984.9826 or rsbecker@nexbridge.com.*

# When does your business need to be available to your customers? Always!

# MAKE CONTINUOUS AVAILABILITY THE RULE!

- HP NonStop technology makes localized fault-tolerance a reality.
- HP Shadowbase software extends this technology to geographic fault-tolerance.
- Minimize risk by selecting the right HP Shadowbase business continuity and data integration architecture to meet your business needs.
- HP Shadowbase software is now directly orderable from HP.



For more information on Shadowbase Total Replication Solutions®, please download our product datasheet:
www.gravic.com/shadowbase/pdf/white-papers/Shadowbase-Total-Replication-Solutions-Product-Datasheet.pdf

Business Partner

GRAVIC® Shadowbase

www.gravic.com/shadowbase

# How to enable your team to move at the speed of Twitter

**Mark Faithfull** >> **CEO** >> Cool Waters

In today's connected world, your customers are just as likely to report that your website is down or your ATM is closed to Twitter or Facebook as they are to post a photo of their lunch. The challenge this presents to Customer Service and Marketing Directors is how to ensure their teams know about these problems and their prognosis before the social media stream explodes. Wouldn't it be nice to be able to get on the front foot for a change?

Many businesses have incident management and escalation plans in place that cover their technical teams. The on-call engineers respond to technical alerts and update their supervisors and perhaps the IT Director with the status of the problem and progress on the fix. However, this is usually a technical conversation and confined to the IT team – it doesn't help the call centre staff taking calls from disgruntled customers who just want to buy something from your website. That's assuming your customers even bother trying to phone at all and don't just abandon the shopping cart and head right over to a competitor.

The long term Social Media impact is even worse: 'ATM is broken again – just trying to get some cash to feed my children lunch #BankFail!' Those messages will live on the Internet forever and customers who otherwise would have been unaware of your problem will get to hear about it. Perhaps worse, those status updates and criticisms will turn up later in Google searches when prospective customers are researching your business.

What's needed is the ability to quickly send headline status information around your business at the speed of social media. Let's think about what such a service would need to be:

1. Private and Secure: Your information needs to be kept secure and private, so you can't use social media tools like Twitter or Facebook which are explicitly designed to keep nothing private.
2. Everywhere: You need to be able to reach key personnel even when they have gone somewhere where there is no WiFi or 3G signal. Crisis rarely erupt when everyone is in the office.
3. Independent: This service needs to sit completely outside of your infrastructure – after all it can't be reliant on your network or data centre if its job is to enable vital communications when that infrastructure is compromised or offline.
4. Simple: This service needs to be simple and intuitive for people to use both to broadcast and receive the crisis messages. You can't afford for a lost password or out of date smartphone app to prevent the messages from getting through.
5. Pushy: Messages need to be pushed to the recipients rather than relying on people to remember to go looking for updates on a website or by calling a hotline.
6. Hey You! Finally this service needs to interrupt the recipient so regular email is probably not going to work. Email is not a real time communication tool and most professionals get too many emails each day to trust that they will be able to spot important ones during an emergency. Also email is going to be reliant on your internal infrastructure – see point 3 above.

One technology that meets all these criteria is the humble SMS or Text Message. Available virtually everywhere people live on the planet, supported by every mobile phone, and so simple to use even your mother can do it. People read their email occasionally but SMS tend to be read as soon as they arrive.

However, sending one SMS from your mobile phone doesn't easily scale to send a message to tens or hundreds of recipients. There needs to be a way to multiply or repeat that message automatically so it goes to everyone on a pre-defined distribution list. Most smartphones have the ability to create


The Crisis Management Cycle.

ALERT: Tell the business what is, or might soon, be going on.

MOBILISE: Wake people up, bring the team together that will manage the crisis.

MANAGE: Deal with the incident, tell stakeholders, partners and customers what is going on.

distribution lists for SMS on the phone but this approach has two difficulties. Firstly the admin burden can be large – how will you get those distribution lists set up and then kept up to date on all the different phones of people who may need to send messages. Secondly there is a privacy issue – not everyone will be comfortable with their mobile phone number being shared so widely within the business. Both these issues are overcome if the distribution lists could be held and used centrally. This means there is just one master copy of each distribution list to maintain and secondly the contents of the distribution list can be kept secure. People authorised to send messages to the distribution list don't need to know the mobile numbers of everyone on the list – only the name of the distribution list itself.

The arrival of ISO 22301 and 22313, the standards for Business Continuity Management Systems, will help many organisations clarify their thinking about, and requirements for, crisis communications. Clauses 7 and 8 of the standard, when applied to your crisis communication service, can be summarised as follows:

- Have a crisis communications service (!)
- Communicate to teams not individuals – build in resilience.
- Define the procedures for how and when to use the crisis communication service.
- Make it easy to include third parties in the communications.
- Define the different procedures for different recipient groups e.g. board members, technical staff, support staff, media, partners and so on. Make it clear who needs to know what, and when.
- Ensure the crisis communication service remains available during your crisis.
- Test it!
- Don't wait for the crisis to hit, establish a protocol to issue Warnings when something might happen – forewarned is forearmed!
- Ensure your crisis communication system is easily interoperable with suppliers, partners and other third parties.
- Record all communications sent, for later review.

TEXTSQUIRT is a service which was invented to help organisations communicate better in a crisis. It meets all the criteria described above. Running securely across multiple availability regions on Amazon's Cloud- TEXTSQUIRT interfaces to the mobile phone networks in 196 countries. Your distribution lists are securely stored on TEXTSQUIRT's servers so you simply need to send one SMS to your personal TEXTQUIRT number and that SMS is broadcast to everyone on your distribution list- wherever they are in the world. We also provide a fully featured web portal compatible with smartphones, tablets and PCs where you can send messages and manage your account.

For more information and to sign up for a free trial, visit www.textsquirt.com.

Contact Mark at mark.faithfull@cool-waters.co.uk

*Mark is the CEO and Founder of Cool Waters who created TEXTSQUIRT and are the European distributor of MOMI, the System Performance Monitor and Operations Utility for NonStop Servers. Mark previously served as a director of ITUG.*

# Back for More...

**Richard Buckle** >> CEO >> Pyalla Technologies, LLC.

"Every time you use an ATM, shop online, or make a call on your cell phone, there's most likely an HP NonStop system behind the scenes making that transaction happen. This year, we are celebrating the 40th anniversary of NonStop. After all this time, HP still continues to be the platform of choice for industries that never stop," so wrote Vice President & General Manager, HP Mission Critical Systems, Randy Meyer, in his column published in the Nov – Dec, 2014, issue of The Connection. I never tire of reading statements like this coming from HP executives as repetition is very important. After all, repetition, so I have been told, strengthens the growth of neural connections in our brains helping cement the idea – and that's something we all think is advantageous for the NonStop community.

As we kick-off a new year, we are taking a journey to a new place. A destination that will surprise many within the NonStop community – again, as much as this is about a journey to a new place it is also about saying good-bye to a familiar landscape. For forty years NonStop has been deployed on systems essentially hand-crafted for the purpose, but now we will be just one of many operating systems leveraging a commodity blade. While we all recognize that the course of this journey was started following the acquisition of NonStop by HP and the subsequent pursuit of commodity chips and peripherals, a lot of what was provided continued to look familiar, but not anymore!

"The most exciting development, however, is the upcoming launch of NonStop X. HP is redefining the availability and scalability of x86 applications by extending the 100% fault tolerant HP Integrity NonStop system to x86 architecture," said Meyer as he wrapped up his column. Although, to clear up one misconception, porting any x86 application to NonStop will still require an effort and the good folks at the Advanced Technical Center (ATC) are standing by to help – but the message is crystal clear all the same. NonStop supporting the Intel x86 architecture is a journey to an unfamiliar destination and yet a journey, when completed, where we will find new "open doors" beckoning us all.

NonStop X is not just about an x86 chip as it is also the first NonStop system utilizing InfiniBand (IB), about which much has already been written. However, before going through the open doors that I anticipate finding, as a short refresher (about statements already made by HP executives), recall what Meyer wrote in the Nov – Dec, 2013, issue of The Connection. "If you're asking why NonStop, and why now, just look around. The megatrends you see and hear about, from cloud computing to social media, and mobility to big data, are all leading to a new style of IT, with ever-increasing demands driven by an always-on world," said Meyer back then. Industries that never stop and an always-on world are well worn phrases coming from HP NonStop, but are worth repeating all the same.

However, with NonStop X, the megatrends discussed just twelve months ago – a little longer for those who recall Meyer's presentation at CTUG – are beginning to come into focus for the NonStop community. Partnerships are already forming around big data and clouds and with the movement of data comes the need for bigger, faster, standard communication pipes. IB is a huge step forward when it comes to building the kinds of hybrid configurations that will become commonplace in tomorrow's data centers. While at the NonStop Technical Boot Camp last month I was asked more than once about customer interest in hybrids and I have to admit, the general level of "noise" in this respect is barely audible – but it will increase in time. IB offers the NonStop community an effective "bus" that will allow the free flow of data between any open doors through which IB leads.

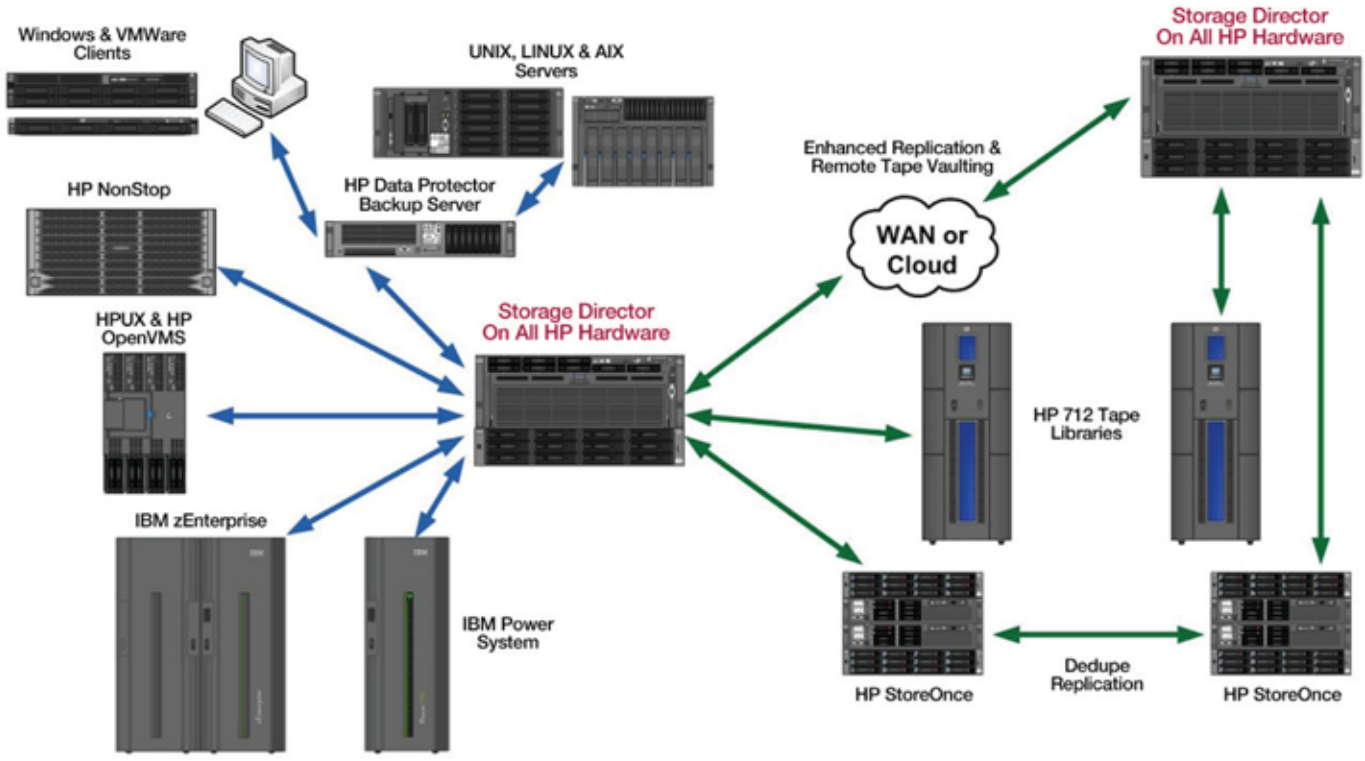
Partners as diverse as WebAction, Gravic, DataExpress, InfraSoft along with many other members of the NonStop vendor community will welcome this new connectivity option. Very few enterprises will ignore the possibilities this opens up, whether it's about exporting data to a big data store, exporting processes to the cloud or simply being able to gain greater insight from pulling information from any number of external resources no matter where they may be! Megatrends? Yes, with NonStop X, the ability to participate in more than simply in the slideware we so often see (at major events) will be a reality in no time at all.

Repetition strengthens the connections in our brains and that allows us to become creative – the number of times I have written about the necessity to "connect the dots" in 2014 isn't something I want to cover in this column but many will be familiar with my exhortation to do so. And yet, in today's always-on world where industries never stop, NonStop X will become an even greater force to be reckoned with; and why? A journey that started forty years ago has finally brought us to a destination where common architectures prevail and where those who prevail will offer differentiation – and just as it was forty years ago, nothing differentiates like fault tolerance and NonStop X will bring that by the bucket-load.

Get ready for the journey of a lifetime, not as something National Geographic would have you believe, but rather an opportunity to deploy NonStop X in a way that truly adds value in ways many in IT may have forgotten even exist, let alone are possible. Repeat after me – "after all this time, HP still continues to be the platform of choice for industries that never stop!"

# Data Backup, Replication and DR Solution for the New HP NonStop X and All Other Server Platforms

STORAGE DIRECTOR®




## Storage Director Implementation in an Enterprise Environment

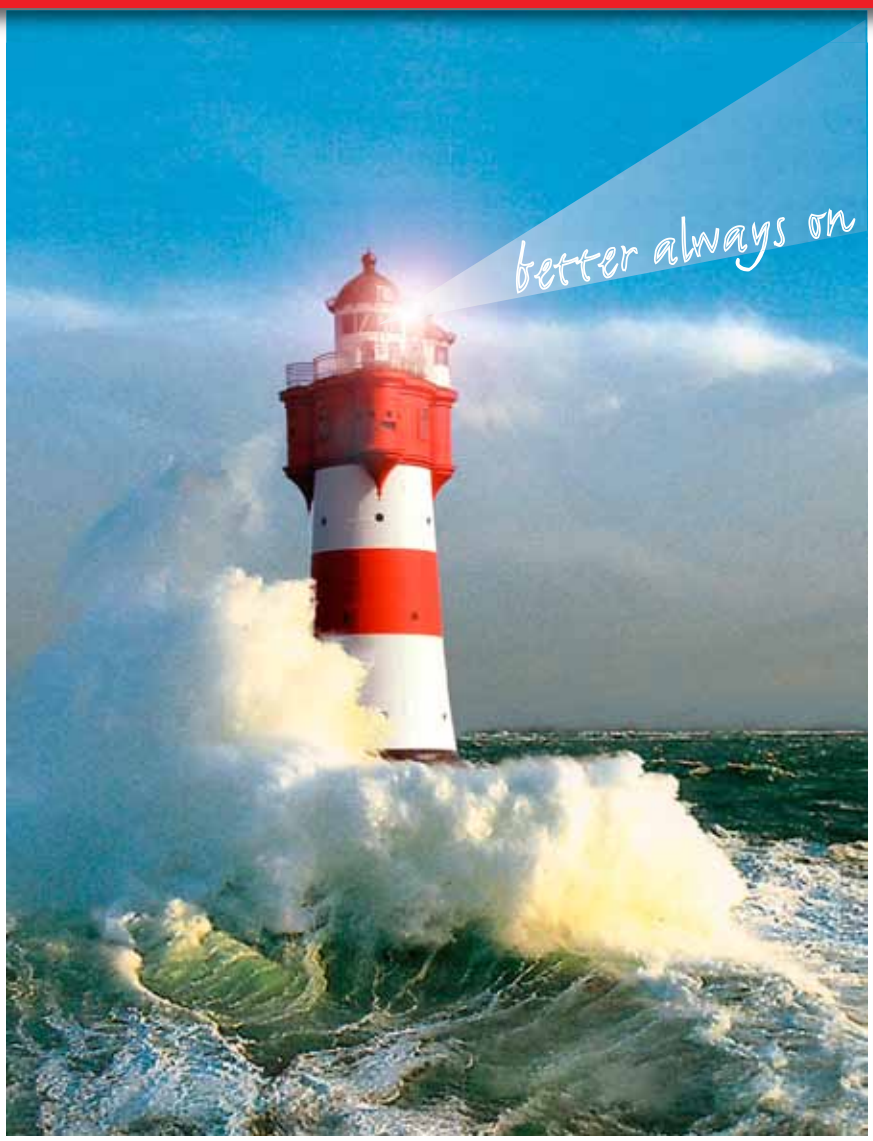
Storage Director is a policy based solution with Any-to-Any connectivity (any host platform with any backup application to any storage technology or media).

Storage Director is unique in supporting de-duplication AND tape in the same environment.

Tributary SYSTEMS, INC
www.tributary.com


Contact us today for a no-obligation assessment.
info@tributary.com
+1 (817) 354-8009

# The guiding light for your mission critical business
# Improve your NonStop'ness. Better always on!




www.comforte.com/better_always_on

Today's demands of mission critical businesses and customers are ever increasing. Unreliable and unavailable systems and applications are not an option. Minimizing downtime whilst maximizing security and operational efficiency is therefore paramount for the IT department. If your light is going out, your business and your customers can get in trouble. Systems and applications can't stop; they must be on, always!

**comForte „better always on" solutions help you gain …**

**Better Infrastructure**
Make the most of best in class communications and connectivity solutions by providing end users and system administrators with high performance, secure and reliable access to NonStop systems.

**Better Security**
Protect your mission critical data-in transit and at-rest. Improve your overall security posture on NonStop and achieve compliance with industry standards and regulations.

**Better Applications**
Modernize your legacy applications from the database layer, through better integration in the enterprise all the way to refreshing the application's Graphical User Interface.

**Better always on with comForte's unparalleled solutions for HP NonStop.**

comforte®

better always on