



AquaLogic Service Bus

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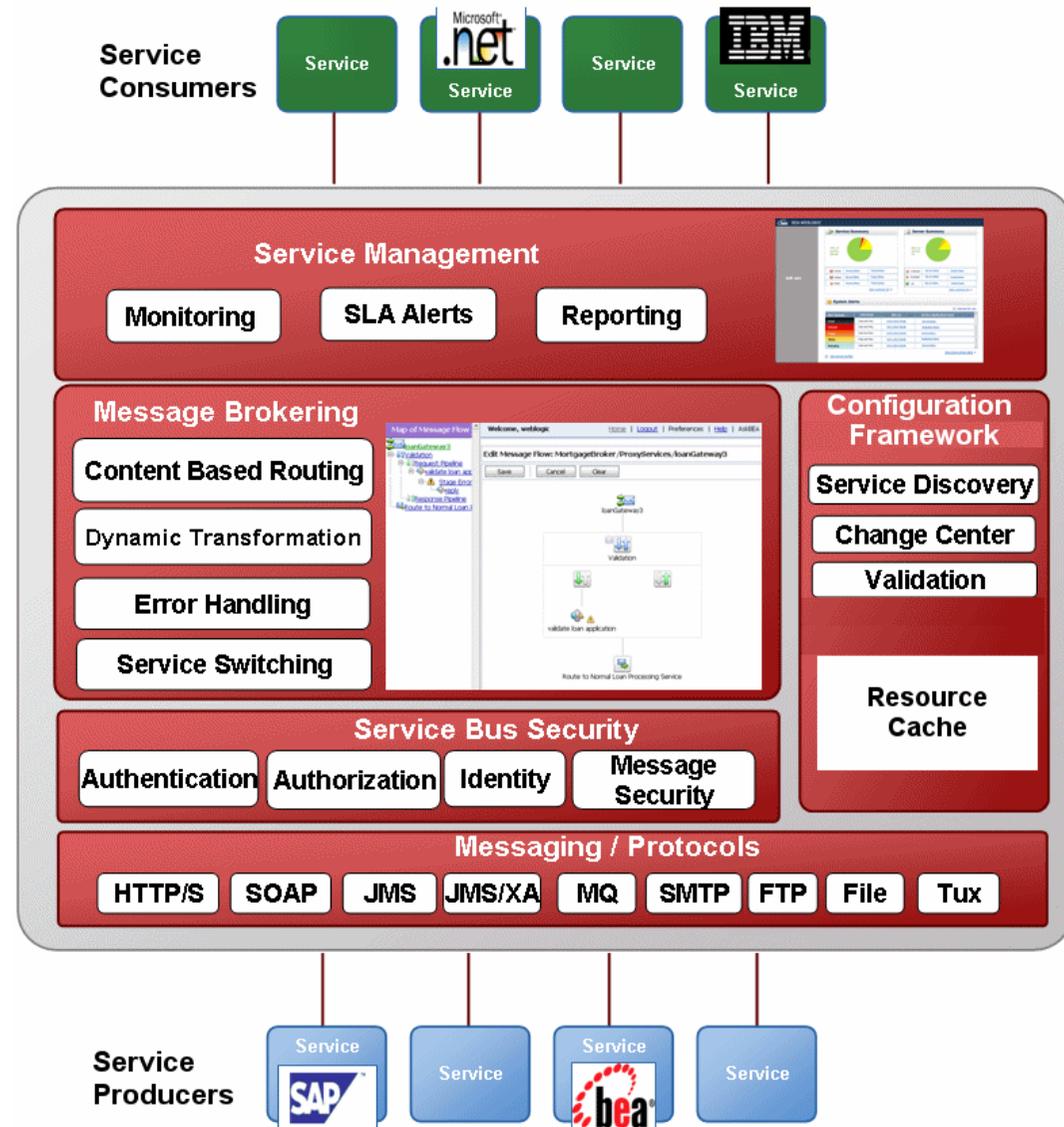
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What to consider when looking at ESB?

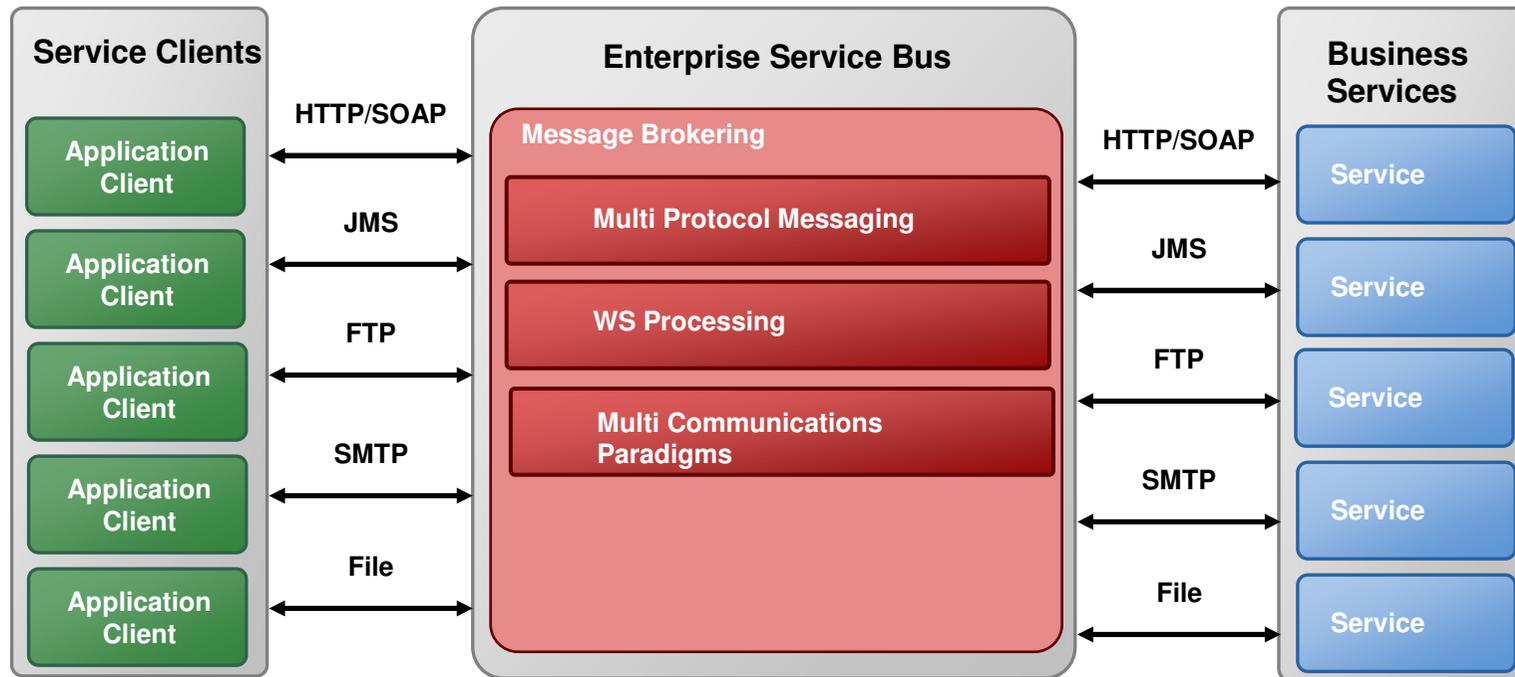
- Number of planned business access points
- Reuse across organization
- Reduced cost of ownership via configuration
- IT Productivity
- Flexibility and availability
- Scalability and Interoperability
- Cross Integration based on standards
- Single product suite
- Ease of use and Implementation

AquaLogic Service Bus

- What it does
 - Heterogeneous service virtualization
 - Dynamic routing transformation
 - Service registration and discovery
 - Monitoring & management
 - B2B connectivity
- What's special
 - Fully configuration based
 - Comprehensive SOA integrity
 - Life-cycle management
 - UDDI registry integration
 - Proven: R-A-S-P

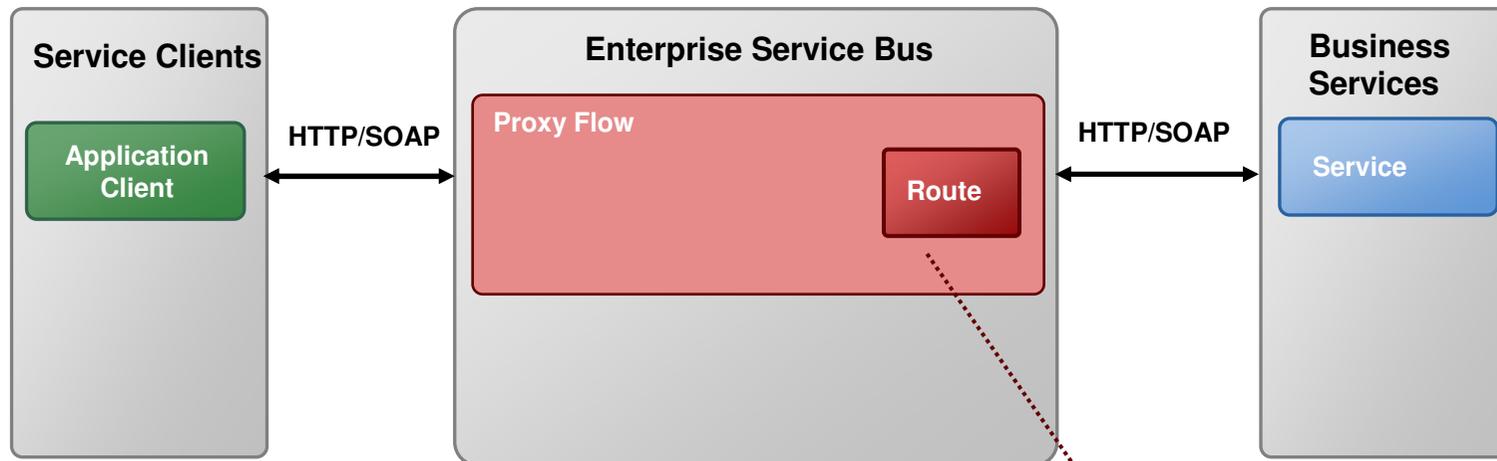


Message Brokering



- **Multi-protocol messaging**
- **WS Processing**
 - Full support for “proper” Web Services (WSDL, SOAP enveloping) and non-SOAP-enveloped messages
- **Multiple communications paradigms**
 - Request/response (synchronous and asynchronous), asynchronous messaging, one-to-many publish
 - Mix-and-match (e.g. sync-to-async bridging)

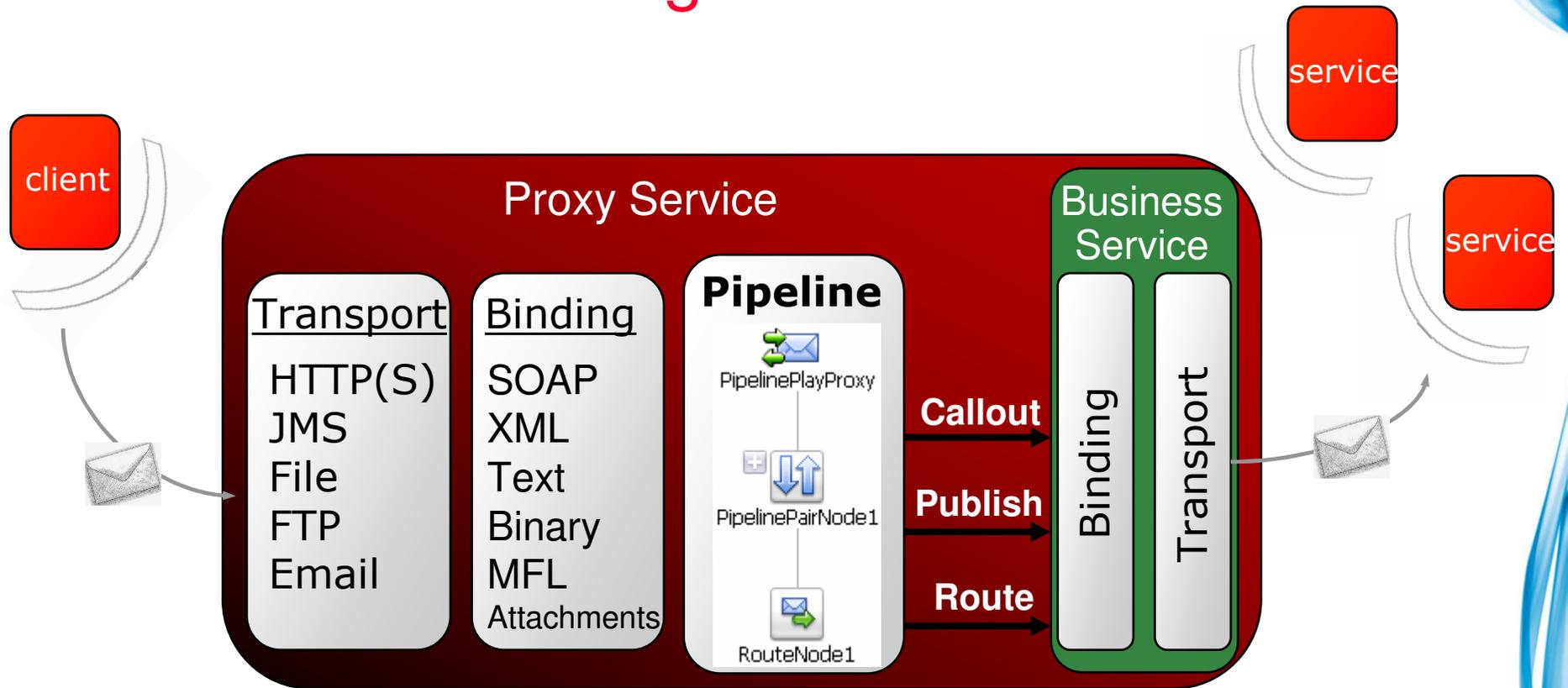
Dynamic Message Routing



- Dynamic message routing
 - Routing Based on SOAP headers, transport headers, JMS user properties, MQ headers, file directory, email subject, and message content (XML and structured non-XML)

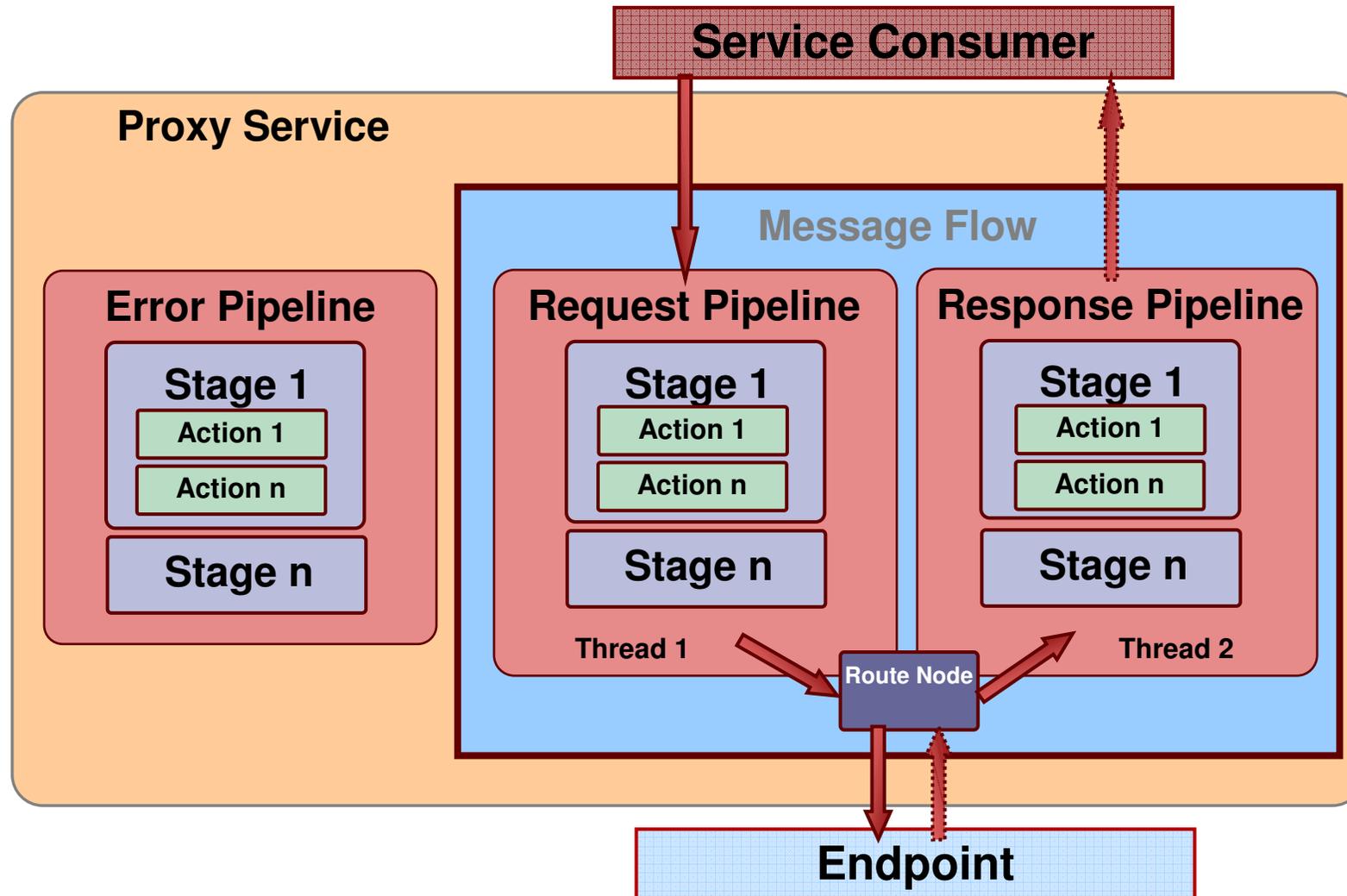


Service Bus Message Flow

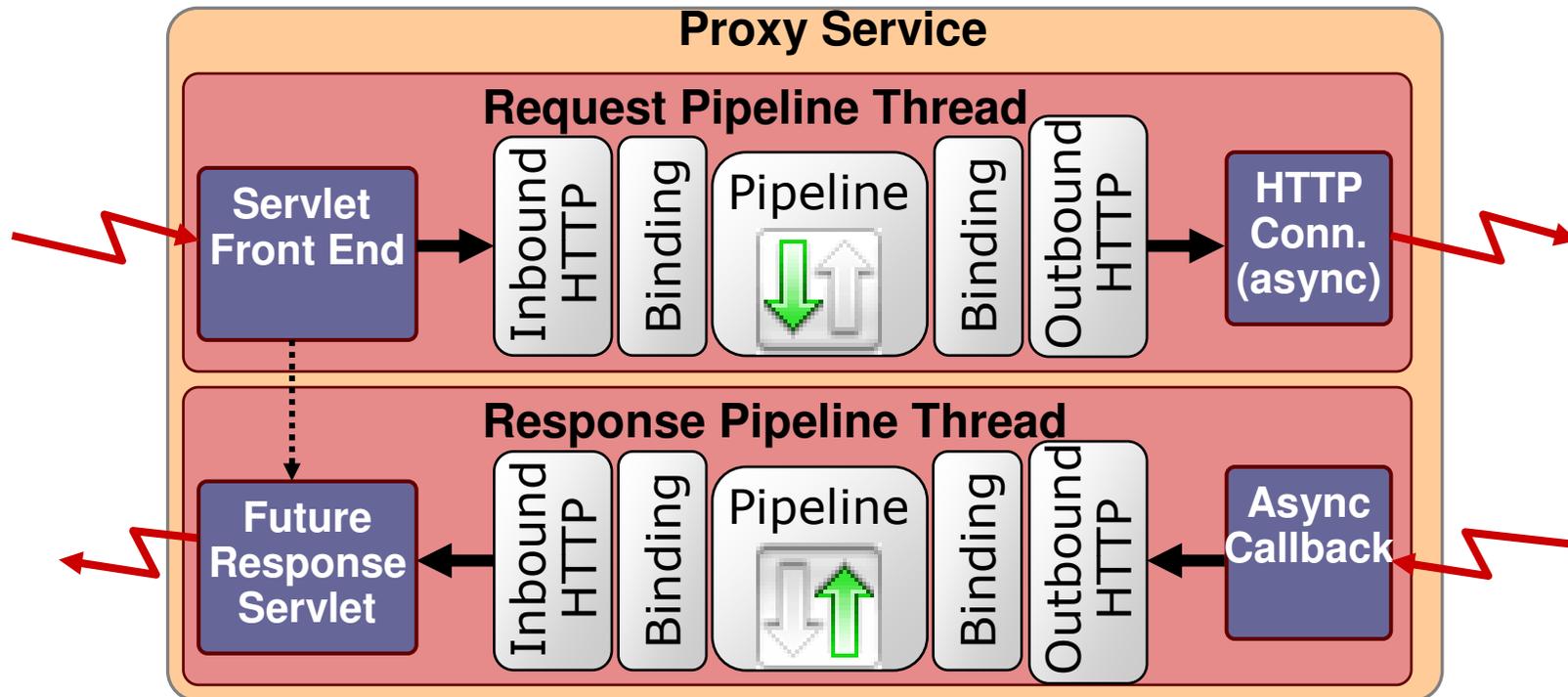


- Pipeline is independent of transport/binding
- Outbound is independent of inbound and vice versa
- Streaming interface for message between transport and pipeline
 - Large messages (e.g. 100 MB) aren't materialized in memory unless needed by pipeline (e.g. XQuery on it)

ESB Proxy Services: Define Message Flow

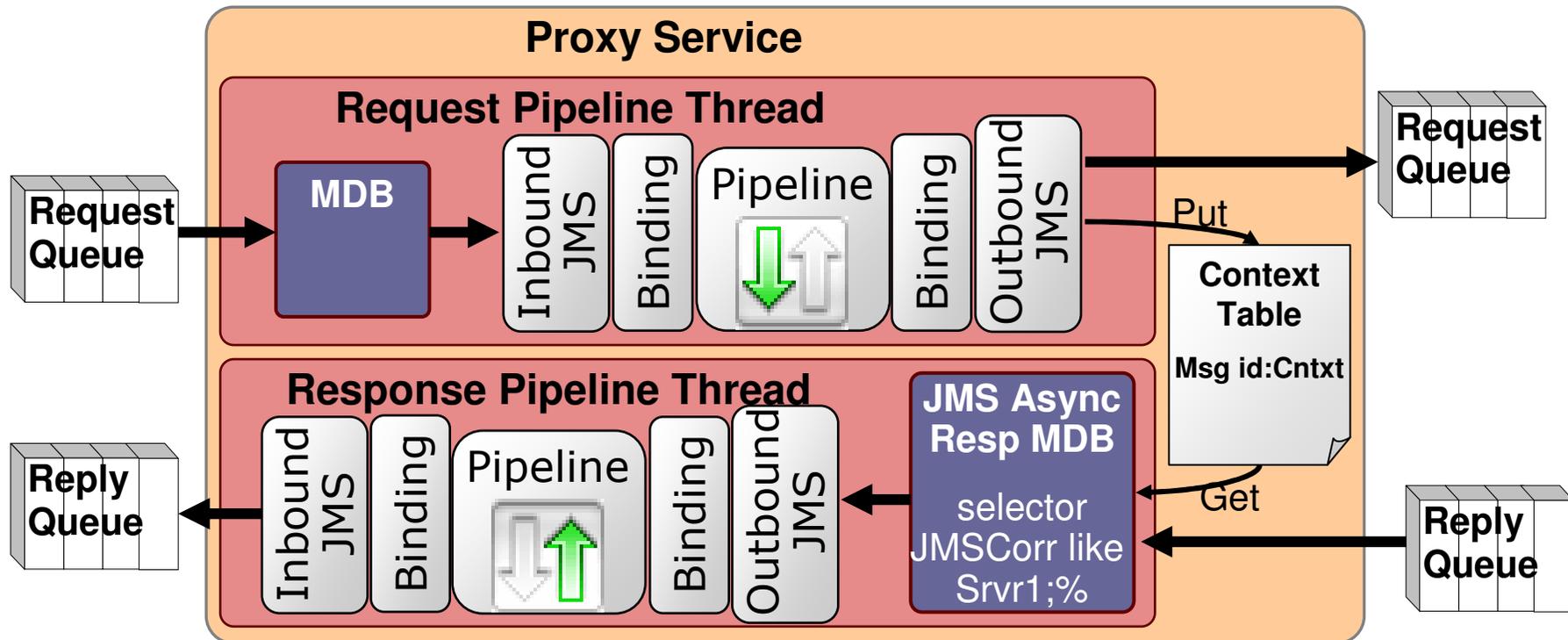


HTTP Transport



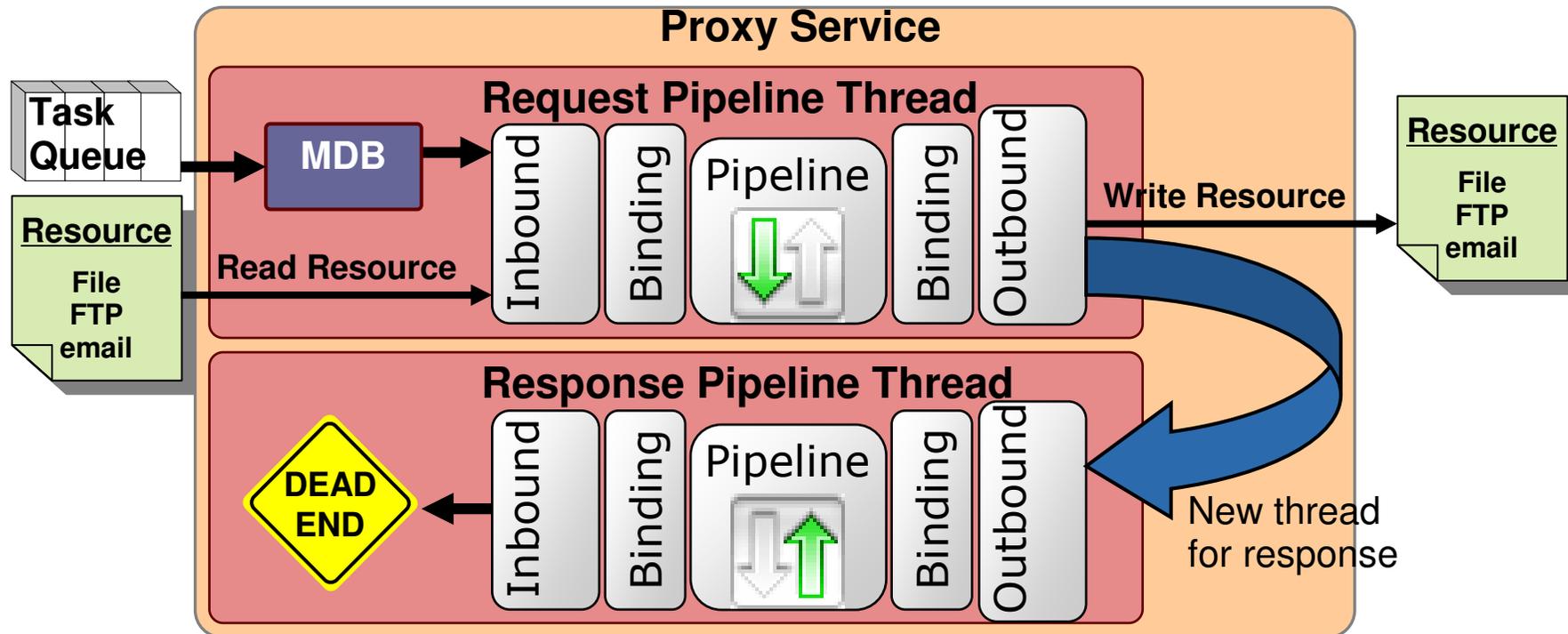
- Servlet deployed as a lightweight web app
 - No files, not visible in WLS console, redeployed on startup
- Servlet response issued from separate thread
- No thread in use while outbound call outstanding (QoS is best effort)

JMS Transport



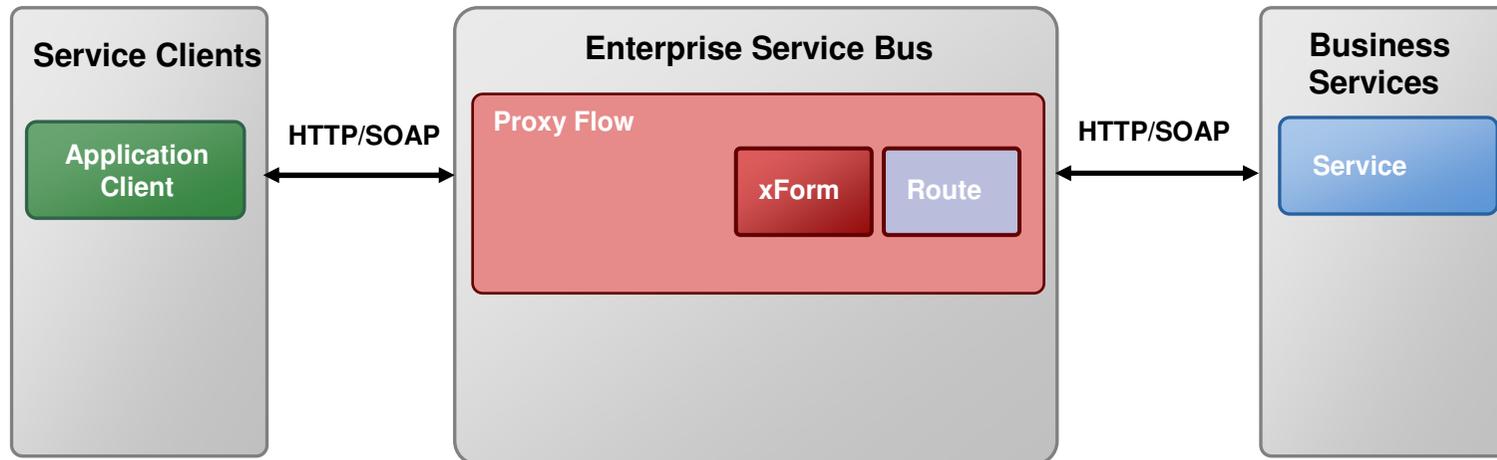
- No thread waiting for response
- MDB ear file deployed for each MDB
 - Future: light weight MDBs
- If JMS connection is XA, processing is transactional
 - Separate transaction for Request and Response pipeline
 - Transactional retries only on Request pipeline

Polling Transports: FTP, File, Email



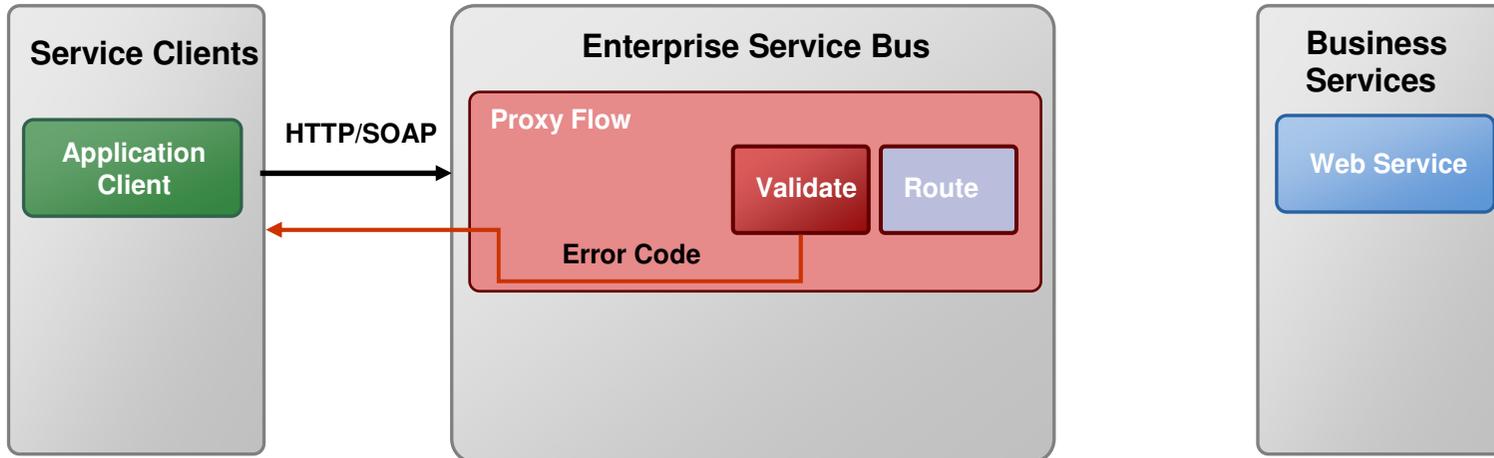
- Request thread spawns response thread from work manager
 - 1-way JMS has similar thread usage
- Request thread is transactional – at least once semantics
- Task Queue entry from poller

Integrated Transformation



- **Support for XML and non-XML messages**
 - XML processing optimized with XQuery engine
 - XML transformation uses XQuery; XUpdate like actions used to update header or content
 - Non-XML messages handled via MFL (Message Format Language). Non-XML messages always look like XML to the message flow actions (auto conversions in place)
- **Format handling tools**
 - Schema-driven console tools for navigating message content/headers, creating routing rules and publish filters
- **Format definition and transformation**
 - XQuery maps and MFL definitions are deployed into Service Bus
 - XSLT transformations are supported
- **Transformation call-outs**
 - Transformations (Java) hosted outside the service bus invoked via the call-out action

Error Handling



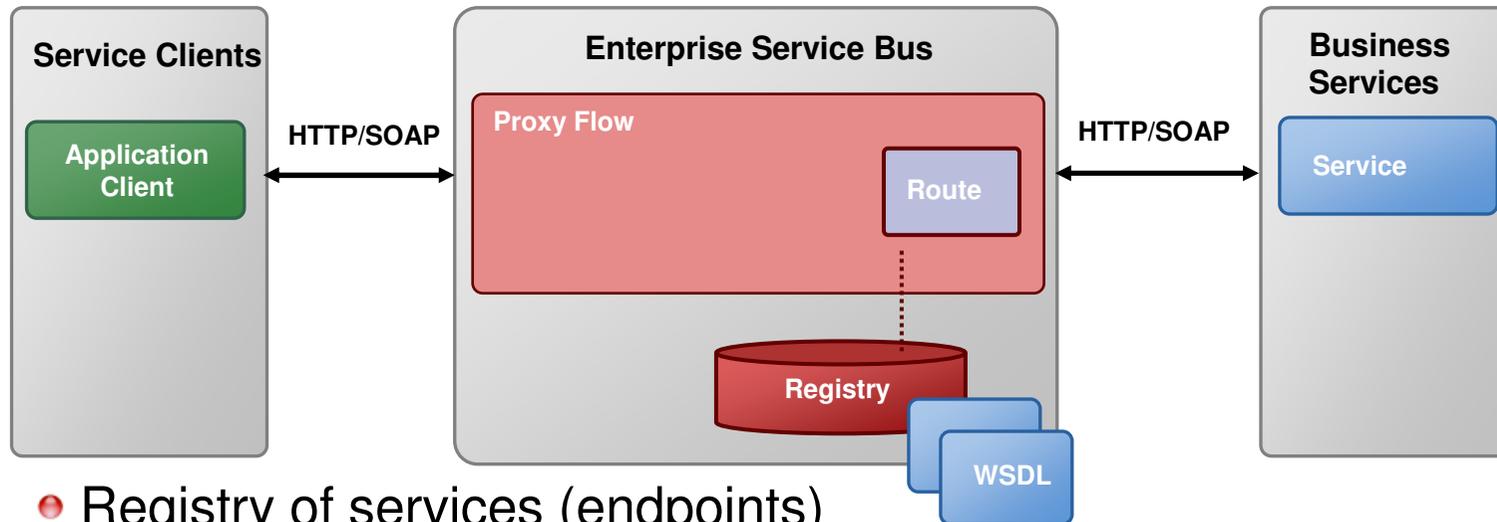
• Error handling Features

- Capture multiple levels of exceptions
- Process SOAP Faults
- Enrich custom error messages to invoking services
- Search / Report by error conditions
- Validation
- Security: authentication, authorization, signing, decryption
- Can raise error on any condition

• Error Handlers

- Service level
- Pipeline level
- Stage level

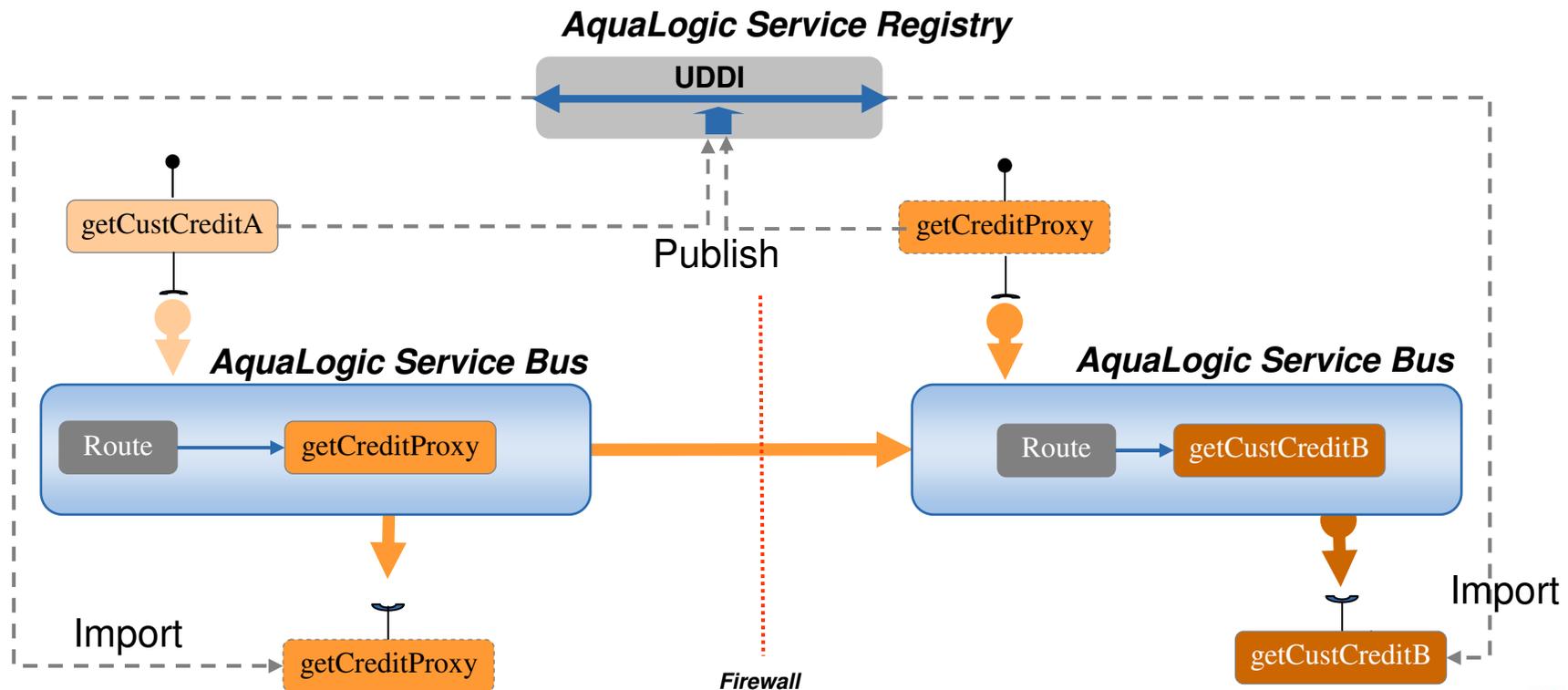
Service Discovery



- Registry of services (endpoints)
 - Services/endpoints mediated by Service Bus
 - Service proxies exposed by Service Bus
- Store of service metadata
 - Transport Interface details (URIs/WSDL/schemas/WSPolicies),
 - Transport characteristics (load balancing, retries, failover, timeouts)
 - Associated service providers
 - Transformation maps used by services.
- Configuration data migration between environments (i.e. dev to test)

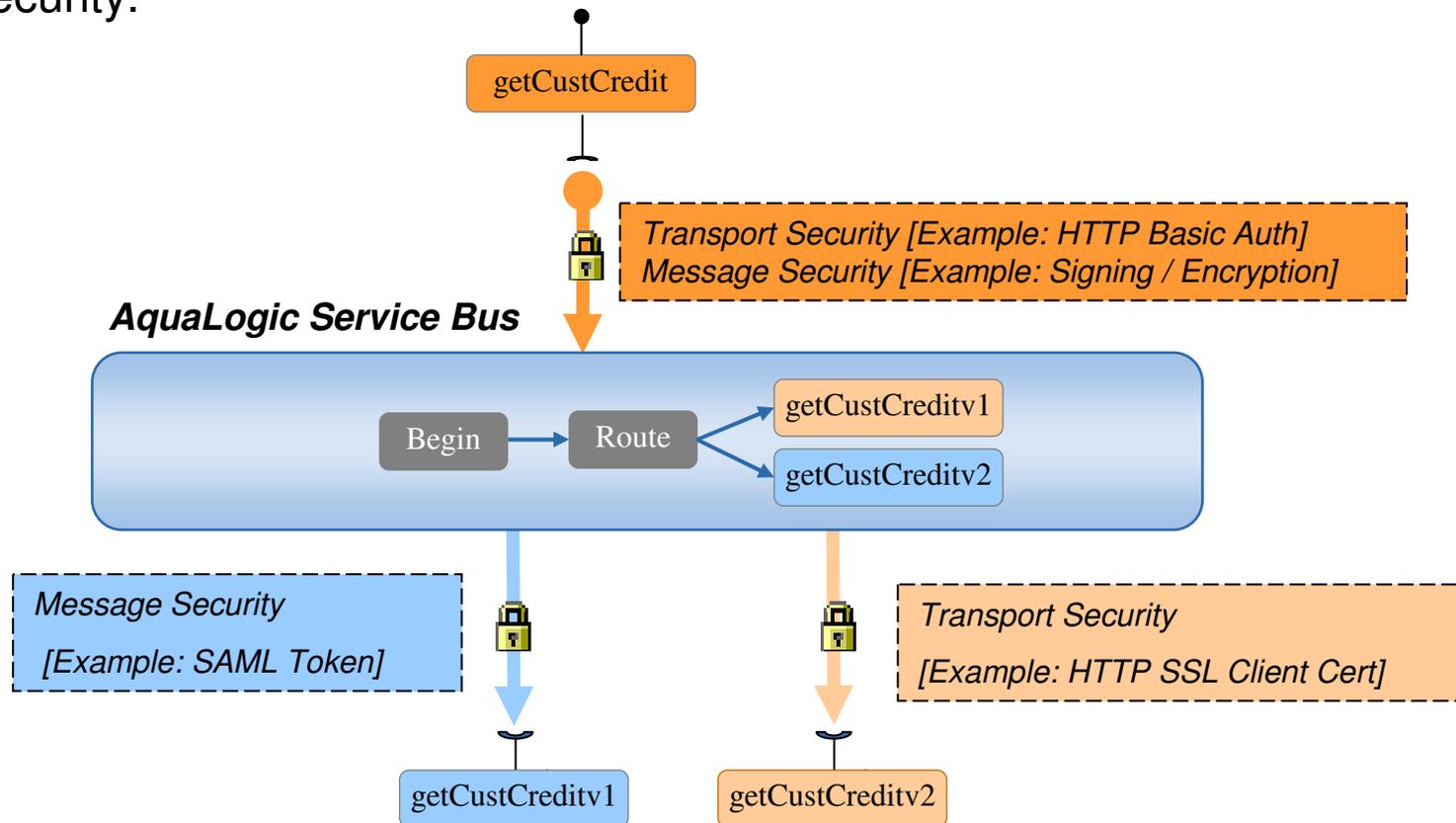
Service Discovery

- ESBs can discover services across the enterprise either locally or in a distributed model leveraging UDDI
- Publish Proxies to UDDI, import business services from UDDI

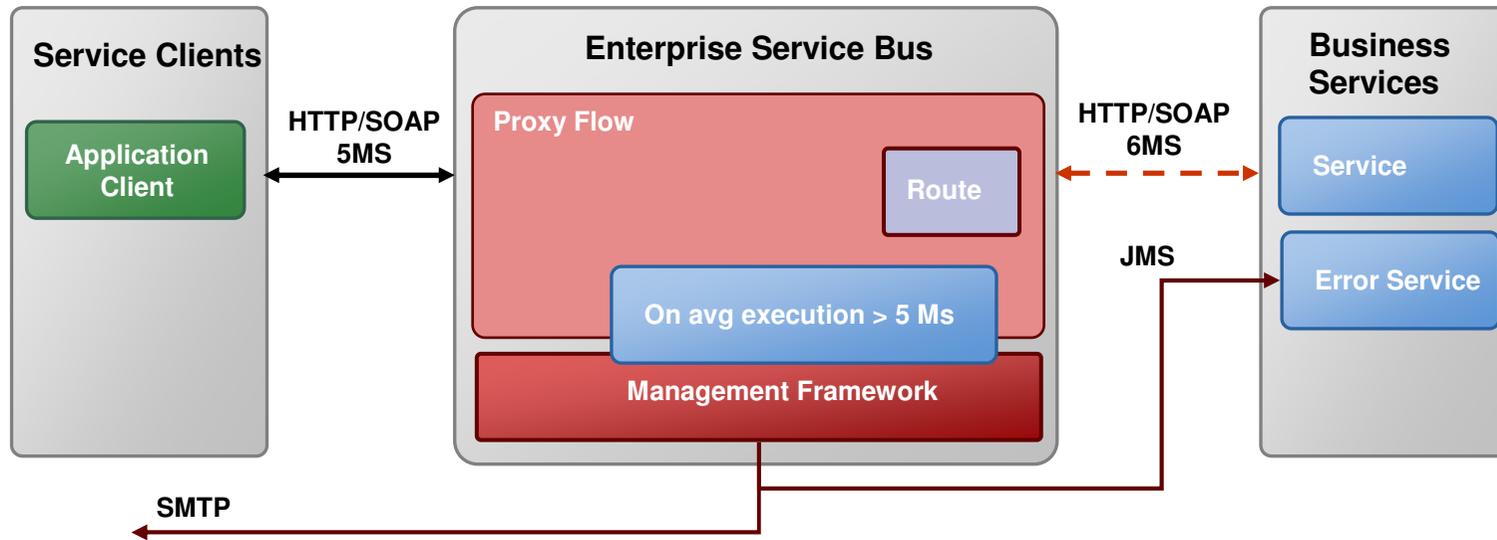


SOA Security Models

- ESB requires Loose coupling of security models, Identity propagation, and WS-Security (Message Security) or Transport Security.



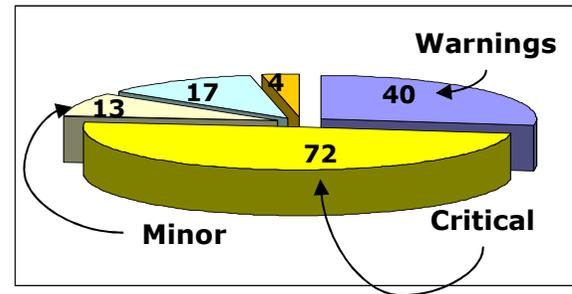
SLA Capabilities



- **Establish thresholds based on performance and error events**
 - elapsed times
 - average execution times
 - # of errors
 - success ratio
 - Alerts by severity
- **Flexible notification**
 - Email, JMS

ESB Service Monitoring

- Monitor System Operations
 - Alerting and reporting key monitoring points
 - Gauge system health, slowdown notification
 - Monitoring is optional per service
- Custom Alerts
 - Alert framework allows defining the conditions that need attention
- Dashboard
 - Show fault and performance metrics aggregated cluster wide or per server
- Service health
 - # of Alerts by Severity
 - Configurable Aggregation Intervals



Error Responses

- # of Generated Errors
- By Service

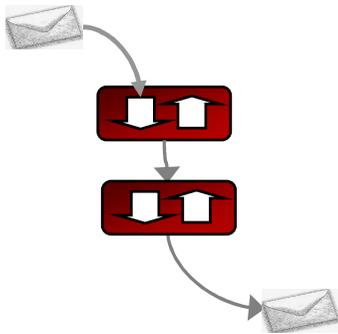
Service Monitoring Summary

Search Name: Path:

Has Alerts
 Has Errors
 Invoked by proxy: Name:

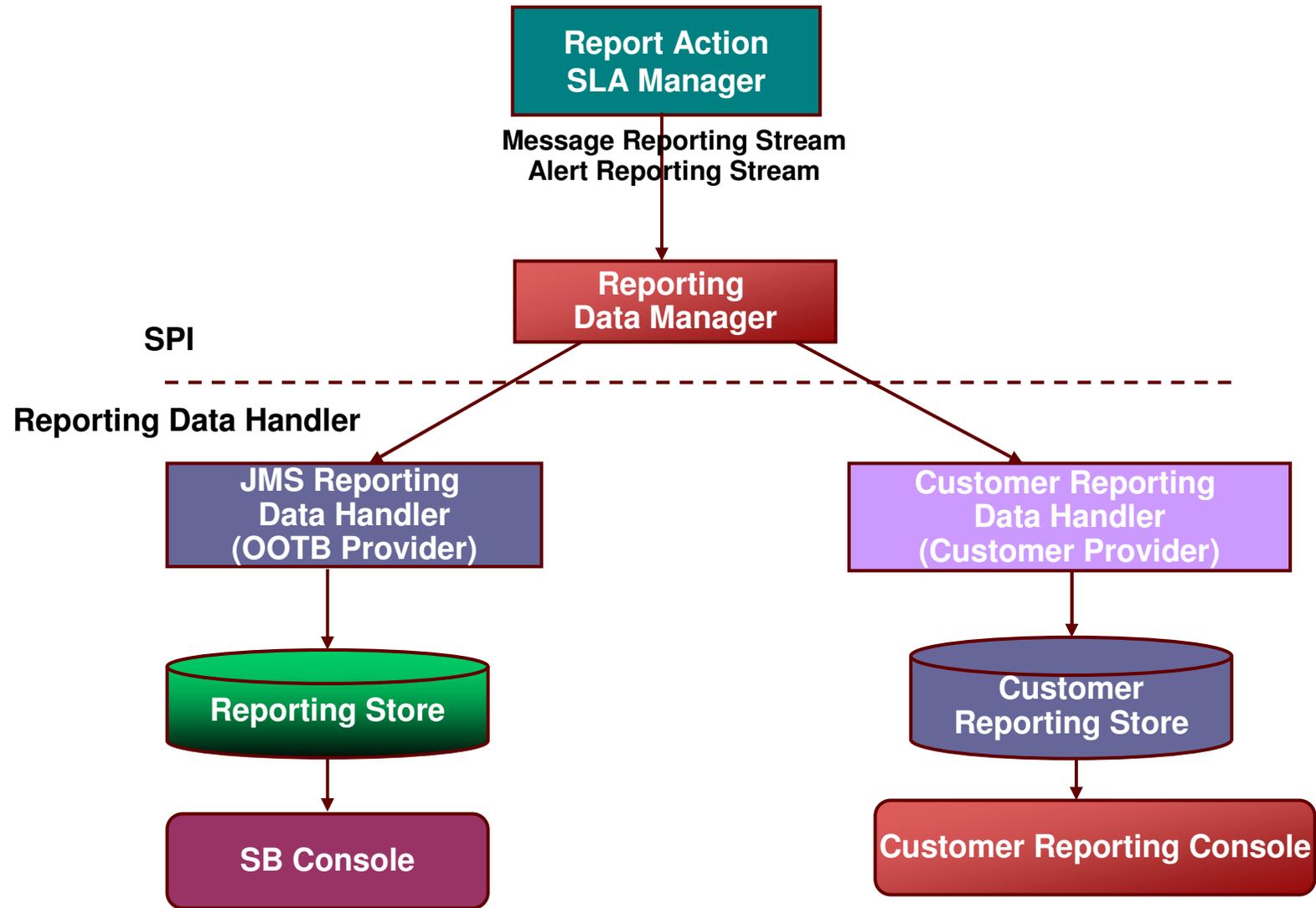
Search View All

Name	Path	Avg. Execution Time (in msec)	# of Messages	# of Errors	# of Alerts
creditRatingService	Folder:Mortgage Broker:Business Services	0	0	0	0
loanGateway1	Folder:Mortgage Broker:Proxy Service	0	0	0	0
loanGateway2	Folder:Mortgage Broker:Proxy Service	0	0	0	0
loanGateway3	Folder:Mortgage Broker:Proxy Service	0	0	0	0
loanSaleProcessor	Folder:Mortgage Broker:Business Services	0	0	0	0
manageLoanReviewService	Folder:Mortgage Broker:Business Services	0	0	0	0
normalLoanProcessor	Folder:Mortgage Broker:Business Services	0	0	0	0



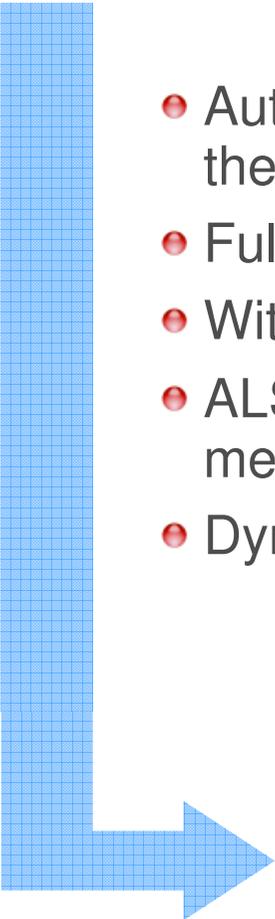
- Service metrics
 - Response times
 - Message or error counts
- For pipelines or routing nodes
 - Transit times
 - Message or error counts

Reporting Logical Architecture



ALSB Federation

Distributed deployments



- Autonomous ESB instances across the enterprise
- Fully distributed, peer-to-peer
- With or without central coordination
- ALSB network reliably routes messages to destination
- Dynamic routing policies

Unlimited scalability for large-scale deployments

- Federation**
- Governance**
- Extensibility**
- Adaptive Connectivity**



ALSB Governance

Complete set of ALSB Governance

- Identity-based routing
- Additional Identity propagation scenarios (username/password)
- Per Message Alerts from within Proxy Pipeline
- SNMP destination for alerts
- UDDI Integration Enhancements

Gain better control and governance of enterprise wide SOA

Federation

Governance

Extensibility

Adaptive
Connectivity



ALSB Run-Time Governance

Complete set of ALSB Run-time Governance

Identity based routing

- Enables routing rules to be based on security groups, for more extensible use of identity in the pipeline.
- Customers can build silver, gold, platinum security groups, and can make routing decisions based on these group categories, in addition to the message context.

Gain better control and governance of enterprise wide SOA

Federation

Governance

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Connectivity



ALSB Run-Time Governance

Complete set of ALSB Run-time Governance

Additional Identity propagation scenarios (username/password) with SAML

- Support passthru of transport level userid/password credentials as well as mapping of inbound authenticated subject to outbound userid/password.
- Helps promote legacy applications which don't have SAML support to do identity propagation scenarios using ALSB

Gain better control and governance of enterprise wide SOA



ALSB Run-Time Governance

Complete set of ALSB Run-time Governance

Per Message alerts

- Simplifies the use case where customers want to build alerts based on message context or message identity – rather than generating a separate SLA.
- Alerts can be configured within the proxy pipeline
- Alerts can be fired directly (SNMP, SMTP, JMS) in addition to raising an exception.

Gain better control and governance of enterprise wide SOA



ALSB Run-Time Governance

Complete set of ALSB Run-time Governance

SNMP destination for alerts

- Enables customers to fire SLA based alerts as SNMP traps, in addition to SMTP or JMS.
- Enables out of the box integration with HP Open View, BMC, and other ESM providers for alert management.
- Certified with BMC Patrol

Gain better control and governance of enterprise wide SOA



ALSB Design-Time Governance

- **Governance of SOA Assets & Lifecycle**

UDDI Integration Enhancements

- Auto export proxy services to UDDI.
- Notification when Business service changes in UDDI, and needs to re-synchronize with ALSB
- Certified on ALSR 2.1

Federation

Governance

Extensibility

Adaptive
Connectivity



Enables better enterprise-wide re-usability of SOA assets

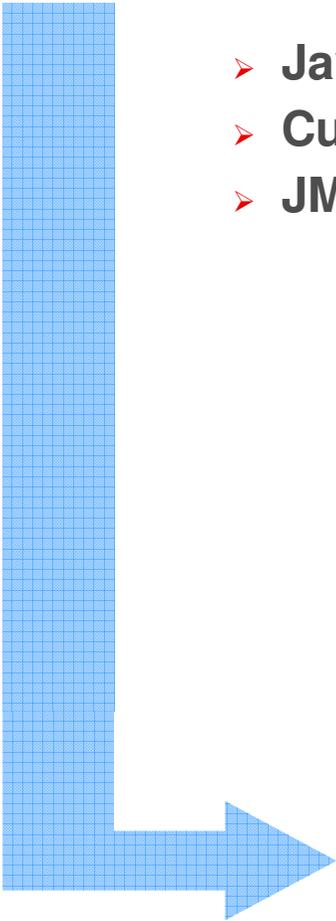
ALSB Extensibility

Enables Customers to extend the capabilities of the Bus to their organization

- Java Exit Mechanism
- Custom Transport
- JMX Monitoring API



Federation
Governance
Extensibility
Adaptive Connectivity



Customize the advantages of ESB to your needs

ALSB Extensibility

Enables Customers to extend the capabilities of the Bus to their organization

Java Exit Mechanism

- Enables Java callouts – via a POJO (Plain old Java Object) within an ALSB pipeline
- Customers can invoke custom java code at any step when ALSB processes a service.
- Static methods can be accessed of any POJO
- POJO and parameters are visible from ALSB pipeline design console and are mapable to message context.

Federation

Governance

Extensibility

Adaptive
Connectivity



Customize the advantages of ESB to your needs

ALSB Extensibility

Enables Customers to extend the capabilities of the Bus to their organization

Custom Transports - Transport SDK

- Customers can add their own custom connectivity options to ALSB natively by using this interface – as opposed to connecting via inbuilt HTTP/S, JMS, FTP, File, EJB/RMI transports.
- Same 'ilities' QoS, Security, Performance are expected for the custom transport:
- All existing transports in ALSB leverage the same Transport interface as the Transport SDK.
- TCP/IP Sockets implementation available as a sample transport using the Transport SDK.

Customize the advantages of ESB to your needs

Federation

Governance

Extensibility

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Connectivity



ALSB Extensibility

Complete set of ALSB Run-time Governance

JMX Monitoring API

- Enables customers to get access to monitoring metrics for custom management use cases.
- The same API we are leveraging also with partners such as Amberpoint, HP Open View, BMC to integrate with their management frameworks.

Gain better control and governance of enterprise wide SOA

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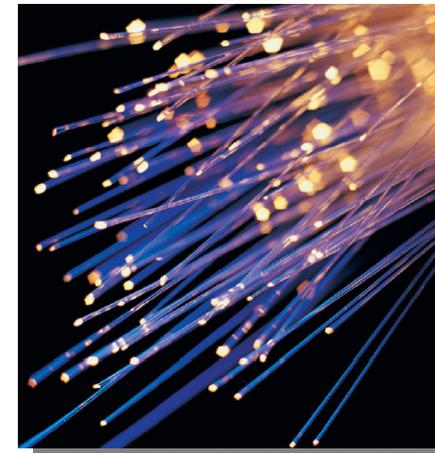
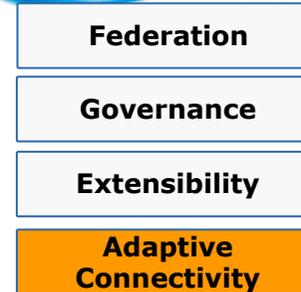
Adaptive
Connectivity



ALSB Adapts to any end-point

Adapts to extended legacy endpoints, external partners for increased heterogeneity

- EJB/RMI
- Tuxedo Native Transport
- B2B Connectivity: AS1, AS2, AS3, Secure FTP, ebXML
- Native EDI transformation: X12, UN/EDIFACT, EDI Splitter
- Tibco EMS Interop



Proliferate SOA advantages across the enterprise

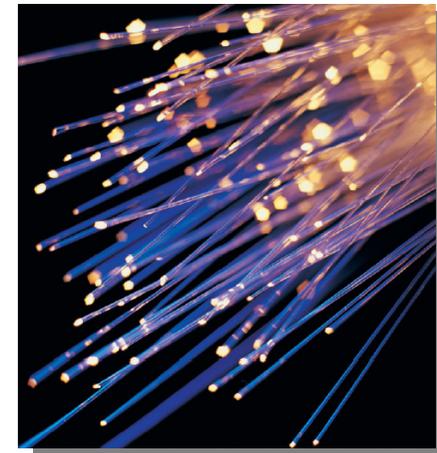
ALSB Adapts to any end-point

Adapts to extended legacy endpoints, external partners for increased heterogeneity

EJB/RMI

- Allows for Business services to be represented as an EJB, completely configuration driven without code.
- Allows for automatic WSDL generation of an EJB for easier promotion to SOA.
- EJBs can be co-located in the same Domain as ALSB
- Supports outbound only (as a service consumer, not as a service provider)
- Architected to support any J2EE container. Current certification is for BEA WLS 8.x and 9.x only
- Supports RMI/IIOP protocol

Proliferate SOA advantages across the enterprise



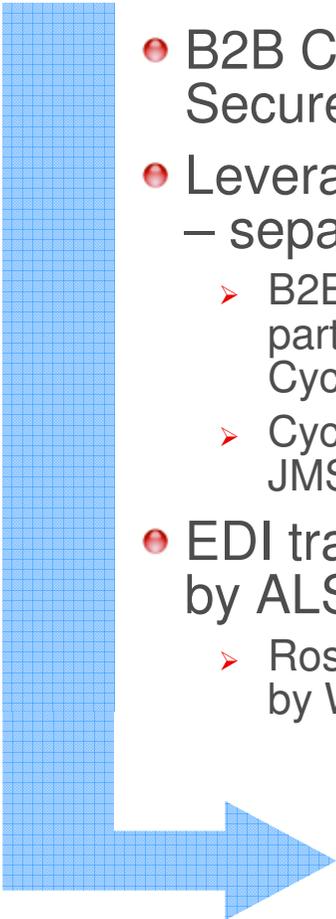
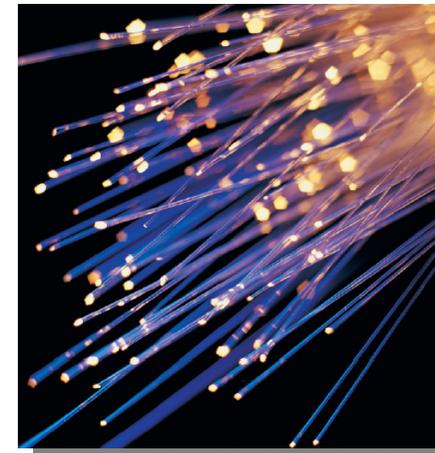
ALSB Adapts to any end-point

Adapts to extended legacy endpoints, external partners for increased heterogeneity

- B2B Connectivity: AS1, AS2, AS3, Secure FTP, ebXML
- Leverages Cyclone Interchange 5.4 – separately licensed
 - B2B Connectivity options and Trading partner management handled natively by Cyclone Interchange.
 - Cyclone and ALSB interop certified via JMS or JMS/XA
- EDI translation is handled natively by ALSB
 - Rosetta net PIP support is only handled by WLI currently



Federation
Governance
Extensibility
Adaptive Connectivity



Proliferate SOA advantages across the enterprise