DataPower SOA Appliances
Simplify, Secure, and Accelerate SOA

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Agenda

1. New Model Required for SOA and Web Services
2. DataPower SOA Appliances Overview
3. DataPower SOA Appliances Product Portfolio (XA35, XS40, XI50)
4. DataPower SOA Appliance Usage Scenarios
5. How DataPower SOA Appliances Work with Other IBM Products
6. Positioning DataPower SOA Appliances within the IBM ESB Portfolio
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Business Centric SOA Starts with Your Most Critical Business Pain and Enables You to Build for Flexibility

- Enable human and process interaction with consistent levels of service
- Achieve greater efficiency and effectiveness with business model innovation
- Deliver trusted information in business context to enable innovation
And SOA Lifecycle Is The Key to Successful Projects

- Discover
- Construct & Test
- Compose
- Integrate processes
- Integrate information
- Manage IT resources
- Manage services
- Monitor business metrics
- Gather requirements
- Model & Simulate
- Design
- Integrate people
- Establish decision rights
- Policies, measurement and control for SOA oversight

SOA Entry Points Help Customers Get Started

Both Business Centric and IT Focused

- Discover
- Construct & Test
- Compose
- Integrate processes
- Integrate information
- Manage IT resources
- Manage services
- Monitor business metrics
- Gather requirements
- Model & Simulate
- Design
- Integrate people
- Establish decision rights
- Policies, measurement and control for SOA oversight
The Extensive Use of XML and Web Services Brings New Challenges and Requirements

- **Scalability**
  - XML is bandwidth, CPU, disk, and memory intensive
- **Performance**
  - Especially for XML Schema validation and XML transformation
- **Security**
  - SOA implies connecting systems never before connected
  - Clear text over HTTP with no inherent security
- **Standards Proliferation**
  - Sheer number and versions of standards have grown
  - Web Services implementations can vary... within the standards
- **Operations**
  - Complexity of SOA solutions continues to grow
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DataPower Overview

- Extensive Experience in XML Processing Optimization
- Eight Years in a Seven Year Old Field
- Advantages: First to Market, Great Team, Deep Standards Involvement, Invented and Owns Core XML Technology, Comprehensive Product Portfolio

Post-Acquisition Innovation Continues

- 150% Staff increase / Core DataPower team intact / Global reach and expansion
- New improved hardware platform – IBM hardware combined with DataPower technology innovations
- New capabilities – WS*, 3rd-party JMS, NFS, ODBC, XG4, WSDL compiler, XACML, etc.
- Continued IBM Technology Integration – TAM, TFIM, IT CAM for SOA, WebSphere JMS, WebSphere XD, etc.
Why Use an Appliance for SOA

- Hardened, specialized hardware for helping to integrate, secure, and accelerate SOA
- Many functions integrated into a single device
- Higher levels of security assurance certifications require hardware
  - Example: FIPS 140-2 Level 3 HSM, Common Criteria
- Higher performance with hardware acceleration
  - Impact: ability to perform more security checks without slow downs
- Addresses the divergent needs of different groups
  - Example: enterprise architects, network operations, security operations, identity management, web services developers
- Simplified deployment and ongoing management
  - Impact: Reduces need for in-house SOA skills & accelerates time to SOA benefits
- "Commodity" Processes Migrate to Hardware
- Historical Trend Favours Appliances for XML-Aware Networking

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DataPower SOA Appliance Architecture

- Optimized hardware, firmware, embedded OS, locked-down configuration
- Security vulnerabilities eliminated (open source, Trojan horses, Java/C++ libraries)
- Secure hardware storage of encryption keys, locked audit log
- No drives/USB ports, tamper-proof case
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DataPower SOA Appliances Product Portfolio

- **Problem: WS Application Performance Degradation**
  - Accelerates SOA and Web services deployments
  - Increases performance throughput
  - Decreases application latency
  - Reduces cost and complexity
  - Lowers overall TCO

- **Problem: WS Application Security Threats and Risks**
  - Secures SOA and Web services deployments
  - Provides comprehensive XML security
  - Advanced XML firewall and security policy enforcement point functionality
  - Compliant with most Web services standards

- **Problem: WS Application Integration**
  - Integrates SOA and Web services deployments
  - Transforms between disparate message formats (binary, legacy, XML, etc.)
  - Bridges wireline transport-level protocols (HTTP, MQ, FTP, JMS, Tibco EMS, etc.)

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XML Accelerator XA35

- **Wirespeed XML/XSLT/XPath processing** – Accelerates XML processing, increasing throughput and decreasing latency for XML-based applications by offloading transformation and other resource-intensive functions
- **Schema Validation** - Performs XML Schema validation to ensure incoming/outgoing XML documents are legitimate and properly structured
- **XML Compression, XML Caching** – Reduces impact of increased XML traffic
- **Innovative XML Processing Capabilities** – XML Pipeline processing, deployable in Proxy or co-processor mode, dynamic content generation, data and forms processing, support for popular XSLT extensions
- **SSL Termination/Acceleration** – Accelerates SSL with industry-leading hardware further lessening server workload
- **Easy Configuration & Administration** – Support CLI and WebGUI as well as fully integrated with industry standard IDEs such as Altova XML Spy and Eclipse allowing developers to design, debug and deploy against one single XML and XSLT processor, saving valuable cycles in the progression from pilot to production
XML Security Gateway XS40

- XML/SOAP Firewall - Filter on any content, metadata or network variables
- Data Validation - Approve incoming/outgoing XML and SOAP at wire speed
- Field Level Security - WS-Security, encrypt & sign individual fields, non-repudiation
- XML Web Services Access Control/AAA - SAML, LDAP, RADIUS, etc.
- MultiStep - Sophisticated multi-stage pipeline
- Web Services Management - Service Level Management, Service Virtualization, Policy Management
- Transport Layer Flexibility - HTTP, HTTPS, SSL
- Easy Configuration & Management - Web GUI, CLI, IDE and Eclipse Configuration to address broad organizational needs (Architects, Developers, Network Operations, Security)

XML Integration Appliance XI50

- DataGlue “Any-to-Any” Transformation Engine
  - Support for Content, IBM WebSphere Transformation Extender (TX)*
- Content-Based Message Routing
  - Message Enrichment via ODBC, NFS, etc.
- Protocol Bridging (HTTP, MQ, FTP, JMS, Tibco EMS, etc)
  - Request-response and sync-async matching
- XML/SOAP Firewall - Filter on any content, metadata or network variables
- Data Validation - Approve incoming/outgoing XML and SOAP at wire speed
- Field Level Security - WS-Security, encrypt & sign individual fields, non-repudiation
- XML Web Services Access Control/AAA - SAML, LDAP, RADIUS, etc.
- MultiStep - Sophisticated multi-stage pipeline
- Web Services Management - Centralized Service Level Management, Service Virtualization, Policy Management
- Easy Configuration & Management - Web GUI, CLI, IDE and Eclipse Configuration to address broad organizational needs (Architects, Developers, Network Operations, Security)
Content-Based Routing Features

**Route based on**
- IP information
- SSL parameters
- HTTP headers
- XPath against any data content e.g., XML/SOAP envelope

**Load balancing**
- Round-robin
- Least requests

**SLA/Traffic shaping**
- Throttle requests

AAA Framework Diagram

*Authenticate, Authorize, Audit Enforcement*

- Extract Resource
- Map Resource
- Authorize
- Audit & Accounting
- External Access Control Server or On-Board Policy

**XS40 AAA Framework**
- SAML assertion
- Nonrepudiation Monitoring

**Extract Identity**
- SOAP/WS Security
- SSL client cert
- HTTP Basic Auth
Web Services Management:
Service Level Management

- Configure and install in minutes
- Hierarchical Service Level at WSDL, service, port, operation level
- Flexible actions when reaching a threshold: notify/alert, shape, throttle
- Threshold for both overall requests and failures
- Graphical display

Intuitive WebGUI: Ease of Use

- WSDL-based policy creation
- Hierarchical policies applied at WSDL, service, port, operation level
- Drag & drop policy creation screen allows flexible chaining of operations
- Configures and installs in minutes
Simple Appliance Configuration for Complex 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

SOA Appliances Operations

- Logging
- Role-based Management
- Managing configs & policy – Deploying, backing up, Diff/Undo, App domains: many virtual devices
- Separate, locked audit log
- Troubleshooting aids
- Security – Device security, Key and Certificate management, HSM option, Security Audit, Single Image Firmware Upgrade
IBM SOA Appliance Deployment Summary

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DataPower SOA Appliance Usage Scenarios

1. Securing Web Services
   - Securely enabling access to back-end system of record for partners and customers
   - Protecting against XML-borne threats

2. Legacy Integration
   - Connecting mainframe or legacy application to Web services/SOA
   - XML-enabling mainframe and legacy systems

3. Hub Mediation
   - Efficiently transforming, routing, logging messages among applications and Web services

4. Enterprise Service Bus (ESB) Deployments
   - Provide on- and off-ramps to ESBs, manage Web services easily through service-level management, security management, enterprise management console

5. Web Portal Acceleration
   - Speed up rendering for dynamic content generation

Use Case 1: Securing Web Services
Protect Against XML-Borne Threats

XS40 provides first line of XML defense and enforces access policy stored in an Identity Management Solution (e.g. IBM Tivoli Access Manager, CA Netegrity SiteMinder, EMC RSA ClearTrust / Access Manager, LDAP, Microsoft Active Directory, etc.)
Use Case 2: Legacy Integration
Facilitate Mainframe Modernisation

XI50 connects to the mainframe via MQ or other connection mechanism, converts mainframe data (e.g. COBOL Copy Book from VSAM or ISAM) to XML data, validates it, and sends it to a destination via web services protocol (SOAP/HTTP).

Use Case 3: Hub Mediation
Centralise Policies and Routing

XI50 acts as the central hub for all XML/Web Services. Based on the origin, and destination of the message, different policies are applied and the XML is normalized.
Use Case 4: ESB Deployments

Provide On- and Off-Ramp Functionality for ESBs

XI50 acts as the on and off ramp to the ESB, offloading expensive transformations from the ESB, and bridging different protocols (e.g. HTTP, MQ, FTP, WebSphere JMS, Tibco EMS, etc).

Use Case 5: Web Portal Acceleration

Optimise Dynamic Content Generation

XA35 fields all requests but processes only XML requests. XML messages are validated against a schema and then transformed from format A to format B using an XSL stylesheet.
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Integration Across IBM

- XI50 ships with WebSphere MQ Support
- XS40 and XI50 embed TAM RTE / remote client
- Auto-configure XML firewall by importing WebSphere service descriptors
- Tivoli Ready
  - Fine-grained access control with Tivoli Access Manager (TAM) - Certified
  - Tivoli Federated Identity Manager (FIM) Certified (SAML, WS-Trust) - Certified
  - Monitoring of XML traffic flows with Tivoli NetView
  - End-to-end SOA Management with ITCAM SE for DP and ITCAM for SOA
- IBM Autonomic integration - Certified
- RAD / Eclipse integration
  - Rich console allows creation of policies and monitoring of multiple appliances from within IDE
- Futures
  - Integrated SOA tooling across the portfolio
  - Continued investment in 3rd-party (competitive middleware) integration and interoperability
DataPower and IBM Integration Roadmap

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<td><strong>WebSphere software</strong></td>
<td>WebSphere MQ support</td>
<td>Fully integrated administration, management and deployment</td>
<td>Enhance integration with WebSphere’s mediation capabilities</td>
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<td>RAD/Eclipse support</td>
<td>WebSphere ESB integration</td>
<td>Standardise development tooling</td>
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<td>XML Firewall service auto-configuration</td>
<td>WSRR integration</td>
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<td><strong>Tivoli software</strong></td>
<td>TAMeb certification</td>
<td>Web Services Management proxy (ITCAM for SOA)</td>
<td>Comprehensive SOA management and security</td>
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<td>Tivoli FIM certification</td>
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<td>IBM BladeCenter integration</td>
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<td>IBM DB2 Viper XML Optimization</td>
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SOA Reference Architecture: ESB Positioning

DataPower Adds New Capabilities to the IBM ESB Portfolio

- Innovative hardware appliance deployment option
  - Consumable form factor
  - Straightforward configuration
- Reduced total cost of ownership (TCO) for ESB solutions
- Hardened security and rich gateway functions
  - Delivers well-respected XML firewall, access control enforcement, Web services security
  - Provides gateway functions, including service level management, monitoring and audit
  - Does not require deploying separate SOAP firewall / web services security product
  - Ensures secure DMZ deployment
- Enables wire speed, lower latency and higher throughput
  - Optimized processing without significant additional resources
IBM Delivers a World-Class ESB Portfolio

ESB:

WebSphere ESB provides Web Services connectivity and data transformation

Advanced ESB:

WebSphere Message Broker provides universal connectivity and data transformation

SOA Appliances:

WebSphere DataPower provides simplified connectivity and wirespeed data transformation with enhanced security

A Typical SOA/ESB Design Pattern
What Does DataPower Add to WebSphere Message Broker and WebSphere ESB environments?

- **WebSphere DataPower adds:**
  - Enhanced throughput, reduced latency for XML processing and security processing
  - XML firewall & XML threat protection (eligible for DMZ deployment)
  - A higher level of security assurance including DoS protection
  - Additional administrative capabilities (CLI, signed and encrypted logging, etc.)
  - Service Level Management capabilities

- **WebSphere DataPower brings to WebSphere Message Broker:**
  - Enhanced WS-* (in particular WS-Security support)
  - Web services gateway functionality (eligible for DMZ deployment)
  - Wirespeed any-to-any transformation

- **WebSphere DataPower brings to WebSphere ESB:**
  - Enhanced WS-* support
  - Wirespeed any-to-any data transformation
  - TIBCO EMS connectivity
  - Advanced Web services gateway functions
What Does WebSphere DataPower add to non-IBM ESB Software Solutions?

- For competitively installed (and happy) customers looking to extend their ESB …
  - Add value to a competitive environment

- For customers where IBM software-based solutions do not meet customer requirements …
  - Appliance-based ESB solution

- There are scenarios where an ESB appliance will be all that a customer requires

What Does WebSphere ESB Add to a DataPower Scenario?

- Persistent JMS messaging server
- General purpose programming environment, and support for arbitrary integration logic
  - Java
  - J2EE programming environment (with the full capabilities of WebSphere Application Server)
- Full transaction support
  - XA transaction coordination
  - XA transaction participation
- Wide range of application and technology adapters including robust support for IBM transaction processing environments
What Does WebSphere Message Broker Add to a DataPower Scenario?

- Persistent messaging server
- General purpose programming environment, and support for arbitrary integration logic
  - Java, C, ESQL
- Advanced message and event processing
  - Complex message flow implementations
  - Complex event processing
- Full transaction support
  - XA transaction coordination, XA transaction participation
  - Multiple transactions within a message flow
- Tight integration with IBM transaction processing systems, including CICS and IMS
- Adapter and protocol support
  - Support for multiple transport protocols
  - Any third party JMS 1.1 provider - including transaction management across 3rd-party JMS providers
  - Wide range of application and technology adapters
Only WebSphere Delivers the Most Comprehensive ESB Solutions to Power Your SOA

1. **WebSphere continues to offer two robust ESB Software components**
   - **WebSphere ESB, delivering an ESB**
     - Connect using SOA standards and enjoy a full general programming environment
   - **WebSphere Message Broker, delivering an advanced ESB**
     - Universal connectivity with SOA standards and non-SOA standards with the richest set of broker functionality

2. **WebSphere now offers an innovative appliance deployment option**
   - **WebSphere DataPower, proven SOA Appliances to power your ESB**
     - Connect with increased security, improved gateway functions and increased performance

3. **WebSphere offers the broadest range of ESB capabilities on the market today**
   - Most powerful solutions *combine* WebSphere DataPower with WebSphere Message Broker to deliver an Advanced ESB or WebSphere ESB for a standards-focused ESB

Questions

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