Simplify, Secure and Accelerate your SOA Deployment with WebSphere DataPower

Sidney Antflick, May 2009

IBM

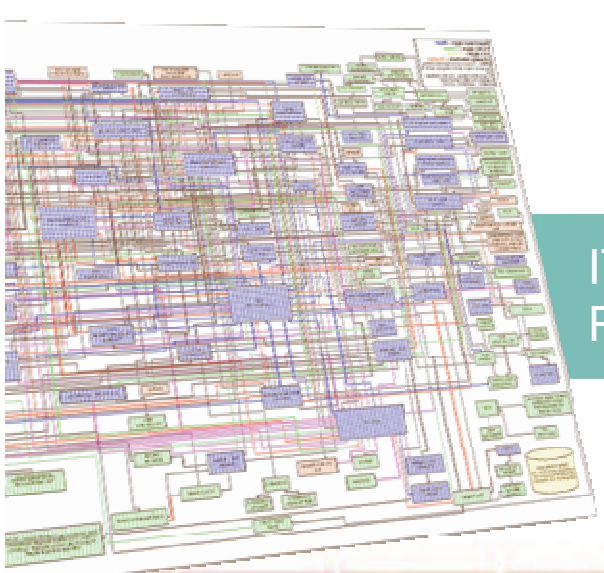
	Session A – 9:15am to 9:55am	Session B – 10:10am to 10:50am
Stream 1	**Managing Business Rules with ILOG Business Rules Management Systems (BRMS)** Designed for those who want to discover an easy and safe solution to automate process-based decisions with the right tools for business managers, analysts, architects and developers.	**Enable SOA Governance with WebSphere Service Registry and Repository** Designed for those who want to learn how to easily and quickly publish, find, enrich, manage and govern services and policies in your SOA. A particular emphasis is placed on runtime aspects of the services lifecycle.
Stream 2	**Simplify, Secure and Accelerate your SOA deployments with WebSphere® DataPower SOA Appliances** Designed for those who want to learn more about WebSphere DataPower SOA Appliances, a key element in IBM's holistic approach to SOA.	**Untangle your SOA Connectivity Infrastructure with WebSphere Message Broker** Learn how WebSphere delivers an advanced ESB to power SOA. Intended for those who want to understand how to achieve universal connectivity and transformation in heterogeneous IT environments.

Key goals of this presentation

- Why businesses of all sizes are adopting DataPower
  - Benefits of DataPower: Simplicity = lower TCO, Helps to lower business risk, Speeds time to value
- To place DataPower Appliances in context
  - Within the domains of SOA, Connectivity and B2B
- To explain what is a DataPower Appliance
  - Major functions: Integration, Security, B2B, Low-latency messaging
- How they solve critical business and IT problems like…
  - Security, Authentication, Performance, Governance, SOA Management,
- Exactly which products make up the DataPower appliance family
  - (and how they address different needs like B2B or SOA)

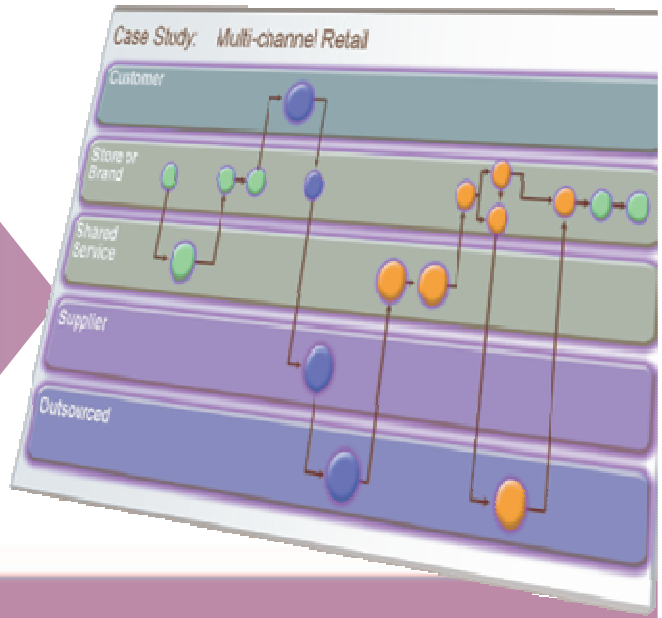
Aligning IT to Business is Critical

- Today's Business-focused IT requires:
  - **Faster** response from IT to enable business to address changing market conditions
  - Increased portion of IT budget to be spend on **new innovation** rather than maintenance
  - **Reduced IT complexity** for better security and management as well as reuse

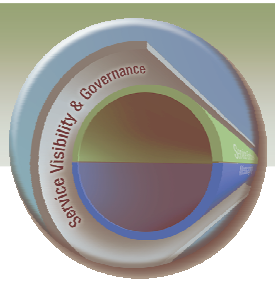


IT Reality

IT Needs to Be



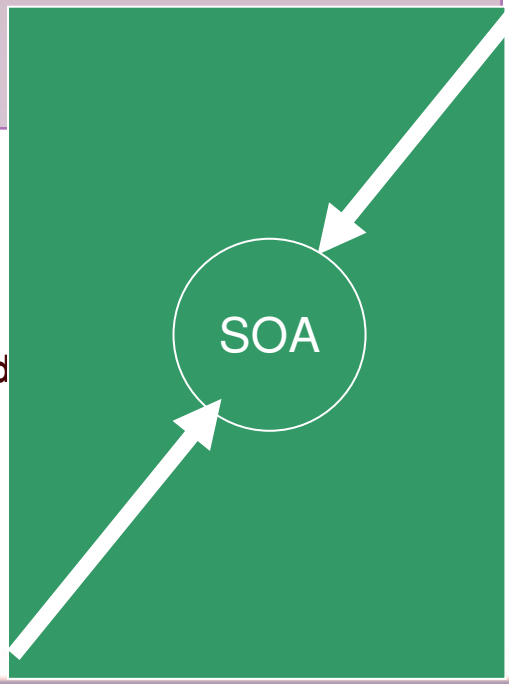
Organizations Leverage SOA Connectivity & Integration
To Address Critical Business Needs

Business Needs	***Common Adoption Patterns***	
"Fast, flexible & reliable access to business information"		ESB Messaging & Enrichment
"Trust, management & security for business applications"		Service Visibility & Governance
"Make it easy for a the company's customers, partners & suppliers to conduct business"		Extend Connectivity to Partners & Customers

What are the Painpoints?

XML is the foundation of SOA, but brings new challenges:

- Scalability: XML is bandwidth, CPU, and memory intensive
- Performance: some XML apps literally grind to a halt
- Security: connecting systems never before connected
- Security: clear text over HTTP with no inherent security
- Integration: connecting Web services to legacy applications
- Standards are still in flux
- Governance: ability to manage your SOA



- **Businesses want to deploy secure XML-based applications**…but security adds further bulk to the application that slows it down.
- **Businesses want to move to standards-based XML…**but XML is bulky which can cause performance bottlenecks.
- **Businesses want to integrate their new Web Services to each other and to existing legacy applications…**but they don't want to do it point to point because that diminishes the flexibility that SOA is supposed to bring.
- **Businesses want to manage and monitor their Web Services in the same way as server**…but SOA management is more than just management from an IT perspective– achieving a level of control, policy, and governance

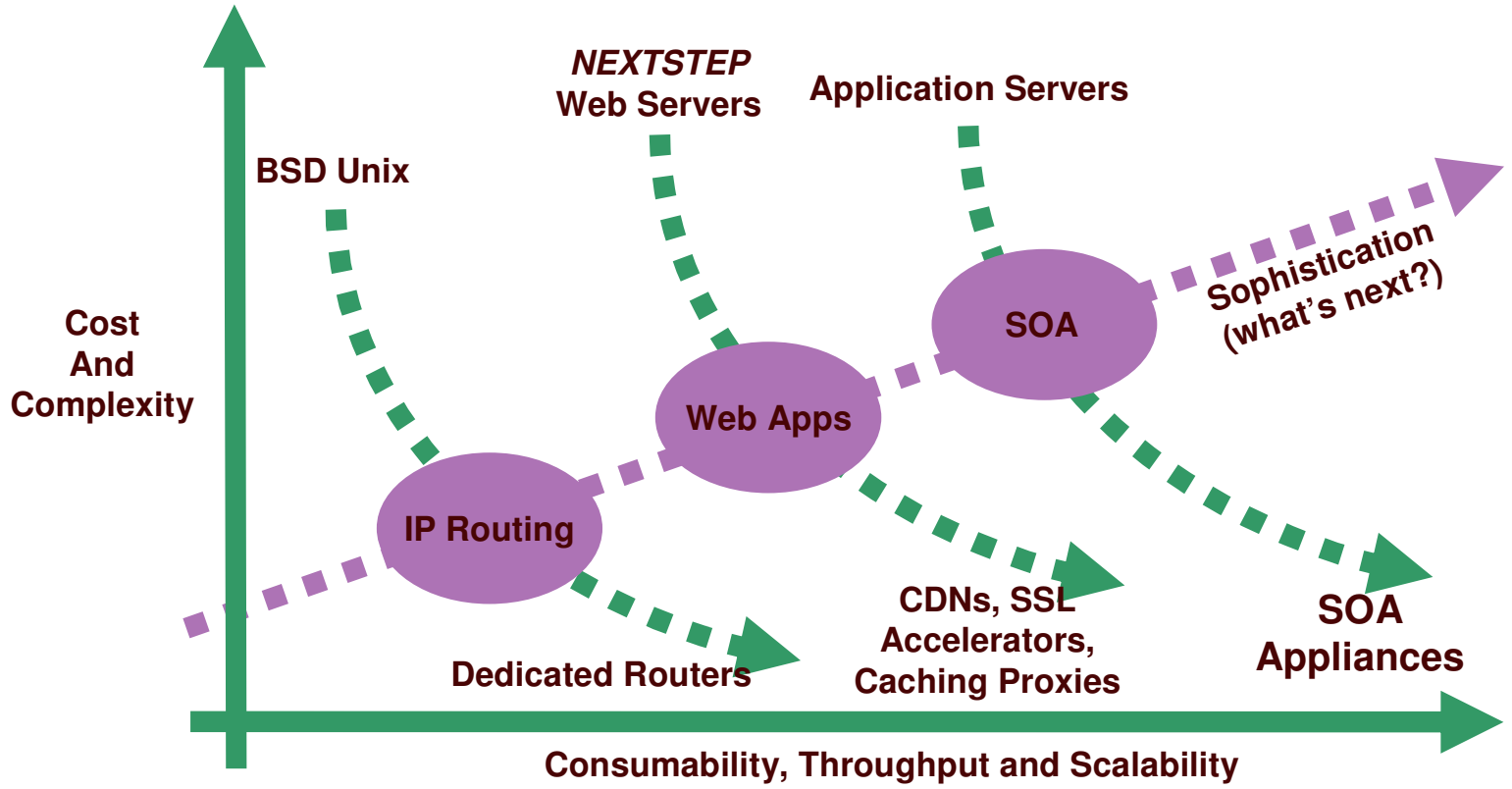
What Makes Systems "Vulnerable" from the Network?

- Most hosts run a general purpose operating system that allows users to login and start "command shells" (UNIX, Windows, Linux, etc.), even though this access may be disabled externally
- Recently the US Department of Homeland Security commissioned a source code security analysis of the 180 top Open Source projects
- Their findings:
  - On average, **Open Source projects contain 1 "security exposure" (read: potential vulnerability) per every 1000 lines of code**
- This exploit code can then make use of general purpose operating system facilities to run things like "Command Shells" that give the attacker direct access to the system

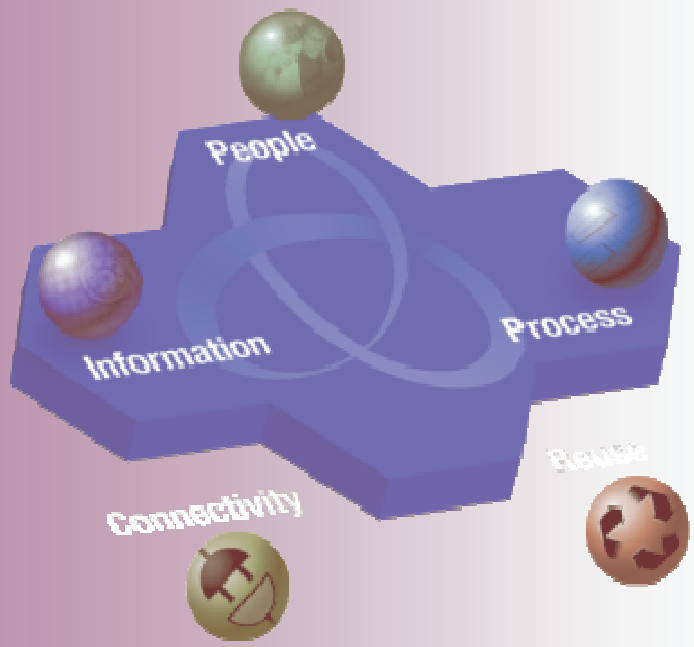
Any system or "security device" built on a full general purpose operating system has the potential of running vulnerable applications/services that are at risk of compromise

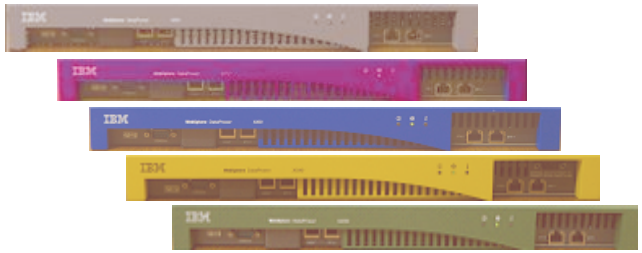
Quick History: Appliance Origins

- Successful key core IT technology migrates from software to dedicated hardware to lower cost and to increase consumability and scale



WebSphere DataPower SOA Appliances





Creating customer value through extreme SOA connectivity, performance and security

- **Simplifies** SOA and accelerates time to value
- **Helps secure** SOA XML implementations
- **Governs and enforces** SOA/Web services policies

WebSphere DataPower SOA Appliances redefine the boundaries of middleware extending the SOA Foundation with ***specialized, consumable, dedicated SOA appliances*** that combine ***superior performance and hardened security*** for SOA implementations.

DataPower SOA Appliances Are Not . . .

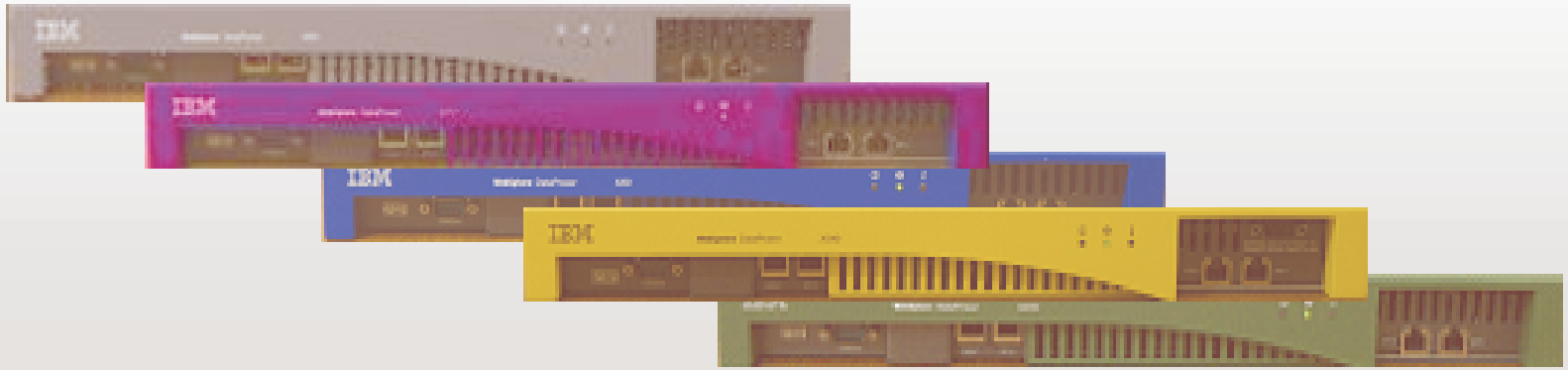
- Regular rack mount servers with some pre-loaded software
- Running a full standard operating system
- Traditional network packets (below layer 7)
- Java-based
- Application servers, which typically provide business logic for specific functions such as customer relationship management or sales force automation
  - XML processing is the common element found across these applications
  - DataPower appliances **add headroom and scalability**, allowing application servers to process business logic while leveraging a common platform for the heavy lifting that comes with XML processing and security
- Routers, load balancers or IP firewall replacements
  - DataPower **augments existing network infrastructure** by adding a layer of intelligent infrastructure to the enterprise network
  - Devices are **IP-addressable** and designed to be deployed alongside **existing network infrastructure** without requiring adjustments to network topology

WebSphere DataPower SOA Appliances

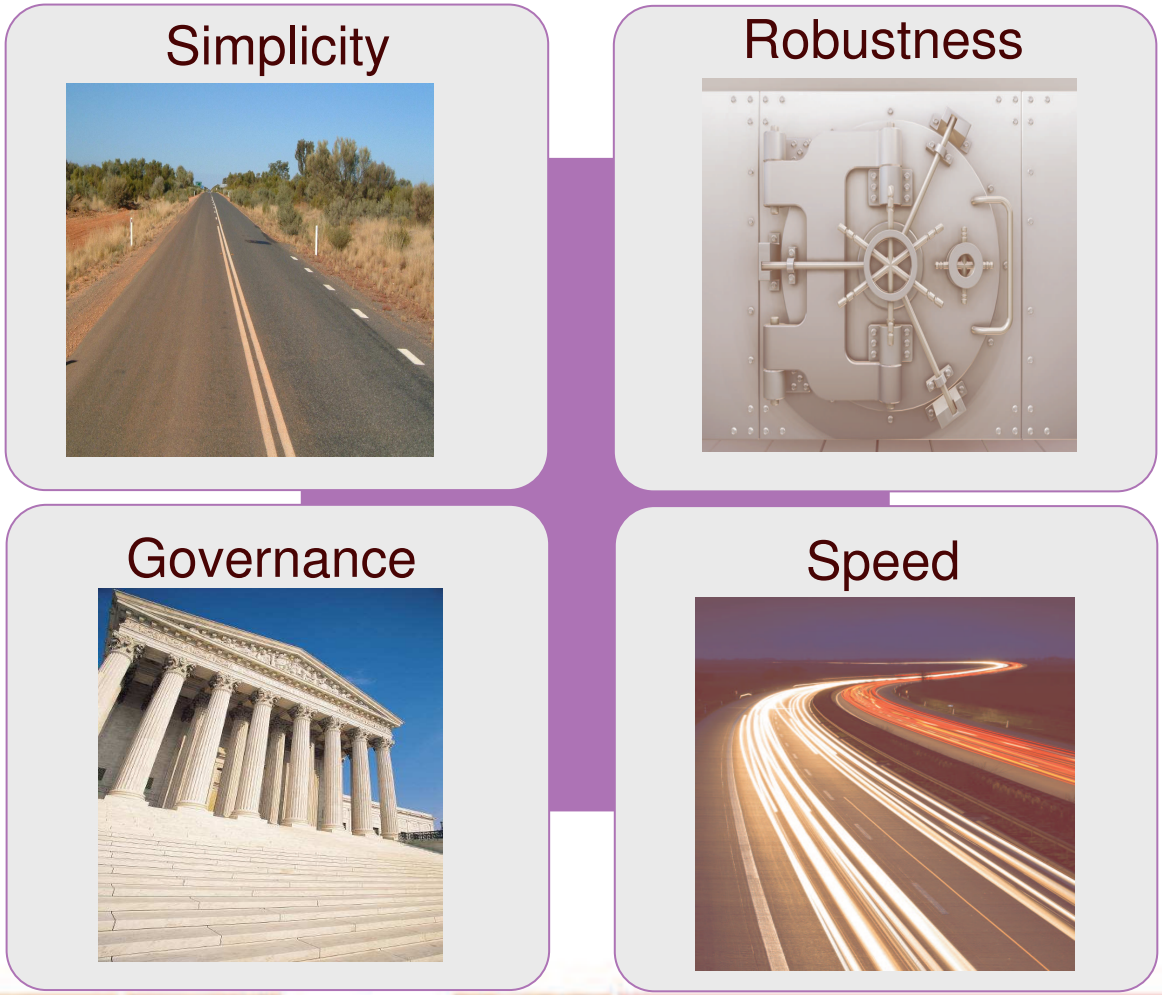
Exceptional growth and acceptance

- **DataPower:**
  - **Market leader in integration and SOA appliances**
  - **Accepted and supported world-wide**
  - **Leads with standards in SOA, Security, Policy, etc.**

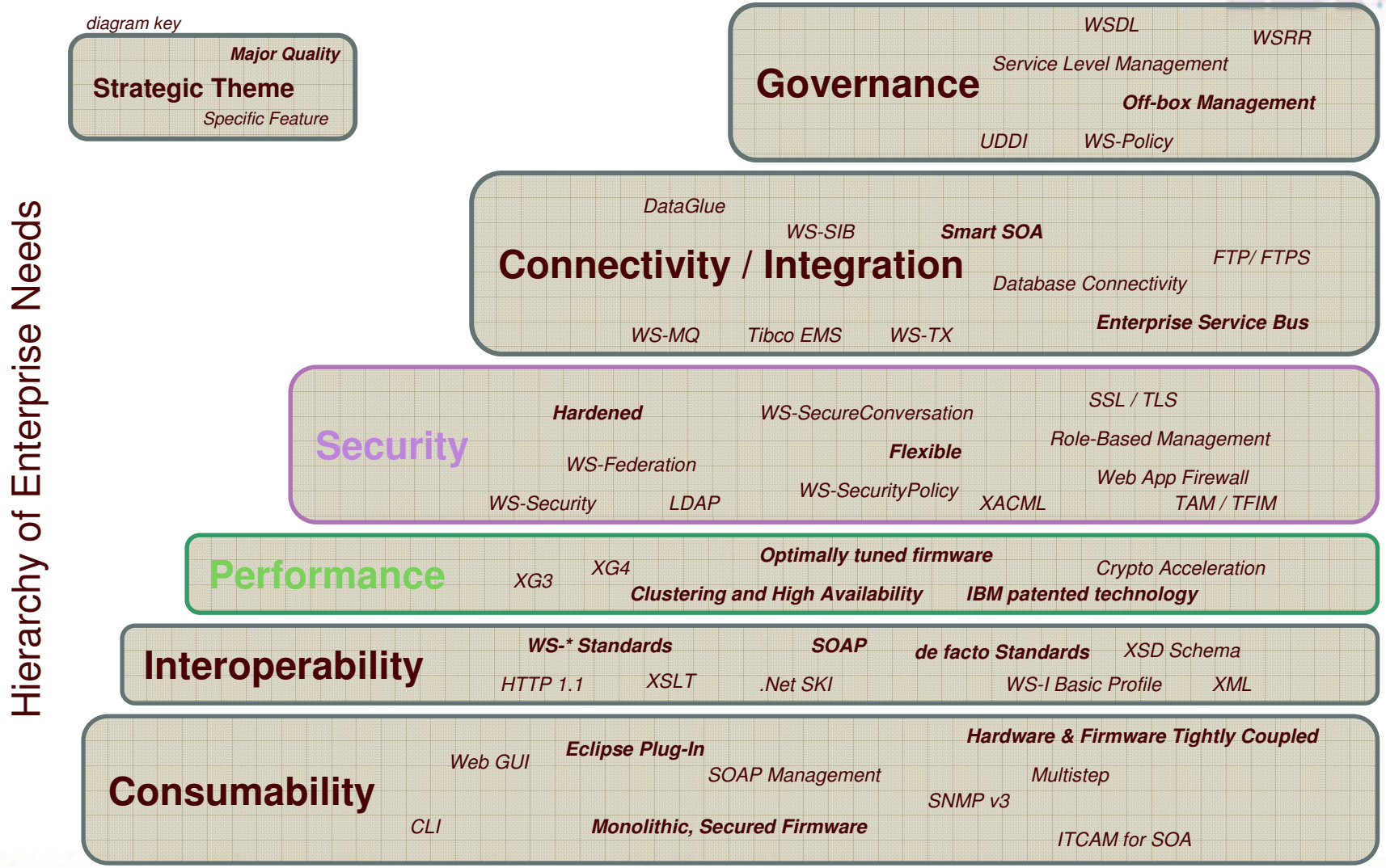
- **Used by**
  - **banks, insurance, brokers**
  - **telcos,**
  - **federal and local governments,**
  - **healthcare,**
  - **general business**



WebSphere DataPower SOA Appliances Address Critical Connectivity Issues



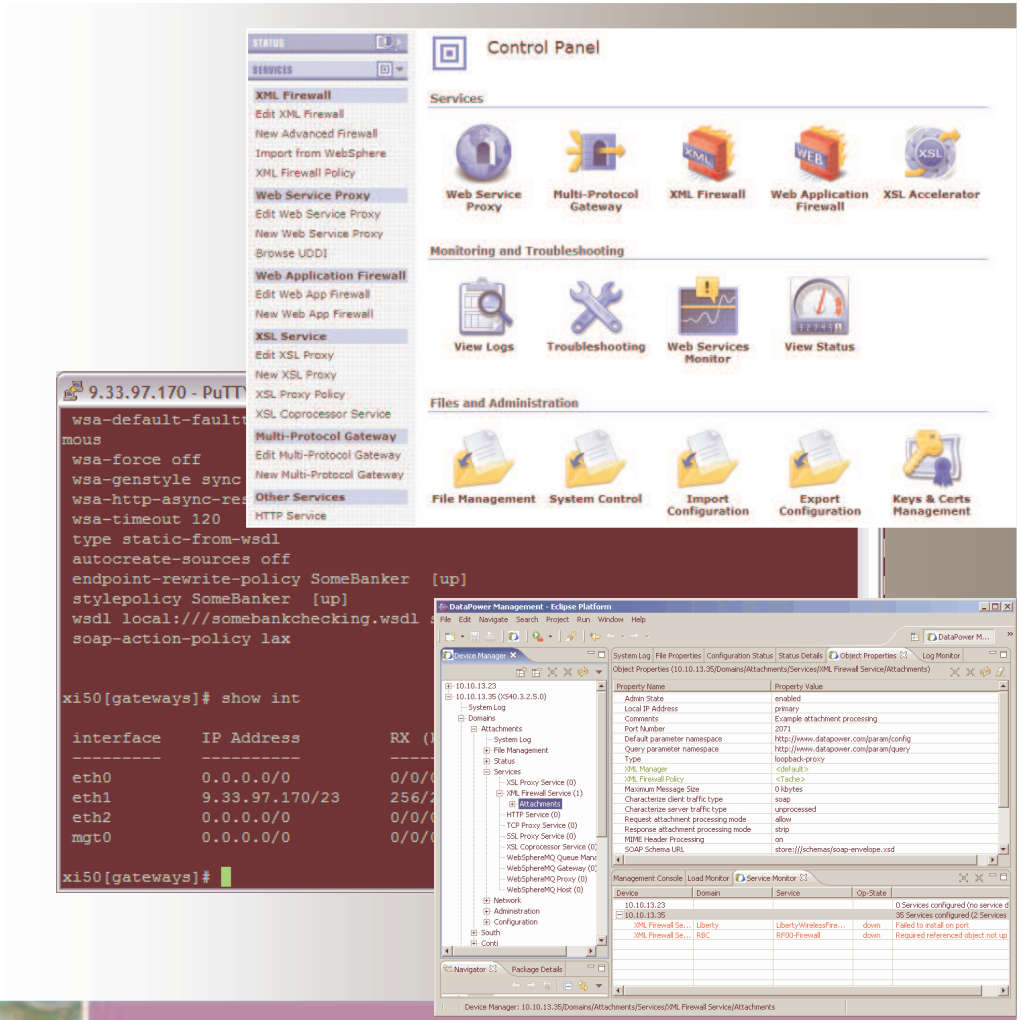
WebSphere DataPower Base Qualities & Features



Simple Appliance Configuration for Robust Connectivity Functionality

Fits into your existing environment

- Address broad organizational needs *(Architects, Developers, Network Operations, Security)*
- Complete Configuration from GUI or CLI interface
- IDE integration/Eclipse plug-in
- XPath / XML config files
- SNMP
- SOAP management interface



Why an Appliance for SOA?

Configuration vs. Programming

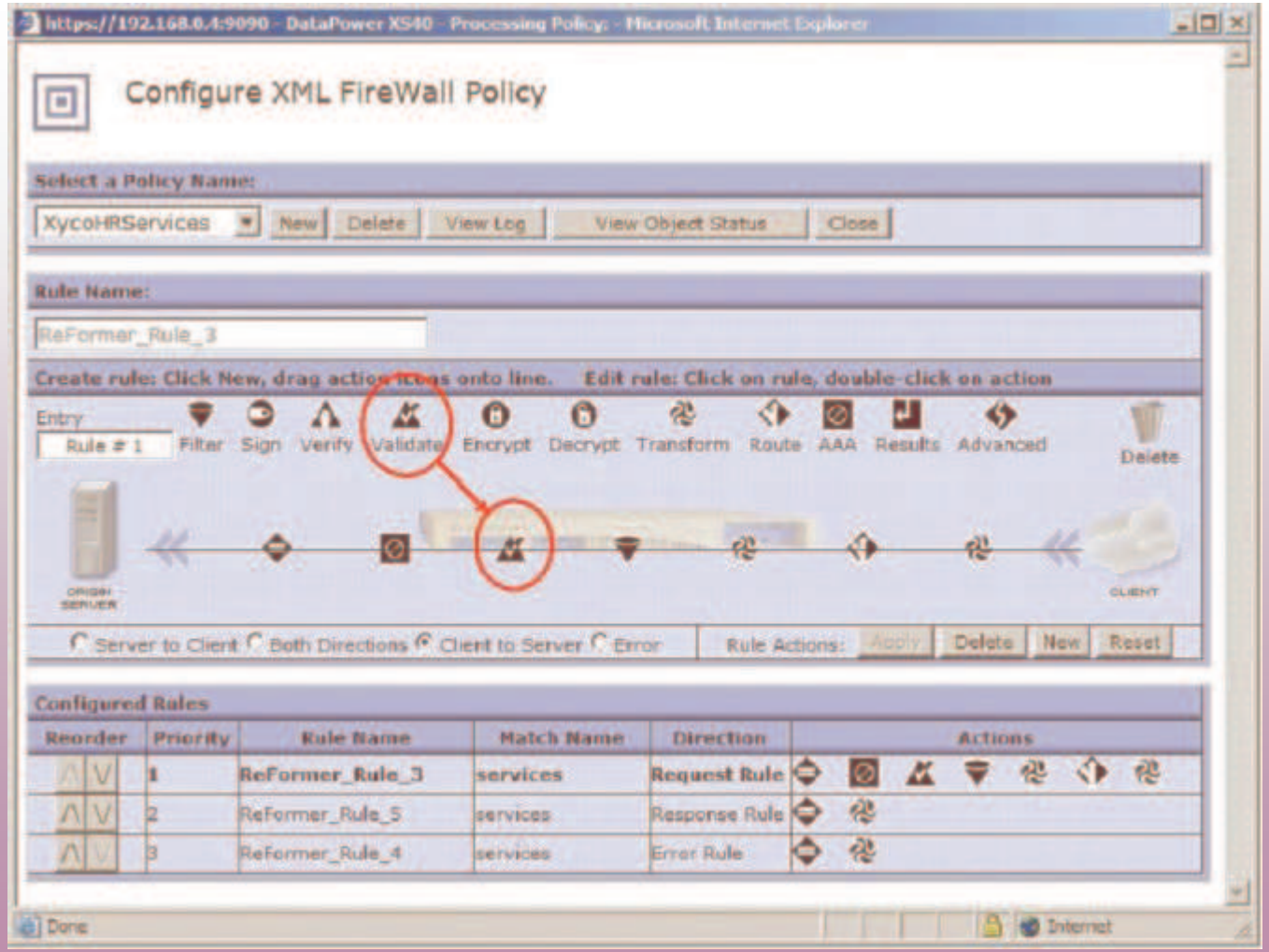
Configuration driven Web GUI

Drag & Drop Workflow Style

Implement Complex Policies

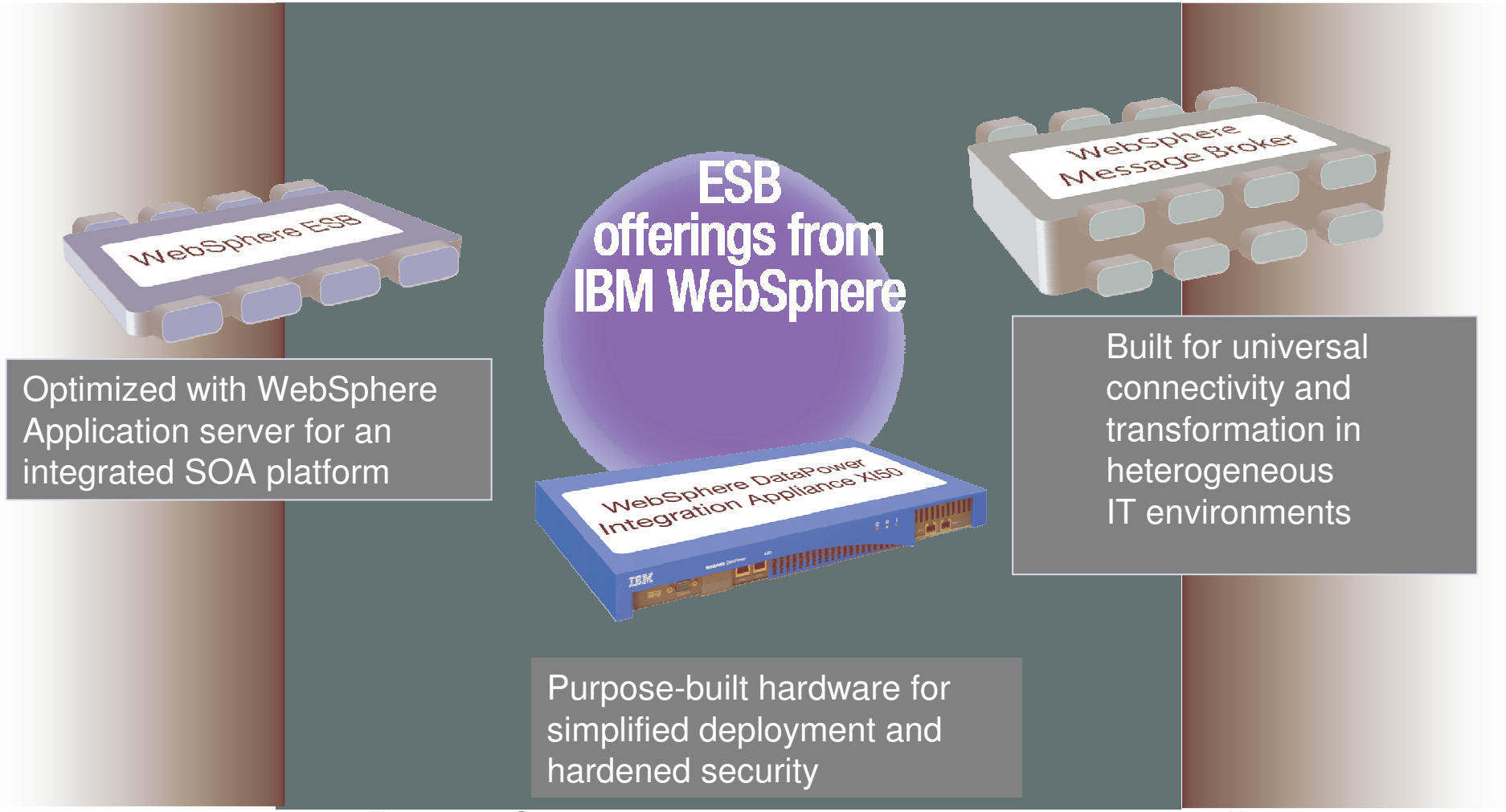
No Programming, Less Errors

All Functions Available via CLI & SOAP Interface



A choice of ESBs

IBM offers three ESBs to choose



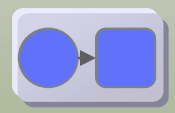
Departments have differing ESB requirements which are best met by different products

Provide Service Enrichment
The ESB

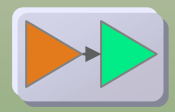
An Enterprise Service Bus (ESB) is a flexible connectivity infrastructure for integrating applications and services.

An ESB performs the following between requestor and service

MATCHES & ROUTES
communications between services



CONVERTS
between different transport protocols



TRANSFORMS
between different data formats

IDENTIFIES & DISTRIBUTES
business events

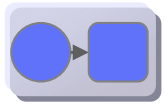
Shape = Transport protocol
Color = Data format

Integration Appliance XI50

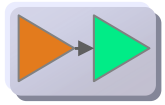
Purpose-built hardware ESB for simplified deployment and hardened security

- Redefines the boundaries of middleware with specialized hardware
- Many functions integrated into a single device
- Simplified deployment and ongoing management
- Routes messages based on content and policy

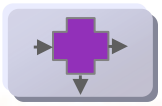
Secures services on the network with sophisticated web services access control, policy enforcement, message filtering, and field-level encryption



Optimized to bridge between leading standard protocols at wirespeed, including web services, messaging, files, and database access



Enables transformation between a wide range of data formats, including XML, legacy, and industry standards, and custom formats

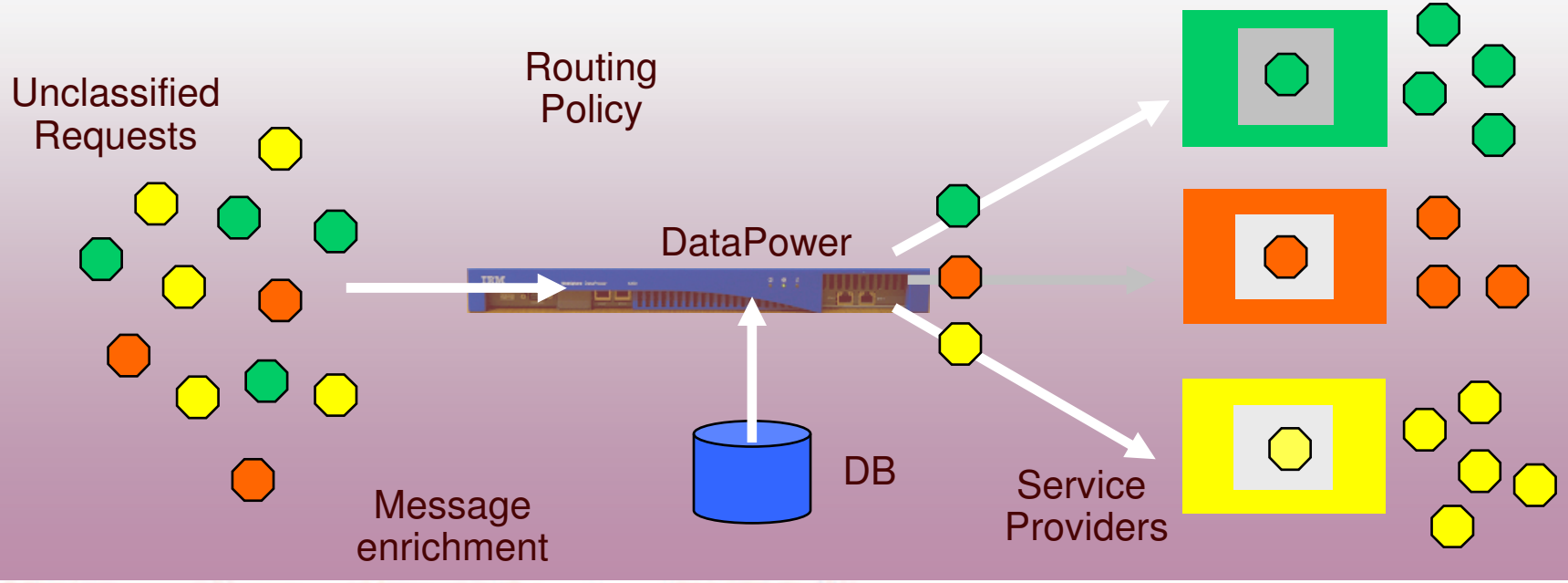


Captures and emits events to facilitate web services management and enable business visibility in Business Activity Monitoring solutions

Deep-Content Routing/Aggregation

- Route based on
  - IP information
  - SSL parameters
  - HTTP headers
  - XPath on XML/SOAP

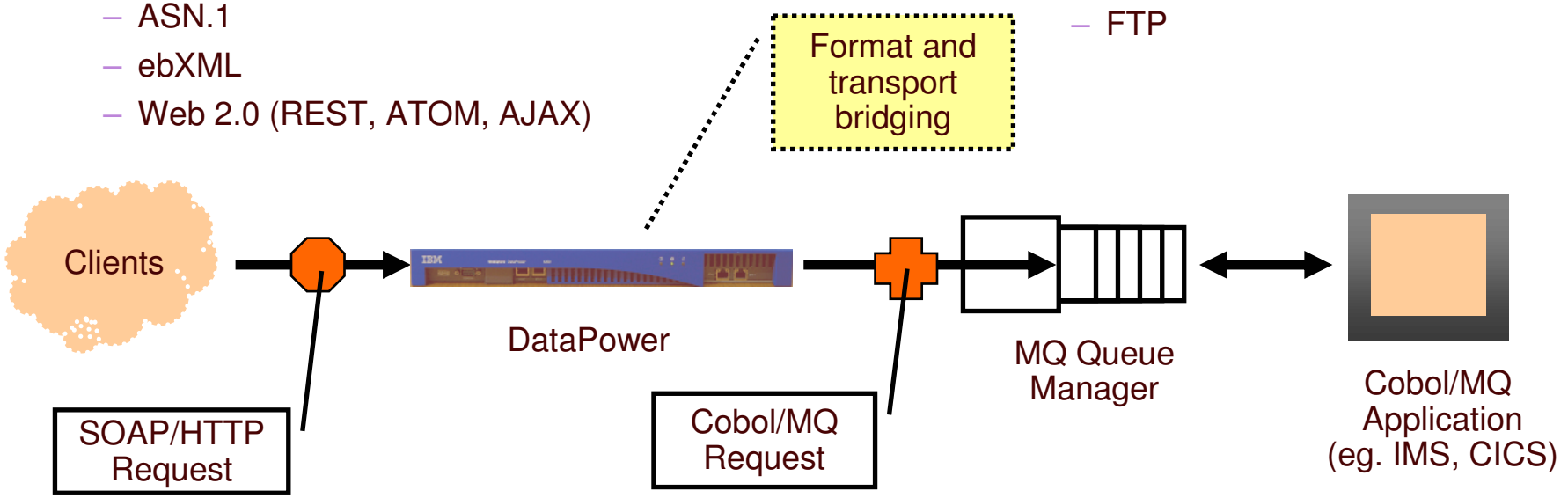
- Load balancing
- Enrich and aggregate messages with data from
  - A remote Web Service
  - A database



Protocol Bridging & Transformation

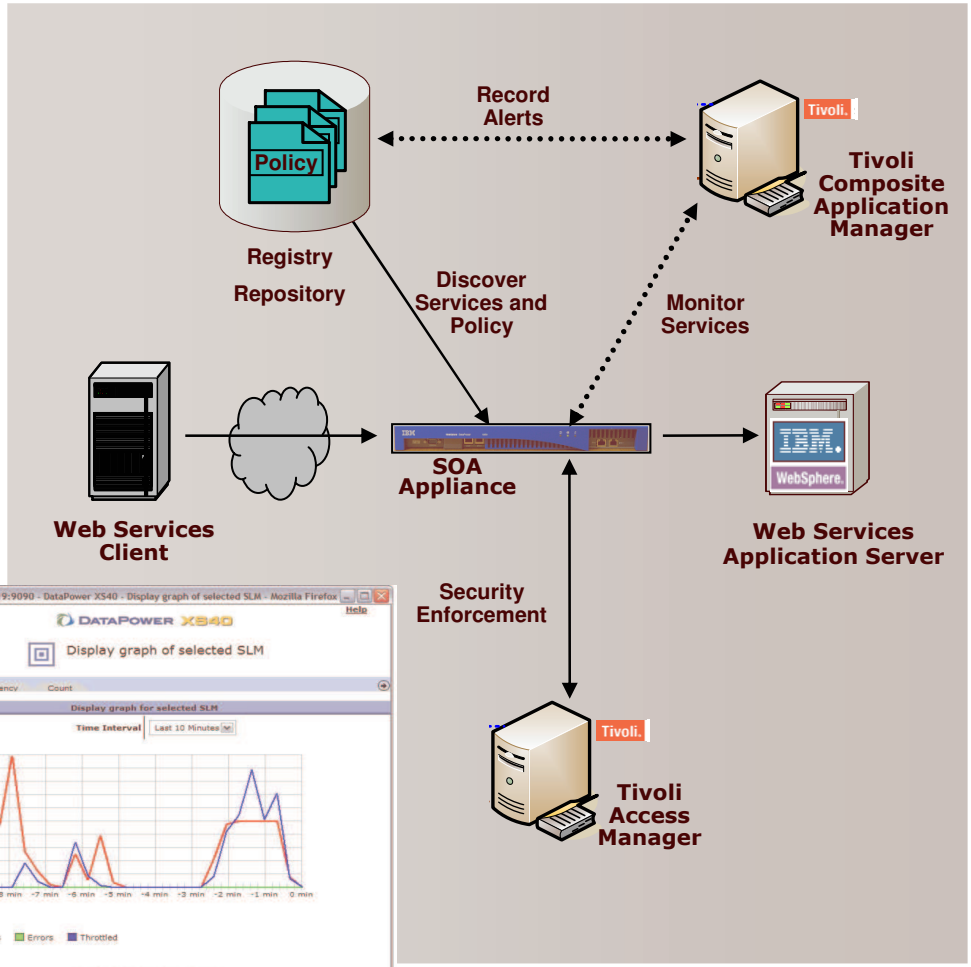
- Application formats
  - EDI
  - Binary Formats
  - CORBA
  - CICS
  - ISO 8583
  - CSV
  - ASN.1
  - ebXML
  - Web 2.0 (REST, ATOM, AJAX)

- Transport protocols
  - HTTP
  - MQ
  - SSL
  - SOAP
  - Tibco
  - JMS
  - FTP



Governance and enforcement for secure connectivity

- Natural fit for a high-speed, secure, message-aware hardware device
- Standards based centralized governance
  - WS-Policy and WS-SecurityPolicy
  - Integration with centralized policy stores
  - Lowers risk and management cost
  - IBM WebSphere Registry and Repository
  - UDDI v2 and v3
- Centralized management and monitoring
  - ITCAM SE, ITCAM for SOA, WS-Management, SOAP Management Interfaces
- Process Integrity
  - Service Level Monitoring
  - Authentication and Authorization
  - Extended logging option
  - Off-device logs
- Security governance
  - Hardware XACML enforcement
  - Existing SSO's (ldap, 3rd party)
  - IBM TAM and TFIM



XML Security Gateway XS40

Web service threat protection and message security

- Centralizes XML security and policy enforcement
- Hardened security appliance for DMZ deployments
- Configuration-driven interface reduces need for specialized SOA skill sets
- Heterogeneous interoperability enables secure integrations with partners, customers, and/or vendors

Secures next-generation applications with an XML and SOAP firewall that filters any content, metadata, or network variables at wirespeed.

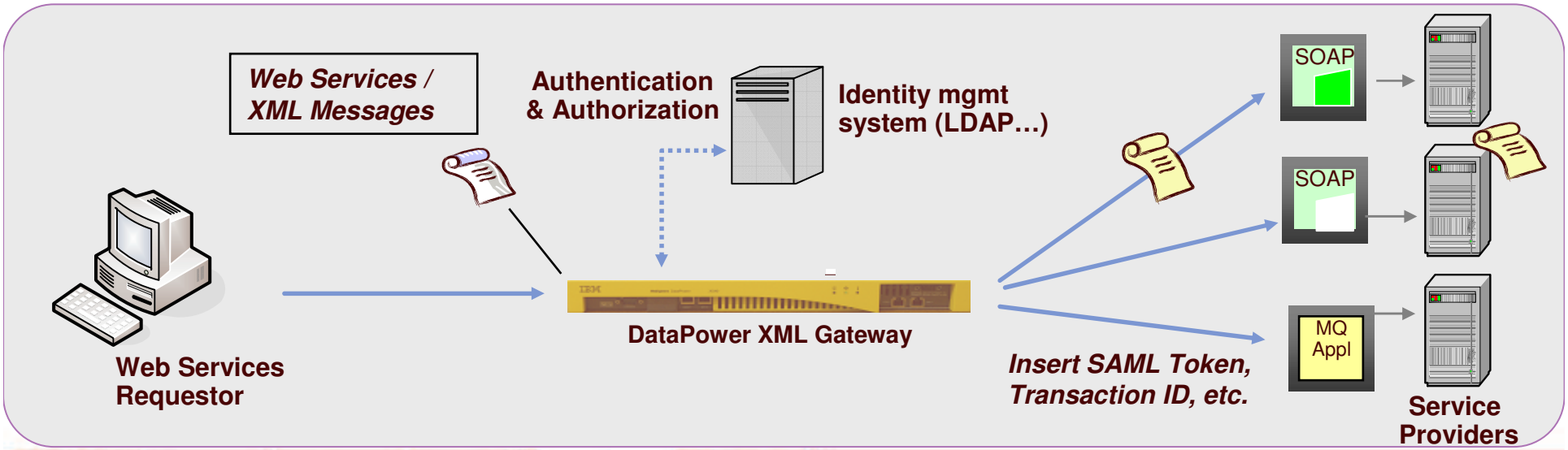
Validates XML schemas and messages, protecting against XML attacks, buffer overflows, or vulnerabilities in malformed XML documents.

Provides field-level XML security through encryption/decryption and signing/verification of entire messages or individual XML fields.

Supports a variety of access control mechanisms, and can control access by rejecting unsigned messages and verifying signatures within SAML assertions.

Comprehensive Web Services & XML Security

- Encryption of transport layer - HTTP, HTTPS, SSL
- XML/SOAP Firewall - Filter on any content, metadata or network variables
- Data Validation - Approve incoming/outgoing XML
- Field Level Security - WS-Security, encrypt & sign individual fields, non-repudiation
- Access Control (AAA) - enforces access policy stored in an Identity Management Solution
- Message Enrichment – Insert header info, SAML token, Kerberos token, transaction ID…
- Anti Virus Protection - integrates with corporate virus checking through ICAP protocol
- Security standards - WS-Security, WS-Policy, SAML, XACML, WS-Trust, WS-Addressing…



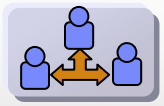
XML Threats - Security Risks Growing

- XML Entity Expansion and Recursion Attacks
- XML Document Size Attacks
- XML Document Width Attacks
- XML Document Depth Attacks
- XML Wellformedness-based Parser Attacks
- Jumbo Payloads
- Recursive Elements
- MegaTags – aka Jumbo Tag Names
- Public Key DoS
- XML Flood
- Resource Hijack
- Dictionary Attack
- Message Tampering
- Data Tampering
- Message Snooping
- XPath Injection
- SQL injection
- WSDL Enumeration
- Routing Detour
- Schema Poisoning
- Malicious Morphing
- Malicious Include – also called XML External Entity (XXE) Attack
- Memory Space Breach
- XML Encapsulation
- XML Virus
- Falsified Message
- Replay Attack
- …others

Business to Business (B2B) Appliance XB60

Purpose-built B2B hardware for simplified deployment, exceptional performance and hardened security

- Extend integration beyond the enterprise with B2B
- Hardened Security for DMZ deployments
- Easily manage and connect to trading partners using industry standards
- Simplified deployment and ongoing management



Trading Partner Management for B2B Governance; B2B protocol policy enforcement, access control, message filtering, and data security

Application Integration with standalone B2B Gateway capabilities supporting B2B patterns for AS2, AS3 and Web Services

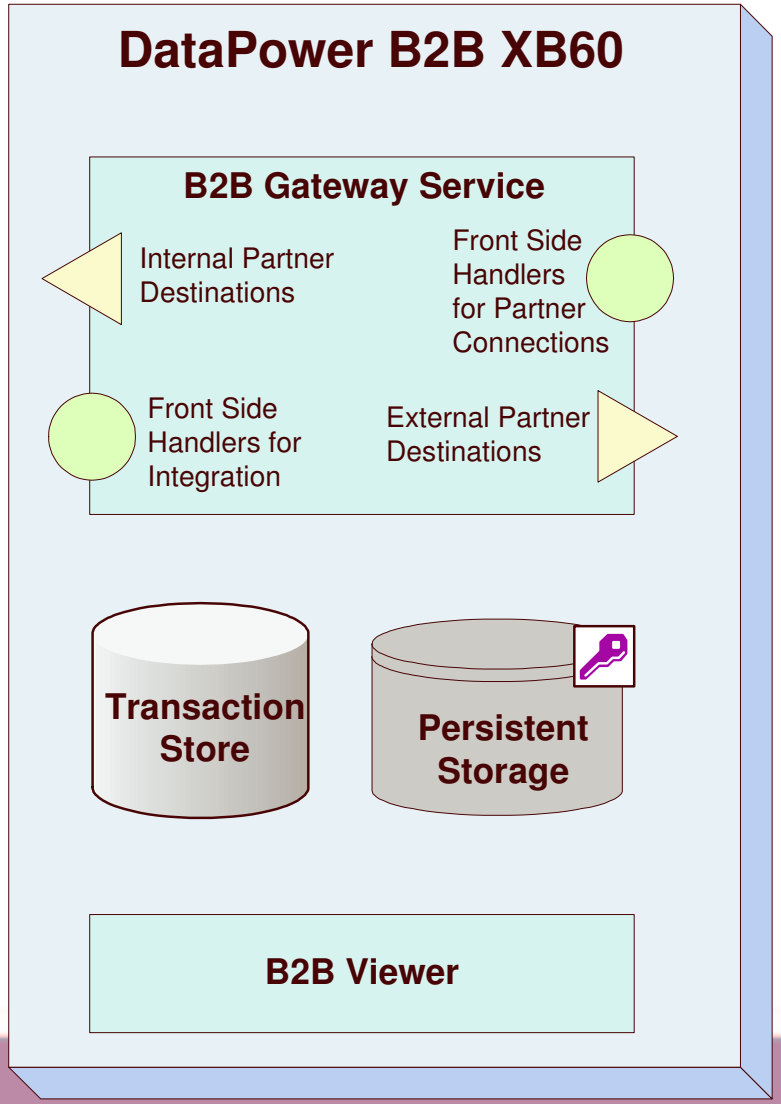
Full featured User Interface for B2B configuration and transaction viewing; correlate documents and acknowledgments displaying all associated events

Simplified deployment, configuration and management providing a quicker time to value by establishing rapid connectivity to trading partners

DataPower B2B Appliance XB60 - B2B Components

The DataPower B2B Appliance extends your ESB beyond the enterprise by supporting the following B2B functionality:

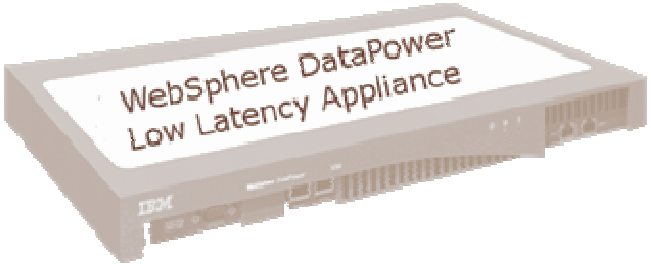
- B2B Gateway Service
  - AS2 and AS3 packaging/unpackaging
  - EDI, XML and Binary Payload routing
  - Front Side Protocol Handlers
  - Trading Partner Profile Management
    - Multiple Destinations (Back Side Protocol Handlers)
    - Certificate Management (Security)
  - Hard Drive Archive/Purge policy
- B2B Viewer
  - B2B transaction viewing
  - Transaction resend capabilities
  - Acknowledgement correlation
  - Transaction event correlation
  - Role based access
- Persistent Storage
  - Encrypted with a box specific key
  - B2B document storage
- Transaction Store
  - B2B metadata storage
  - B2B state management



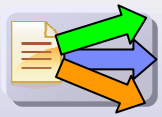
Low Latency Appliance XM70

Purpose-built hardware for low-latency, network-based messaging and data feed processing

- Drop-in messaging solution which plugs into existing network infrastructure
- Enhanced QoS and performance with purpose-built hardware
- Simplified, configuration-driven approach to low-latency, publish/subscribe messaging and content-based routing
- High availability out of the box (two or more appliances)



Low-latency unicast and multicast messaging, scaling to 1M messages / sec with microsecond latency



Destination, property and content-based routing, including native XML and FIX parsers

Optimized to bridge between leading standard messaging protocols such as MQ, Tibco, WebSphere JMS and HTTP(S)

Simplified deployment, configuration and management providing a quicker time to value by rapidly configuring messaging destinations, connectivity and routing

WebSphere DataPower Solution Categories

SOA Integration / ESB Enrichment and Messaging

- Efficiently transforming, routing, logging messages among applications and Web services using multiple protocols and data formats (XML and non-XML)
- Connecting Z or legacy applications to Web services/SOA

ESB & SOA Security

Securely enabling access to back-end systems for partners and customers
Protecting against XML-borne threats

SOA Governance & Policy Enforcement

- Manage Web services easily through service-level management, security management, enterprise management console, registry/repository integration

Business-to-Business Gateway

- Extend integration beyond the enterprise with B2B
- Easily manage and connect to trading partners using industry standards

Low Latency Messaging

- Drop-in messaging solution which plugs into existing network infrastructure
- Simplified, configuration-driven approach to low-latency, publish/subscribe messaging and content-based routing

International Hotel Chain

Secure SOA Integration of Web Services

Challenge

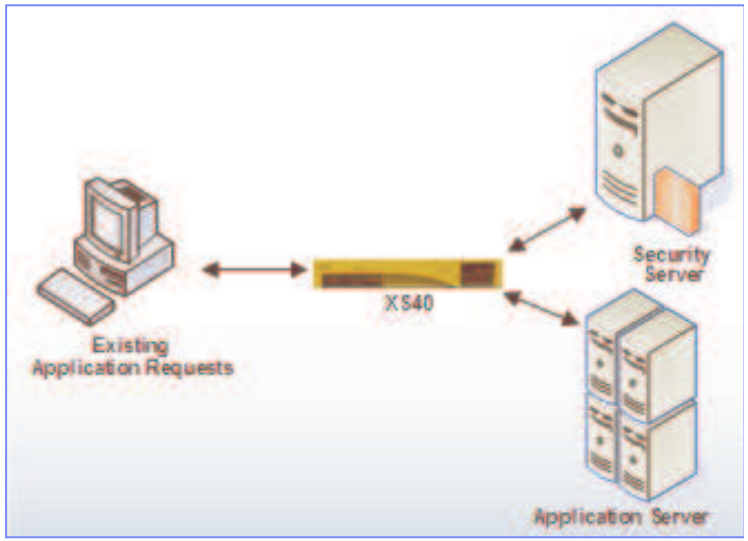
- **Decrease management costs by implementing an SOA for B2B transactions with online partners, while increasing XML processing and security.**

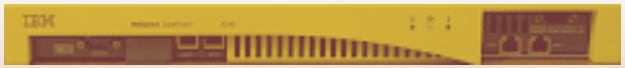
Solution

- Deployed WebSphere DataPower XML Security Gateway XS40
- The XS40 acts as an enforcement point; including encryption, firewall filtering, digital signatures, schema validation, WS-Security, & XML Access Control

Benefits

- Ability to handle **high transaction transformation**
- **Reduced customer response times** for e-business transactions
- **Reduced IT costs & overall maintenance** of SOA





WebSphere DataPower XML Security Gateway XS40

US Insurance Provider

Challenge

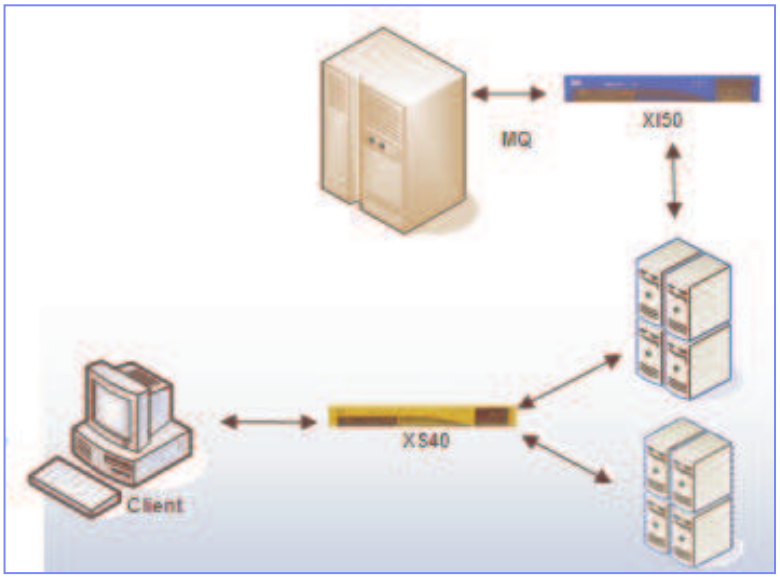
- **Simplifying communication process with B2B portal to facilitate electronic insurance benefits for customers accessing internal services**
- **Implement security functionalities to protect mission-critical information**
- **Support for SAML assertions & LDAP directory**
- **Quickly transforming messages in various formats**

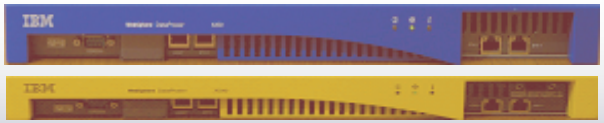
Solution

- Implemented WebSphere DataPower Integration Appliance XI50 for XML transformations
- Implemented WebSphere DataPower XML Security Gateway XS40 for comprehensive security practices

Benefits

- Won new business & increased customer satisfaction
- Enables secure **standards-based interoperability**
- **Interoperates seamlessly in existing heterogeneous environment**
- Supports **ACORD XML standard**





- **WebSphere DataPower Integration Appliance XI50**
- **WebSphere DataPower XML Security Gateway XS40**
- **WebSphere MQ**
- **WebSphere Message Broker**

Canadian Financial Services Company

Challenge

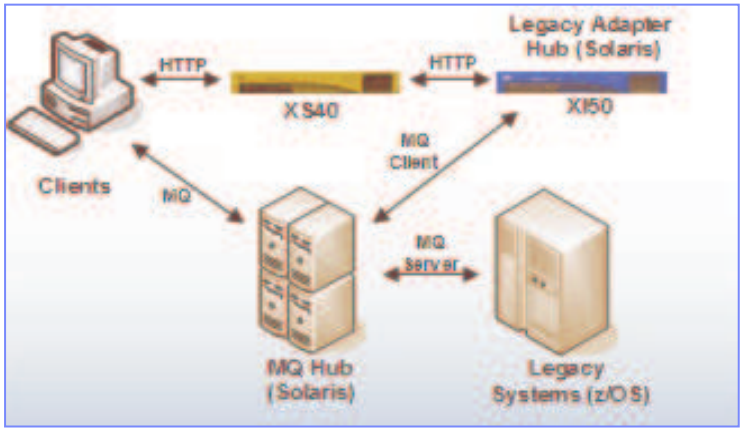
- **Implement Service Oriented Architecture (SOA) in order to integrate disparate systems, replace an existing message bus, increase security and performance, and meet business scaling needs**

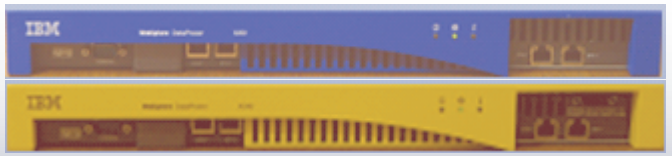
Solution

- Implemented WebSphere DataPower Integration Appliance XI50 for transformation and routing functions
- Implemented WebSphere DataPower XML Security Gateway XS40 as the gateway for shared services used by multiple business units
- Integrated into heterogeneous environment

Benefits

- Greater than **5x reduction in configuration & operability time**
- **10x performance improvement**
- Opportunity to expand usage beyond transformation & routing





- **WebSphere DataPower Integration Appliance XI50**
- **WebSphere DataPower XML Security Gateway XS40**
- **WebSphere MQ**

e-Business Organization

Acceleration, Security & ESB Functionality with BPM & SOA

Challenge

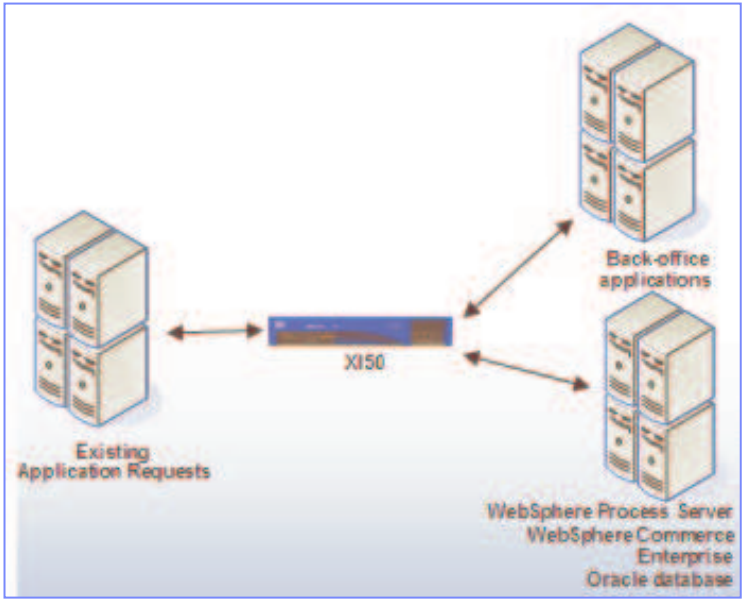
- **Could not support increasing user load on e-commerce web site**
- **Replace internally developed e-commerce site with a solution that was flexible, robust & scalable to accommodate current & future capacity requirements**

Solution

- Deployed WebSphere DataPower Integration Appliance XI50 to secure all XML Web service transactions & transforms incoming messages before they flow into WebSphere Process Server or back-office applications
- Using BPM & SOA, the XI50 is operating with Dell servers, which are running WebSphere Process Server, WebSphere Commerce Enterprise & an Oracle database

Benefits

- **Achieved ROI** immediately after implementing solution
- Ability to make rapid changes to its e-commerce web site
- **Greater security with encryption of customer data**



- **WebSphere DataPower Integration Appliance XI50**
- **WebSphere Process Server**
- **WebSphere Commerce Enterprise**

US Retail Bank

Federated ESB in a Heterogeneous Environment

Challenge

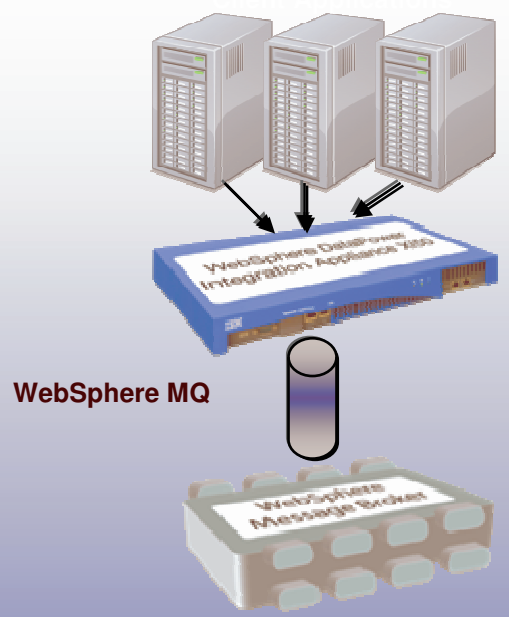
- **Introducing SOA capabilities**
- **Enhancing current heterogeneous IT infrastructure**
- **Existing point-to-point homegrown solution costly and difficult to maintain**

Solution

- WebSphere MQ already established as the enterprise messaging backbone
- Implemented WebSphere Message Broker as service bus for Z-based applications
- Implemented WebSphere DataPower Integration Appliance XI50 for message routing, transformation, logging and partner integration

Benefits

- Enabled **quicker time to value for business initiatives**
- **Consumability and performance of the SOA Appliance** combined with the flexibility of WMB



- **WebSphere MQ**
- **WebSphere Message Broker**
- **WebSphere DataPower XI50 Integration Appliance**

International Insurance Corporation

Web Services Security and Management

Challenge

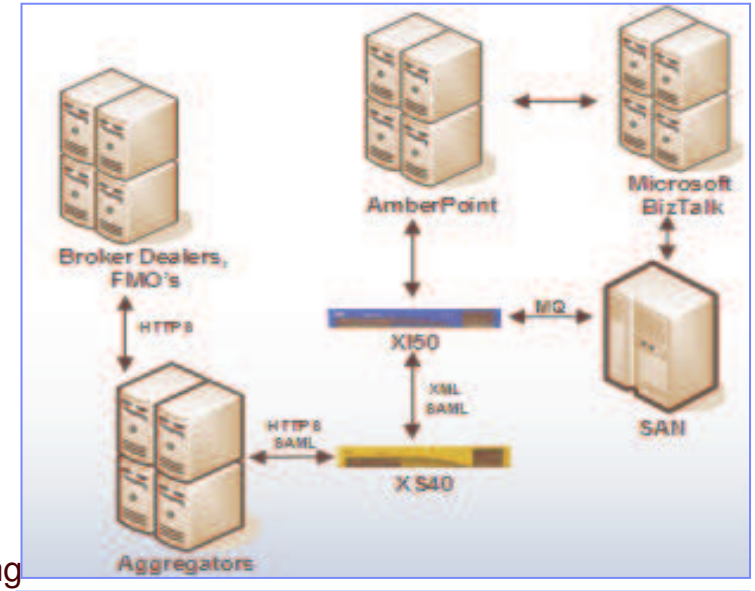
- **Pursuing a new/enhanced channel to sell products through large Broker Dealers via "eApplication"**
- **Increasing data reliability and rapid response for the Agents and carriers on Application submittal**

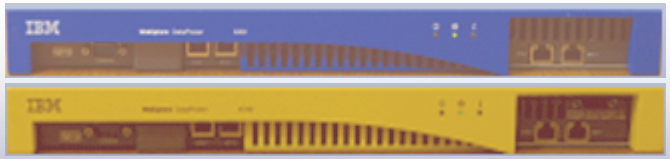
Solution

- Implemented WebSphere DataPower Integration Appliance XI50 & WebSphere DataPower XML Security Gateway XS40
- Extension of existing ESB as a gateway to receive inbound transactions for perimeter security, message level encryption, signing & protocol swapping (HTTPS-to-MQ)

Benefits

- **Perimeter defense, DoS, schema validation & throttling**
- Secure messaging infrastructure
- SLA enforcement
- **Protocol swapping**
- **Acceleration**





- **WebSphere DataPower Integration Appliance XI50**
- **WebSphere DataPower XML Security Gateway XS40**
- **WebSphere MQ**

International Investment Firm

Challenge

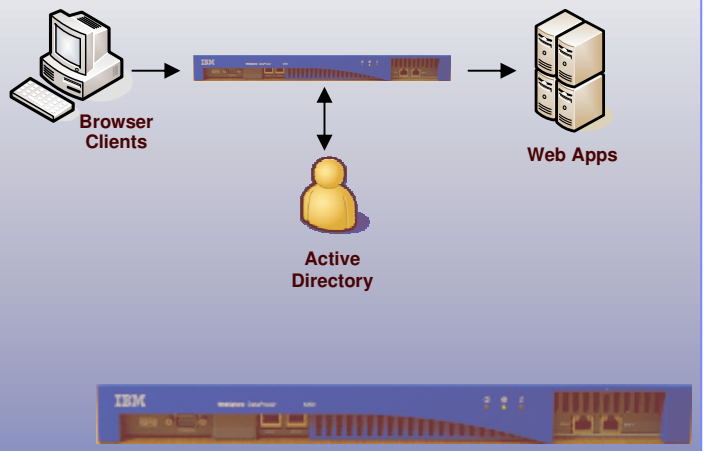
- **Aggressive Investment Banking business growth strategy**
- **Corresponding architectural shift to utility computing model**
- **"Extreme SOA"**
- **Need for rapid and secure reuse of existing web assets**

Solution

- Two-tiered DataPower architecture to secure web apps
- Generalized threat protection and access control across vertical boundaries

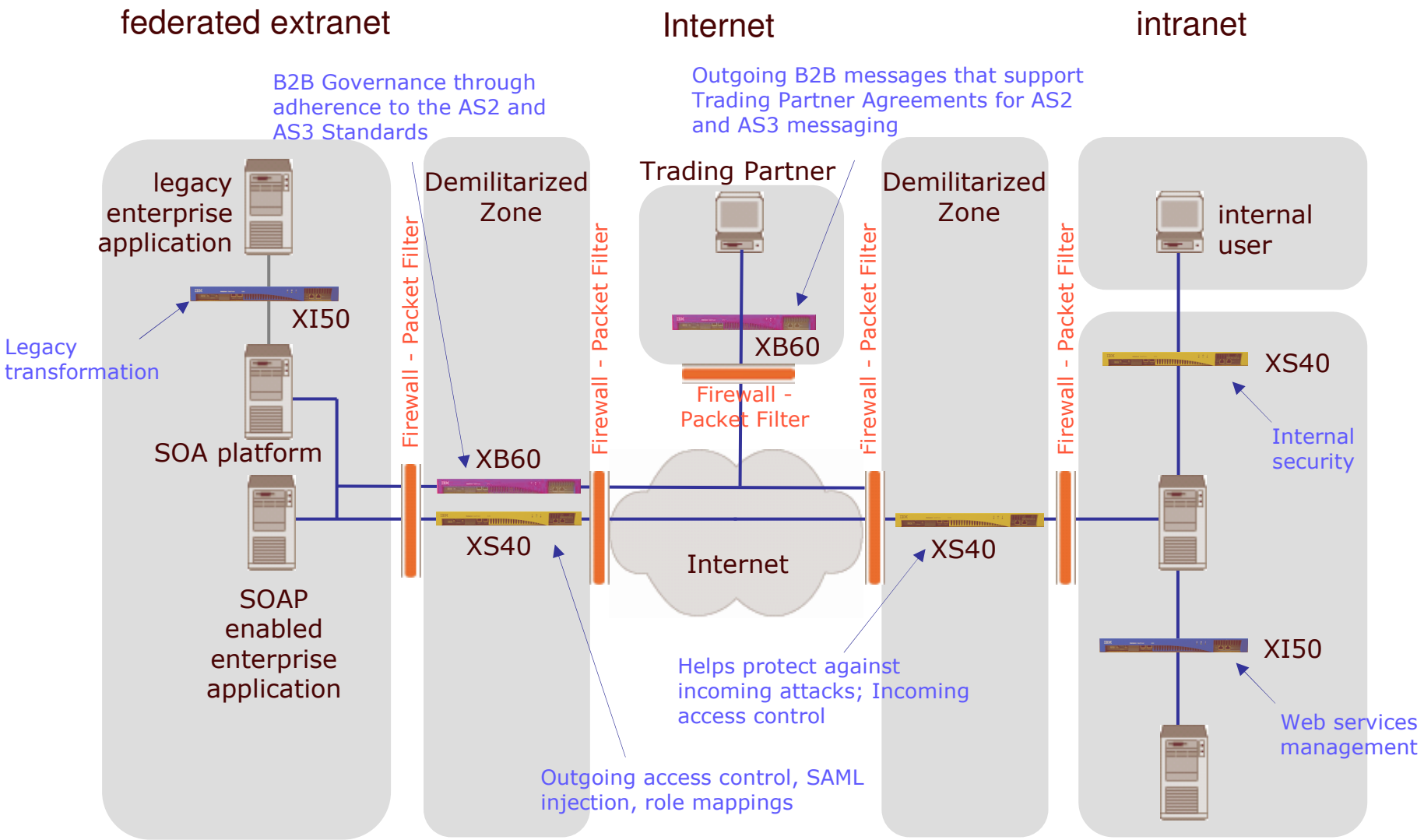
Benefits

- Massive scalability to support business growth plan
- **Interoperability with existing run-time assets (AD, DataSynapse, JBoss)**
- **Cost reduction and avoidance through simplified infrastructure**
- Platform enabled for external and internal integration (ESB)



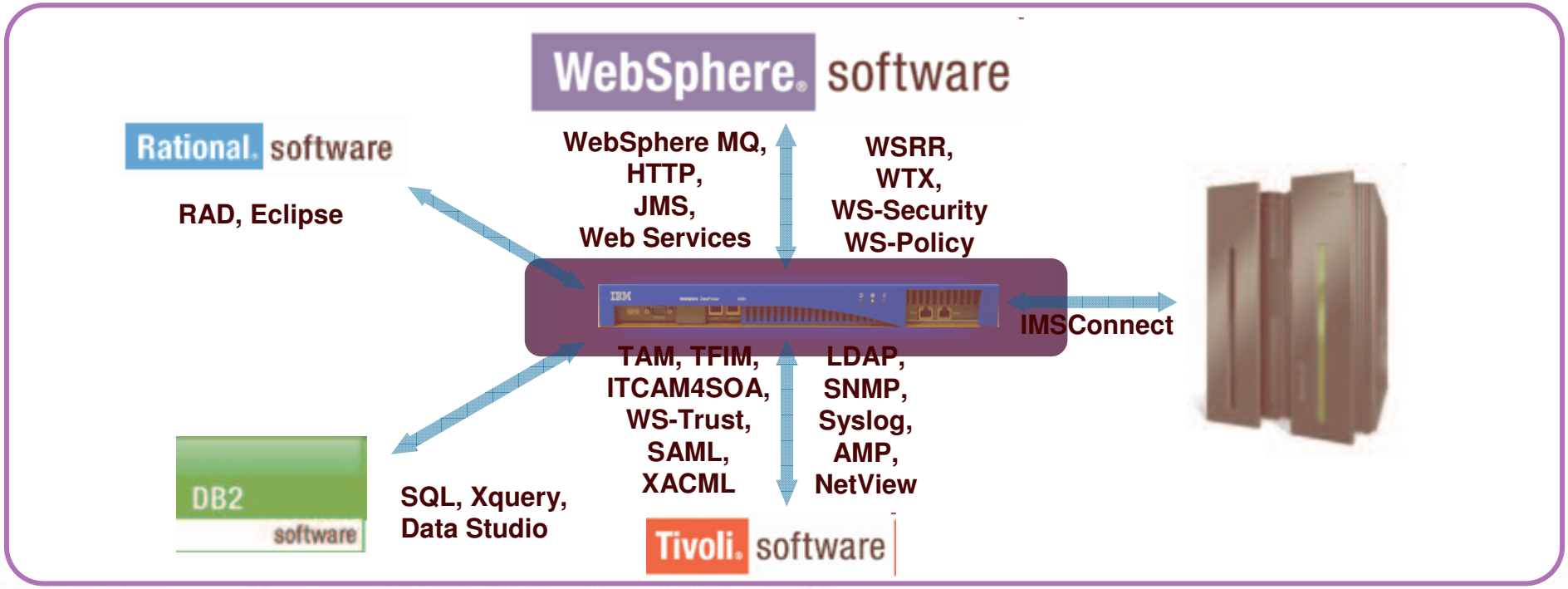
WebSphere DataPower Integration Appliance XI50

Deployment Scenarios for Advanced Connectivity



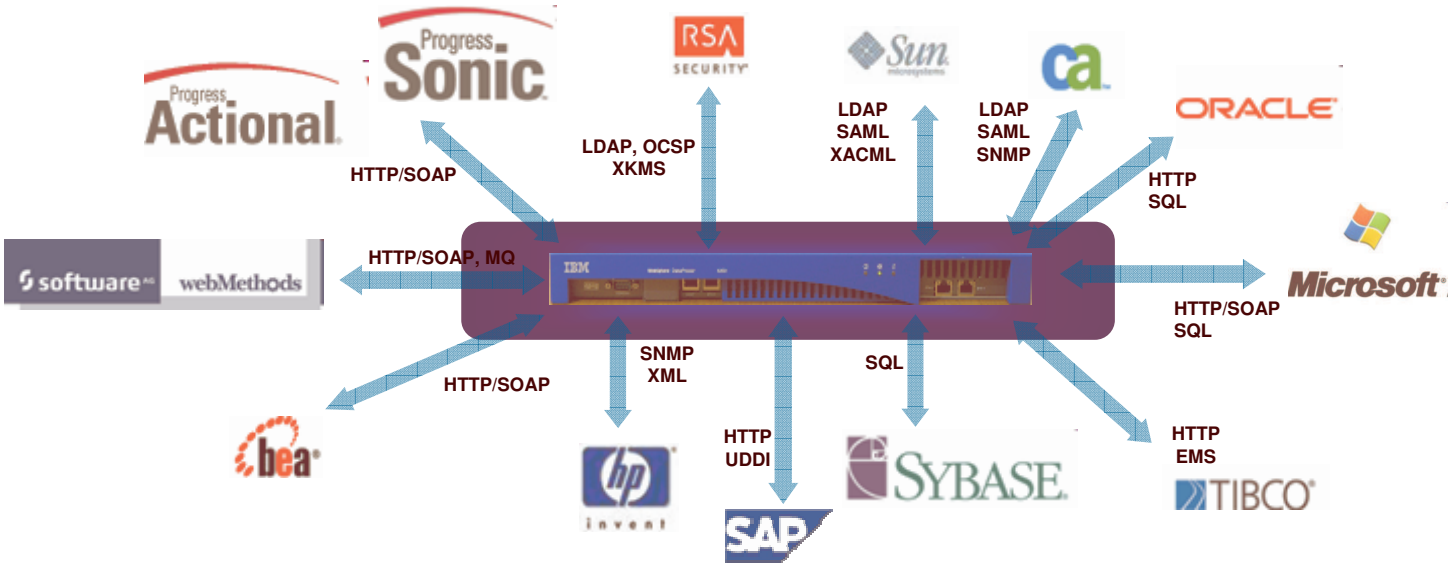
Integration across the IBM Software Portfolio

- Mature integration within WebSphere software portfolio
  - *WebSphere MQ with WebSphere DataPower: 4+ years, numerous customers*
  - *Industry-leading SOA Runtime Governance with WSRR + DataPower*
  - *Many more examples: WTX for data maps, WS-Security for WMB*
  - *Auto-configure XML firewall by importing WebSphere service descriptors*
- Complete SOA Security and Management solution with Tivoli products
- Robust enterprise integration through native DB2 and IMSConnect
  - *Deliver data as Web services into new or existing SOA solutions with DataPower/Data Studio integration*
- IBM Autonomic Integration – CBE/CEI Certified



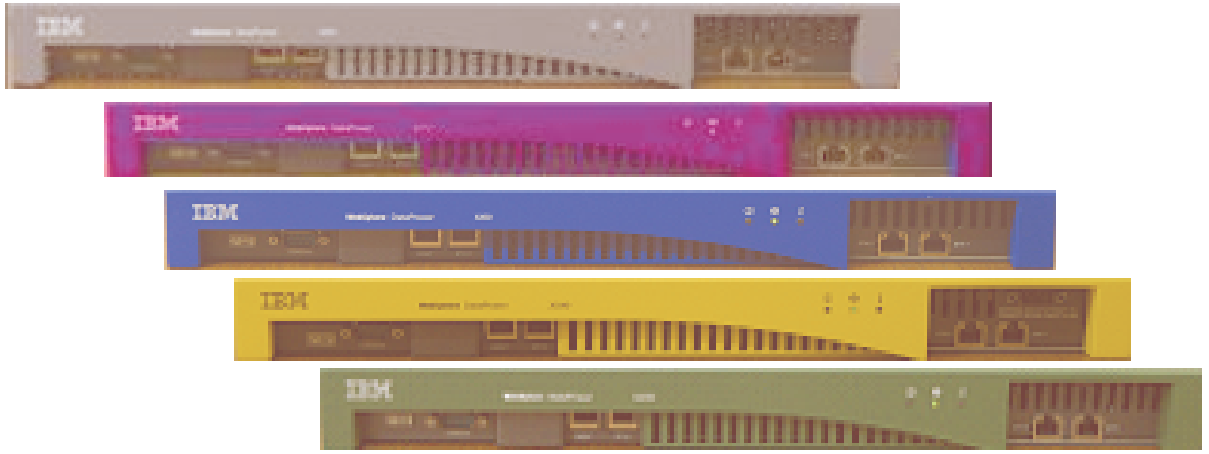
Integration with the Competition

- Standards-based integration with third party vendors
- Tighter integration with some key competitors
- No platform dependencies – hardware or software
- Exceptional interoperability through industry profiles and testing



WebSphere DataPower Appliances Benefits

- ***Reduce Time-to-market*** through **Simplification**
- ***Improve IT agility*** through **Service Enrichment**
- ***Protect corporate assets*** through improved **Security**
- ***Improve Quality of Service*** through **Service Governance**
- ***Lower Operational Costs*** with **Speed and Scalability**
- A component of ***Smart SOA*** (below), aligning Service-Oriented approaches



Upcoming WebSphere Proof of Technologies

Topic	Where	When
Simplify, Secure and Accelerate your SOA with WebSphere DataPower SOA Appliances	**Sydney** IBM Centre, 601 Pacific Highway, St Leonard's	Wednesday, 3 June
Simplify, Secure and Accelerate your SOA with WebSphere DataPower SOA Appliances	**Canberra** Cliftons, Level 2, 10 Moore Street	Thursday, 4 June
Business Process Management for End-to-End Process Automation	**Melbourne** Cliftons, Level 1, 440 Collins Street	Tuesday, 16 June
Business Rules Management with WebSphere JRules	**Melbourne** Cliftons, Level 1, 440 Collins Street	Thursday, 18 June

For information on the above sessions or to register, call 1800 802 796, or speak to an IBM representative.

Thank you