Using WebSphere DataPower SOA appliances to extend the value of System z assets

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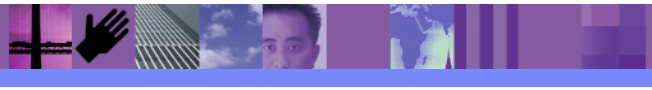


Agenda

- WebSphere DataPower product line overview
- DataPower XI50 as an ESB
- What's new in the latest release?

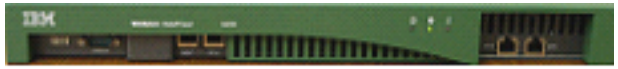
Why an Appliance for SOA

- **Hardened, specialized hardware for helping to integrate, secure & accelerate SOA**
- **Many functions integrated into a single device:**
  - Impact: connectivity will require service level management, routing, policy, transformation
- **Higher levels of security assurance certifications require hardware:**
  - Example: government FIPS Level 3 HSM, Common Criteria
- **Tamper-proof**
- **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
- **Proven Green / IT Efficiency Value**
  - Example: Appliance performs XML and Web Services security processing as much as 72x better than server-based systems.
  - Impact: Same tasks accomplished with reduced system footprint and power consumption

IBM SOA Appliance Product Line

Specialized network devices simplify, help secure & accelerate SOA

XML Accelerator XA35



- Accelerates XML processing and transformation
- Increases throughput and reduces latency
- Lowers development costs

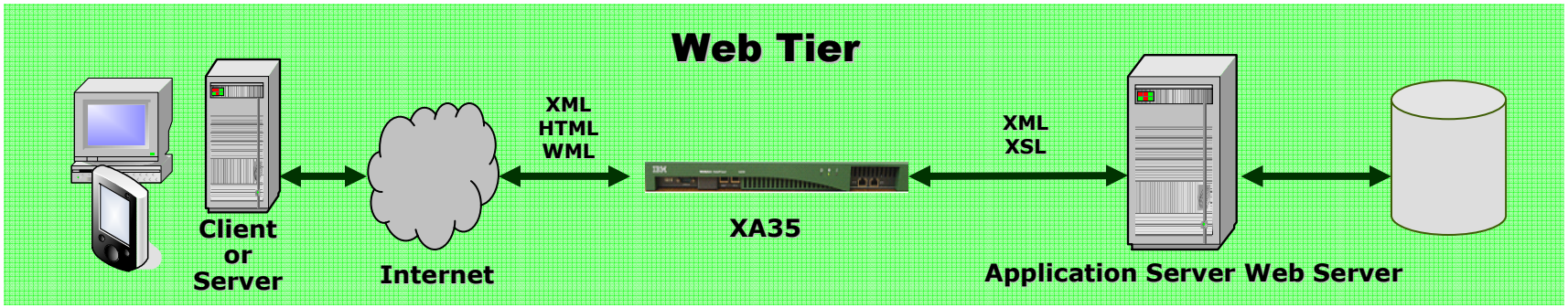
XML Security Gateway XS40

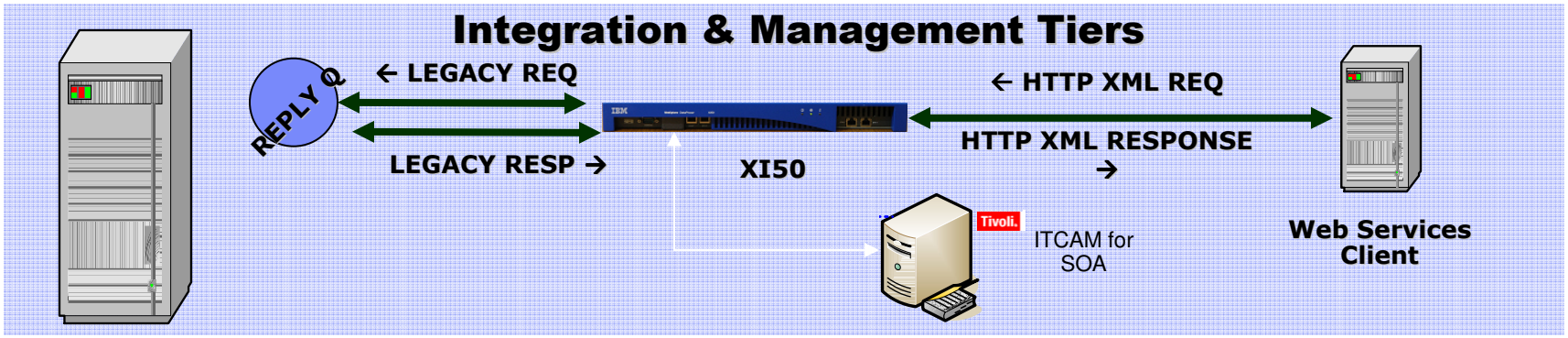
- Help secure SOA with XML threat protection and access control
- Combines Web services security, routing and management functions
- Drop-in, centralized policy enforcement
- Easily integrates with exiting infrastructure and processes

Integration Appliance XI50

- Transforms messages (Binary to XML, Binary to Binary, XML to Binary)
- Bridges multiple protocols (e.g. MQ, HTTP, JMS)
- Routes messages based on content and policy
- Integrates message-level security and policy functions

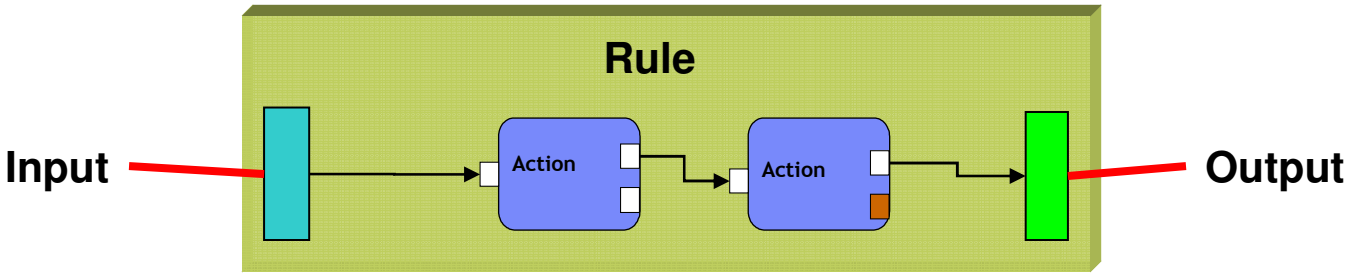
IBM SOA Appliance Deployment Summary





DataPower XI50 as an ESB - Concepts

- DataPower = “container” for rules
- Rule = deployable unit of mediation, definition of mediation
  - Input = means of getting message into message flow
  - Output = means of getting message out of message flow
- Action = atomic unit of message processing

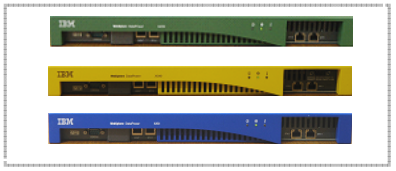


Integration Appliance XI50

Middleware Appliance Purpose-Built for Application Integration

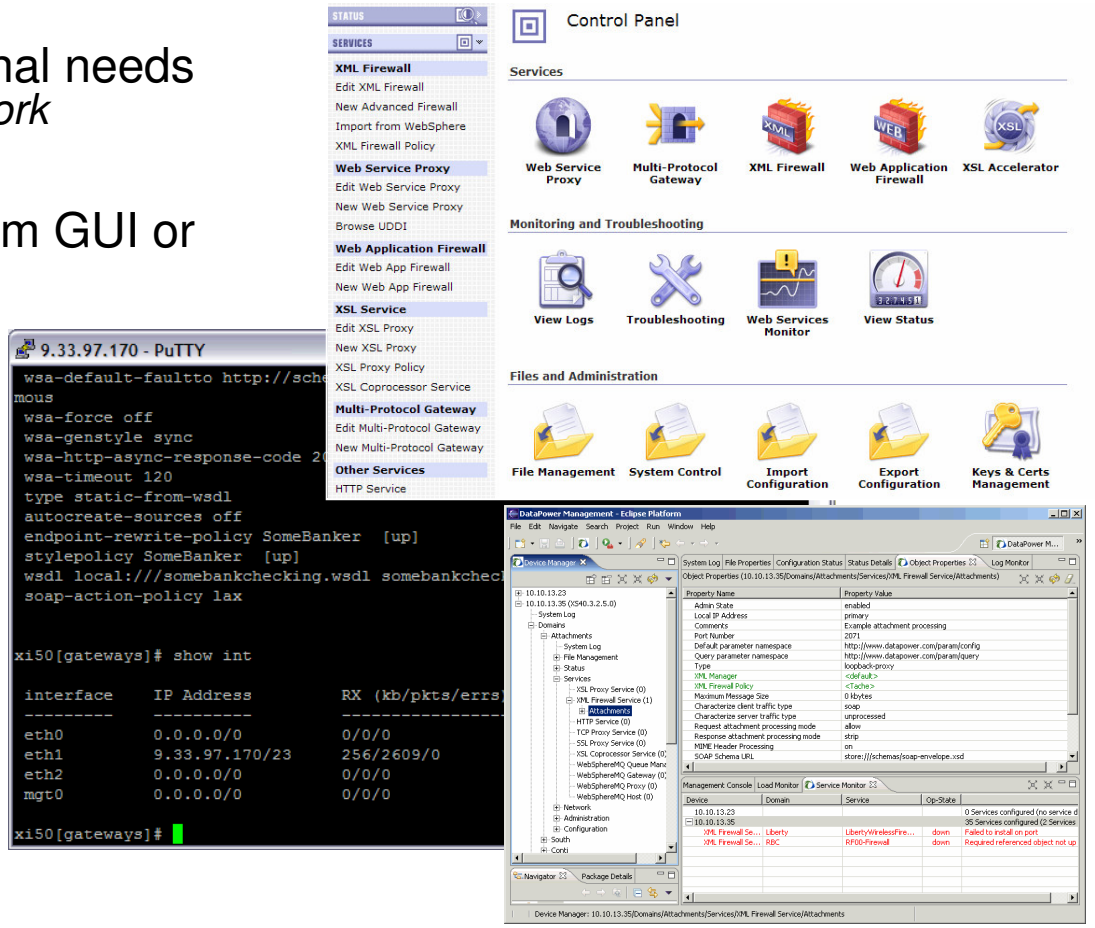
- DataGlue “Any-to-Any” Transformation Engine
- Content-based Message Routing:
  - Message Enrichment
- Protocol Bridging (HTTP, MQ, JMS, FTP, etc.):
  - Request-response and sync-async matching
- Direct to Database:
  - Communicate directly with remote Database instances
- XML/SOAP Firewall:
  - Filter 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:
  - WebGUI, CLI, IDE and Eclipse configuration to address broad organizational needs (Architects, Developers, Network Operations, Security)

***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



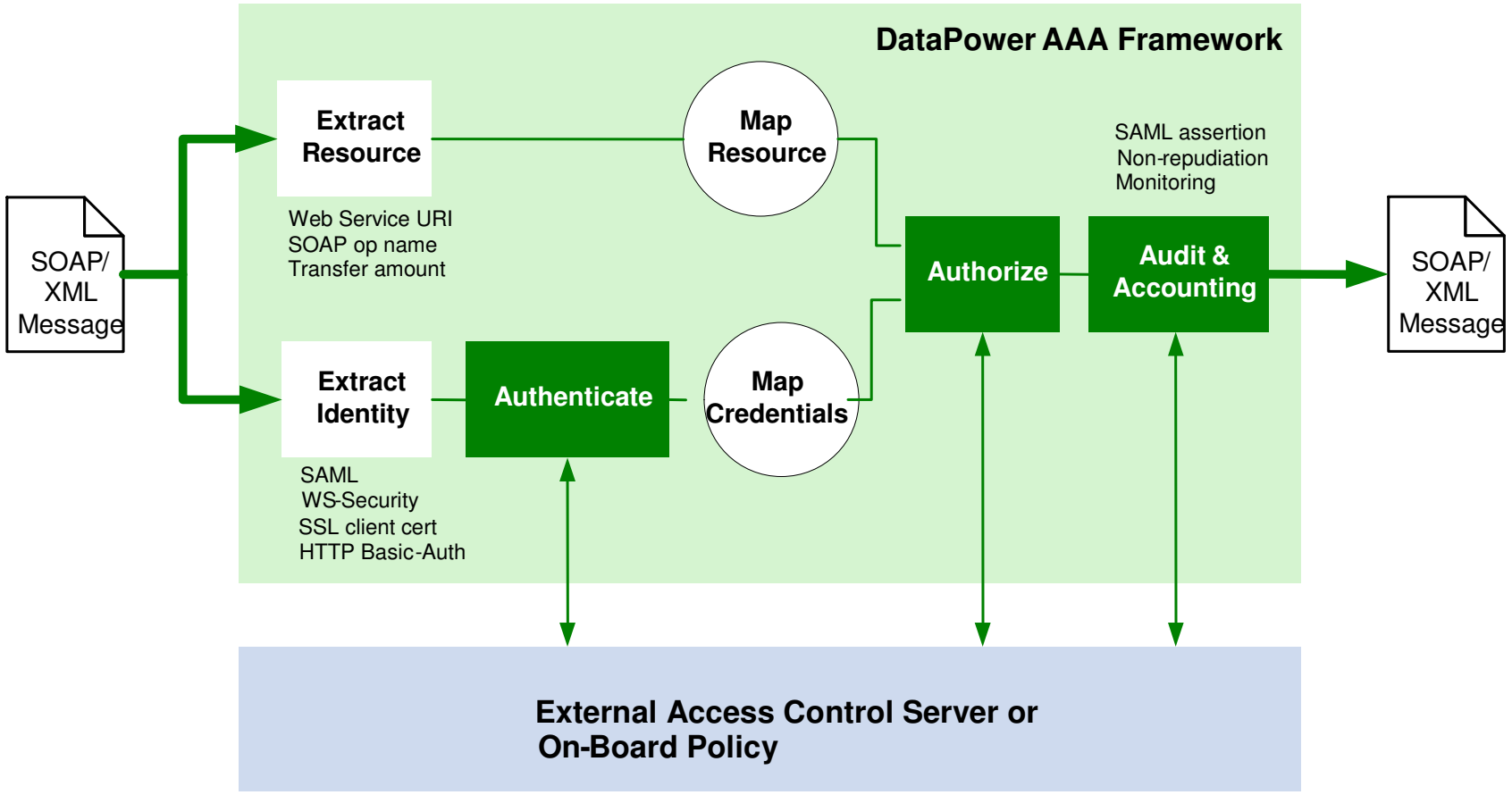
Access Control

Enforce Who can access Which Web service & When

- **Deploy as a high-speed access policy enforcement point**
- **Modular authentication/authorization architecture:**
  - x = extract-identity()
  - z = extract-resource()
  - zm = map-resource(z)
  - y = authenticate(x); if (y = null) reject
  - ym = map-credentials-attributes(y)
  - allowed = authorize(ym, zm); if (!allowed) reject
  - audit-and-post-processing();
- **Identity examples include:**
  - WS-Security user/pass token
  - SSL client certificate
  - SAML assertion
  - HTTP basic-auth
  - Proprietary SSO cookie/token
- **Resource examples:**
  - URL
  - SOAP method / operation

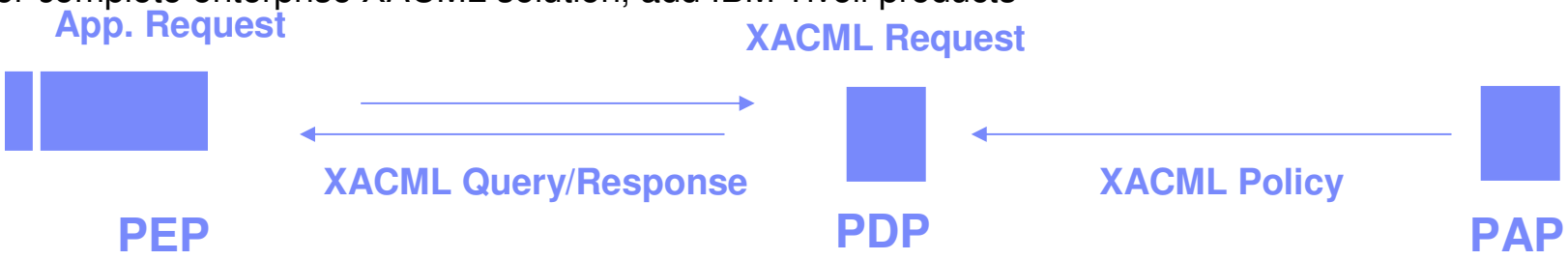
Access Control (2)

AAA Framework Diagram - Authenticate, Authorize, Audit



Access Control (3)
XACML, an open standard for fine-grained authorization policy

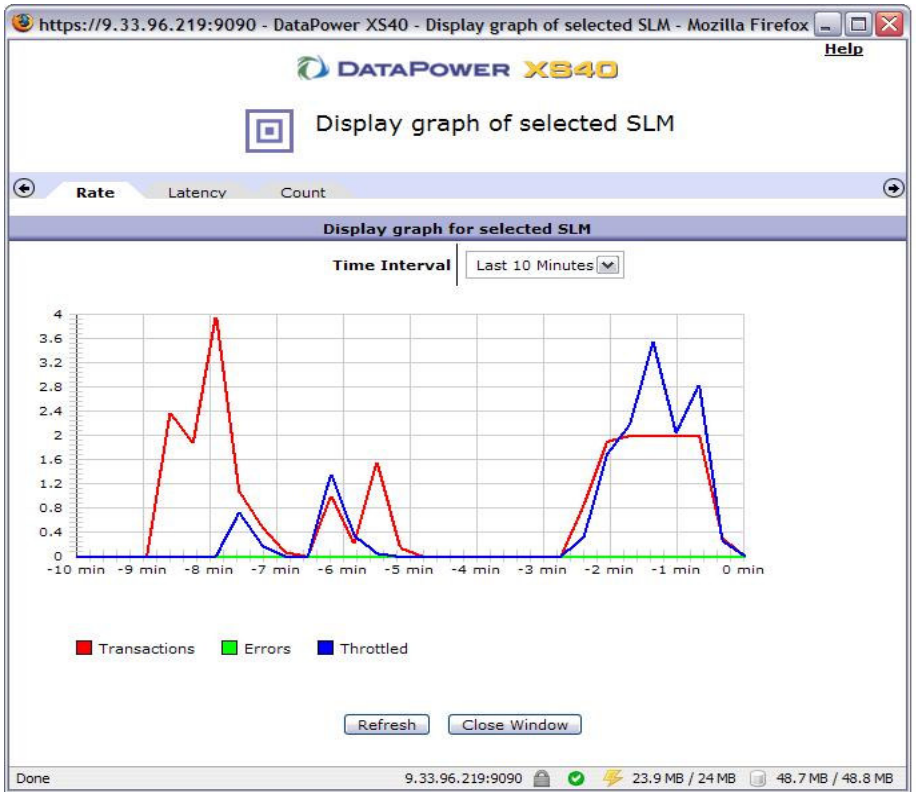
- XACML (eXtensible Access Control ML) open standard
  - Expresses complex, fine-grained access control policy rules in XML
  - Enables distributed policy enforcement throughout the network
  - Allows policies to be moved between different vendor systems
  - Defines PEP (enforcement), PDP (decision), PAP (admin) and PIP (information)
- XS40 and XI50 leverage their core XML engine for XACML processing (XACML doc similar to XSLT, XSD, WSDL)
  - High performance, robust caching and familiar administration
  - Not a XACML server or authoring environment
- Flexible and extensible
  - Base bias, deny-biased, permit-biased, custom obligations
  - Integrated into AAA Framework
- For complete enterprise XACML solution, add IBM Tivoli products



Web Services Management

Service Level Management

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



Web Services Management (2)

Service Level Management

- **Configure Policies:**
  - Based on any parameter: WSDL; Service Endpoint; Operation; Credential
  - Based on Rate (TPS) or Count by Time (Outlook like Calendar)
  - Based on Request; Response; Fault; XPath
  - Support for enforcement across a pool of devices
  - Action: Notify (Alert); Shape (Slow Down); Throttle (Reject)
  - Notify other applications such as billing, audit, etc.
- **SLM is a verb in the policy pipeline**
- **Support for WSDM, Web services management standards, …**
- **Allow subscription to SLM for alerts, logging, etc.**

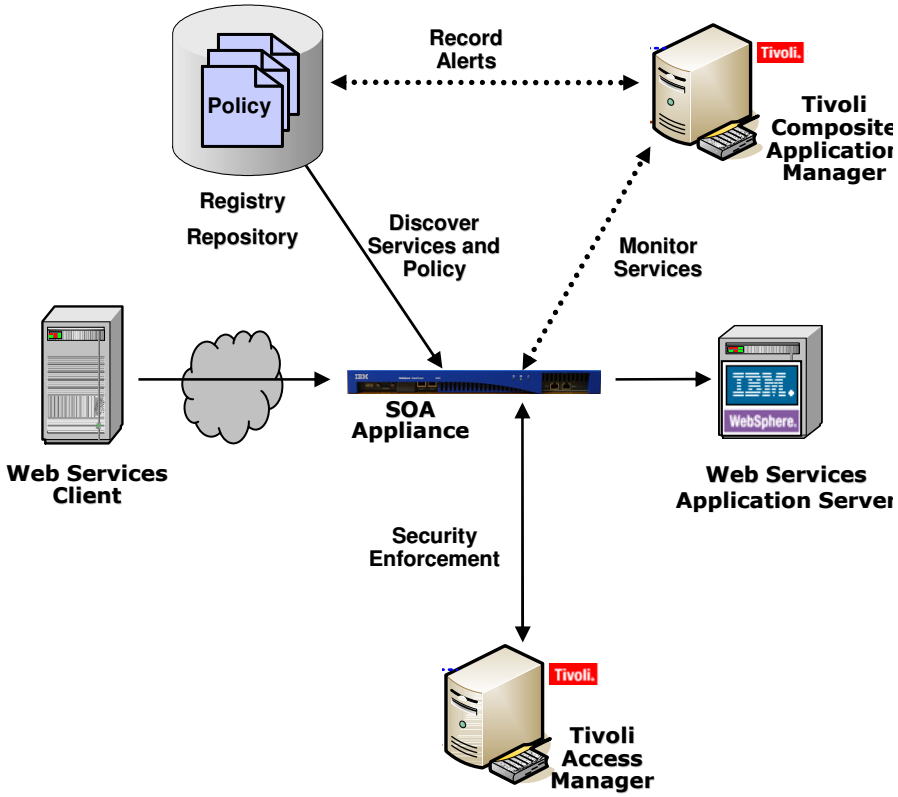
Web Services Management (3)

Service Virtualization

- **Web services security best practice:**
  - Create abstraction barrier between internal and external Web services
  - Especially important for auto-generated web services
  - Helps with varying standards support between partners, versioning, availability, and scalability
- **WSDL-centric design:**
  - WSDL Versioning: Automatically retrieve updated internal WSDL and update external one
- **Multi-layer:**
  - Optionally, internal/external transport-layer proxy (e.g. MQ in XI50)
  - Dynamic routing
  - SOAP header stripping / rewriting
  - Payload transcription & wirespeed schema transformation
- **Very XML processing intensive**

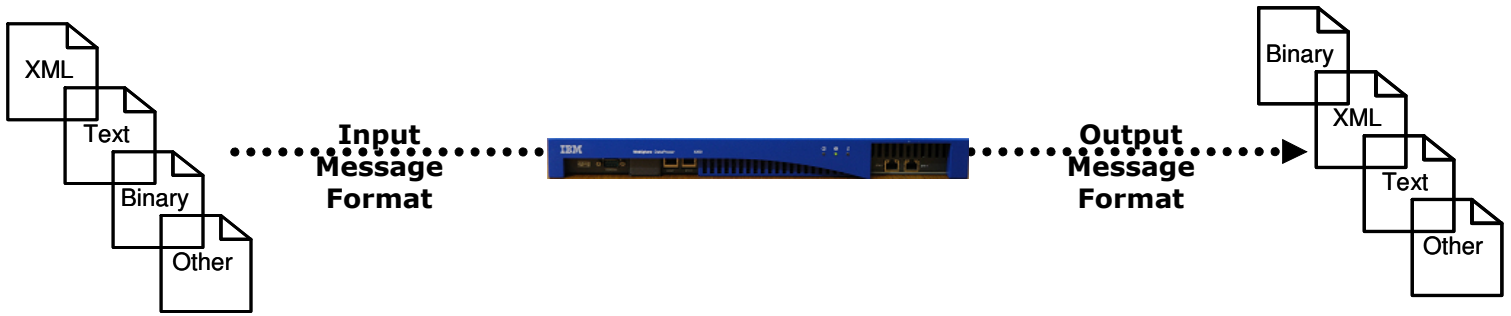
Web Services Management (4)
Registry/Repository Support & SOA Governance

- **Use of a central repository can facilitate Discovery and Reuse of Web services:**
  - WSRR and UDDI supported today
- **Artifacts can be stored, updated via repository**
- **Push/Retrieve configuration of new services to DataPower for enforcement**
- **Policy and Security enforcement for SOA Governance on DataPower**
- **ITCAM for SOA:**
  - Central management console
  - Polls device at set intervals
  - Traffic inspection, statistical analysis



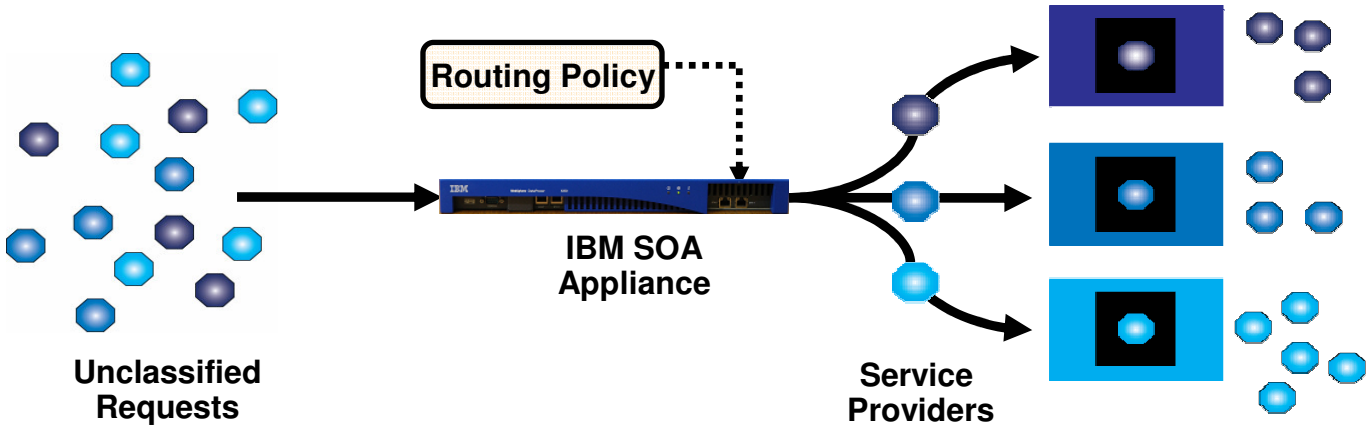
DataGlue's "any-to-any" Transformation

- **Transform Disparate Data Formats (XML, Binary, Text, etc.)**
- **Broker data between previously siloed systems**
- **Simplifies Reuse of and Connectivity to existing systems**
- **Promotes loose coupling**
- **Transformation of data on the wire enables integration without coding**



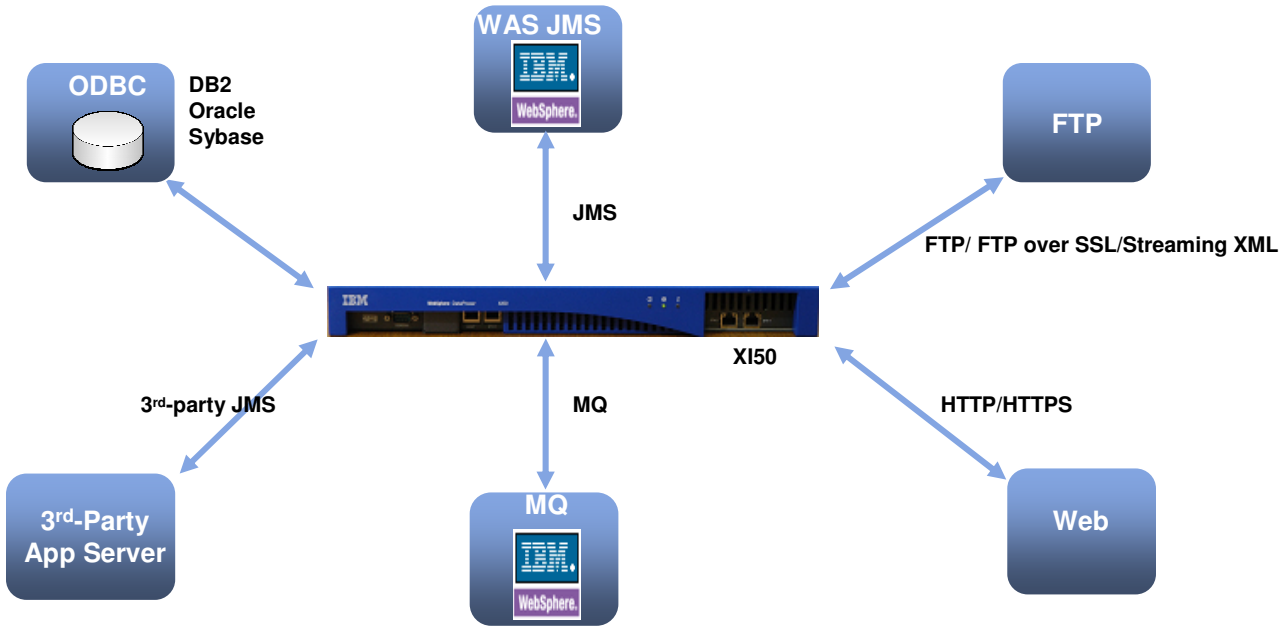
Content-based Routing Features

- **Dynamically route based on context (e.g. originating URL, protocol headers and attributes, etc.) and message content (both legacy and XML):**
  - XPath-based routing against any part of the message content or context
  - XPath statements can point to dynamically set URLs and/or message queues (MQ, JMS)
  - Routing may be one way (a response from the service may not be necessary)
- **XI50 can be configured to accept a routing table where routing parameters are supplied using XML:**
  - A table results in extremely fast turnaround of routing changes, including transport protocol conversions
- **XI50 can dynamically retrieve routing information from other systems:**
  - Databases, web servers, file servers, etc.



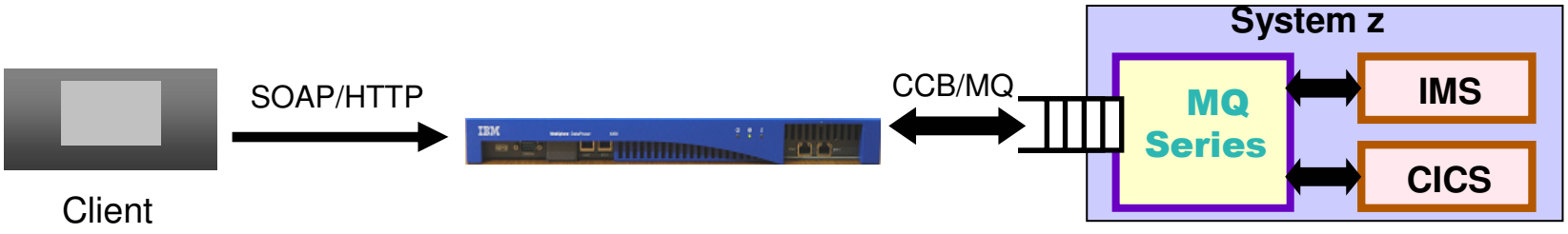
Protocol Bridging

- **First-class support for message and transport protocol bridging**
- **Protocol mediation with simple configuration:**
  - HTTP←→ MQ ←→ WebSphere JMS ←→ FTP ←→ Tibco EMS
- **Request-response and sync-async matching**
- **Able to configure to preserve fully guaranteed, once-and-only-once delivery**



DataPower and System z Integration

- Web Services enablement and security for CICS and IMS applications



- DataPower XI50 acts as a services gateway to host-based applications
  - Web Services and XML security
  - Web Services management and service level agreements
  - Tight integration with WebSphere MQ on Z for connectivity and reliability
  - Any-to-any transformation (e.g. SOAP/XML to Cobol Copy Book) for simplified legacy integration
  - Protocol mediation and bridging – variety of inbound/outbound protocols – HTTP, HTTPS, MQ, WAS JMS, Tibco EMS, FTP, FTP/SSL, NFS, Database
  - Easy Configuration & Management:
    - WebGUI, CLI, IDE and Eclipse configuration to address broad organizational needs (Architects, Developers, Network Operations, Security)

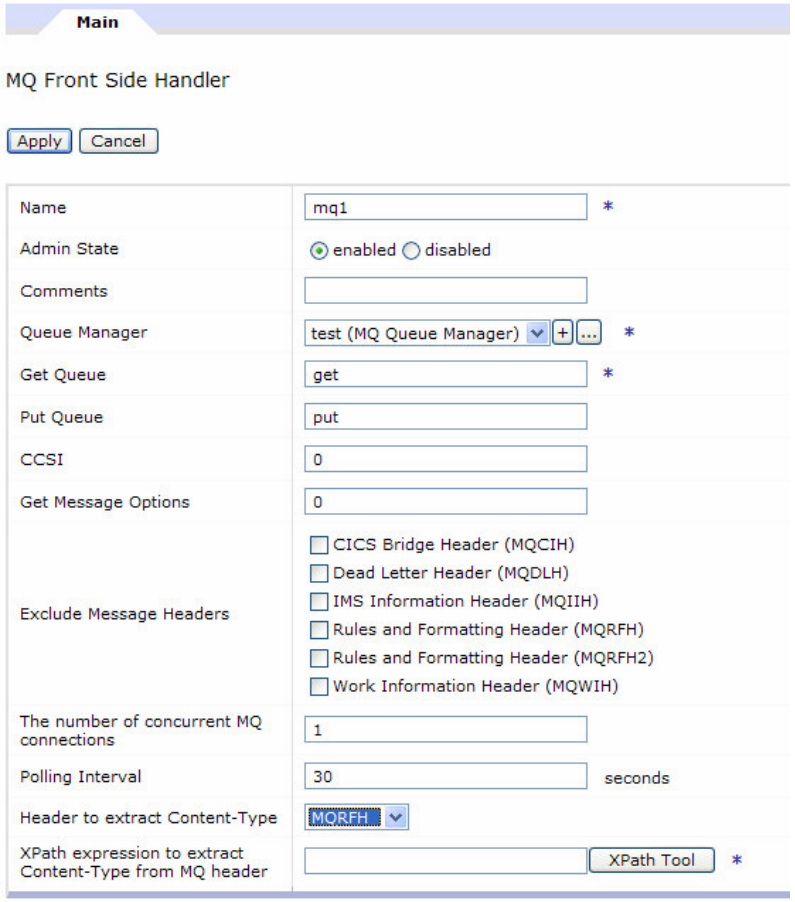
DataPower for CICS and IMS Web Services

- **Web Services Security and Management for CICS and IMS web services**

- Content-based Message Routing
- Protocol Bridging (HTTP, MQ, JMS, FTP, etc.):Request-response and sync-async matching
- XML/SOAP Firewall: Filter on any content, medata or network variables
- Data Validation: Approve incoming/outgoing XML and SOAP at wirespeed
- Field Level Security: WS-Security, encrypt & sign individual fields, non-repudiation
- XML Web Services Access Control/AAA: SAML, LDAP, RADIUS, etc.
- Web Services Management: Centralized Service Level Management, Service Virtualization, Policy Management
- Easy Configuration & Management:
  - WebGUI, CLI, IDE and Eclipse configuration to address broad organizational needs (Architects, Developers, Network Operations, Security)

What's New in WebSphere DataPower Integration Appliance XI50 v3.6.1

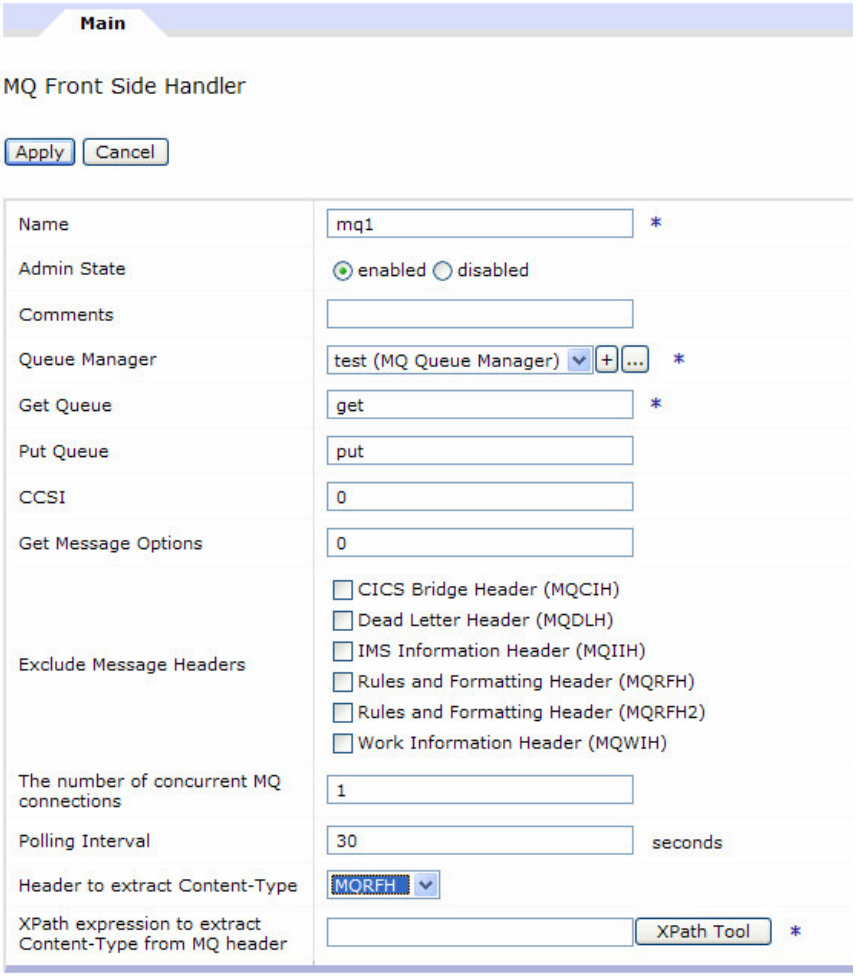
- Expanded integration and connectivity
  - Enhanced MQ support
  - Full support for WS-ReliableMessaging (WS-RX)
  - Additional support for VLAN and NFSv4
  - Enhanced support for WSRR and UDDI v3 registries
  - Full support for SOAP 1.2, WS-Security 1.1 updates
  - Integration with DB2 V9 pureXML
- Enhanced governance capabilities
  - Dynamic Web Services policy framework (WS-Policy and WS-Security Policy)
  - WS-I Basic Profile and Basic Security Profile support
- Breakthrough enhancements for ease of use
  - Streamlined Multi-step Transaction Processing
  - Expanded Quality of Service (QoS) support



WebSphere DataPower Enhancements

Enhanced Connectivity

- Enhanced MQ connectivity
  - MQ connectivity performance optimizations
  - Simplified DP->MQ->CICS/IMS connectivity
  - Simplified parsing and generation of MQ headers
    - MQMD, MQRFH,MQRFH2, MQIIH, MQCIH, etc
    - Simplified use of MQ API
      - MQOD, MQOR, etc
- New support for NFSv4
  - Includes Kerberos support
- New support for VLANs
  - Allows easier deployments into existing network environments



Customer Example: Automotive

Business Challenge

- Implementing Web services based SOA
- Ability to access services that will provide a list of known issues for each vehicle

Solution

- Implemented WebSphere DataPower Integration Appliance XI50 as an ESB
- Implemented WebSphere DataPower XML Security Gateway XS40 as a Web services proxy for verification, digital signatures, and authentication between Web server client and reverse proxy
- Planned integration (Q4 2007) of DataPower & WSRR

Benefits

- Deployed 21 services in 2006 & currently 50 new services in 2007
- Log files & SNMP alerts to HP OpenView

Software/Hardware

WebSphere DataPower Integration Appliance XI50

WebSphere DataPower XML Security Gateway XS40

WebSphere Service Registry & Repository

System z


Thank
You

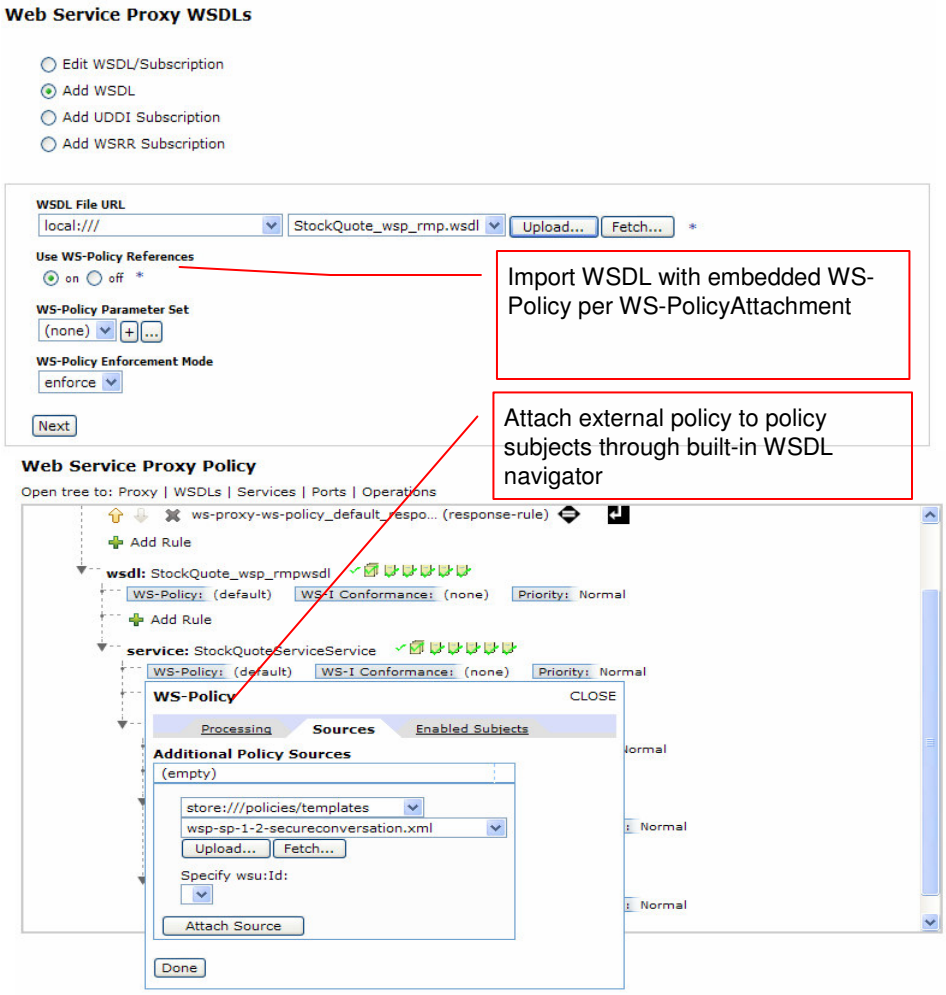
Additional Information: DataPower Enhancements

name

WebSphere DataPower Enhancements

WS-Policy framework

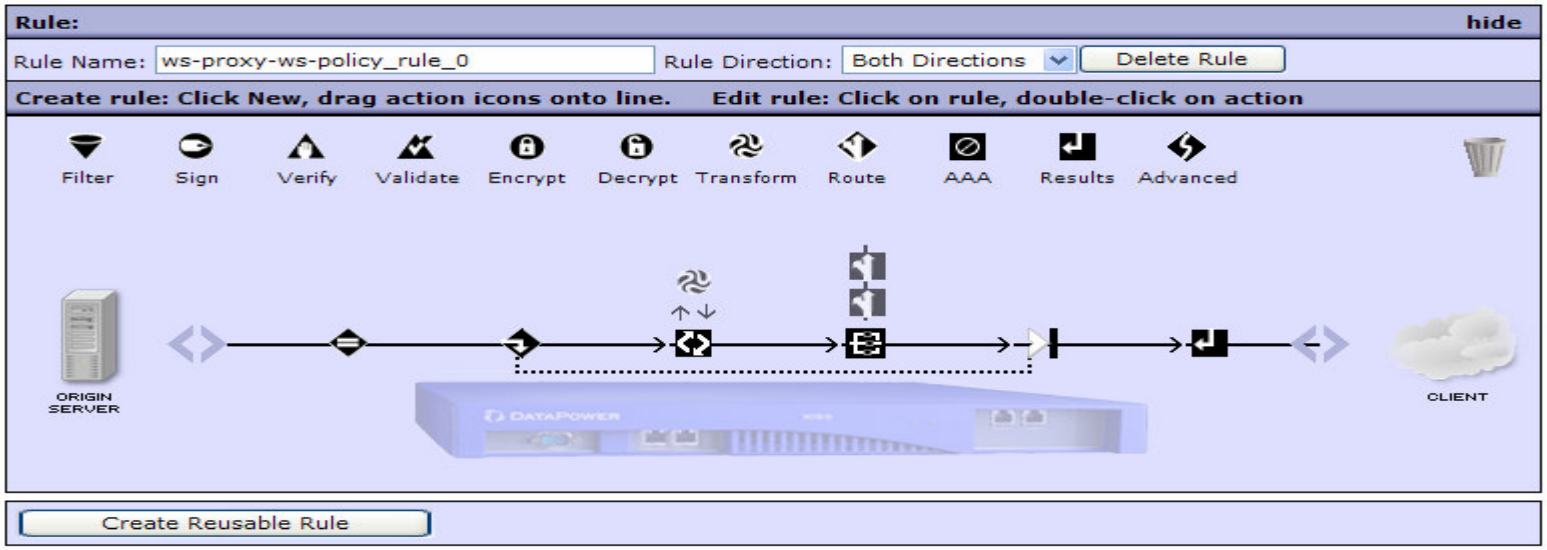
- Flexible WS-Policy framework
  - Enables quick consumption of new and updated standard and custom WS-Policies for central enforcement and management via DataPower appliances
  - Supports WS-PolicyAttachment
    - Via embedded WS-Policy references
    - External attachment
    - WSRR
    - UDDI
  - Provides standard policy templates out of the box
    - WS-Security Policy
    - WS-ReliableMessaging Policy



WebSphere DataPower Enhancements

Multi-step Processing Enhancements

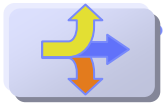
- Streamlined Multi-step Transaction Processing
  - Makes common processing patterns more consumable and easier to configure
  - New and updated processing actions to support
    - looping
    - conditional branching
    - parallel processing
    - multi-way fan-out and aggregation
    - asynchronous processing of any action



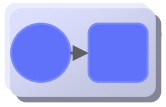
WebSphere DataPower Integration Appliance XI50

Purpose-built hardware ESB for simplified deployment and hardened security

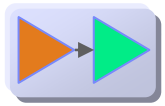
- Redefines the boundaries of middleware with specialized hardware
- Many functions integrated into a single device
- Simplified deployment and ongoing management



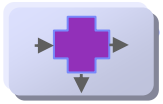
Secures services on the network with sophisticated web services access control, policy enforcement, message filtering, and field-level encryption



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