NonStop Software Roadmap

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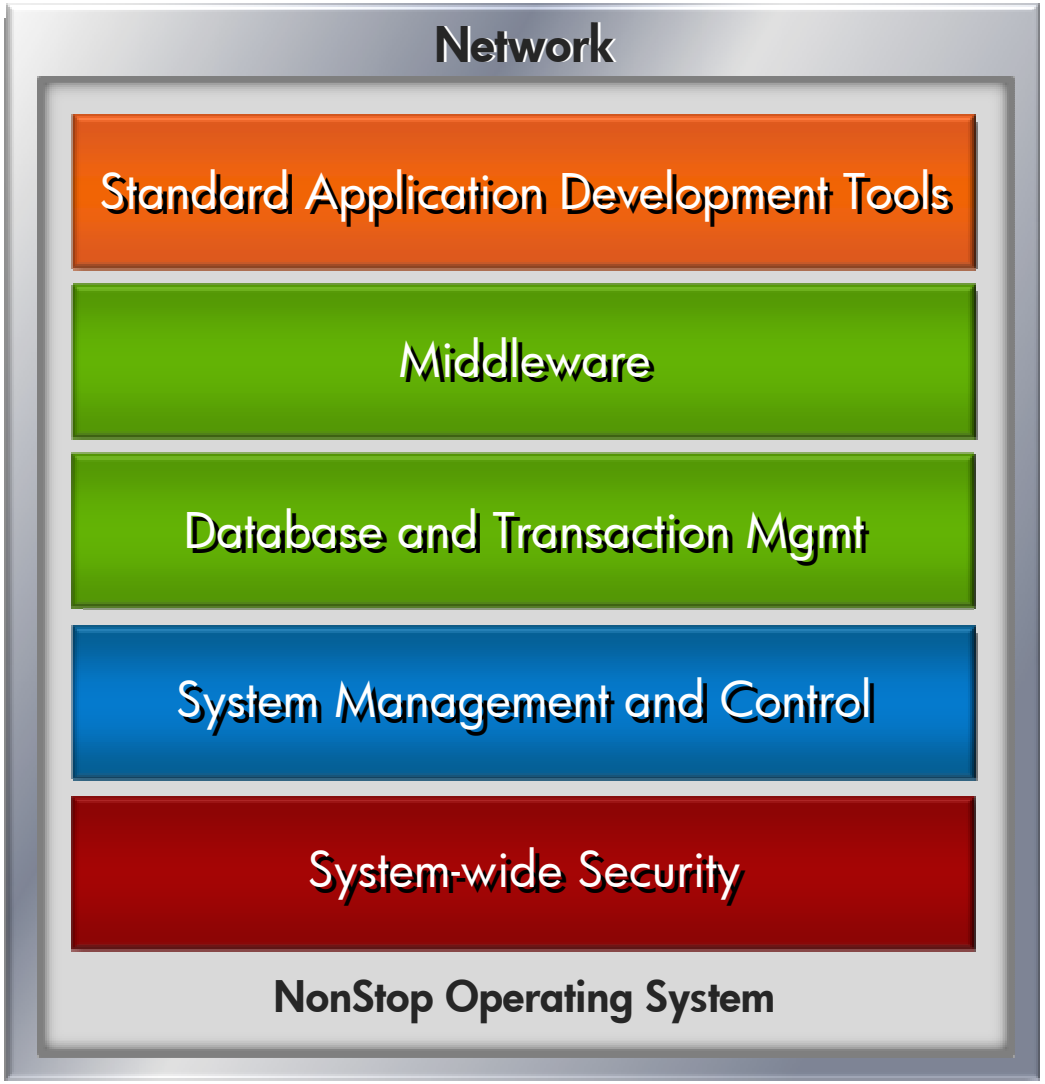
Goals of our software investments – in a nutshell

- Support industry standard technologies for application development
- Differentiate these standard applications by deploying them into the most scalable and available platform infrastructure (without change)
- Make this infrastructure easily accessible, open, highly secure, and simple to manage

Common standards, uncommon advantages
The same application runs better on NonStop

NonStop Software
Investments



Operating system infrastructure – plans

Continuing adherence to industry standards

February 2009

- **Guardian Binary Semaphore – Limits Relief**
  - Increase the number of binary semaphores per process from 64 to 24K

May 2009

- **OSS File Open – Limits Relief**
  - Increase OSS file opens (per CPU including sockets, terminals, disk, …) from 12K to 64K
  - Increase OSS disk file opens (per CPU) from 12K to 48K
  - Increase OSS open sockets (per CPU) from 4K to 16k

2H 2010

- **Standard Library Support for Non-blocking IO**
  - Non-blocking IO for threaded applications using standard C libraries
- **System Limits Relief**
  - Increase OSS PIDs (per 16P system) to 128K
  - Increase number of Guardian processes to 10K
  - Increase OSS file opens (per CPU) to 128K
  - Increase OSS disk file opens (per CPU) to 96K
  - Increase OSS open sockets (per CPU) to 32K

Time

NonStop Software
Investments

Java Support

Support latest Java releases
Support latest Tomcat releases
Open-source frameworks for ease of appl development

Application Development

Increase developer productivity
Make apps easier to port
New optimization and debugging capabilities

SOA, Java and Open-source Frameworks

- Java open-source application platform with NonStop fundamentals

April 2009

- **Release NSJava 6.0**
  - Certified implementation of JDK 6.0

July 2009

- **Open Source Java Frameworks**
  - **S**pring framework for business logic tier
  - **A**xis 2 for SOA web-services
  - **S**erver Faces and Sprint MVC for Web tier
  - **H**ibernate for persistence tier

June 2009

- **Large Message Support in SOAP 3.0**
  - SOAP messages limit increased from 32K to 2MB

2010

- **Standards-based SOAP engine (4.0)**
  - Based on open source Apache AXIS2/C architecture (EAP available earlier) Feb. 2010
  - Adheres to SOAP 1.2 standard
- **NonStop Java Server Pages 6.1**
  - Deep port of latest Apache Tomcat servlet engine (version 6.0.18) July 2010

Time

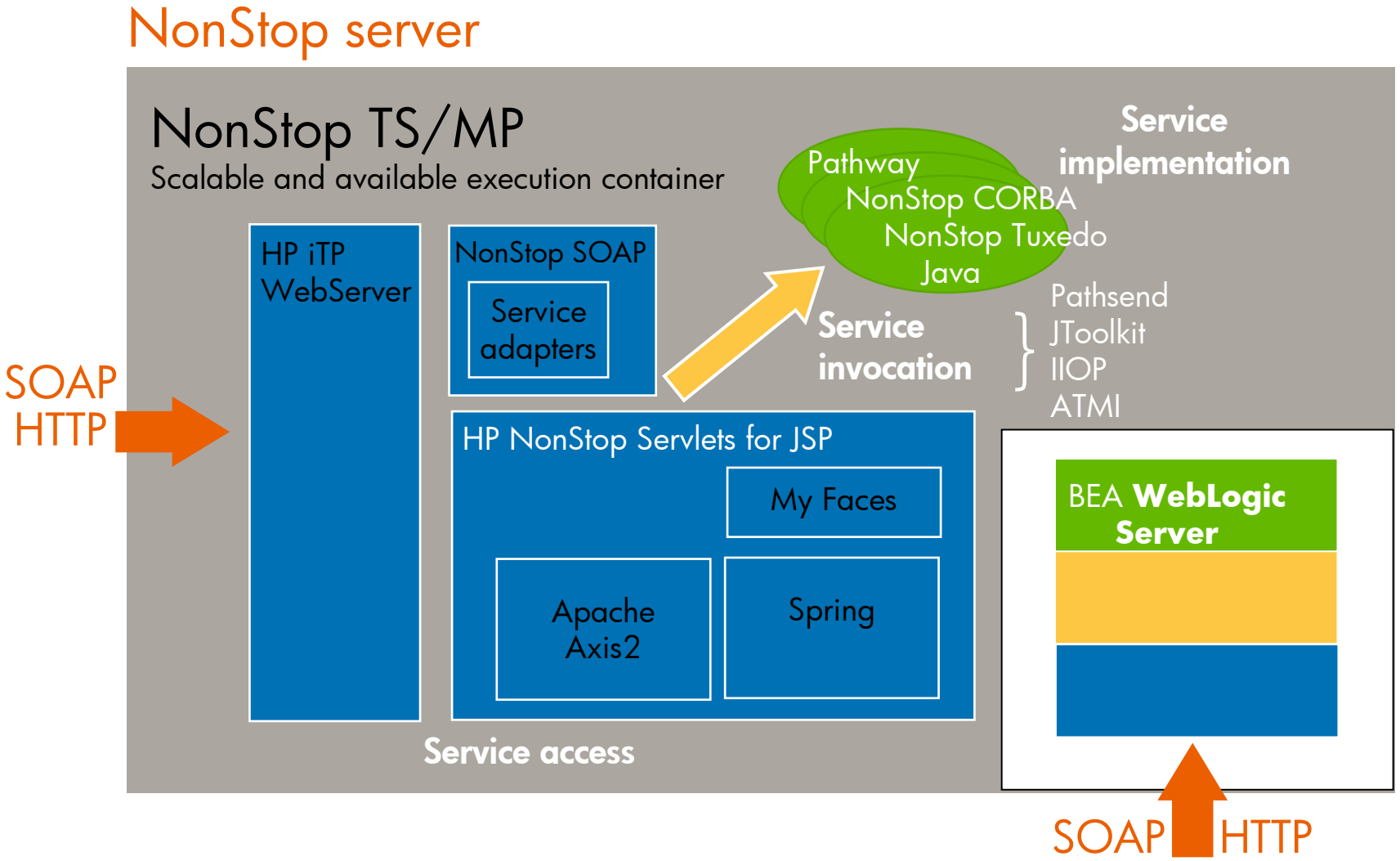
The SASH stack

- Category leaders with active community support
  - **S**pring (Business logic framework)
  - **A**xis2 (Web services framework)
  - **S**erver Faces (Web framework)
  - **H**ibernate (Persistence framework)
- Vendor support
  - BEA WebLogic, IBM Websphere, Oracle AppServer have expressed support for Spring
- Analyst endorsement
  - "Spring threatens Java EE" (Gartner)
  - "… organizations should consider alternative frameworks such as LAMP, Spring, Hibernate, RoR, and Microsoft .NET, which offer simpler and more productive programming models." (Burton Group)

Gartner: Trends in Platform Middleware, Sept. 2007
Burton: JEE 5: The Beginning of the End of Java EE, July 2006

SOA and the NonStop server

Product technologies summary



Phases of a SOA Project – examples

Awareness	Team Believes in Ability to Implement	Team is participating in internal SOA project planning	Implementation
• When asked by management or a SOA team, you are aware that NonStop CAN support SOA	• When a SOA team asks whether your team can implement, you are confident • You understand the basics of how to implement • Your team knows that SOA extends existing appli-cations and does not threaten them	• Team is actively engaged in SOA planning with other groups in company	• Team commences implementation • Extra resource load on NonStop system may call for additional software and hardware upgrades or move from S-series to Integrity

Application Development Updates

HP NonStop OS

Future product plans, dates, and functionality are subject to change without notice

Improved Language Features & Perform.

- Continuous improvements in –O1 and –O2 performance, debug information, compile time and compile memory consumption (Nov '08, Feb. '09)
  - Recompile to take advantage of the performance improvements
- O2 and O1 debugging improvements
  - Feb. '09 for O2, earlier RVUs for O1 improvements

Native Inspect: Major Features

- GDB (GNU Debugger) based debugger derived from HP-UX debugger
- Capabilities new to NonStop
  - Improvements to O1 and O2 debugging capabilities
  - PURIFY-like memory debugging, leak detection and corruption (Aug. '08)
  - Make function calls from the debugger (May '08)
  - Advanced scripting using Integrated TCL interpreter (May '08)
- Native Inspect capabilities
  - COBOL debugging support
  - Report open files in the debugger
  - Suspend execution at termination (catch/stop abend)
  - Catch dlload and unload events
  - Optimized code debugging

Integrated Development Environments

PC-hosted IDEs

Tool	Version	Platform	Description
ETK	3.1	Visual Studio 2003 or 2005. Visual Studio 2008*	Enterprise Toolkit
NonStop EPE	1.1	Eclipse	Enterprise Plug-ins for Eclipse

* Visual Studio 2008 support in 2H 2009

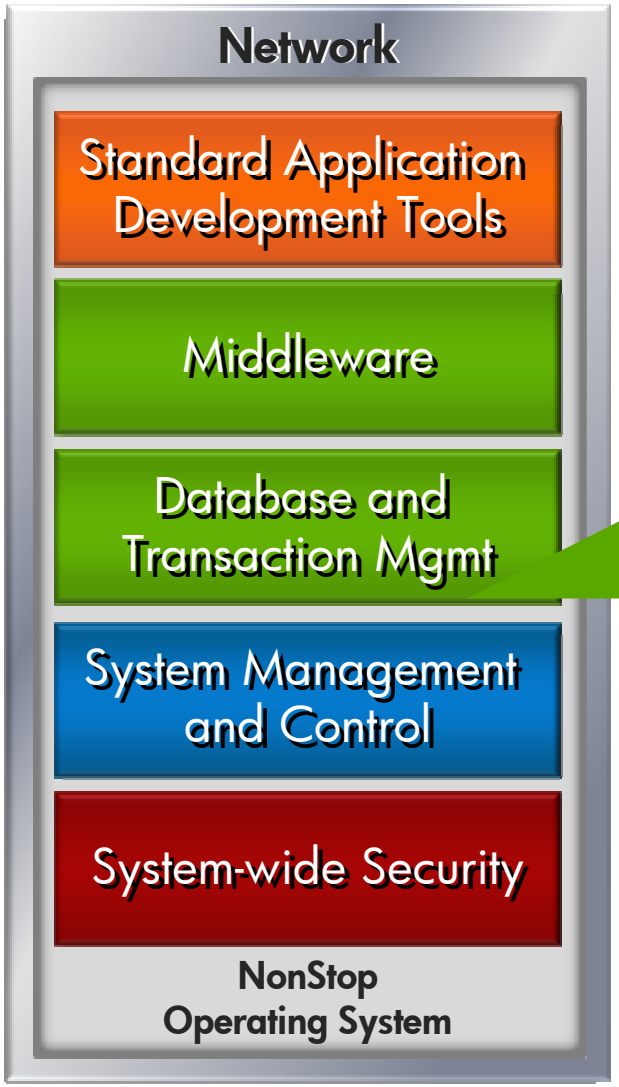
Enterprise Plugins for Eclipse 1.1 (Nov. '08)

- Build applications remotely on HP Integrity NonStop servers using the new remote build functionality
  - Availability of "Remote perspective" on all Integrity NonStop servers
- Editor windows now highlight (color code) keywords and other language elements for COBOL and pTAL
- Supports
  - C, C++, COBOL, and pTAL
  - NonStop SQL/MX and SQL/MP
  - Applications and DLLs

Enterprise Plugins for Eclipse 2.0 (Jan. 2010)

- Greater productivity through integrated debugging in the Eclipse IDE
- Eclipse standard point and error correction for remote builds
- Improved connectivity to NonStop server
- Rebase to new Ganymede Eclipse platform (CDT 3.4)

NonStop Software Investments



Middleware

Reduce planned downtime
Increase OLTP capacity
Support SOA standards/protocols

Database & Transaction Mgmt

Improved performance
Enhanced ease of use
Richer coding capabilities

Future product plans, dates, and functionality are subject to change without notice

Pathway – plans

Continuous functional enhancement and technology currency

May 2009

- **NonStop TS/MP 2.4**

–Online application upgrade

–Support for large Pathsend messages

–Optimized server/cpu placement for greater cpu utilization

–Node independent DEFINE support

–Increased granularity of CREATEDELAY

–Enable use of > 32K Pathsend messages between WS and CGI servers

–Raise GDSX transaction limit

2nd Half 2010

- **NonStop TS/MP 2.5**

–Large message support NonStop Java Server Pages (a Tomcat derivative),

–Large message support for iTP WebServer

–Large message support for NonStop SOAP

–More

Time

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NonStop SQL/MX Roadmap

Future product plans, dates, and functionality are subject to change without notice

SQL/MX Release 2.3.2

November 2008

Feature	Function	Benefit
• Faster Update Statistics	• Additionally shorten the time taken to Update Stats	• Improved performance
• Support partition name for MODIFY command	• Ability to specify partition name while modifying table	• Improved usability
• Support for No-Wait ESPs (Executor Server Process)	• Start all ESPs in no-wait mode, minimize start-up time	• Improved performance
• Resultset for Stored Java Procedures (MXCI, ODBC, JDBC T2 & T4)	• Generates a table of data upon query execution	• Improved performance and usability
• New optimization rules	• Optimizer explores additional plans for queries with OR-predicates and Join improve.	• Improved plan quality
• QA enhancements	• Proactively improve code quality, diagnostics, etc…	• Improved stability

SQL/MX Release 2.3.3

September 2009

Feature	Function	Benefit
• JDBC T4, T2 and ODBC/MX statement cache	• Eliminates some compiles, reduces CPU use, reduces memory consumption	• Improved application performance
• General performance enhancements	• Transparent to programmers and DBA, shortens pathlength	• Improved performance and reduced CPU use
• N-way union operator	• Efficient method to union a large number of tables	• Reduced compile time, improved performance
• Constraint based pruning	• Define constraints on tables to improve resource utilization	• Reduced compile time, improved performance
• BR2 (Backup Restore) enhancements	• Enable parallel BR operations in separate sessions & CPUs	• Improved performance
• QA enhancements	• Proactively improve code quality & diagnostics	• Improved stability

SQL/MX Release 2.3.4

Target February 2010

Feature	Function	Benefit
• Cascaded Updates/Deletes	• Completes Referential Integrity	• Improved portability • Reduced number of sql statements for delete/updates • ANSI compliance
• Embedded SQL in DLLs	• Allows SQL statements to be embedded within DLLs	• Facilitates modular and manageable DLL code
• Display Explain enhancements	• Better insight into query plans	• Improved usability and supportability
• Thread aware and safe OSS ODBC/MX Driver	• Allows multi-threaded client applications to run under OSS	• Improved portability and performance
• General performance enhancements	• Transparent to programmers and DBAs	• Improved performance and reduced CPU use
• QA enhancements	• Proactively improve code quality, diagnostics	• Improved stability

SQL/MX Release 3.0
Target February 2011

Feature	Function	Benefit
• Large keys/rows	• Allows creation large keys and rows	• Improved portability and usability
• Extended numeric precision	• Allows numeric precision up to 128 digits	• Improved usability and portability
• Materialized Views, Triggers	• Allows creation and use of Materialized Views and Before and After Triggers with Compound statements	• Improved ease of use by DBAs & developers
• Continued performance improvements	• Transparent to DBA and programmers	• Improved Performance
• Many customer RFEs	• Functionality requested by customers	• Helps retain customers
• QA enhancements	• Proactively improve code quality, diagnostics	• Improved stability

HP NonStop Business Continuity Suite

Recent Releases

Business Continuity

Integrated products designed to protect your data and ensure your business.

Remote Database Facility (RDF)

Update 9 – May 2009

Planning for Update 10 underway

AutoSYNC

Update 12 – May 2009

AutoTMF

Update 9 – May 2009

SQL DDL Replicator (SDR)

Update 1 – July 2009

TMF Synchronous Gateway

Just shipped – and partner solutions due early 2010

Future product plans, dates, and functionality are subject to change without notice

New RDF 1.9 Enhancements

- **Performance**
  - Option for faster browse access of updater-replicated data via FASTUPDATEMODE
- **Availability**
  - Alter updater mode online for easier online dumps
  - Guidelines for faster Switchover/Takeover
- **Manageability**
  - Enter one command to affect many RDF/IMP(X) environments
  - Option for file level purge replication
  - Display SQL/MX 3-part ANSI table names in selected events
  - Support for full-length process names (6 character)
  - See control subvolume name in RDFCOM Error Message; option to purge existing control file(s)

NonStop Software
Investments

Manageability

Heterogeneous manageability
Adaptive Infrastructure integration
HP plus partners

System-wide Security

Enhanced platform security
Data encryption
Regulatory compliance

NonStop Security Products
What does HP offer today?

On Platform Security

Safeguard

NS System Console Security Program

Secure iTP WebServer/SOAP

Data In Motion

SSH Server

IPSec

Atalla NSP (Encryption Processors)

Data At Rest

Volume Level Encryption (Oct. CA, Feb. 2010 GA)

Secure VTS (Virtual Tape System)

Audit and Compliance

CLW (Compliance Log Warehouse)

Data Sanitization

SafeArt (Safeguard reporting)

Future product plans, dates, and functionality are subject to change without notice

Security Highlights: Safeguard
H06.18, J06.07 Releases

Feature	Function	Benefit
• Support for additional POSIX security APIs	Support for initgroups(), setgroups(), seteuid(), and setegid(), with appropriate audit generated	Improved ease of porting POSIX/UNIX applications
• Additional information for Authorization SEEPs (Security Event Exit Program)	Inclusion of object file name in data structure sent to Authorization SEEP	Improved ability for SEEPs to control what programs are run, when, and by which user
• Change in flow between Safeguard and Password Quality SEEPs	Safeguard validation of password prior to sending it to Password Quality SEEP	Improved ability for PQ SEEPs to keep their password databases in sync with Safeguard's
• Additional support for wild cards	Support for wild cards in GROUP ADD MEMBER and ALTER MEMBER commands	Improved ease of use. (Other wildcarding capabilities added in previous releases.)
• OSMP shipped with HIGHPIN set	System runs the $ZSMP process pair in high PINs by default	Makes additional low PINs available for unconverted programs

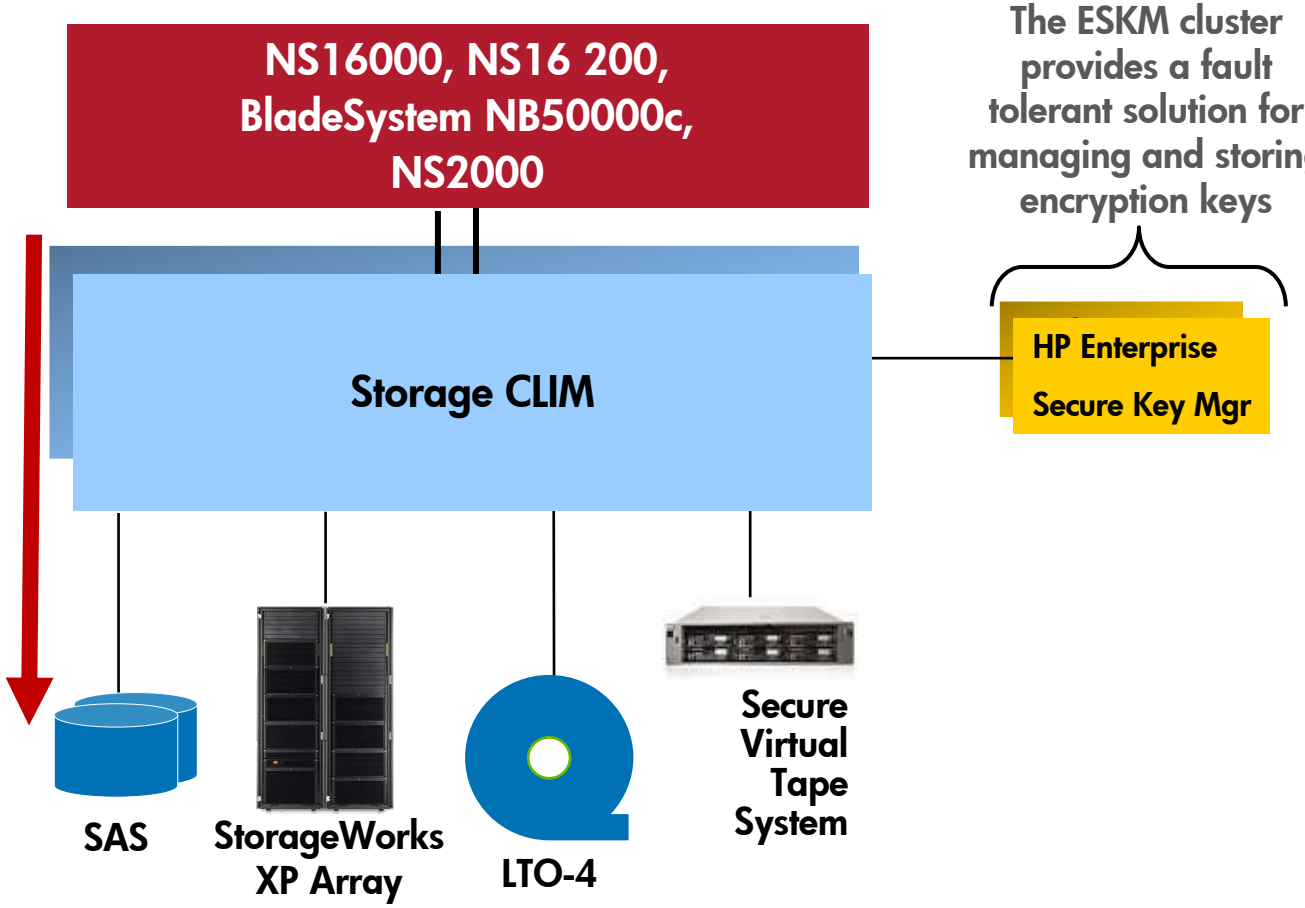
Data At Rest Security

NonStop Volume Level Encryption Overview

Data is decrypted and appears in the clear when "in use" by authorized applications

Customers continue to maintain security controls on the system when using this solution

Data is encrypted as it is written to selected disks or tapes



Secure VTS may also be attached to the same Storage CLIM though it contains its own encryption capability.

Data Sanitization for NonStop

Product Features

Data At Rest

Stored data and sensitive customer information is protected on disk and tape

- Meets Department of Defense (DoD) standards for Data Sanitization as described in the DoD 5220.22-M pattern
  - Writes over segments of the disk making at least three passes on the disk to overwrite data
  - Uses a random series of characters during one of the write passes
- Plugs into OSM as a Guided Procedure
- Allows user to specify the number of "write" passes and specific write patterns to be used to overwrite the disk
- Allows concurrent sanitization of multiple disks
- Supports disk devices sold on NonStop S-series, Integrity NonStop NS-Series and Integrity NonStop BladeSystems
- Provides output report to verify sanitization was successful
- Sends EMS events to notify when sanitization was initiated and when it was completed, with success or failure

NonStop Compliance
Integration with HP Compliance Log Warehouse

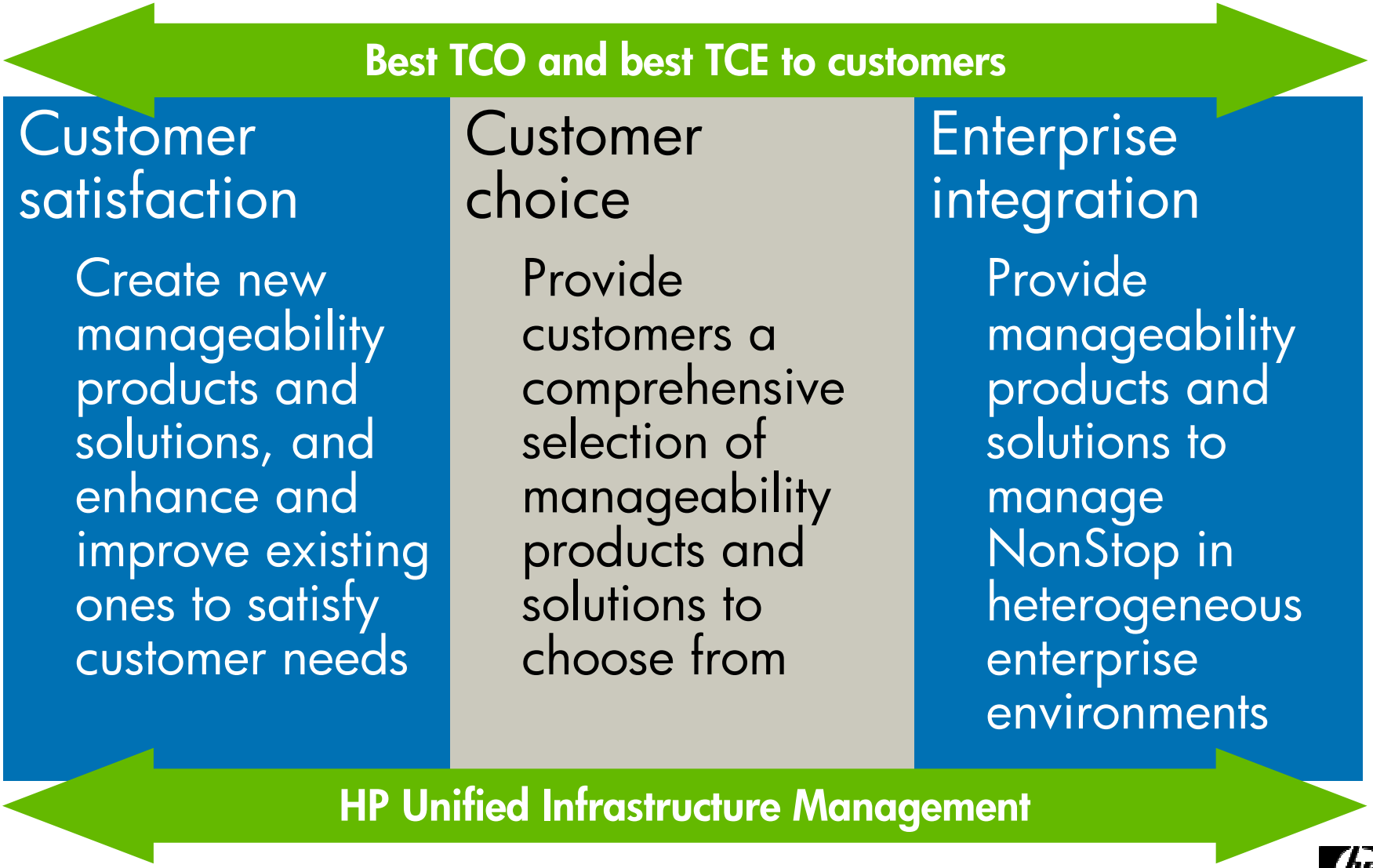
HP Compliance Log Warehouse (CLW)

Strategic log event data management designed for enterprises that demand the highest performance with the lowest total cost of ownership

High performance appliance with Log and Analysis Manager and Real-time Alert Manager modules

- Log and Analysis Manager
  - High speed collection and analysis of log data that automates compliance reporting of many industry and government standards
  - Collects, compresses & stores log record data in a replicated repository for high-speed analysis for audits or forensic investigations
- Real-Time Alert Manager
  - Scans log record data from numerous sources, in real-time, for potential security-related or natural events & alerts trained personnel

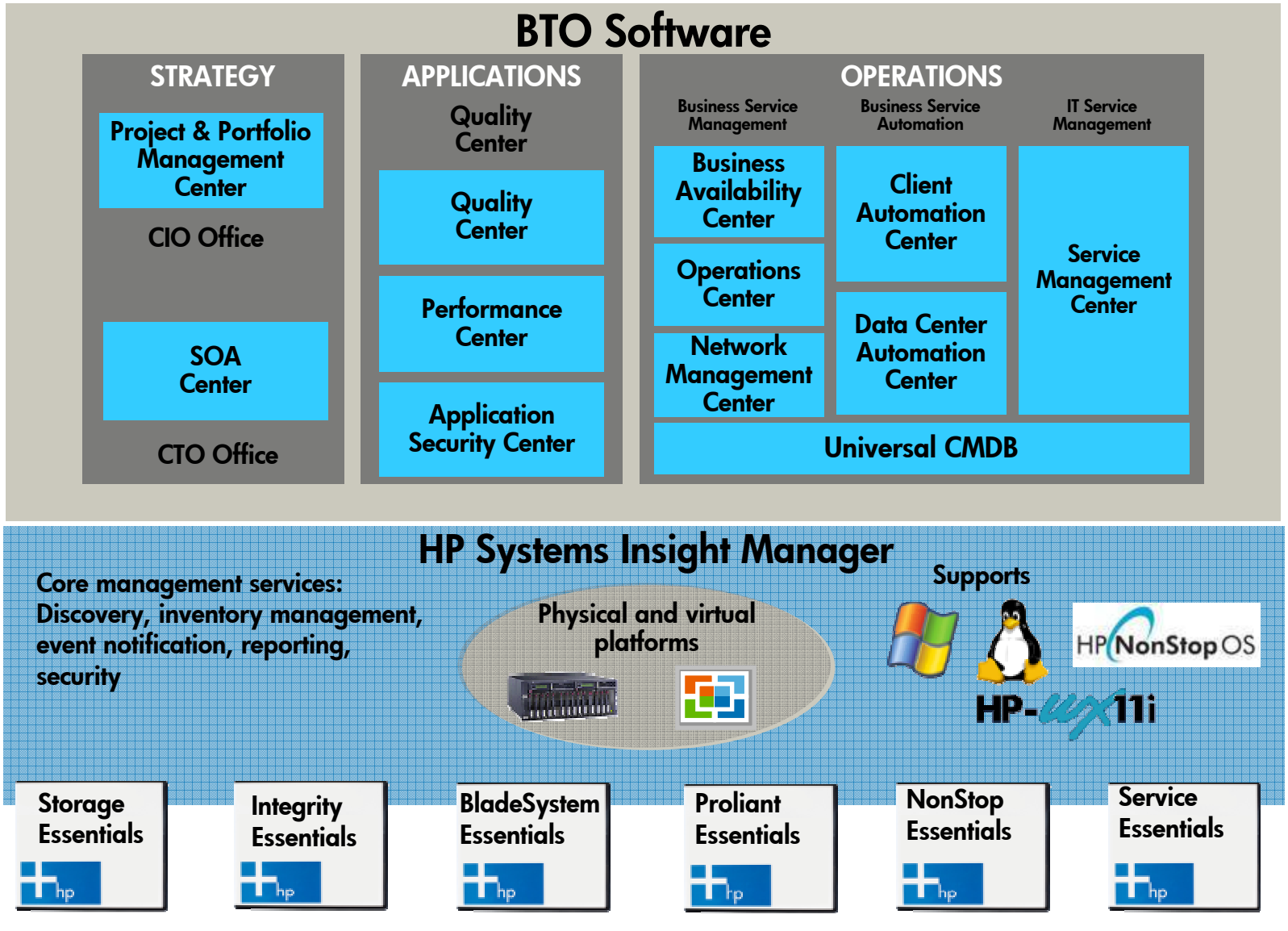
NonStop manageability strategy



NonStop manageability integrated with HP Unified Infrastructure Management

- Common view for management of all HP platforms
- NonStop management in heterogeneous environments
- Increase in operator productivity and reduction in operator training costs
  - Reduced specialization based on platform
- Extending manageability up to application level

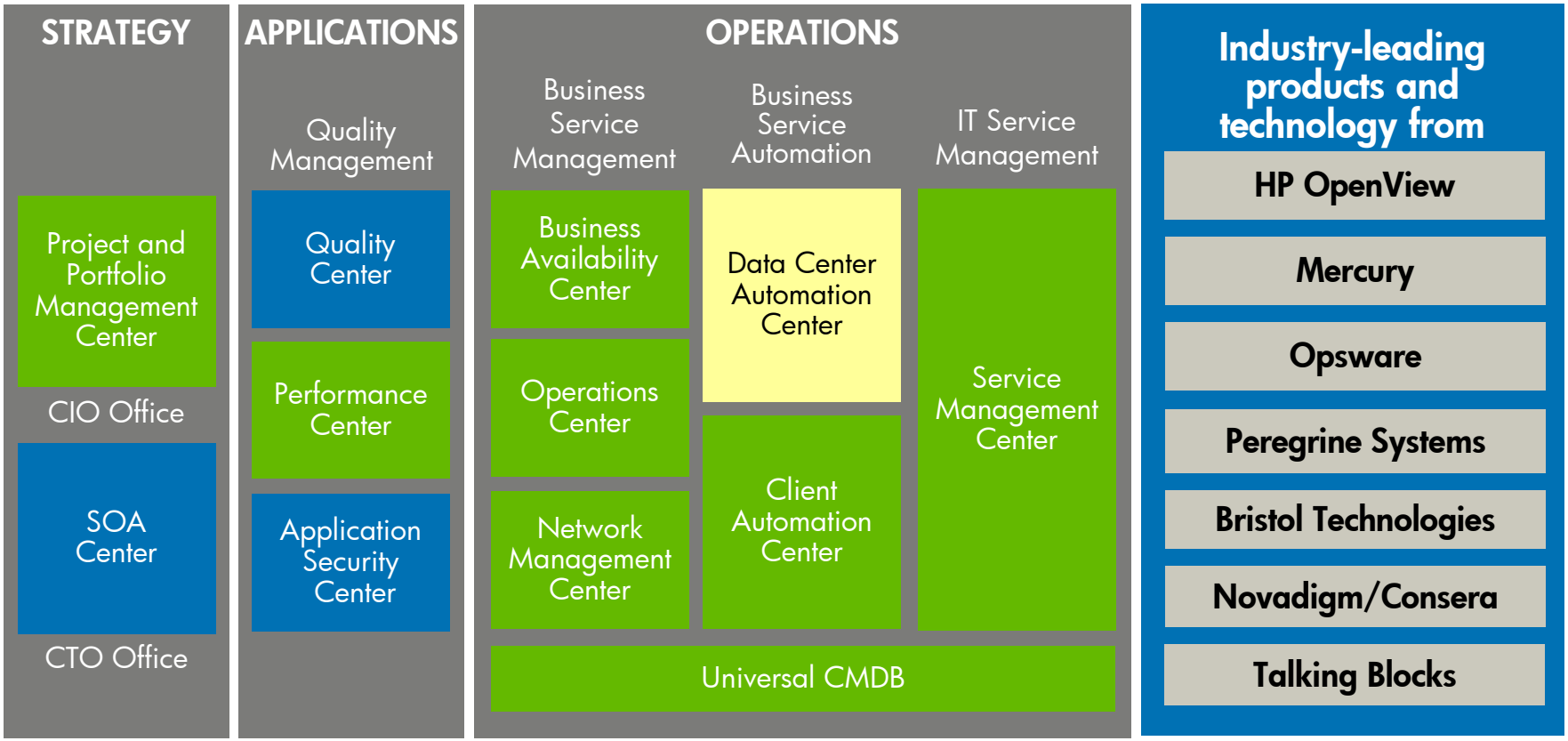
HP SIM, Essentials and BTO products



NonStop Capabilities, HP BTO Centers

Supported today
Coming in 2009
Looking for customer input

BTO Centers: Optimize key functions



Future product plans, dates, and functionality are subject to change without notice

New Manageability Products

NonStop Cluster Essentials

Manages NonStop & Linux clusters through a single interface

Centralizes userid management, boot and monitoring

Minimizes need to know complex NonStop syntax

NonStop Time Synchronization

System clock synchronization product from HP

Synch system clocks across all your NonStops Systems

Also synch Linux or Windows platforms

Synch to NTP source or assign a server to act as NTP source for the enterprise

NonStop software objectives by product segment

Develop
Application programming models

Enable the development of applications conforming to current standard tools and programming models

"Common standards…"

Deploy
Application infrastructure

Provide a highly scalable and available deployment environment for mission critical applications

"…uncommon advantages"

Enable
Platform infrastructure

Provide the underpinnings for an accessible, open, secure, and easy to manage platform

Technology for better business outcomes

- Due to time contraints, the following information was not presented but is provided here as added information for your use.

Compiler Strategy

- Support new language features as driven by customer need
- Facilitate NonStop application quality and supportability
  - Diagnose problems early
  - Enable debugging of production applications
  - Maintain stability and compatibility
- Provide optimizations required to meet business and customer requirements

Future product plans, dates, and functionality are subject to change without notice

Integrity NonStop Debuggers

Debugger	Program Types	Roles
Native Inspect	TNS/E	•Based on industry popular and open source GNU Debugger GDB •Future support for integrated debugging using Native Inspect within NonStop Development Environment for Eclipse • Memory leak detection •GDB command-line interface Limited multi-process debugging •TCL debugging scripts •System debugger (replaces DEBUG)
Visual Inspect	All*	•Windows GUI Interface •Multi-process debugging •Integrity and S-Series
Inspect	TNS Screen COBOL	•TNS program debugging

* Except Screen COBOL

IDE and Debugger Strategy

IDEs

- Build upon the feature rich open source Eclipse IDE
  - Leverage the base IDE
  - Provide extensions to interface to NonStop systems and tools
  - Allow users to leverage the rich ecosystem of extensions
  - Enable third-party extension development
- Eclipse hosting
  - Windows
  - Linux (future)
- Support Windows based and NonStop based build models

Debuggers

- Build upon GDB (GNU Debugger), a de facto industry standard
  - User interface commonly available on other platforms
  - Apply benefits of GDB evolution
  - HP-UX-like debugging on NonStop
- Provide debugger extensions to support NonStop fundamentals
  - Key inspect features
  - Optimized code debugging
  - Production debugging
- Use Eclipse and GDB to provide the next generation debugging GUI

Future product plans, dates, and functionality are subject to change without notice

Planning underway for RDF 1.10 Potential candidates for the release

- Performance
  - Capability to control updaters in coordination with TMF timer for faster, or if needed, delayed, updates to target
- Availability
  - Improvements for verifying database consistency
    - Primarily for use after initial configuration of RDF
  - Automatic control to avoid unneeded shutdown of updaters during SQL Shared Access operations on primary
- Manageability
  - Report of files opened by updaters online
  - Enhancements to Validate Configuration command
  - EMS improvements
  - SPI support
  - HighRequesters active in RDFCHEK

Future product plans, dates, and functionality are subject to change without notice

SQL/MX 2.3.1

February 2008, H06.13

Feature	Function	Benefit
• Improved compiler memory usage	• Faster compiles, less memory usage, handles queries with larger number of joins	• Improved performance
• Enhanced DISPLAY USE OF	• Display source and object file names plus potentially invalid modules where table modified timestamp > module creation time	• Minimized recompile time, improved manageability
• Improved error handling of IMPORT tool	• Carry on the import task even when data errors are encountered	• Ease production, improved usability
• Plan Versioning	• Allows a mixed release network without recompiling applications	• Ease of migration
• SET TRANSACTION AUTOBEGIN OFF	• Allows implicit transaction to be turned off	• Improved usability

NonStop Security Strategy

- Improve NonStop security capabilities offered by HP
  - Enhance security offerings to offer new security products to customers
  - Correct existing product shortcomings
  - Invest in areas of largest impact
- Leverage expertise inside HP
  - Participate in the Secure Advantage program
  - Support security standards and HP interoperability efforts
- Leverage Partner products
  - Examine opportunities to leverage existing partner technologies and engage for new customer offerings

Future product plans, dates, and functionality are subject to change without notice

NonStop Security Areas
Product Categories

On Platform Security

Only authorized users can access the system. Access to data and other resources is controlled and protected

Data In Motion

Network and sensitive data moving between systems or workstations cannot be deciphered if intercepted

Data At Rest

Stored data and sensitive customer information is protected on disk and tape

Audit and Compliance

Security policies can be verified to be working and compliance regulations can be proven to be in place.

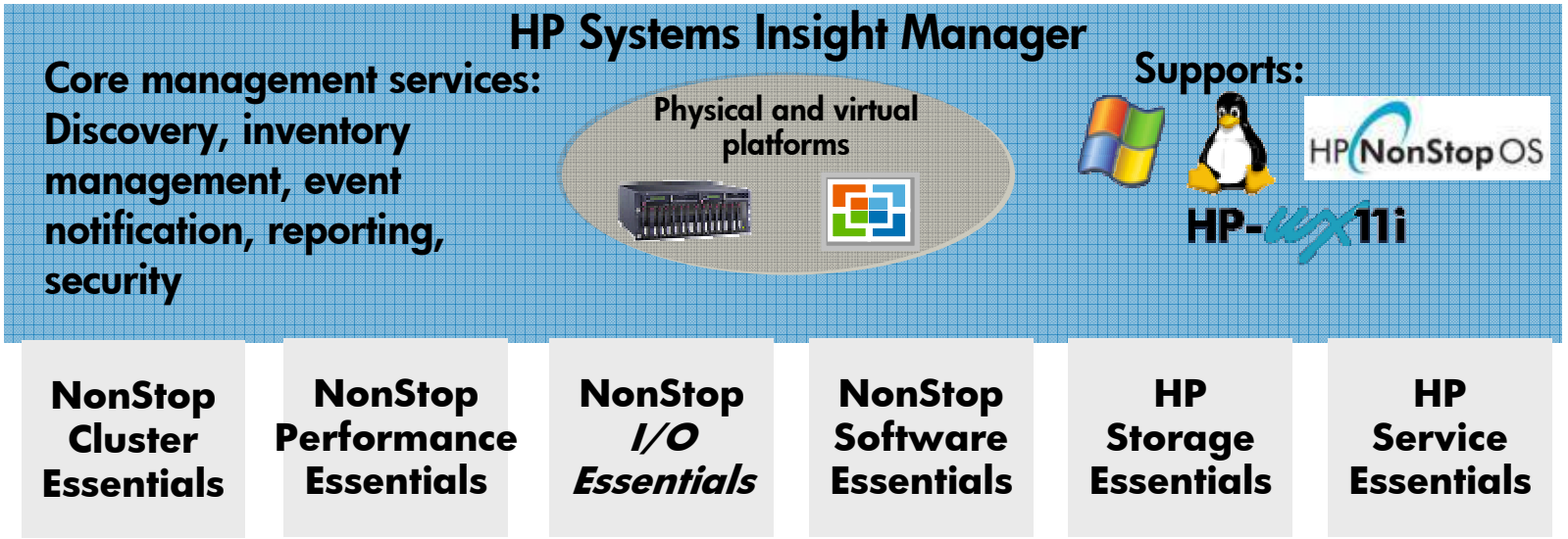
NonStop manageability portfolio

Basic operations	NonStop System Console (NSC) Open System Management (OSM)
Homogeneous NonStop environments	Web ViewPoint Pocket ViewPoint Real-time Process Monitor (RPM) Tandem Reload Analyzer (TRA) Performance Management Bundles SPAM

NonStop manageability portfolio

Enterprise integration	Availability, Stats, and Performance (ASAP) TimeSync HP Systems Insight Manager (SIM) NonStop Cluster Essentials NonStop Cluster Performance Essentials NonStop I/O Essentials HP Storage Essentials HP Remote Support Advanced (RSA) HP Business Technology Optimization (BTO) products Operations Agent for NonStop (OVNM) Performance Agent for NonStop (OVNPM) NonStop Tivoli Adapter

HP Systems Insight Manager
NonStop and Supporting Essentials



Strategy is to implement new platform management functionality as SIM Essentials

Interface existing products to SIM as appropriate

Future product plans, dates, and functionality are subject to change without notice

Newer Manageability Products

HP Operations & Perf Agents for NonStop

Formerly known as OpenView, these agents present an application level view of the system and allow you to manage by "exception". Run on their own or with HP's central OVO Console, these agents provide a graphical view to the system. A plug-in allows data to flow to your Tivoli Console as well.

ATM & POS Transaction Analyzers

New products that provide tracking and monitoring of transactions that occurred on ATM or POS devices across your enterprise. Works with Base24 applications on NonStop. Monitors approvals, denials, and timeouts. Includes pre-canned reports for upper management. Supports ad hoc reporting. Optionally integrates with Service Desk for trouble ticketing and with HP Operations for system outage tracking.

For monitoring ATM device states:

HP Self Service Terminal Operations Bridge

NonStop software product segments