

Modernizing NonStop Applications

using modern tools, programming models and technologies

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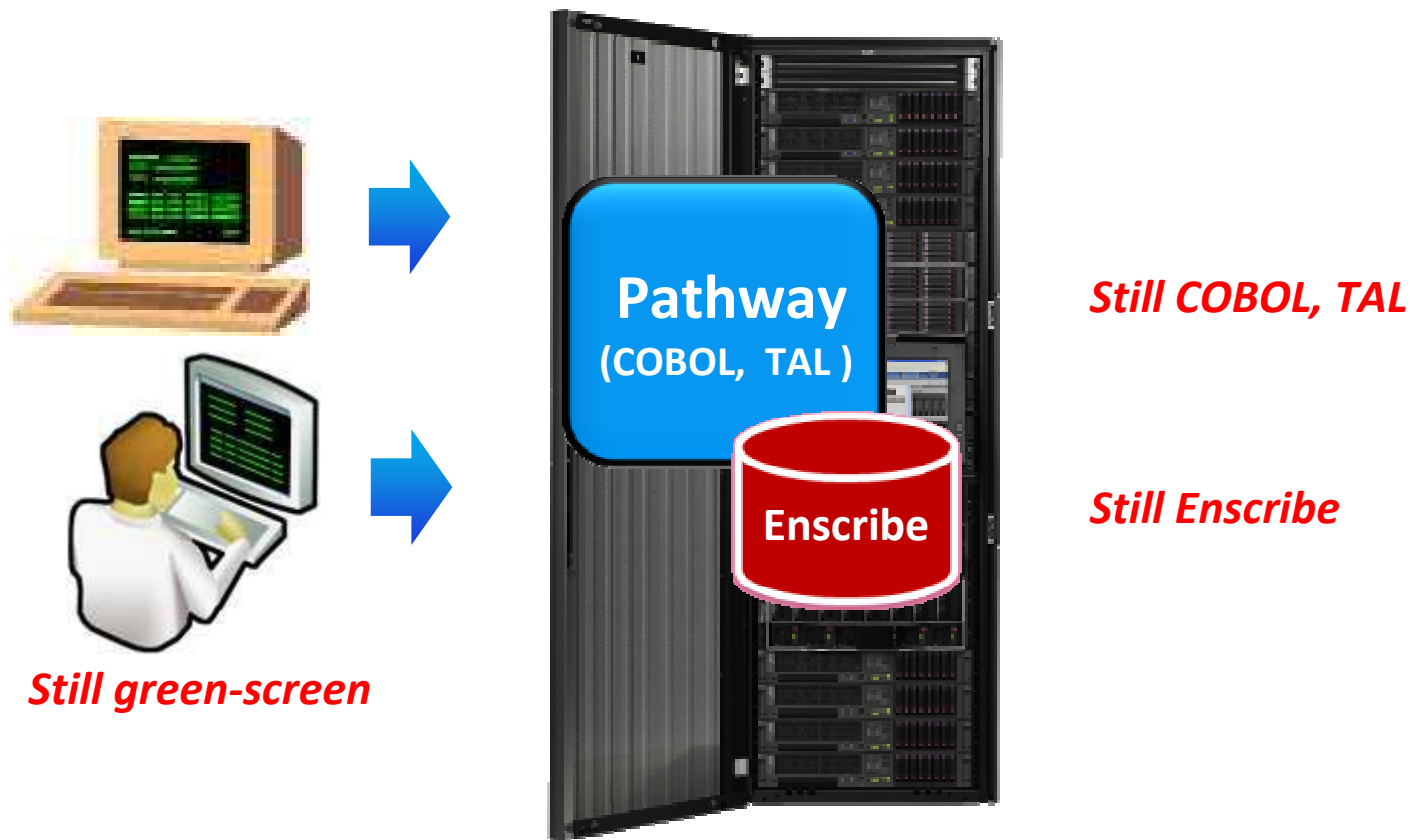
April 1, 2010



Agenda

- Quick intro to modernization – What and Why
- Types of modernization with customer examples
 - User Interface modernization
 - Application interface modernization
 - Application infrastructure modernization
 - Database modernization
 - Development tools modernization
 - Systems management tools modernization

Over the years, many customers have **upgraded their hardware**, but their **applications have not evolved!**



Locking up the value of their application assets



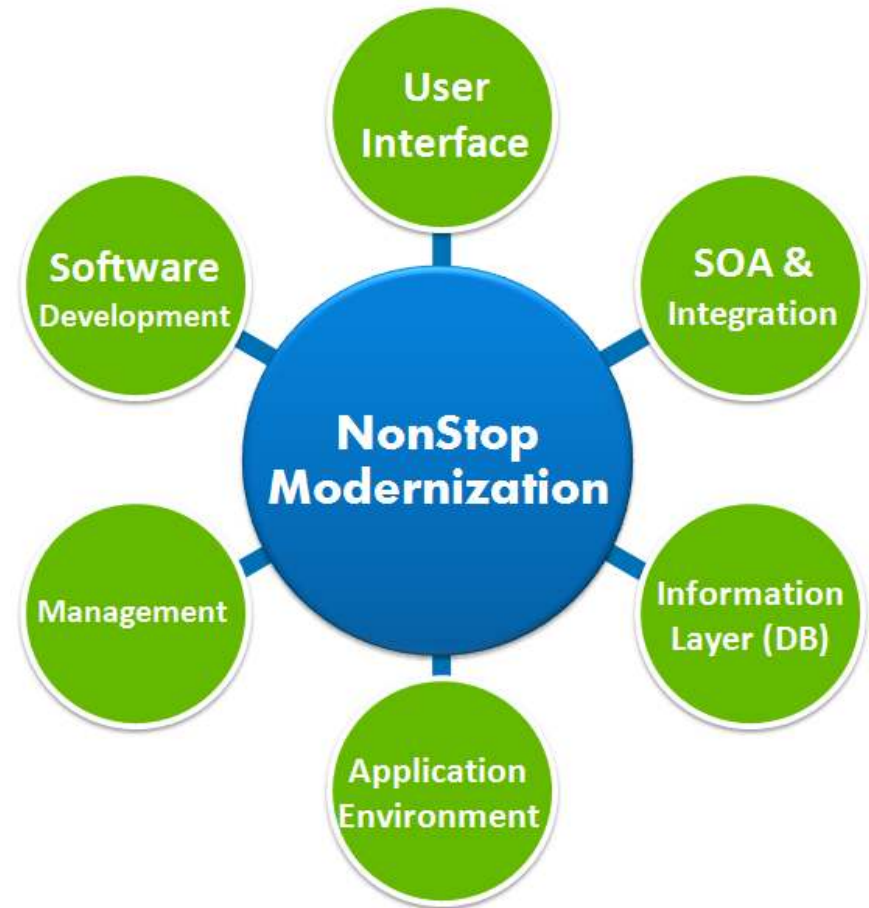
NonStop has capabilities to unlock the value of legacy apps, plus create new apps with modern capabilities



Modernization helps customers to ...

Move to common standards

- Lots of developers on market
- Significant TCO reduction
- Still build on NonStop fundamentals



Aspects to modernizing classic NonStop apps

- **User Interface (green screen) modernization**
 - Re-face existing applications with Rich-UIs
 - Ease end-user workforce training
- **Integrate NonStop Apps (SOA)**
 - Make existing applications and data accessible from heterogeneous platforms
 - Use standard interfaces and protocols
 - Eliminate application silos
 - Deploy new business processes quickly
- **Information Layer (DB) Modernization**
 - Get existing Enscribe data into NonStop SQL relational form
 - Lower development cost
 - Enable information to be readily used in new ways



Other aspects of modernization

- **Modern Development Tools**

- Leverage industry standard programming languages, tools and frameworks
- Increase programmer productivity
- Lower development & maintenance costs

- **Modern Management Tools**

- Manage NonStop in heterogeneous environments with common management view for all HP platforms
- Increase operator productivity



User Interface Modernization



User Interface (UI) Modernization

Challenges

- Many apps are still using green-screens
- Steep learning curve
- Low productivity
- Cost of conversion
- Lack of conversion skills

Needs

- Easy to use, rich user interface
- Browser based UI to avoid deployment effort and cost
- Mashups



User Interface Modernization

NonStop Product Offering

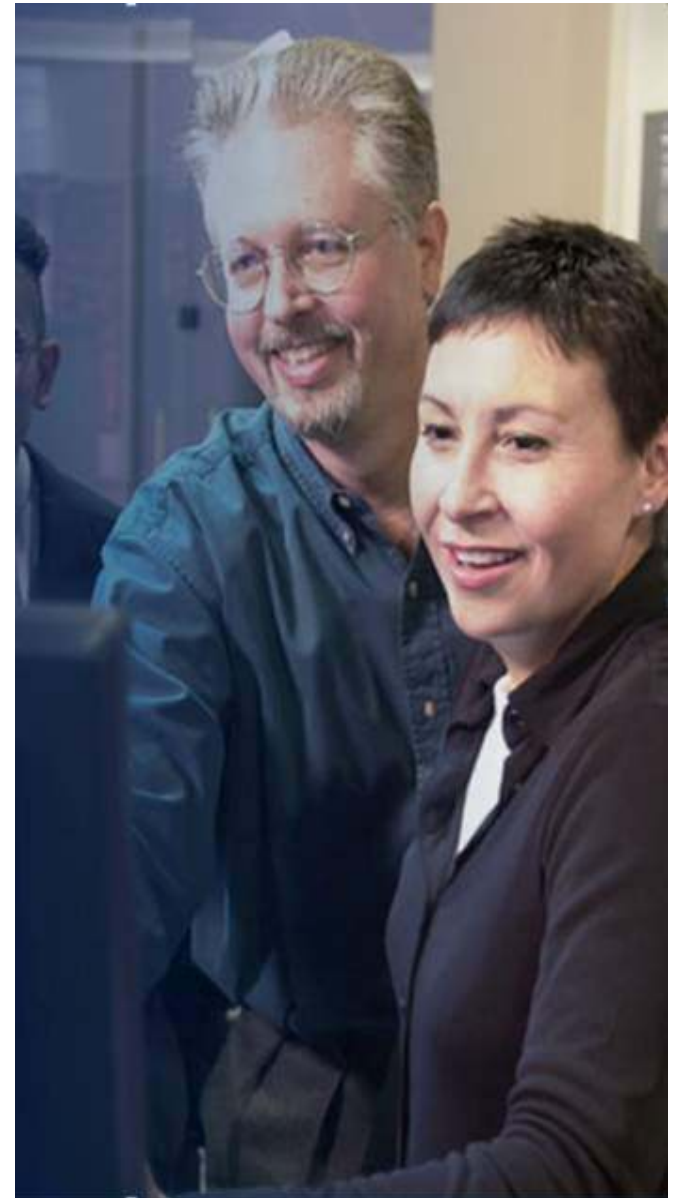
- Java Products for web/browser-based UI's
 - NSJSP, plus Open Source Frameworks
 - myFaces for Java Server Faces
 - Spring MVC and Webflow
 - JToolkit for Pathway integration
- SOA products for off platform GUIs (e.g. VB.net)

Partner Offerings

- comForte's CSL Studio and JPath, CommitWork's OmnivoBase, CAIL's CAIL Studio, NuWave's SOAP/AM, Crystal Point's AppViewXS

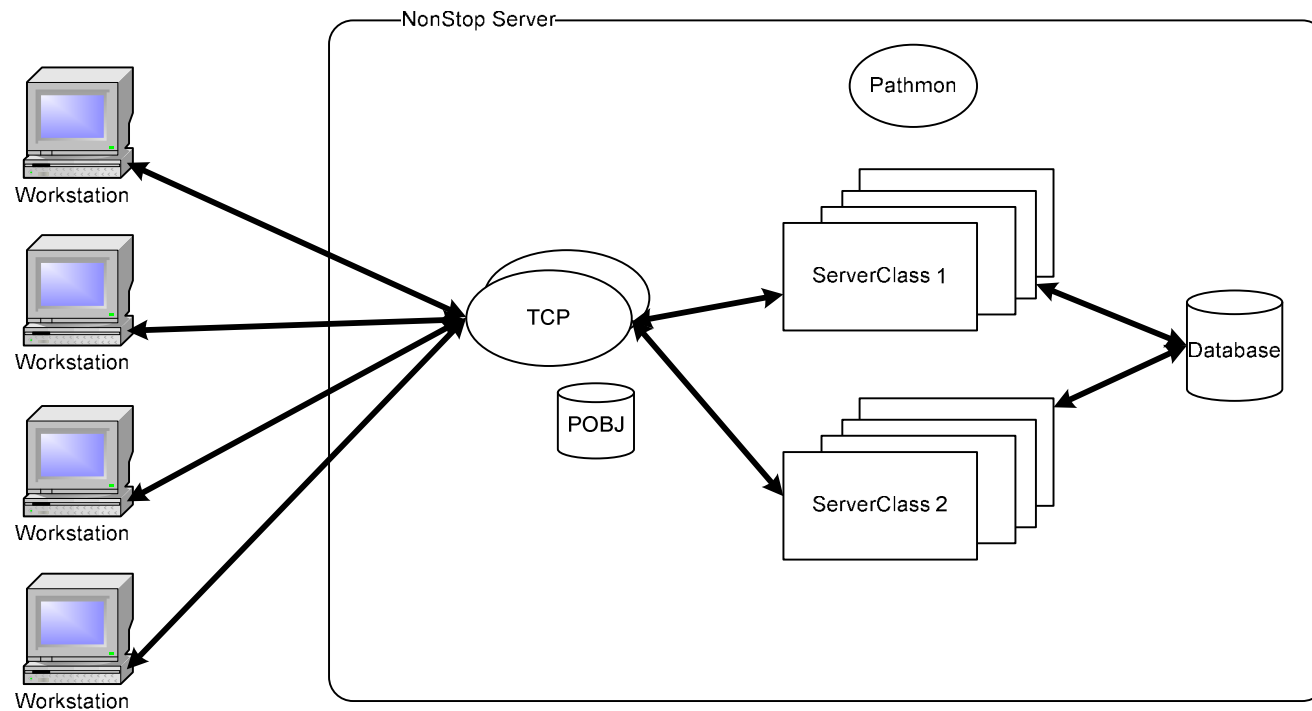
NonStop Service Offering

- ATC Services



Customer example

Pre-modernized environment: Pathway app



The Problem

– Application development

- Hard to find COBOL programmers to maintain & develop SCOBOL requesters
- No modern IDE (ex. Eclipse) support for SCOBOL development

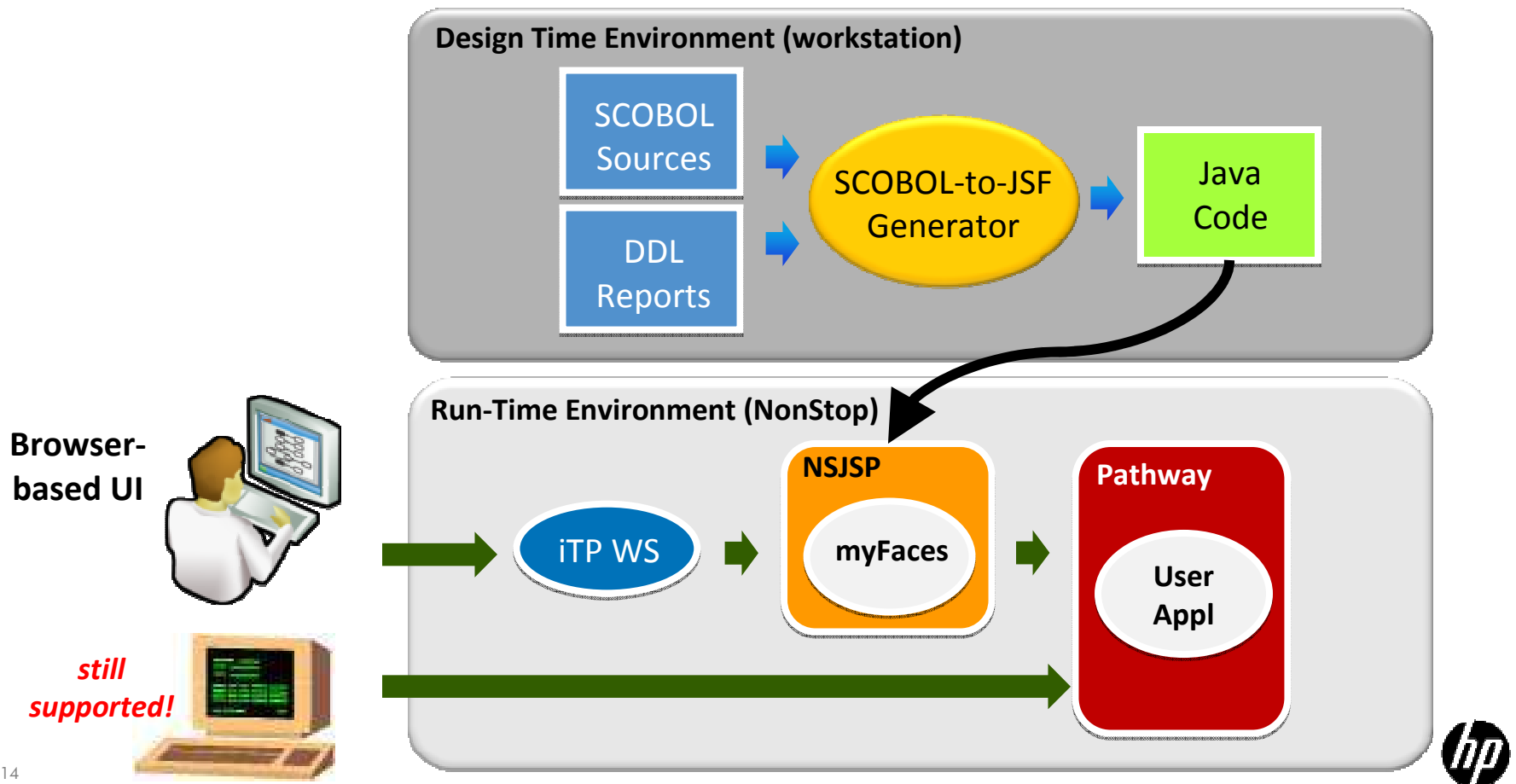
– User experience

- Old fashioned for gen X web users
- Huge learning step
 - Where is the <F16> key ?



The Solution

NonStop provided service to convert 600 Pathway Screen-Cobol Screens to Web Screens



SCOBOL to JSF* Generator Tool

- Workstation based tool – Eclipse plug-in
- Consists of
 - Java-based parser for SCOBOL and DDL
 - Generator
 - JSF generator
 - Code generator
 - Java Beans for SCOBOL Working Storage elements
 - “Requester” code

*JSF=Java Server Faces, a Java EE standard server-side UI framework for web apps. JSF runs on any standard web container, including NSJSP.

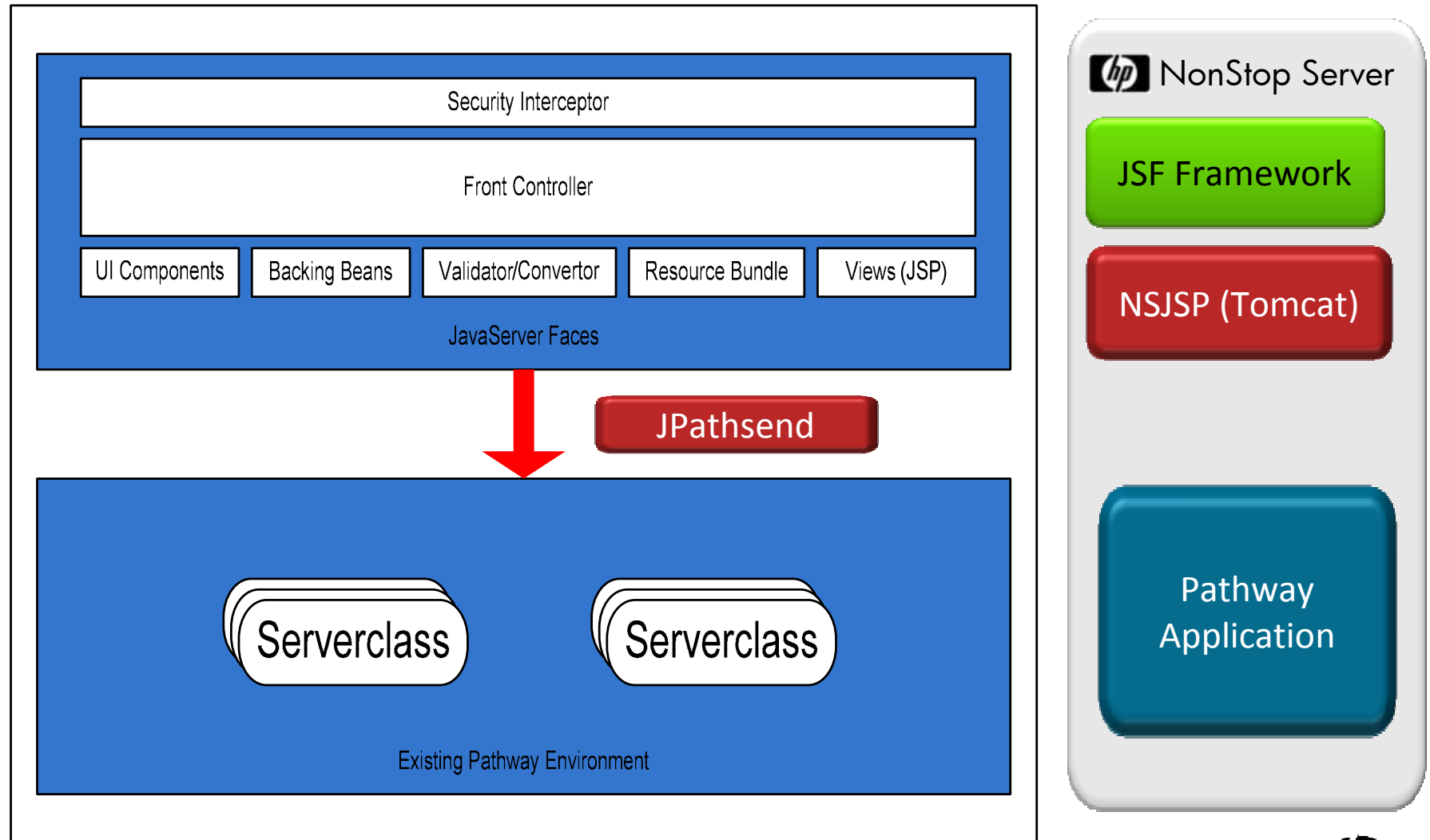


Conversion Rules

- SCOBOL screen = JSF page
- SEND = JPathsend
- Transaction support = JTA/TMF
- WorkingStorage = Java Beans and POJOs
- Procedure Division = Java code in Java Beans



Integrating JSF front-end with Pathway back-end



Example SCOBOL Screen

RQMV004	MOTOR VEHICLE REGISTRATION SYSTEM NEW VEHICLE ENTRY	10/22/09 16:09:03
LICENSE PLATE:	VEHICLE TYPE:	
YEAR:	MAKE:	MODEL:
ENGINE #:	HORSEPOWER:	
NUMBER OF AXLES:	SMOG DATE:	/ / 00
SALES PRICE:		
OWNER MAINTENANCE		
PERSON-ID:		
NAME:		
FIRST :		
MIDDLE:		
LAST :	SUFFIX:	
ADDRESS:		
STREET:		
CITY :	STATE :	
POSTAL CODE:		
F3 - SCREEN PRINT @: \$S.#XXX		
F1 - INSERT DATA, F15 - NEW VEHICLE, SF16 - EXIT		
Please select one of the functions above.		
		BLOCK



Displayed JSF Page

RQMV004-0 - Windows Internet Explorer

http://tomcat:17180/DMVWeb/screens/RQMV004.faces

HP Intranet Search

RQMV004-0

RQMV004 **MOTOR VEHICLE REGISTRATION SYSTEM** **10/22/09**
NEW VEHICLE ENTRY **16:10:38**

LICENSE PLATE: VEHICLE TYPE:
YEAR: MAKE: MODEL:
ENGINE #: HORSEPOWER:
NUMBER OF AXLES: SMOG DATE: / /
SALES PRICE:

OWNER MAINTENANCE

PERSON-ID:
NAME:
FIRST :
MIDDLE:
LAST : SUFFIX:

ADDRESS:
STREET:
CITY : STATE :
POSTAL CODE:

F3 - SCREEN PRINT @:
F1 - INSERT DATA, F15 - NEW VEHICLE, SF16 - EXIT
Please select one of the functions above

F1 F3 F15 SF16 Enter



Adding CSS style sheets

RQMV004-0 - Windows Internet Explorer

http://tomcat:17180/DMVWeb/screens/RQMV004.faces HP Intranet Search

RQMV004-0

RQMV004 MOTOR VEHICLE REGISTRATION SYSTEM
NEW VEHICLE ENTRY

10/22/09
16:10:38

LICENSE PLATE: [REDACTED]
YEAR: [REDACTED] MAKE: [REDACTED]
ENGINE #: [REDACTED]
NUMBER OF AXLES: [REDACTED]
SALES PRICE: [REDACTED]

VEHICLE TYPE: [REDACTED]
MODEL: [REDACTED]
HORSEPOWER: [REDACTED]
SMOG DATE: [REDACTED] / [REDACTED] / [REDACTED]

OWNER MAINTENANCE

PERSON-ID: [REDACTED]
NAME:
FIRST: [REDACTED]
MIDDLE: [REDACTED]
LAST: [REDACTED]
ADDRESS: [REDACTED]
STREET: [REDACTED]
CITY: [REDACTED]
POSTAL CODE: [REDACTED]

SUFFIX: [REDACTED]
STATE: [REDACTED]

F3 - SCREEN PRINT @: [REDACTED]
F1 - INSERT DATA, F15 - NEW VEHICLE, SF16 - EXIT
Please select one of the functions above

F1 F3 F15 SF16 Enter

If you'd like to modernize your SCOBOL UI

- Contact your HP rep for NonStop modernization services
 - Generator not sold as a product
 - Highly customizable service



Application Interface Modernization

With SOA and Web Services



What is SOA?

- SOA and web services describe a methodology and a set of technologies to present applications in a standard way, as *services*
 - Enabling them to be easily invoked by heterogeneous clients (service consumers)
- SOA encourages *service reuse* that enables existing services to be applied easily to new business processes
 - Reduces the time to implement a new business process leading to business agility

Why should you care about SOA on NonStop?

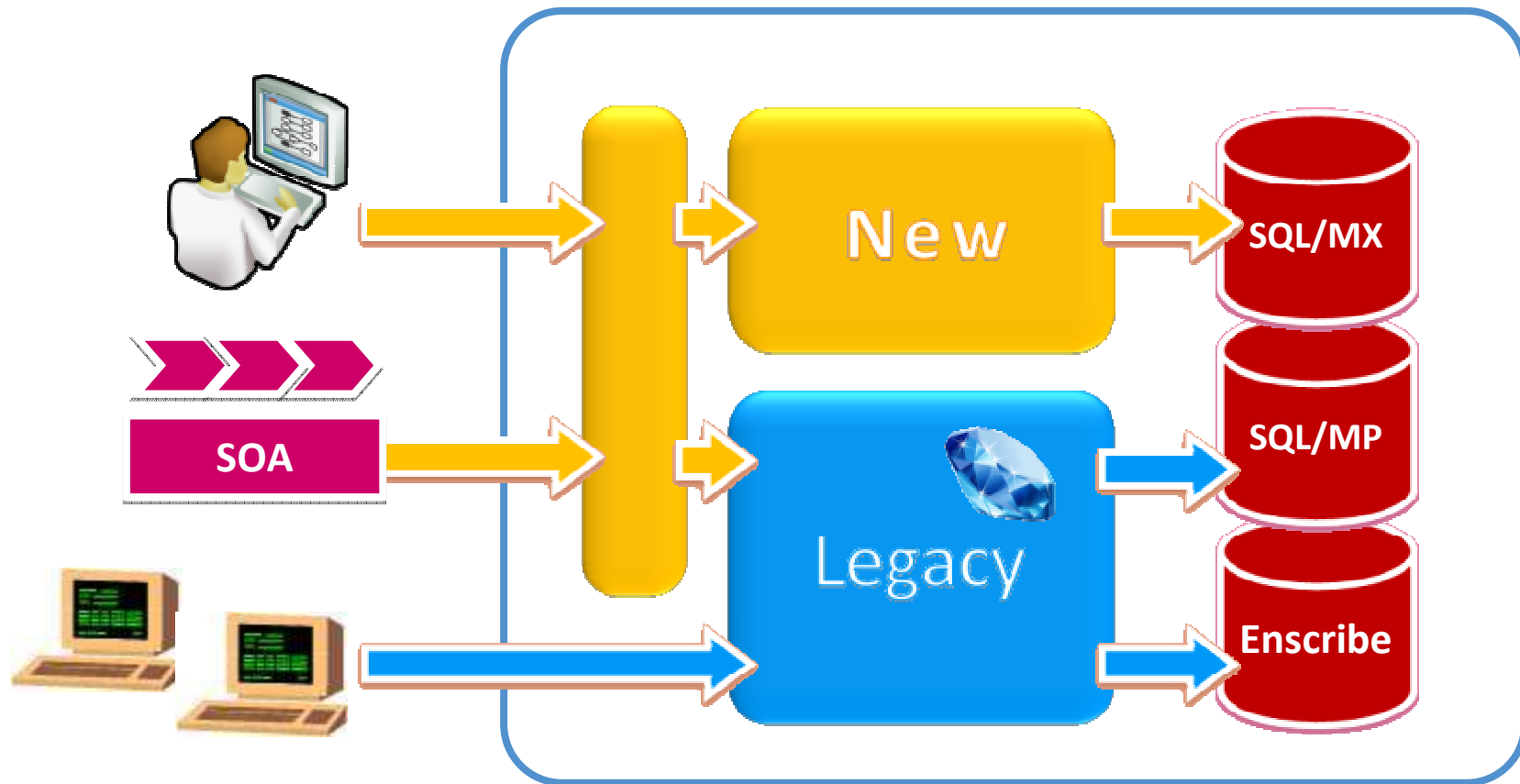
- Wouldn't it be nice to expose the value of your Pathway apps to other apps in the enterprise?
- Exposing Pathway services as web services enables
 - Pathway apps to interoperate with external apps in the enterprise
 - Enterprise apps to interoperate without any knowledge of Pathway
 - Enterprise apps to inherit the QoS characteristics of SOA-based Pathway services

**Use SOA to extend the reach of Pathway services
beyond the NonStop server**

SOA is not just for invoking Pathway services

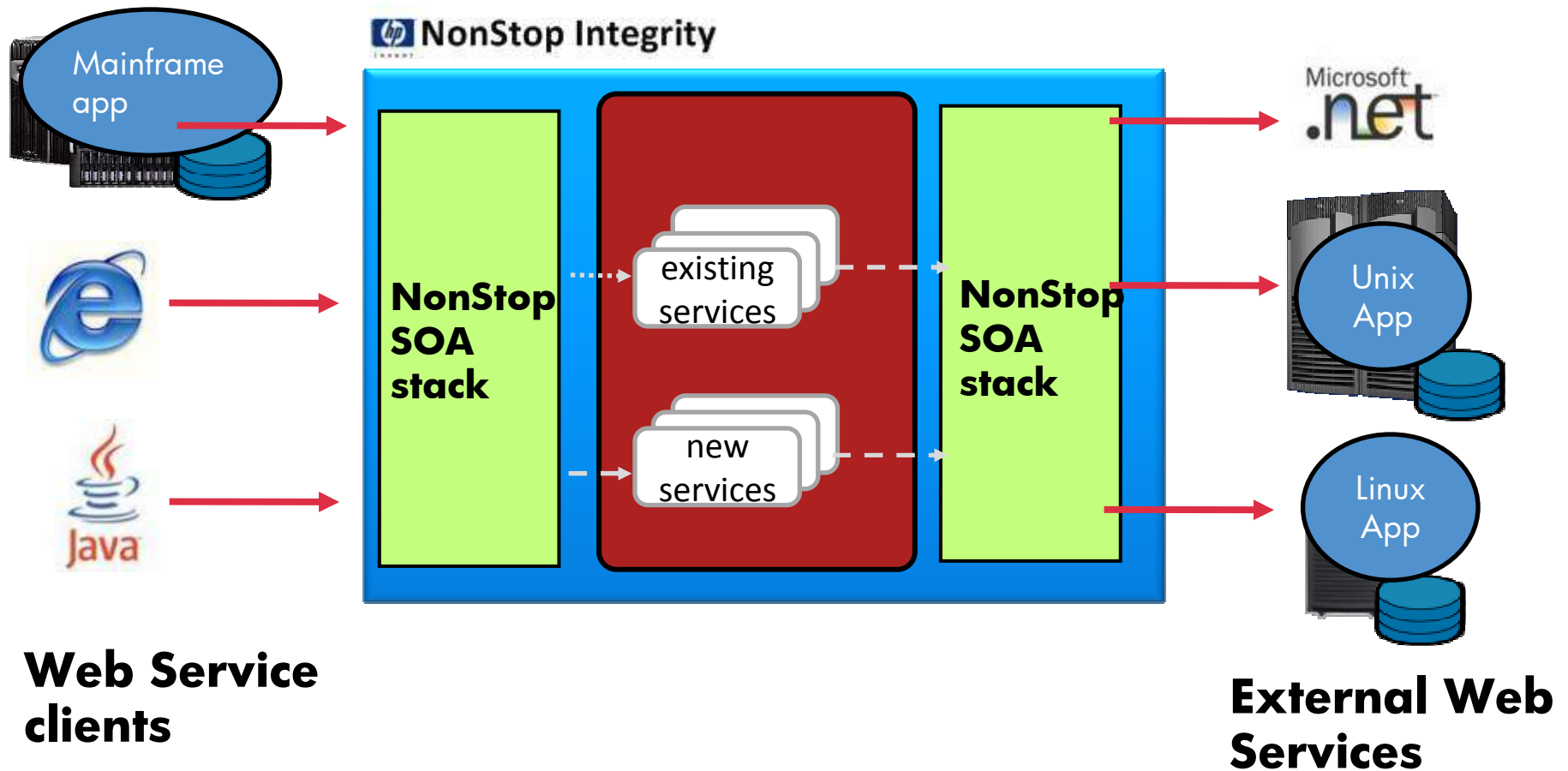
- NonStop SOA has capabilities that enable
 - NonStop apps to invoke external SOA services
 - External SOA services to invoke business logic implemented as a DLL, a NonStop process, a Java component

SOA enables legacy apps to retain their legacy interfaces while providing new ones

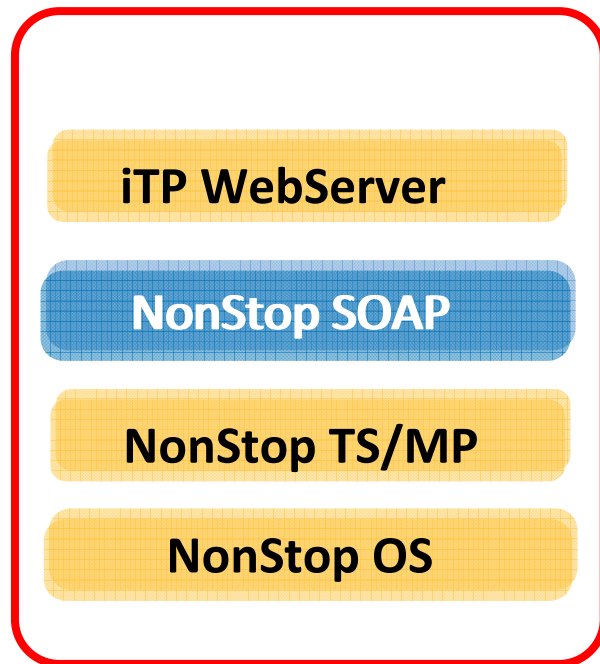


Legacy apps can be augmented by new apps to provide SOA service implementation

SOA provides standards-based integration with a wide range of external apps

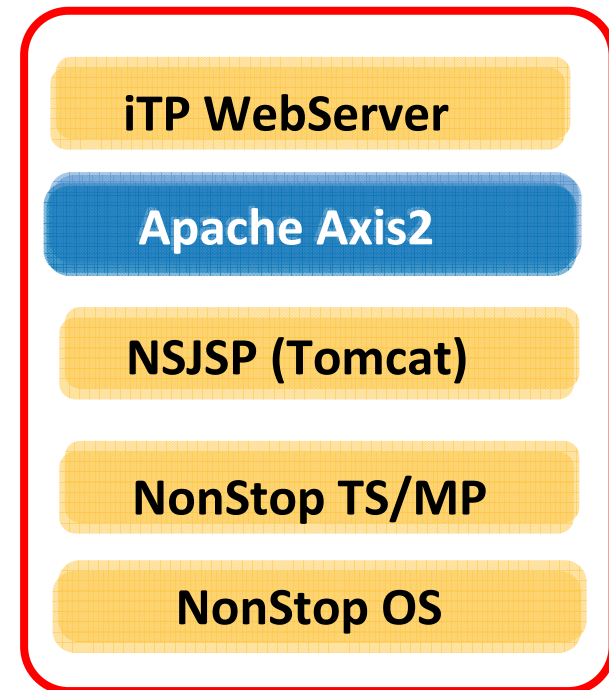


NonStop provides two Web Service stacks



NonStop SOAP

- No coding
- C-based
- Included in J-series OS



Apache Axis2

- Some coding
- Java-based
- Open source, free



Customer example: Their reasons for modernization

Business driven

- SEPA (Single European Payment Area) regulations
- Siebel (Customer View) integration
- WebSphere/MQ integration

Customer's approach to modernization: They developed ...

– SOAP/XML integration framework

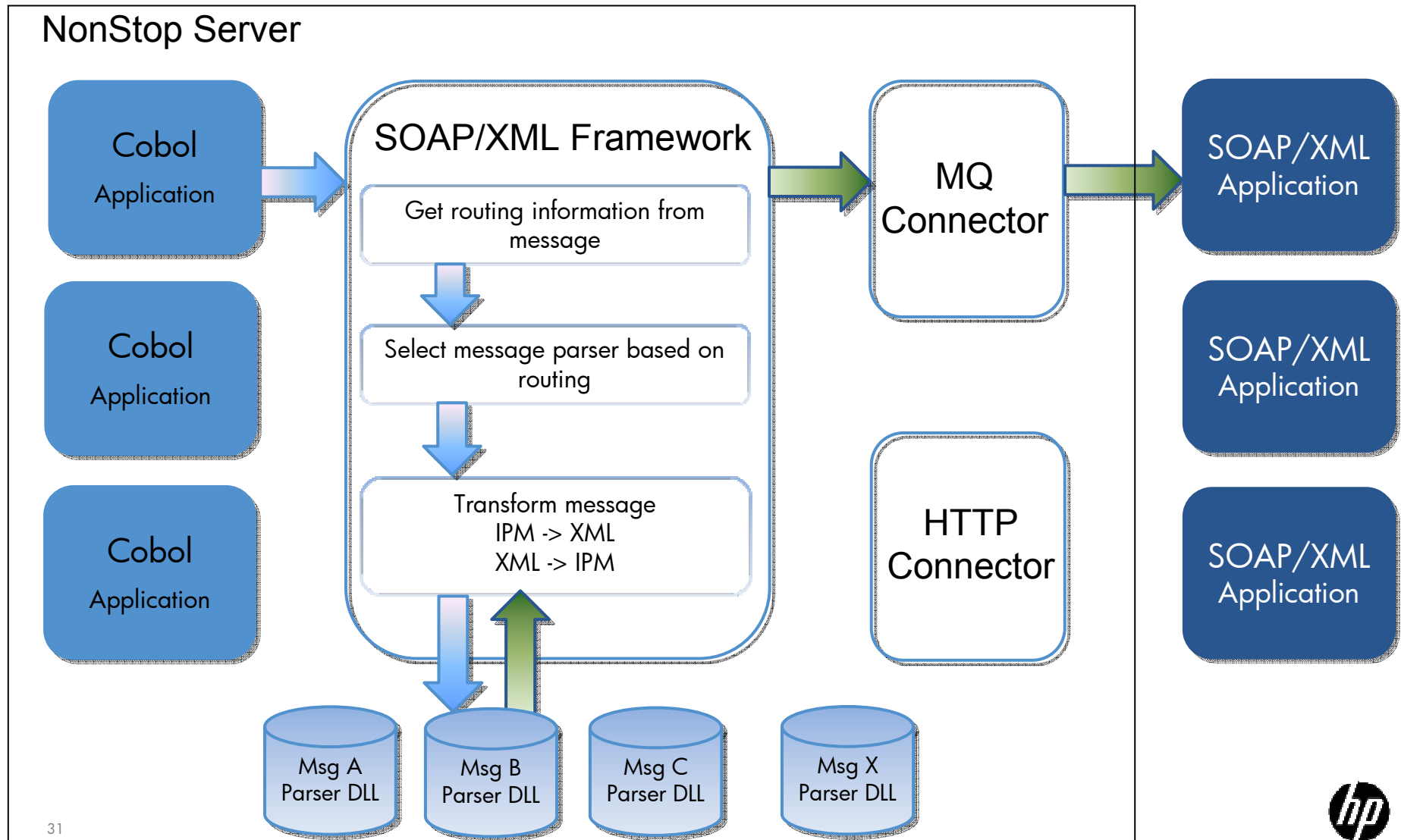
- SOAP/XML façade for COBOL applications
- Utilizes XMLThunder from Canam Software, PC based code generator (<http://nonstop.xmlthunder.com>)

– XML Archival solution

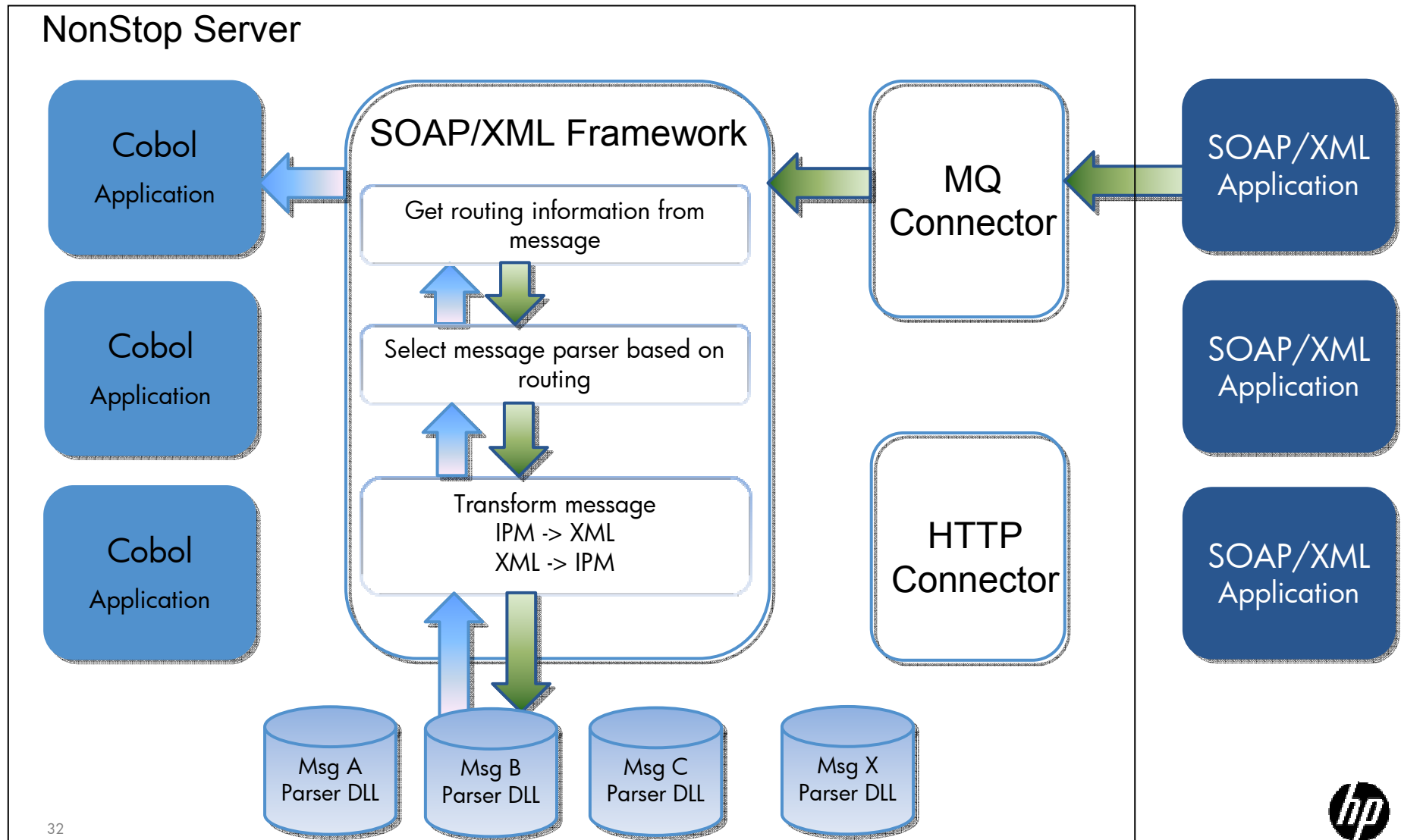
- Contains SEPA transactions
- Utilizes XMLVault from NuWave Technologies (sold by HP)



SOAP/XML integration framework Architecture



SOAP/XML integration framework Architecture

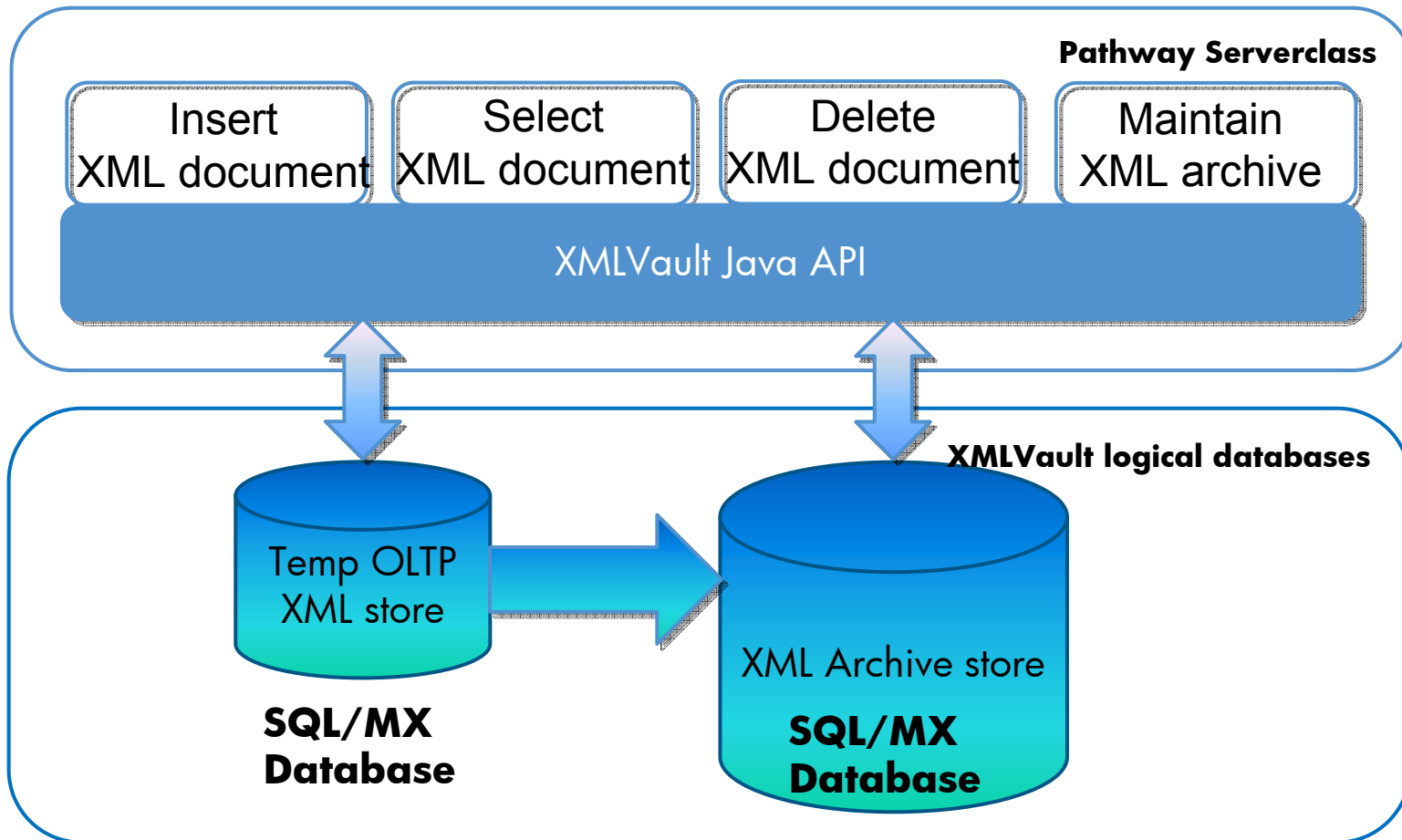


SOAP/XML integration framework

Implementation notes

- Framework written in C – multi-threaded Pathway server
- No code changes in business applications
 - Business logic is separated from transformation
- Supports Server and Client role
- Framework supports multiple connectors
- Every Request /Reply message has dedicated parser DLL
 - Provides modularity
 - Created by Canam XMLThunder
 - Very fast parsing (fast path)

XML-Archive Architecture



SOA offerings on NonStop

NonStop Services

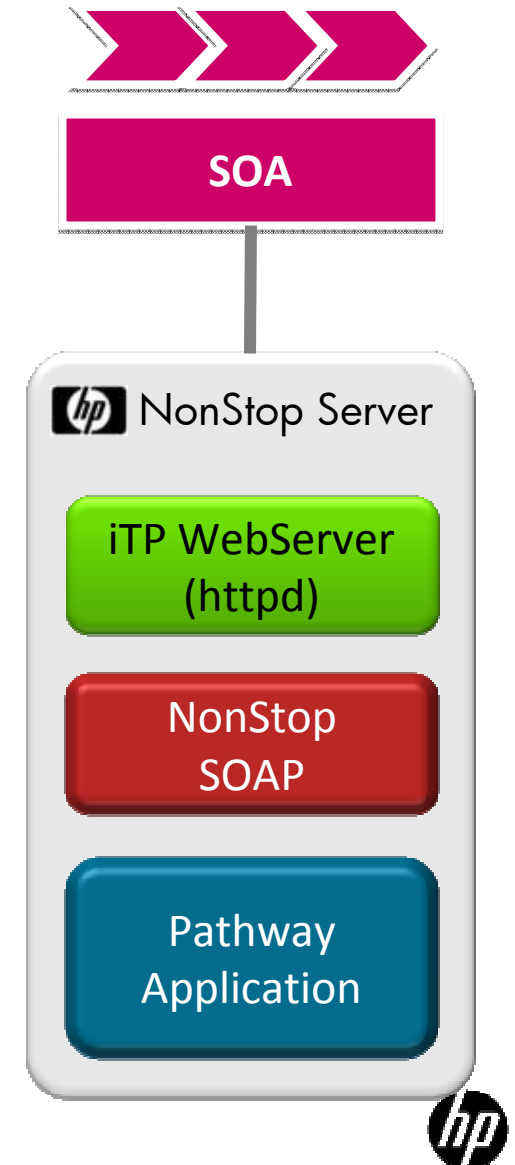
- Three standard SOA services:
 - SOA Quick Start / SOA Enablement / SOA Rapid Development
- Contact your HP rep for more!

NED Products

- NonStop SOAP + iTP Web Server
- NSJSP (Tomcat), plus
 - iTP Web Server
 - Open Source Frameworks (Axis2, Spring Web Services)

3rd Party Products

- comForte's CSL Studio, NuWave's SOAP/AM, ACI's Secure SOA Enabler, Canam Software's XMLThunder



Application Infrastructure Modernization

Java, Tomcat and Open-source Frameworks



Java infrastructure on NonStop

Develop

Application
programming
models

Certified Java SE Platform (JDK and JRE)

Apache Tomcat (Valued-added port)

Open Source Java Frameworks

Deploy

Application
infrastructure

NonStop Clustering & Workload Management
software

NonStop OS



Why open source Java frameworks are important to modernize the NonStop Application Infrastructure?

- In the context of modernization, open source Java frameworks are important because
 - Java is a leading programming model for building modern applications
 - The frameworks address and simplify the development of all major components of an enterprise Java application (including web services, presentation, and business logic)

Open Source Frameworks can help you to get
new services onto NonStop quickly!



Frameworks that are part of Open Source Java Frameworks on NonStop



Apache MyFaces

Component based web UI framework



Apache Axis2

Web services framework



Spring

Framework for developing apps using POJO components



Hibernate

Object Relational Mapping (ORM) framework

SASH: myFaces, Axis2, Spring, Hibernate

Which customer needs are addressed by SASH?

Customer Need	Fit
User Interface Modernization	✓
Expose existing Business Logic as Services	✓
Build new, Modern Services and Applications	✓
Modernize Data Access	✓
Modernize Development Environment	✓

Open Source Java Frameworks on NonStop

Enterprise Java on NonStop

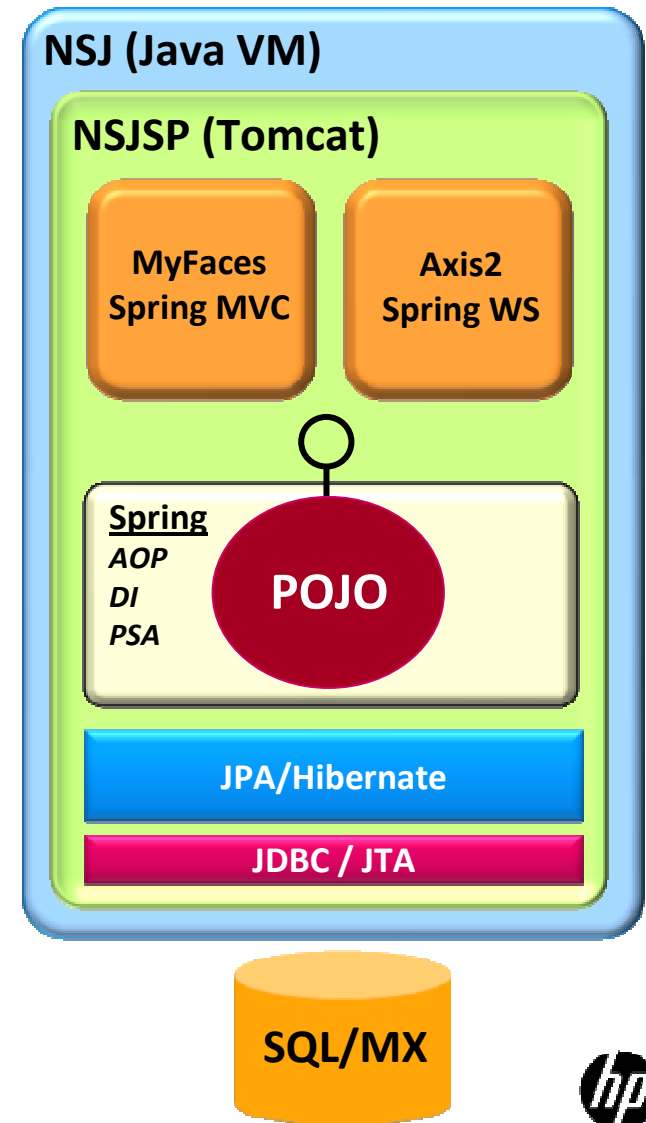
- Executes in NonStop's Tomcat container
- Requires iTP WS, NSJ, NSJSP, TS/MP
- Leverages our scalability and availability
- Integrate existing Apps via JToolkit (Java)
- Fully integrated and tested by NonStop QA!

Documentation & Examples

- Documentation on <http://docs.hp.com>
- Covers NonStop-specifics and examples

End-User Support through HP

- GMCSC support

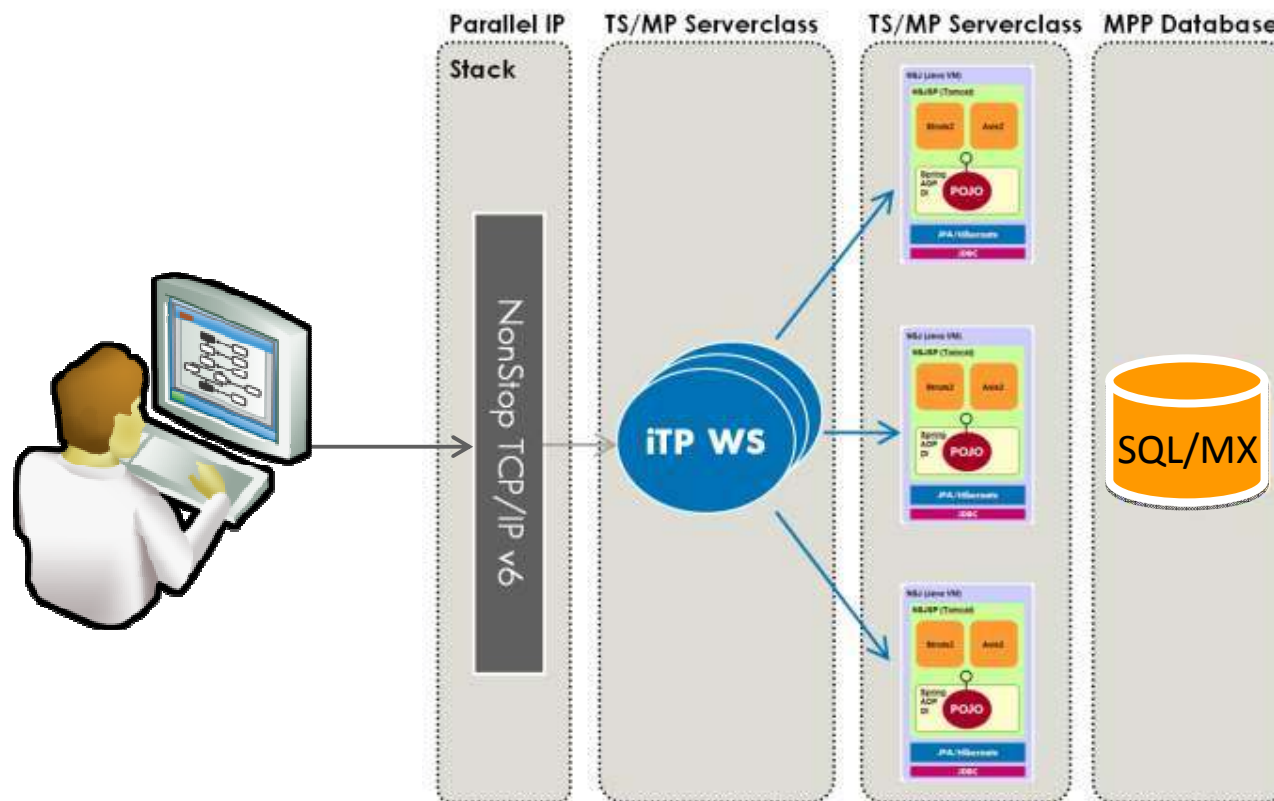


Benefits of SASH

- High market acceptance
- Open source, free
- Non proprietary, backed by major vendors
 - Portable apps, no vendor lock-in
- Light-weight
 - Simple components (POJOs)
 - No expensive app-server needed!
- De facto standards
 - JSF, JPA - part of Java EE spec
- Frameworks, not just a collection of APIs
 - Productivity increase from abstractions, consistency of app structure
 - Better quality apps by automatically embedding good design patterns



Benefits of SASH on NonStop – Light-weight Enterprise Java leveraging our core values



Transparent Scalability	✓	✓	✓	✓
Transparent Fault Tolerance	✓	✓	✓	✓

Customer Example:

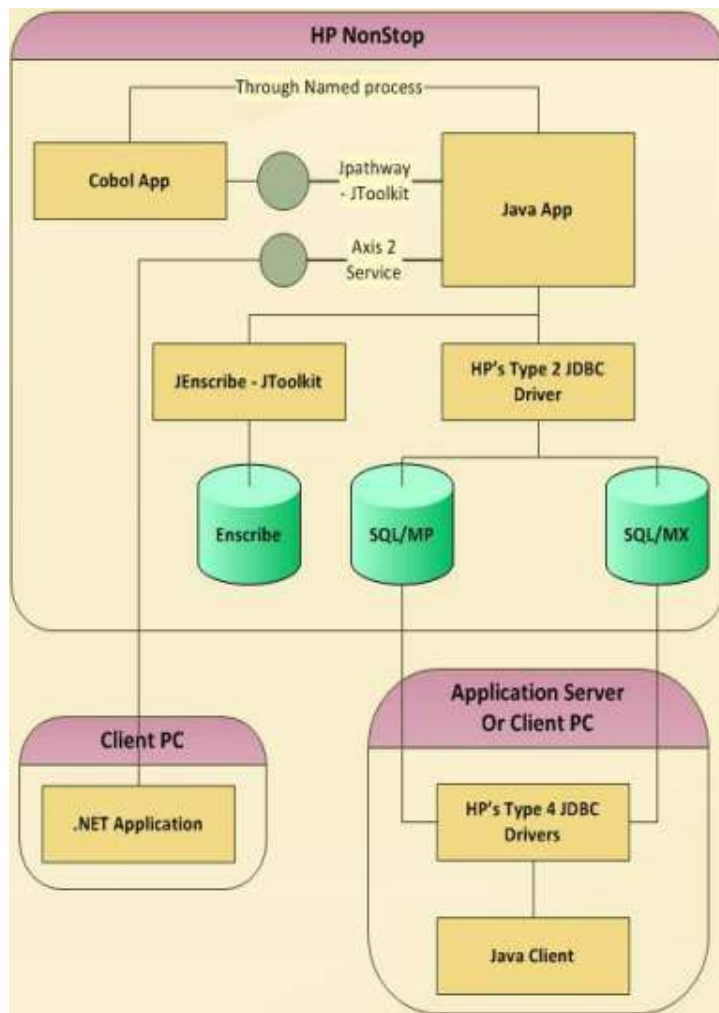
Their reasons for modernization

- Regulatory pressures driving new projects
- Many of their NonStop Cobol programmers are retiring
- New workforce trained in Java
- Eclipse is the IDE of choice
- Portability of code
- Take advantage of newer generation processors
- No forklift changes; building standards-based wrapper around existing functionality



Customer's approach to modernization

They prototyped ...



- Java App published as Axis2 web-service for access by .NET app
- Access to NonStop SQL data from off-platform Java apps
 - Type 4 JDBC driver for accessing SQL/MP or MX over the network
- Java App published as JPathway service for access to legacy
 - COBOL App
 - Enscribe files

Other architectural evaluations

- Access MS SQL Server from OSS
 - Using Microsoft's JDBC Driver
- Access Enscribe file using Attunity's JDBC Driver
 - Hibernate O/R Mapper linked to JDBC Driver
 - Object version of Enscribe data
 - All mappings between Object and Database are in XML

Database Modernization



Database Modernization

Customer Challenges & Needs

- Valuable assets are often in Enscribe files
- Difficult to access, expose and reuse
- Cost of conversion
- Customers want ANSI compliant database, tool support and fast&easy access

NonStop Offering

- ANSI compliant NonStop SQL/MX
- JDBC Type 4 and ODBC for remote access
- Supported by object-relational-mapper (e.g. Hibernate)
- Can use open tools – e.g. Report

Partner Offering

- Escort SQL from Carr Scott Software
- Enscribe-2-SQL from TANDsoft
- Attunity Connect

NonStop Services from ATC



Customer example: Pre-modernization environment

- Standard Pathway and Enscribe application
- Nightly loads to SQL Server database for online customer queries



Customer's reasons for moving to NS-SQL

- Need for real time access to data
 - Able to get up-to-the-minute balances, order and shipment status and product information
- Eliminate nightly loads to SQL Server

Their approach

- Using Escort SQL allowed a staged migration to SQL/MP
- No code changes were necessary
 - With 1,200 files and 2,500 programs
- Plan to migrate to SQL/MX in the future

Development Tools Modernization

With Eclipse



NonStop Development Tools Modernization

Customer Needs

- High developer productivity
- Leverage ubiquitous skills
- Common development environment for all platforms
- Workstation based development

Solution

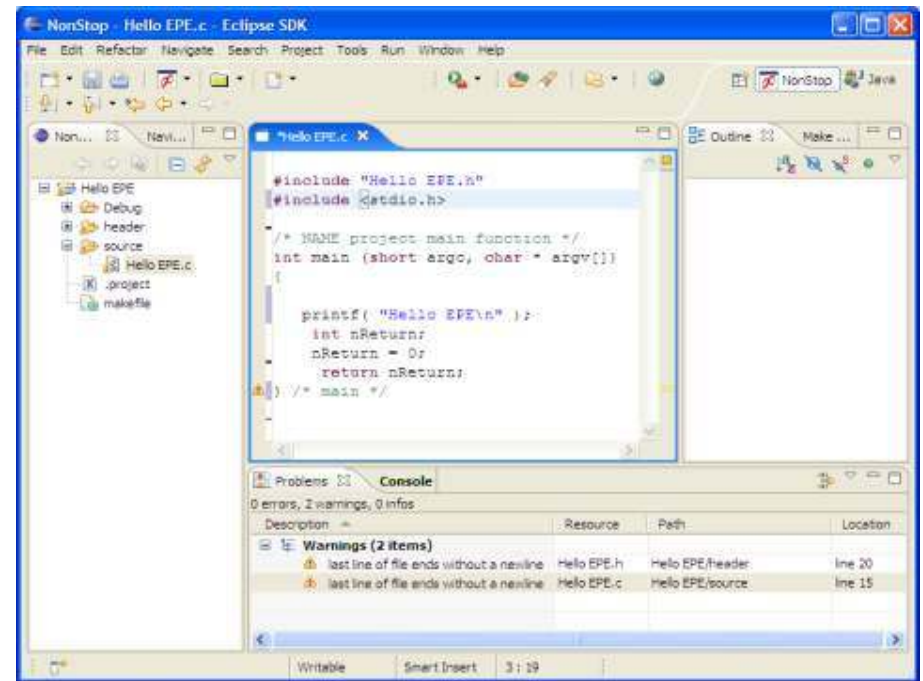
- Offer development tool infrastructure based on industry leading, open source Eclipse IDE
- NED offers commercial plugins (NonStop EPE)
- Partner-provided plugins, example from NexBridge Inc.
- Many industry plugins available to support any phase of the development lifecycle
- Support for Java out of the box
- Eases development with Open Source Frameworks



NonStop Development Tools Modernization

NonStop EPE

- Covers full development lifecycle
 - Editing (syntax highlighting, etc)
 - Compiling
 - Building/Linking
 - Debugging (coming soon)
 - Deploying
- COBOL, C/C++, pTAL, SQL/MX, ...
- local and remote builds
- Available for S-Series and Integrity



Visual Inspect

- Debug your applications from a Windows workstation

Services

- Customized service offering from NonStop to modernize your development environment



Customer example: Pre-modernization environment

- Development environment consisted of:
 - RCS running under OSS for software repository
 - SlickEdit on PC for editing source code
 - make file for compiles
 - Manual testing

Reasons for modernizing their development environment

- Use of Eclipse IDE, their corporate standard
- Use of Subversion, their corporate standard version control software
- Use of free open source software
- Automated nightly compiles and testing while development system is idle
- NonStop developers “fit in” with others

Their approach to modernization

Leverage open source products



Hudson is a continuous integration Java-based tool, which runs in a servlet container or standalone. It supports SCM tools including CVS, Subversion, and Clearcase and can execute Apache Ant and Apache Maven based projects, as well as arbitrary shell scripts and Windows batch commands.



Open source version control system



Open Source Integrated Development Environment (IDE) with HP Enterprise Plug-in for Eclipse

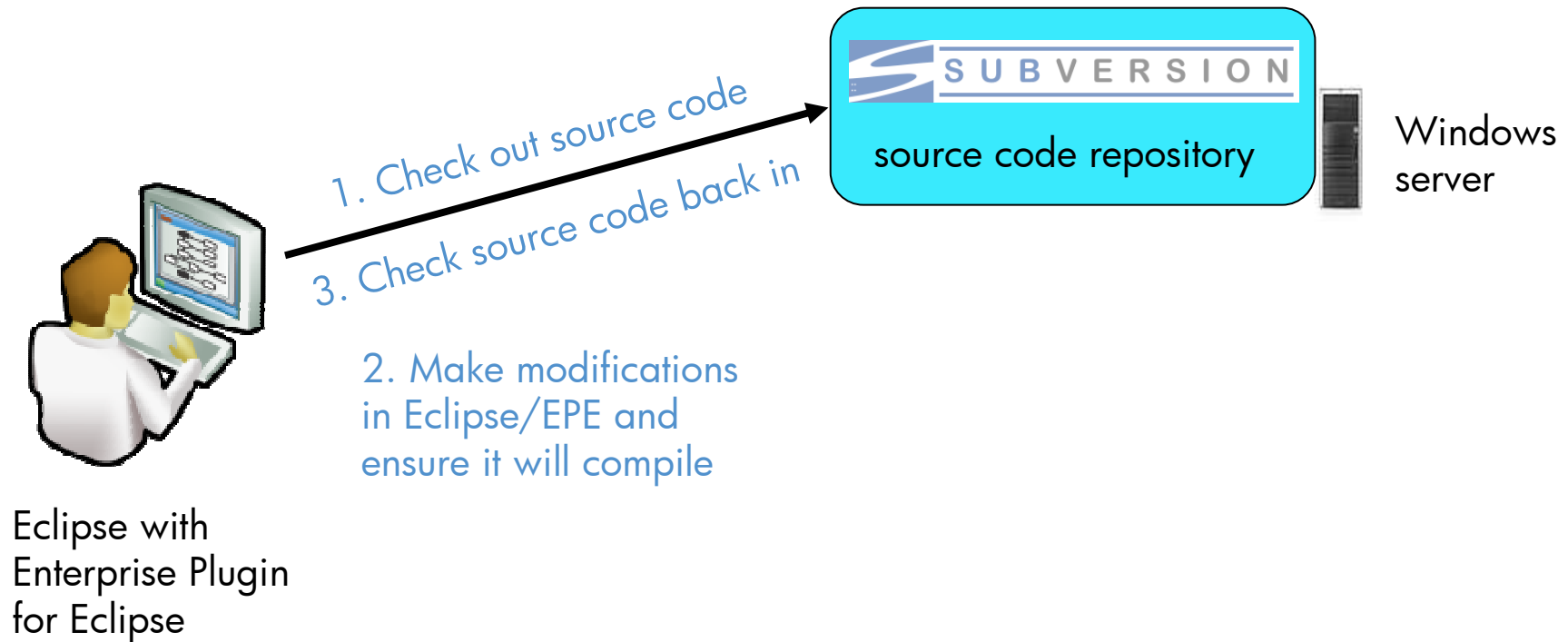
Subclipse – Subversion client Eclipse plug-in



Apache Ant is an open source Java-based build tool



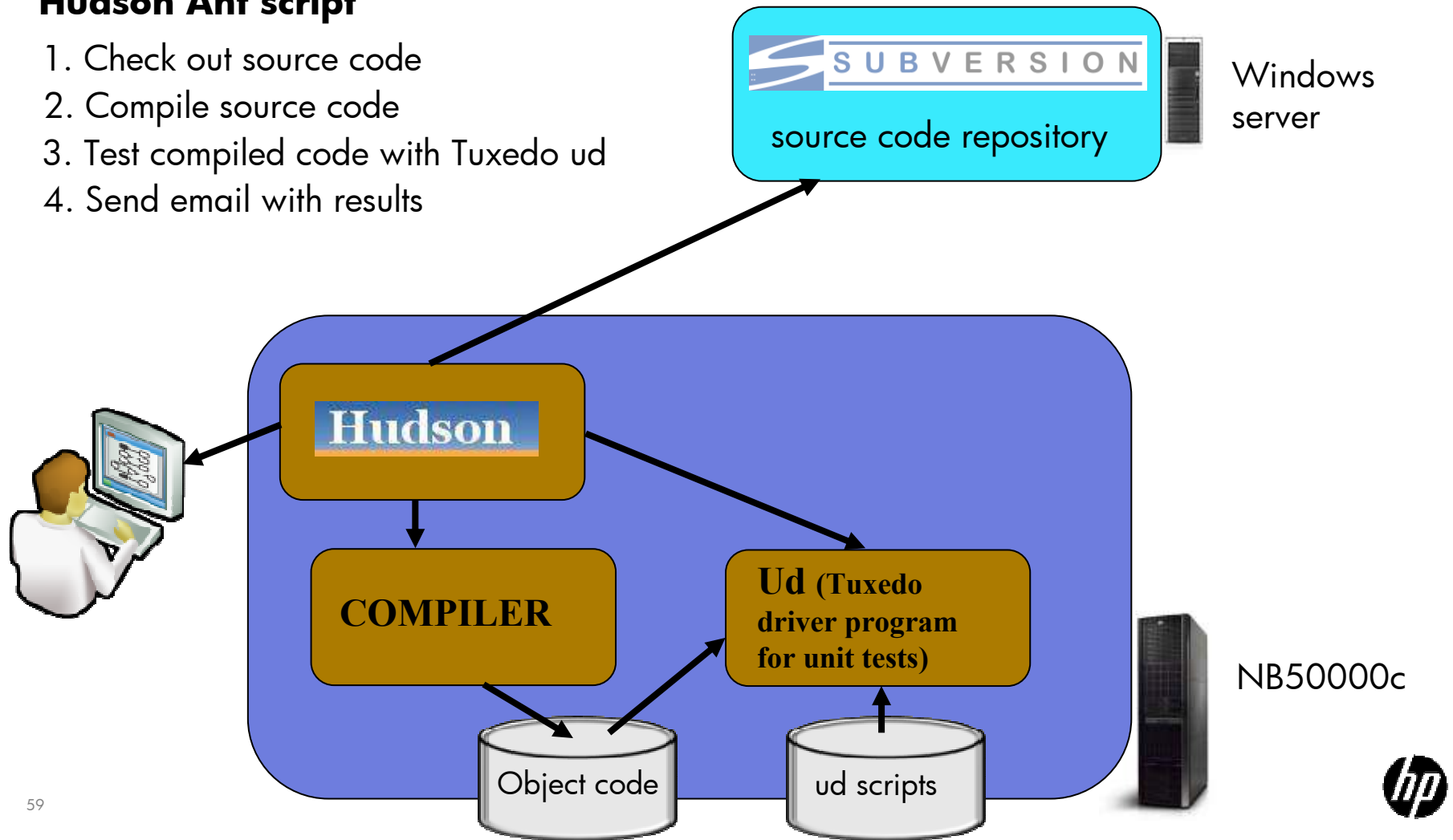
Development process



Automated compile and testing

Hudson Ant script

1. Check out source code
2. Compile source code
3. Test compiled code with Tuxedo ud
4. Send email with results



Management Tools Modernization

With HP SIM and NonStop Essentials



Management Tools Modernization

Customer Needs

- Flexible staffing models
- Reduced training costs
- Standardized responses to events
- Non-disruptive implementation
- Reduced administration efforts
- Quicker time to problem resolution

=> **Lower TCO**

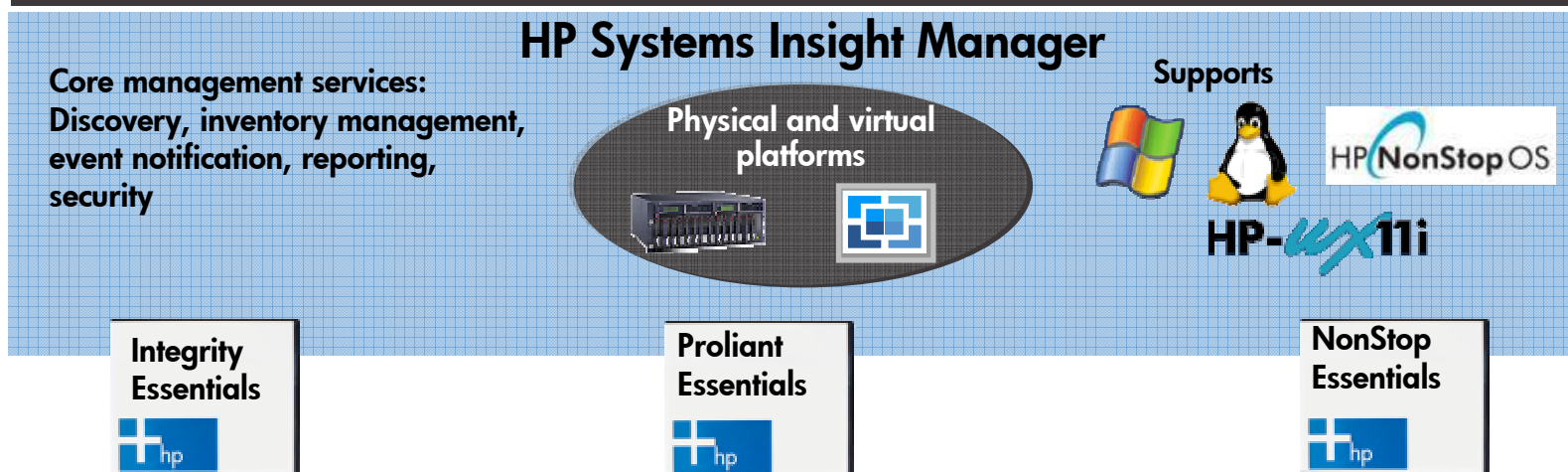
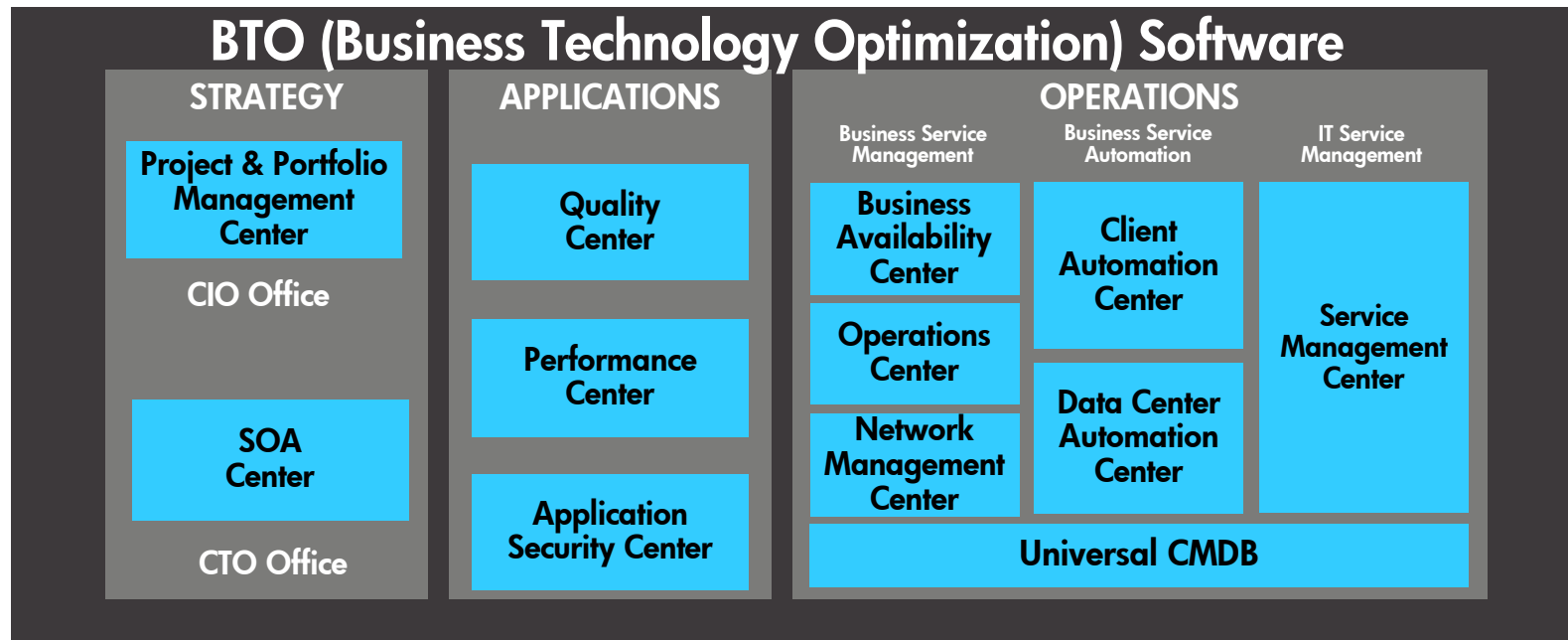


NonStop offering

Unified Management Infrastructure based on HP Systems Insight Manager (SIM) and NonStop Essentials



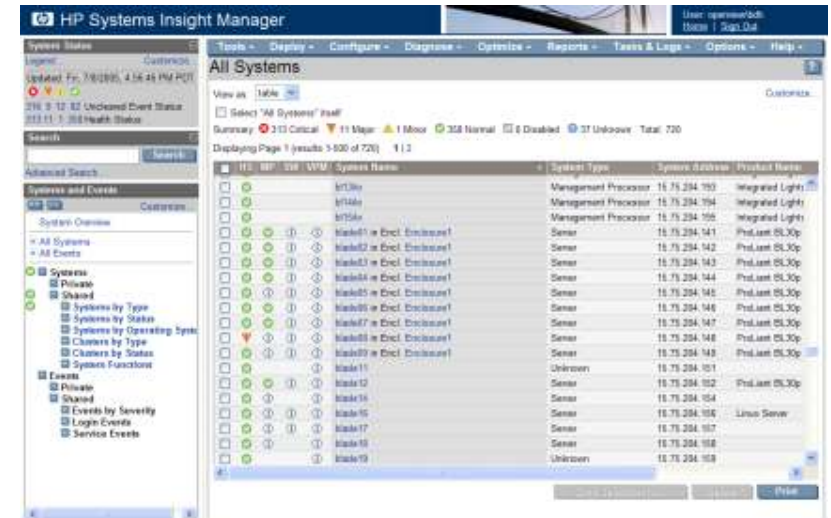
HP SIM, Essentials and BTO products



HP Systems Insight Manager (SIM)

The foundation for converged infrastructure management

- Installs on Windows, HP-UX, and Linux
- Manages all HP servers, **including NonStop**
- Extensible via plug-in architecture



NonStop integration with HP SIM

- Discovery and identification of NonStop systems via WBEM support provided by OSM
- NonStop alarms displayed in HP SIM
- NonStop hardware devices displayed in HP SIM
- NonStop Guardian and OSS commands invoked from HP SIM
- Links to drill-down for single system monitoring and event interfaces (OSM Service Connection and OSM Event Viewer)
- HP SIM ships free-of-charge with NonStop System Console DVD suite



NonStop Cluster Essentials

- One package to perform all cluster management tasks across multiple NonStop and Linux systems
 - Using same web-based user interface

Any clustering technology

Integrated event monitoring

Integrated config & control

Software consistency check

Integrated health monitoring

Single-click boot

Unified account management

Integrated inventory reporting

NonStop Cluster Performance Essentials

- Plug-in to HP NonStop Cluster Essentials
 - Integrated with HP SIM
- Integrated view to monitor real-time performance issues across a cluster of NonStop and Linux systems
- Drill-down to discover performance bottlenecks
- Performance trend displays
- Alert notifications based on defined thresholds
- Secure communication between NonStop Cluster Performance Essentials and managed systems
- Support of CLIM performance monitoring

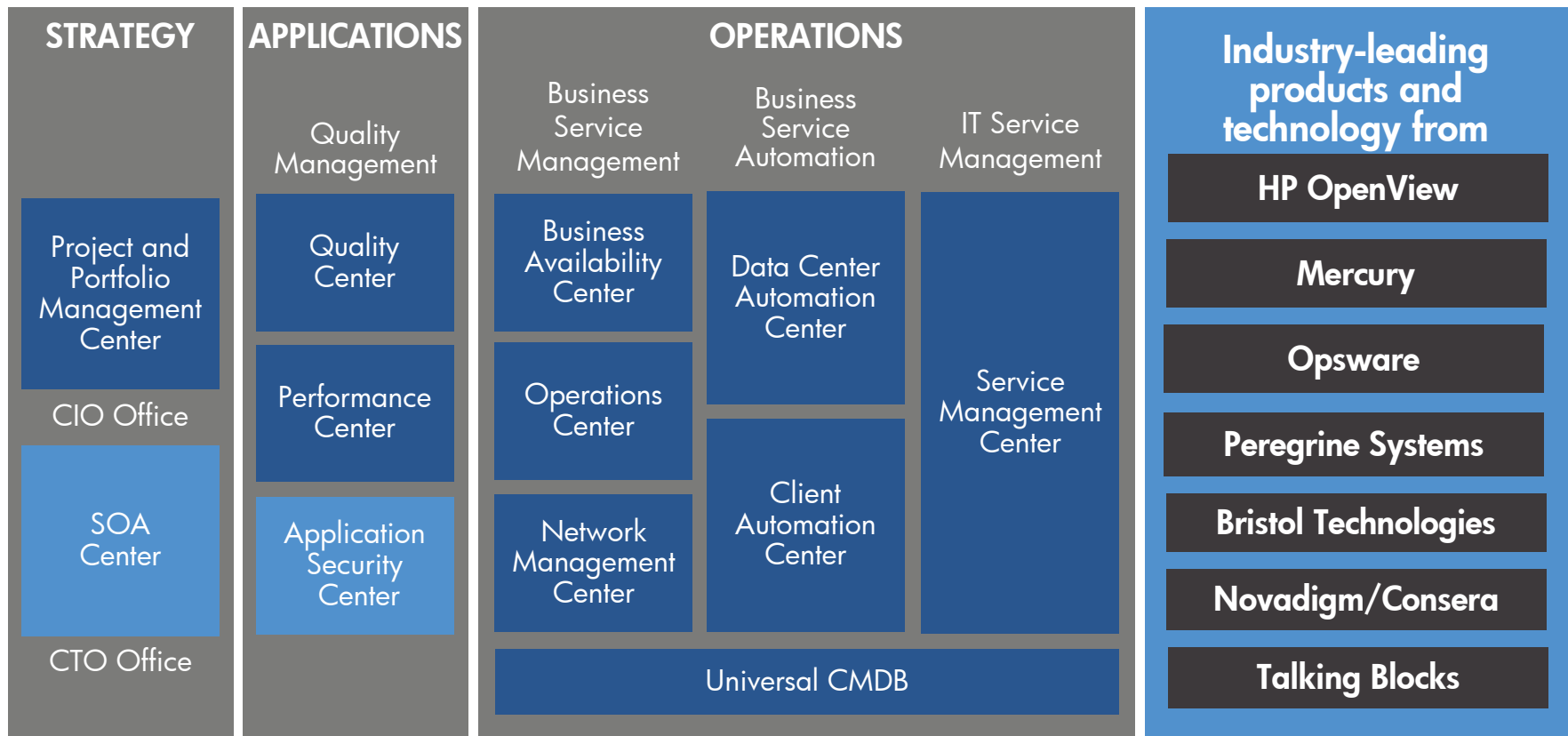
NonStop I/O Essentials

- A plug-in to HP SIM
- Virtualized configuration and control of all CLIM management tasks on NonStop BladeSystems and NS-Series systems
- Ability to perform all CLIM management tasks without knowing the syntax of NonStop or Linux commands
- Pre-defined management tasks shipped out-of-box to configure and control all aspects of CLIM
- Secure and encrypted communication between console and NonStop systems
- Integration with HP NonStop Cluster Essentials to enable CLIM management across NonStop clusters

HP BTO Centers

BTO Centers: Optimize key functions

—— Supported today
—— Looking for customer input



NonStop support in many BTO Centers



Summary



You **can** realize modernization benefits on NonStop today

- Develop your apps using industry standard app development tools
- Architect your apps using industry standard programming paradigms
- Deploy your apps on a scalable industry standard app server
- Integrate your apps with other apps in the enterprise as SOA services
- Store your data in a high performing standard relational database
- Access your data via industry standard database access technologies
- Connect using industry standard network protocols



Where do I get help?

Engage your HP rep

- NonStop has modernization service offering that can be customized for your needs
 - Assessment service
 - Architectural/Design service
 - Implementation service



Outcomes that matter.

