

IBM DataPower Gateway

Common Use Cases

Arif Siddiqui, Principal Product Manager – Strategic Initiatives

IBM DataPower Gateways & API Economy

Ozair Sheikh, Senior Product Manager

IBM DataPower Gateways



Agenda



- ***DataPower Gateway Overview***
- Security & Optimization Gateway
- Mobile Connectivity
- API Management
- Integration
- Mainframe Integration & Enablement
- B2B



DataPower Gateways ...

-  **SECURE** Mobile, API, Web, SOA, B2B and Cloud Workloads
-  **INTEGRATE** Systems of Engagement with Systems of Record
-  **CONTROL & MANAGE** Traffic and Service Level Agreements
-  **OPTIMIZE** Data Delivery and User Experiences
-  **CONSOLIDATE** & Simplify Infrastructure Footprint



IBM DataPower Gateways provide a low startup cost, helping clients **increase ROI** and **reduce TCO** with specialized, consumable, dedicated gateway appliances that combine **superior performance** and **hardened security** in physical and virtual form factors

Gateway for the Multi-channel Enterprise



IBM DataPower Gateways

Single security and integration gateway platform to provide security, integration, control & optimized access to a full range of Mobile, API, Web, SOA, B2B, & Cloud workloads

Mobile



Simplify mobile security with single, purpose-built gateway; control mobile traffic and accelerate delivery

SOA

Secure, integrate, control & manage SOA workloads in the DMZ and Trusted zones



API

Easily secure, control, publish, monitor & manage your APIs



Cloud

DataPower gateway functionality in a virtual appliance form factor, supports multiple hypervisor & cloud environments

IBM DataPower Gateway



Web

Simplify web security with single, purpose-built gateway; control traffic and accelerate delivery for intranet and internet web applications



Extend Connectivity & Integration beyond the enterprise with DMZ-ready B2B edge capabilities

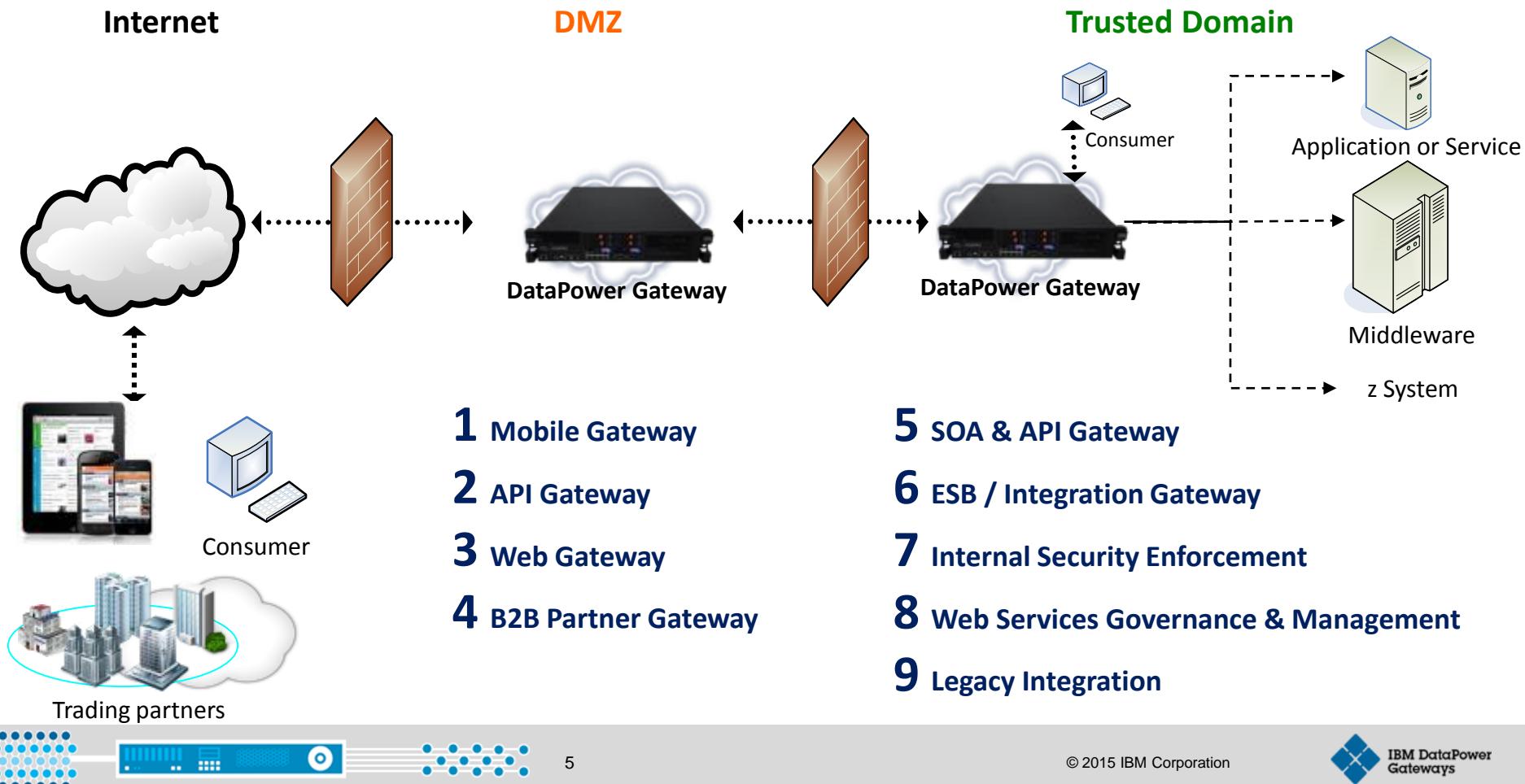


Common Use Cases



IBM DataPower
Gateways

IBM DataPower Gateway Appliances are the industry-leading **Security & Integration** gateways that help provide **security, integration, control** and **optimized** access to a full range of Mobile, Web, API, SOA, B2B, & Cloud workloads



Features



IBM DataPower
Gateways

Secure

- Authentication, authorization, auditing
- Security token translation
- Threat protection
- Schema validation
- Message filtering & semantics validation
- Message digital signature
- Message encryption

Integrate

- Any-to-any message transformation
- Transport protocol bridging
- Message enrichment
- Database connectivity
- Mainframe connectivity
- B2B trading partner connectivity

Control

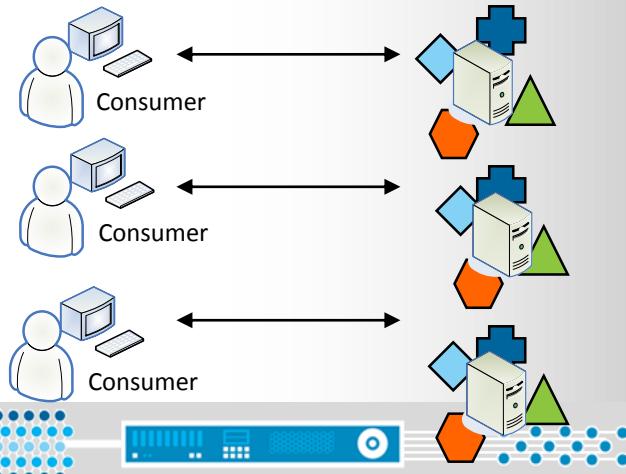
- Service level management
- Quota enforcement, rate limiting
- Message accounting
- Content-based routing
- Failure re-routing
- Integration with management & visibility platforms

Optimize

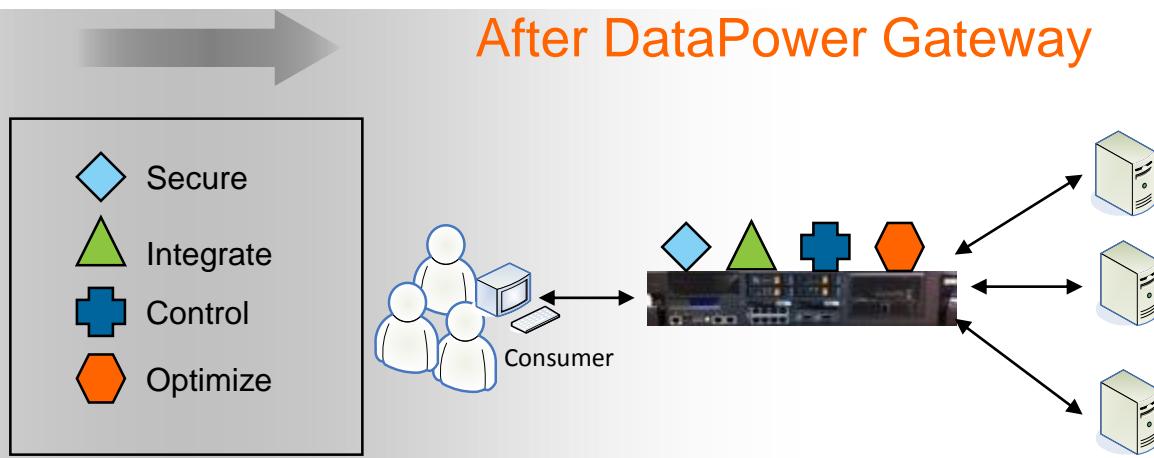
- SSL / TLS offload
- Hardware accelerated crypto operations
- JSON, XML offload
- JavaScript, JSONiq, XSLT, XQuery acceleration
- Response caching
- Intelligent load distribution

Simplify, offload & centralize critical functions

Before DataPower Gateway



After DataPower Gateway



DataPower Gateway: Single, modular & extensible platform

Modules

B2B Module

- B2B DMZ gateway
- EDIINT AS1,AS2,AS3,ebXML
- Partner profile management
- B2B transaction viewer
- Any-to-Any message transformation
- Database connectivity

TIBCO EMS Module

- Integrate with TIBCO EMS messaging middleware
- Support for queues & topics
- Load balancing & fault-tolerance

ISAM Proxy Module

- User access control, session management, web SSO enforcement
- Advanced mobile security: mobile SSO, context-based access, one-time password, multi-factor authn
- Integration with ISAM for Mobile

Application Optimization Module

- Frontend self-balancing
- Backend intelligent load distribution
- Session affinity
- z Sysplex Distributor integration

Integration Module

- Any-to-Any message transformation
- Database connectivity
- Mainframe IMS connectivity

IBM DataPower Gateway (Base)

Secure

- Authentication, authorization
- Security token translation
- Service / API virtualization
- Threat protection
- Message validation
- Message filtering
- Message digital signature
- Message encryption
- AV scanning integration

Integrate

- Transport protocol bridging
- Message enrichment
- Message transformation & processing using JavaScript, JSONiq, XQuery, XSLT
- Mainframe integration & enablement
- Flexible pipeline message processing engine

Control & Manage

- Service level management
- Quota & rate enforcement
- Content-based routing
- Message accounting
- Integration w/ management & visibility platforms including IBM API Management & WSRR for policy enforcement

Optimize & Offload

- SSL / TLS offload
- Hardware accelerated crypto*
- JSON, XML offload
- JavaScript, JSONiq, XSLT, XQuery acceleration
- Local response caching
- Distributed caching with WXS or XC10
- Backend load balancing

2U Physical or Virtual Edition



Deployment options

Physical



- Purpose-built, DMZ-ready appliances provide physical security
- High density 2U rack-mount design
- 8 x 1 and 2 x 10 GbE ports
- Cryptographic acceleration card
- Trusted platform module
- Customized intrusion detection
- Optional HSM (FIPS 140-2 Level 3 certified)

Virtual



- Virtual appliances provide deployment flexibility
- Support multiple hypervisors and cloud environments
 - VMware
 - Citrix XenServer
 - IBM PureApplication System (x86 nodes)
 - IBM PureApplication Service on SoftLayer (x86 nodes)
 - IBM SoftLayer bare metal instances using supported hypervisors



Enterprise grade security requires a secure platform

■ **Purpose-built hardware** provides physical security

- Sealed, tamper-evident case
- No usable USB, VGA, other ports
- Intrusion detection switch
- Trusted Platform Module
- Encrypted flash drive
- FIPS 140-2 level 3 Hardware Security Module (option) for secure storage of private keys



■ **Hardened firmware** provides platform security for physical & virtual gateways

- Single signed and encrypted firmware by IBM
- No arbitrary software
- Optimized, embedded operating system
- High assurance, “locked-down” configuration
- Key materials are not exportable from the appliance *



Virtual Edition

- DataPower gateway functionality in virtual appliance form factor to rapidly secure, integrate, control & optimize access to Mobile, API, Web, SOA & B2B workloads in **hypervisor & clouds** platforms
- Use for development, test or production
- Supports multiple hypervisor & cloud platforms
 - VMware
 - Citrix XenServer
 - IBM PureApplication System W1500/W2500
 - IBM PureApplication Service on SoftLayer (x86)
 - IBM SoftLayer bare metal instances on x86 nodes
- **Seamless configuration migration** between physical and virtual appliances
- Utilizes the same industry-proven & **purpose-built platform** including an embedded, optimized DataPower Operating System, that powers the physical appliances



SOFTLAYER®
an IBM Company

Delivers purpose-built, highly consumable **Security & Integration Gateway** functionality in virtual appliance form factor for cloud deployments



Virtual Edition Benefits

- **Deployment flexibility and elasticity** – “Right size” the deployment, quickly deploy where needed, & rapidly scale
- **Workload isolation** - Projects can use their own instances
- **Unbounded memory scalability** - Memory can be added to instances without additional licensing
- **Low cost for Dev & Test environments** - Developers & Non-Production versions include add-on software modules at no additional charge
- **Free disaster recovery** - Warm or cold backup without additional licenses when licensed for Production
- **Flexible licensing and entitlement**
 - Sub-capacity licensing
 - **Monthly licensing** option
 - **Entitlement to future product versions** at no additional charge with active maintenance (S&S)



SOFTLAYER®
an IBM Company

Delivers purpose-built, highly consumable **Security** & **Integration Gateway** functionality in virtual appliance form factor for cloud deployments



DataPower Gateways

Over 14 years of innovation & over **2,000** global installations



Government

- Agencies and ministries
- Defense and security organizations
- Crown corporations



Banking

- Majority of the big US and European banks
- All of the big 5 Canadian banks
- Numerous regional banks and credit unions



Insurance

- Used by 95% of top global insurance firms
- SaaS providers, ASPs, regulators, etc.



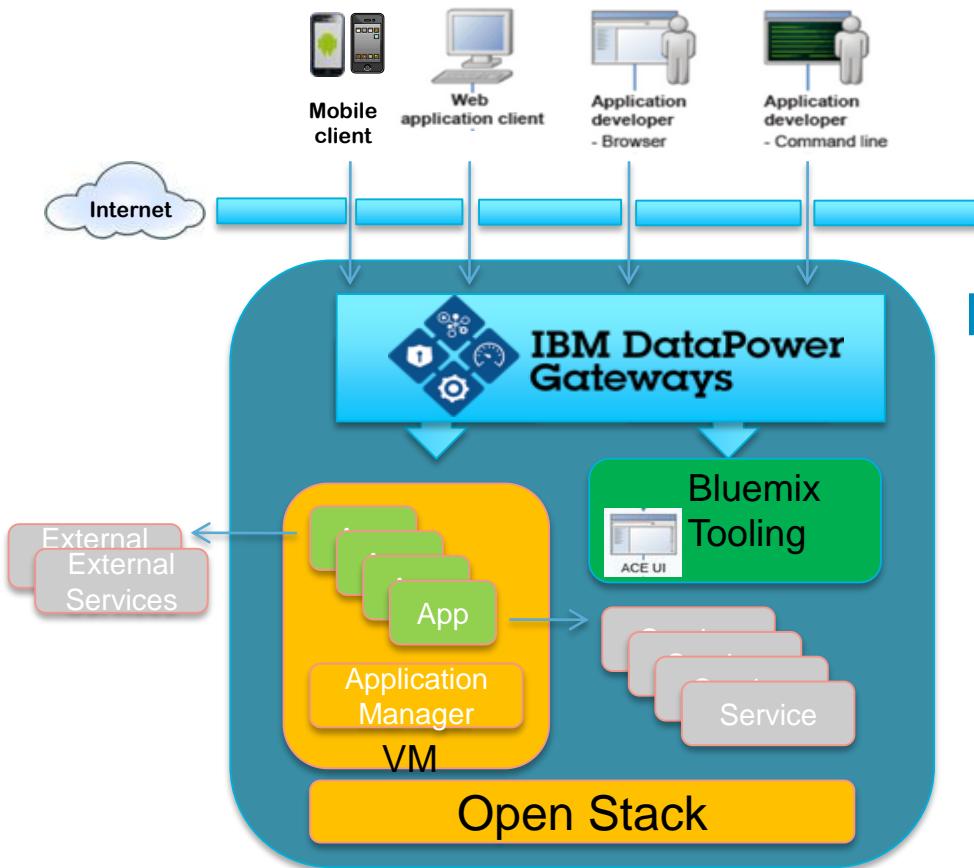
Many, many, more

- Healthcare
- Retailers
- Utilities, Power, Oil and Gas
- Telecom
- Airlines
- Others



Did you know?

DataPower has been trusted to be the exclusive **gateway** for **Bluemix**, IBM's global Platform as a Service



DataPower'ing IBM Bluemix!!!

- Security
- Control
- Filtering
- Content-Based Routing
- Load balancing
- Monitoring and Logging



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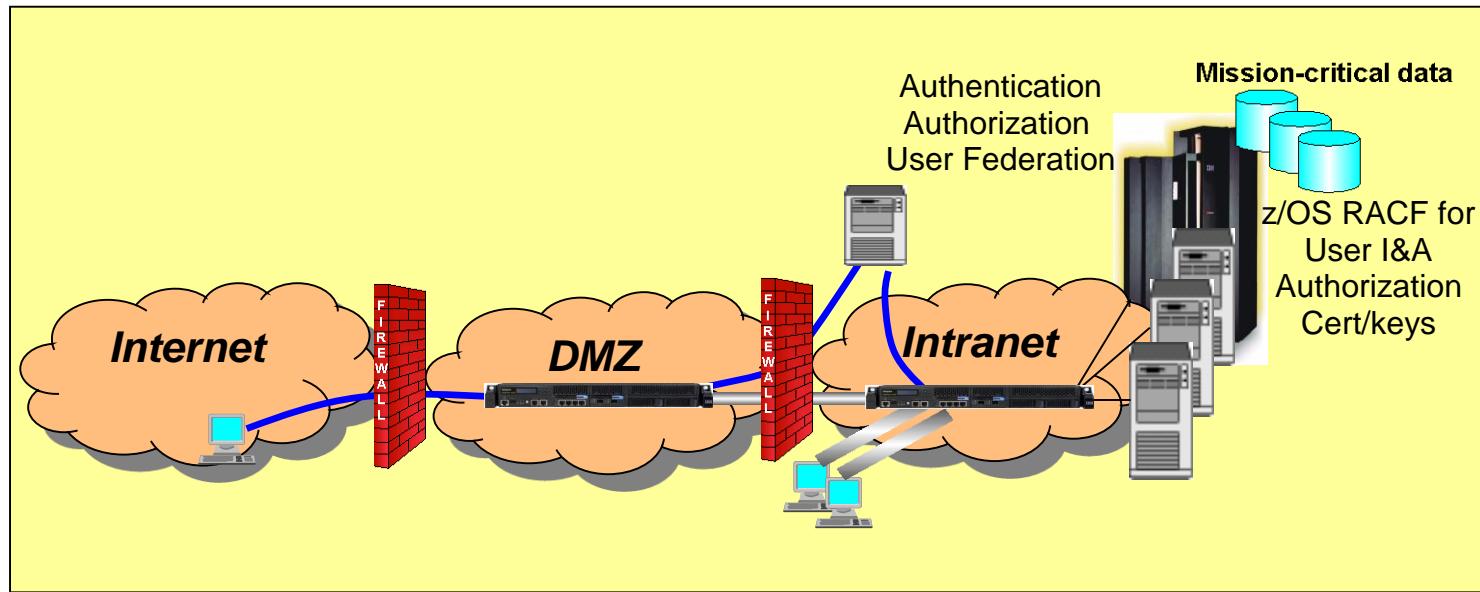
Use Case: Security & Optimization Gateway

Securing the Enterprise & providing optimized access

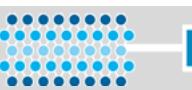


DataPower security roles and objectives

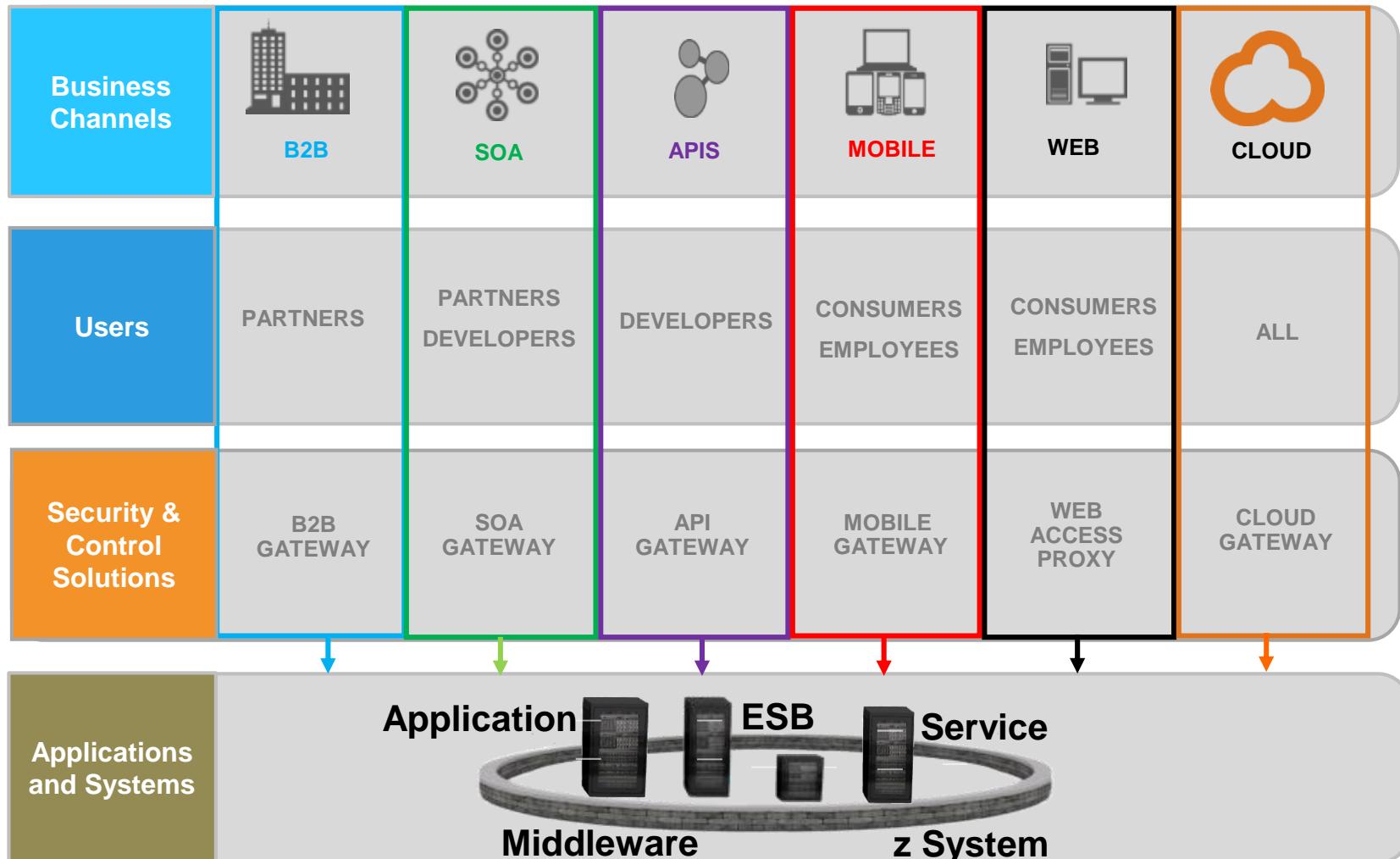
- ✓ Secure access to Web and legacy applications
- ✓ Converged security enforcement
- ✓ Rocksolid DataPower platform
- ✓ Leverages enterprise security and policy managers



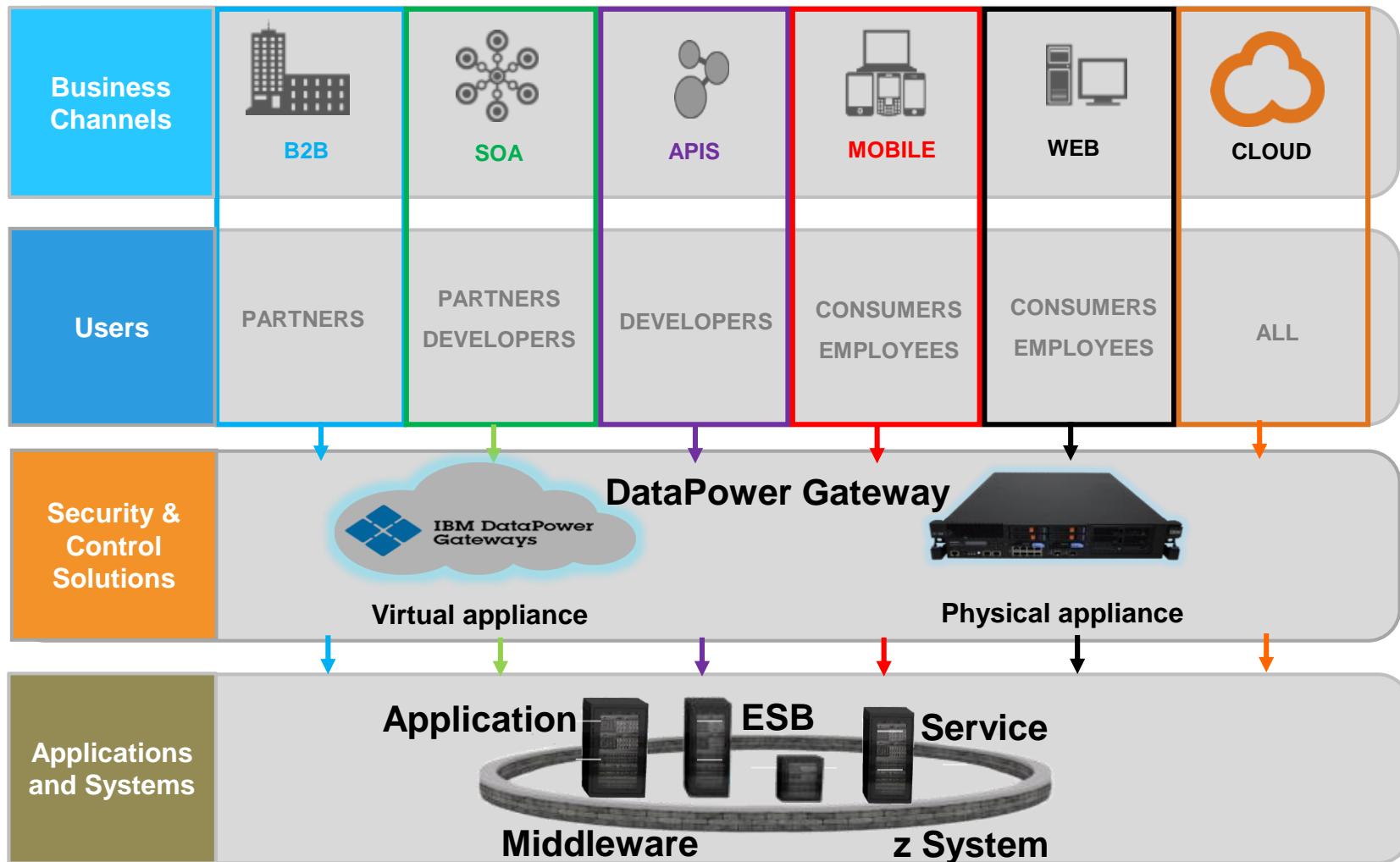
- Protect data and other resources on the appliance and protected servers
 - **System availability**
 - Protect against unwanted access, denial of service attacks, and other unwanted intrusion attempts from the network
 - Only allow “valid” messages through
 - **Identification and Authentication**
 - Verify identity of network users
 - **Authorization**
 - Protect data and other system resources from unauthorized access
- **Protect data in the network using cryptographic security protocols**
 - **Data End Point Authentication**
 - Verify who the secure end point claims to be
 - **Data Origin Authentication**
 - Verify that data was originated by claimed sender
 - **Message Integrity**
 - Verify contents were unchanged in transit
 - **Data Confidentiality**
 - Conceal clear-text using encryption



Silos of security & control are impeding business agility

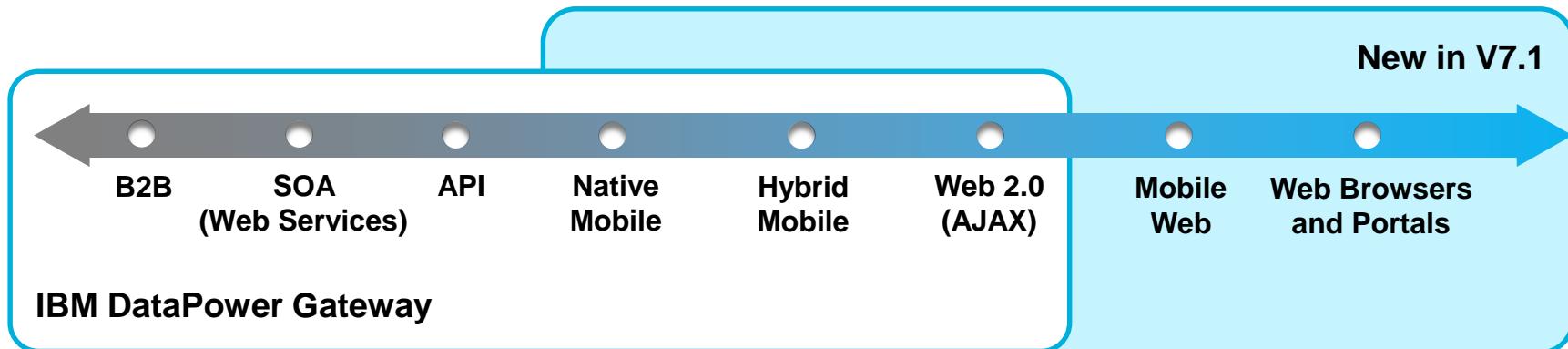


Reduce cost + improve security & control with a single gateway



IBM Multi-channel gateway

Leverage the combined capabilities of **IBM DataPower Gateway** and **IBM Security Access Manager** in a **single**, converged security and integration gateway



App, Service & API security

User access security

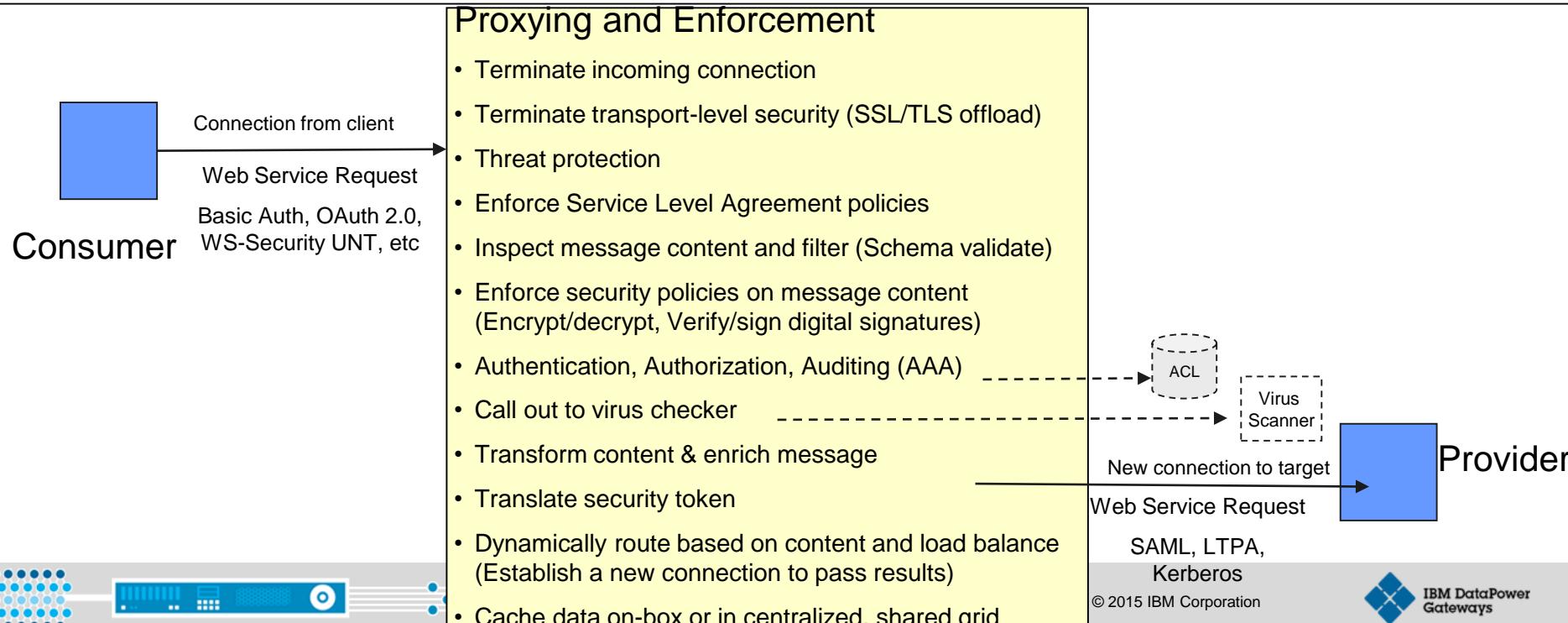
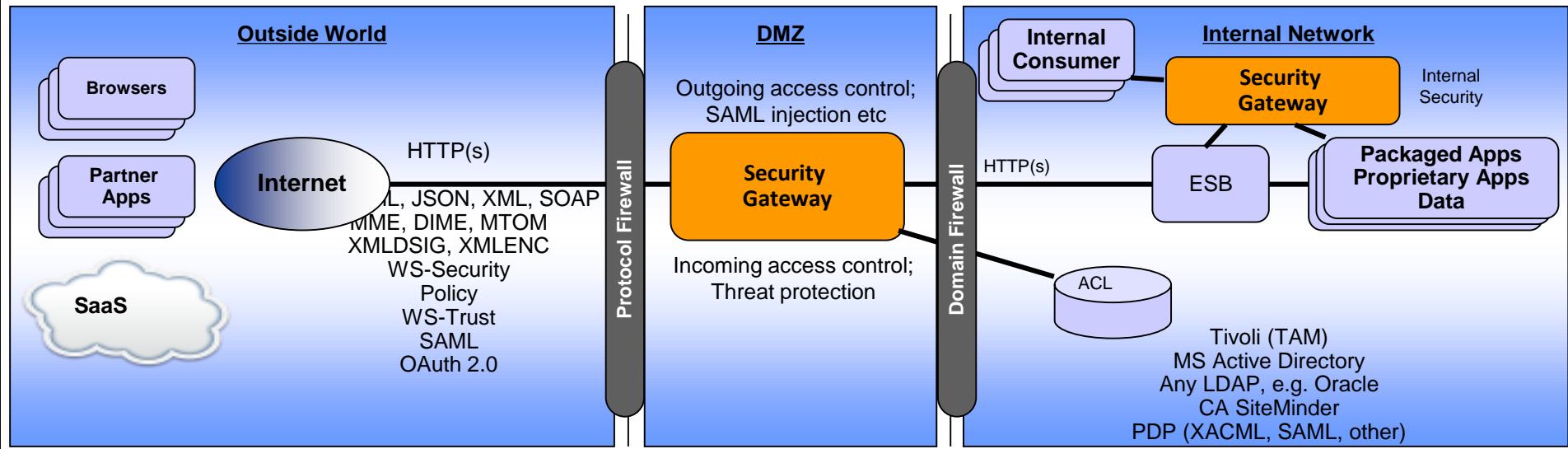
Traffic control & optimization

Connectivity & transformation

- ISAM for DataPower module provides the reverse proxy component that provides enforcement for
 - Centralized **user authentication** & coarse-grained **authorization**
 - **Session management**, & **web SSO**
 - **Context based access** & **mobile SSO**
 - Strong authentication including **one-time password** and **multi-factor authentication**



Security Gateway



Protection of data plus XML & JSON threat protection

- Use DataPower to help resolve **PCI compliance** issues
- Easily sign, verify, encrypt, decrypt any content
- **Configurable** XML Encryption and Digital Signatures
 - Message-level, Field-level, Headers
- **Security standards:** OAuth, WS-Security, WS-Policy, WS-SecurityPolicy, SAML, XACML, WS-Trust, ...



JSON Threat Protection

- Label - Value Pairs
 - Label String Length (characters)
 - Value String Length (characters)
 - Number Length (characters)
- Threat Protection
 - Maximum nesting depth (levels)
 - Maximum document size (bytes)

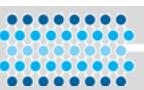
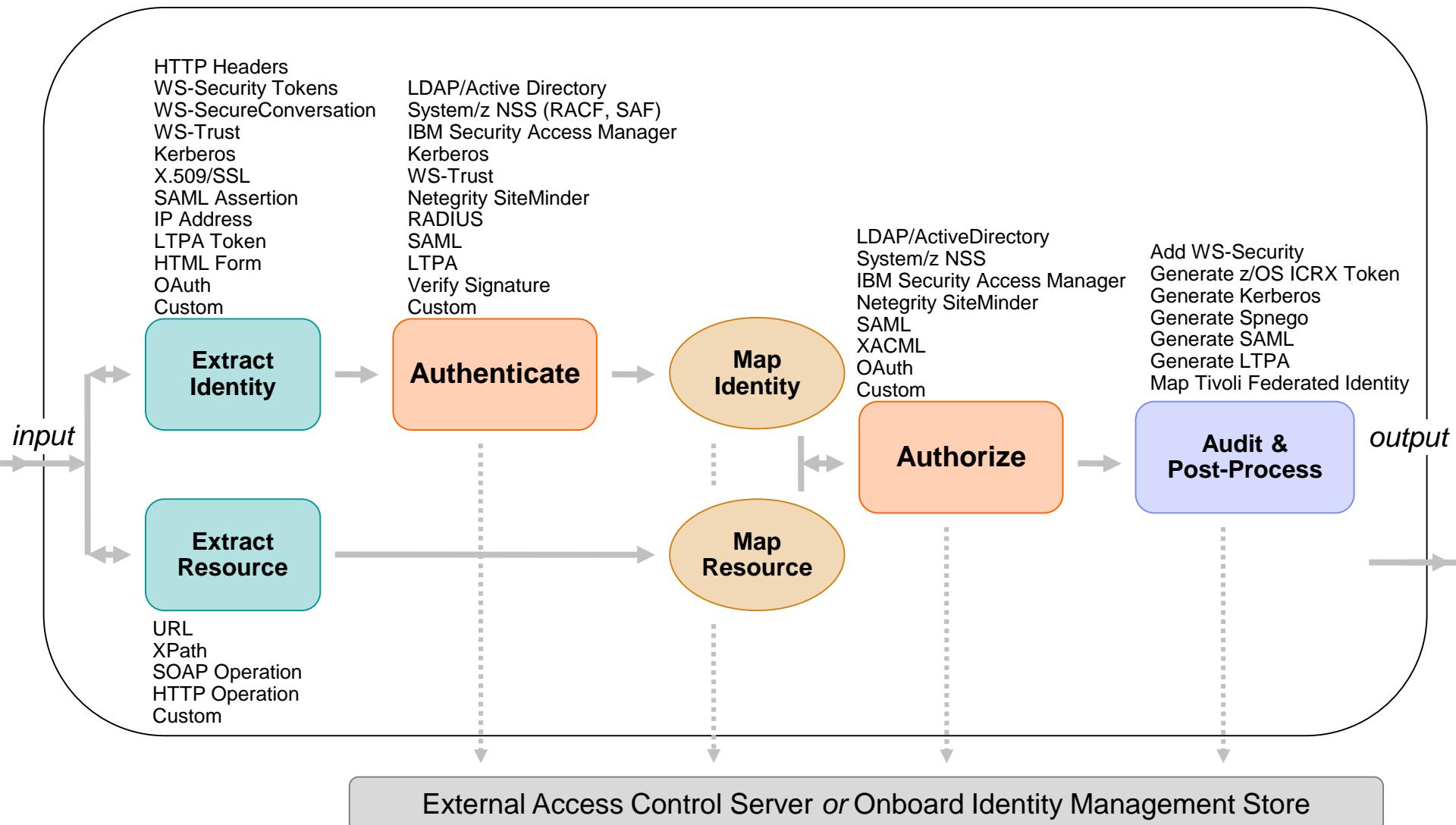
XML Threat Protection

- Entity Expansion/Recursion Attacks
- Public Key DoS
- XML Flood
- Resource Hijack
- Dictionary Attack
- Replay Attack
- Message/Data Tampering
- Message Snooping
- XPath or SQL Injection
- XML Encapsulation
- XML Virus
- ...many others

DataPower security is policy driven

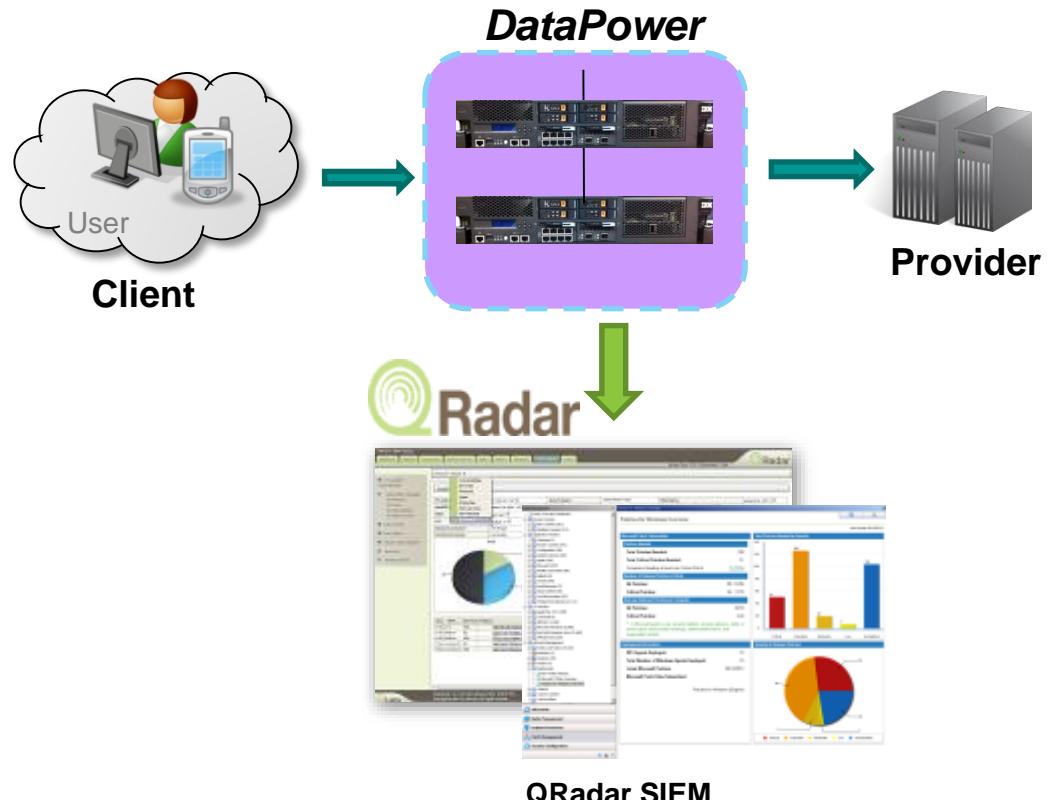
- Use **WS-SecurityPolicy** to define security requirements for your web services
 - DataPower natively consumes and enforces WS-SecurityPolicy statements
 - Integrity & Confidentiality, SupportingTokens, Message/Transport Protection
- Use **XACML** to define access and authorization policies for your web services
 - DataPower natively consumes and enforces XACML policies
 - Resource-based Authorization
 - PEP, PDP

AAA : Authentication Authorization Auditing



Integration with QRadar Security Intelligence Platform

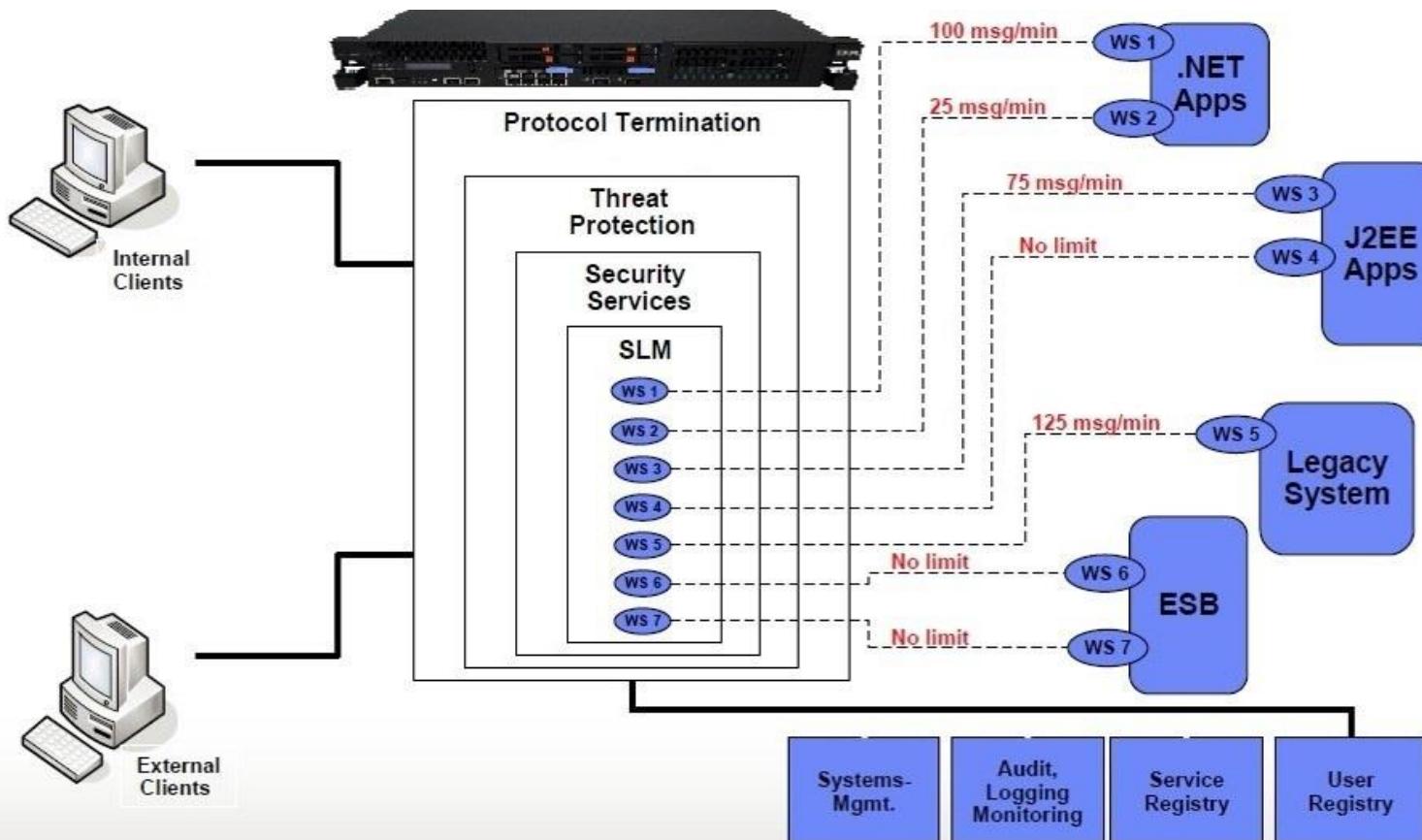
- **Enhance security intelligence and compliance** through integration with QRadar security information and event management (SIEM) platform
- Coming soon: Device Support Module (**DSM**) for **DataPower Gateways** to parse event information



Traffic Control / Rate Limiting

- **Service Level Monitoring (SLM)** to protect your services and applications from over-utilization and enforce quota

- Frequency based on concurrency OR based on messages per time period
- Take action when exceeding a custom threshold:
 - Notify (or log), Shape (or delay), Throttle (or reject)



Retail Service Provider

Securely expose services to consumers

Challenge

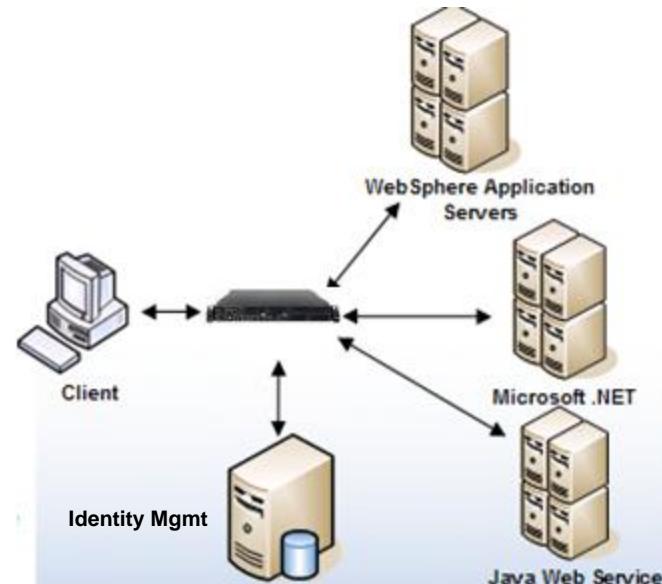
- Consistent & secure delivery of online services to partners that could be shared, integrated & flexible to meet specific needs
- Web services infrastructure needed to support highly secure data routing with daily high volume & sensitive nature of information

Solution

- Implemented WebSphere DataPower to form the Web services backbone
- Through content-based routing, security policy enforcement & data encryption, DataPower ensures safe & efficient flow of confidential customer data
- Integrated seamlessly into heterogeneous environment increasing interoperability & promoting reuse

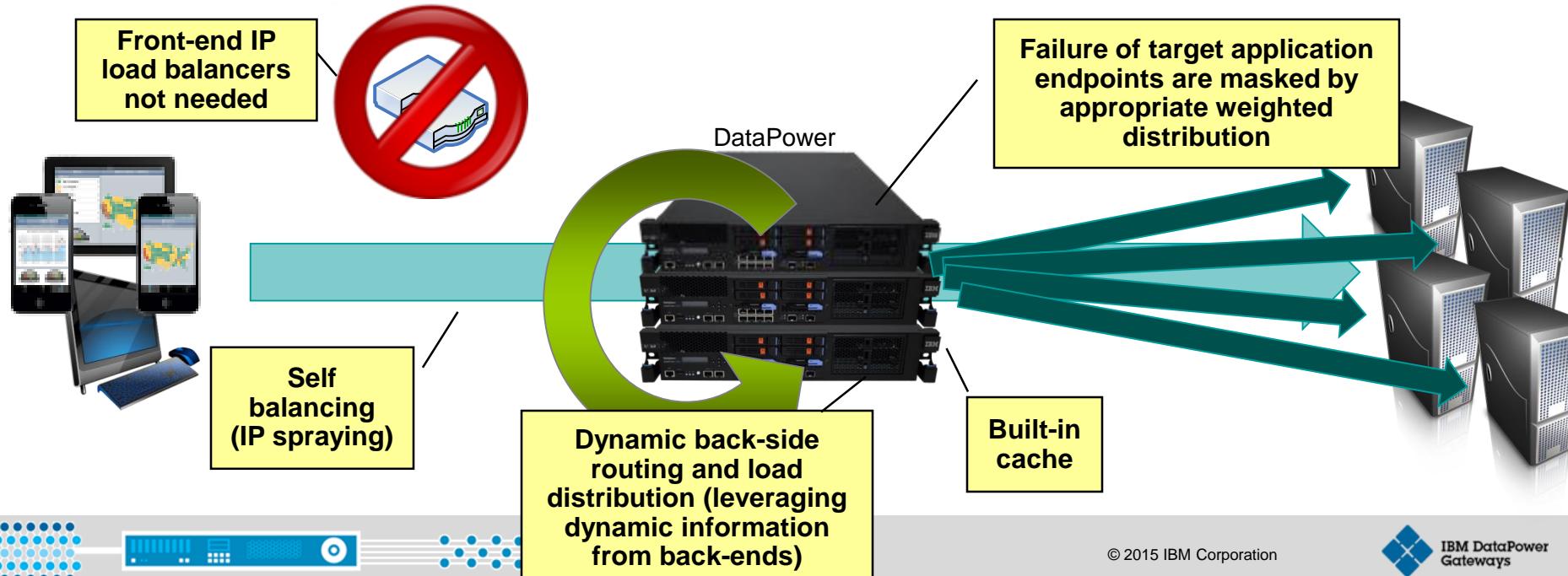
Benefits

- Secure SOA on standards-based platform
- Easily reuse Web services throughout enterprise
- Boosts productivity of IT staff
- Substantially shorten time to market for new services

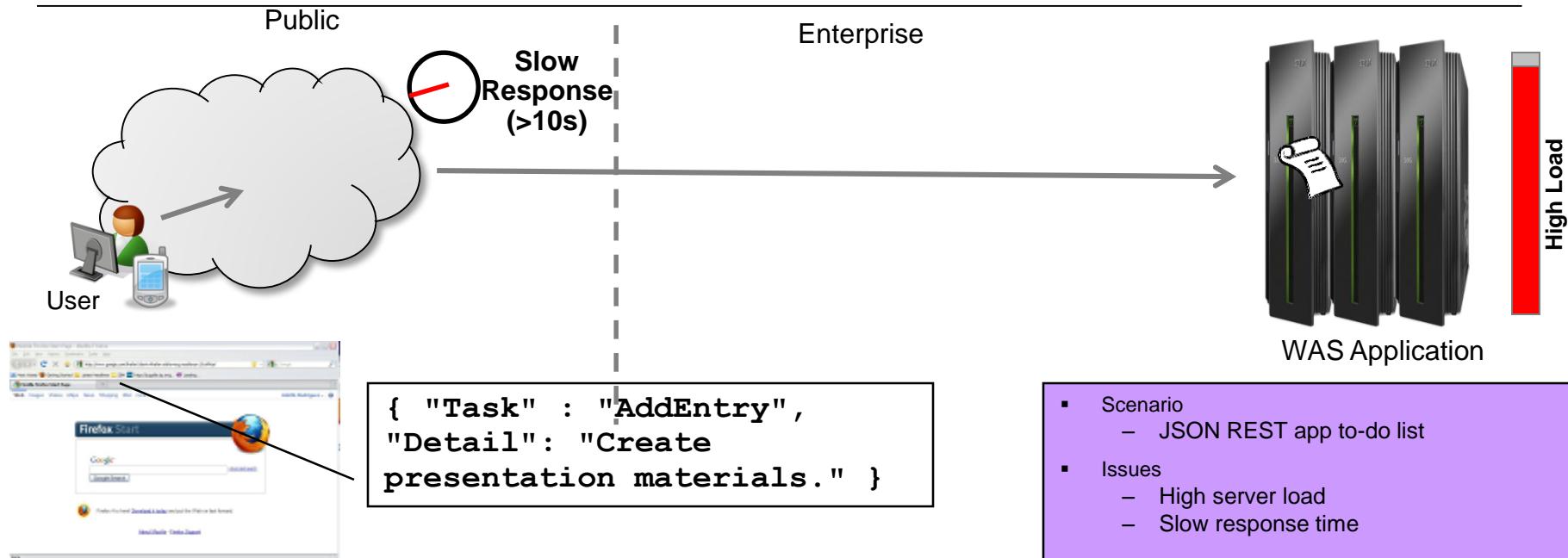


Application Optimization

- **Self Balancing:** Self balance across a cluster of appliances
 - Replace front-end IP load balancer
 - Enables connections to be preserved, without loss, during failover scenario
- Dynamic and **Intelligent Load Distribution** to backend systems
 - Replace backend load balancer
- Auto-discovers application targets and distributes load using **dynamic feedback** mechanism
 - Topology learning for WAS ND and VE
 - Embedded **On Demand Router** for WAS ND environments
- Provides several options for enabling **Session Affinity**
- **Cache** application response data locally or in a caching grid (IBM WXS or XC10)

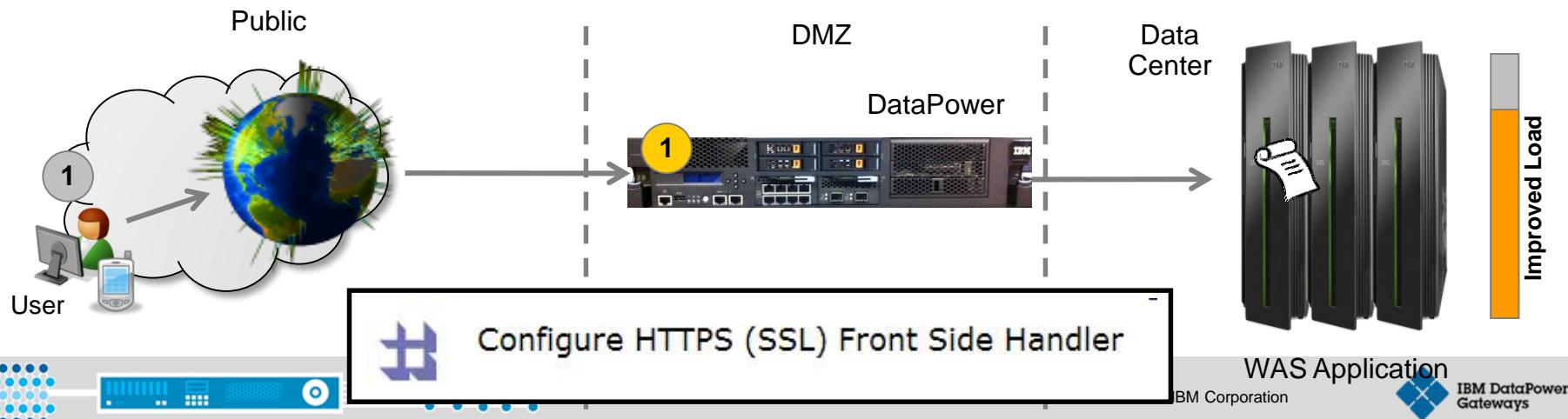


Application Optimization Example



Improve Server Load with SSL Offload

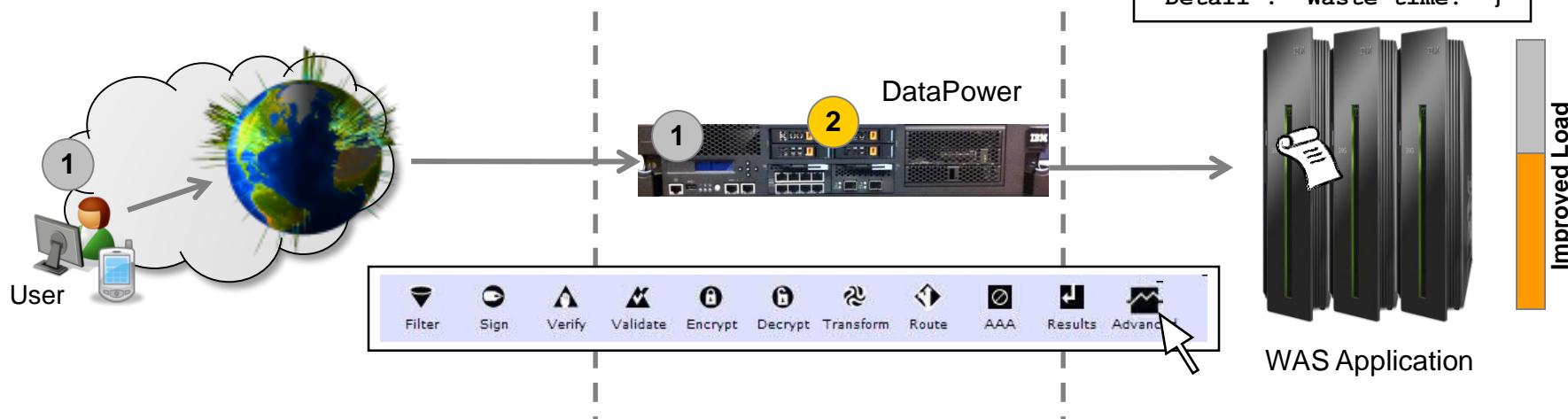
1. Client requests are secured via DP SSL concentrator



Application Optimization Example

Manage Traffic with Application Fluency

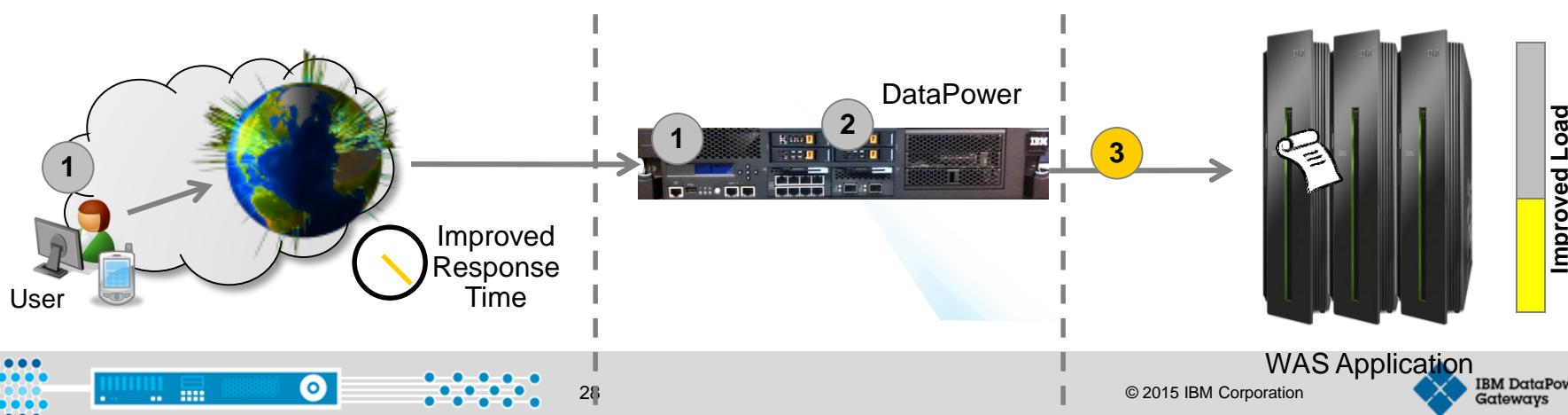
2. DataPower enables application aware traffic management



Distribute Load Intelligently

3. Application Optimization effects load distribution intelligence

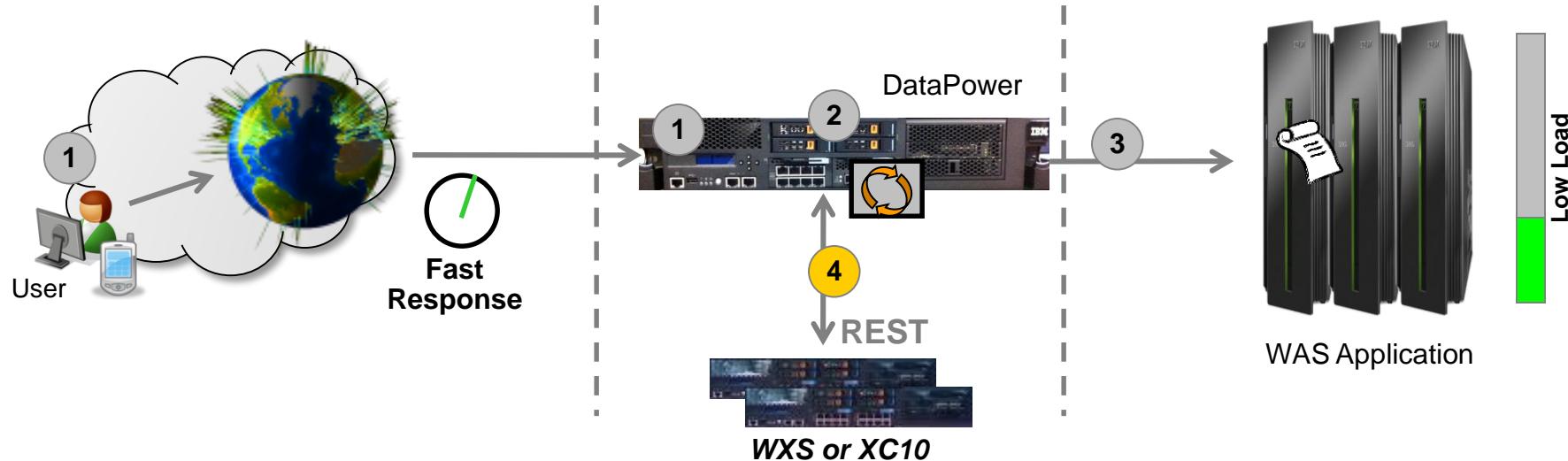
Leverage dynamic runtime conditions to distribute based on topology & workload



Application Optimization Example

Cache at the edge(s)

4. Results are cached at the edge using IBM WXS or XC10 caching grid OR locally on-box

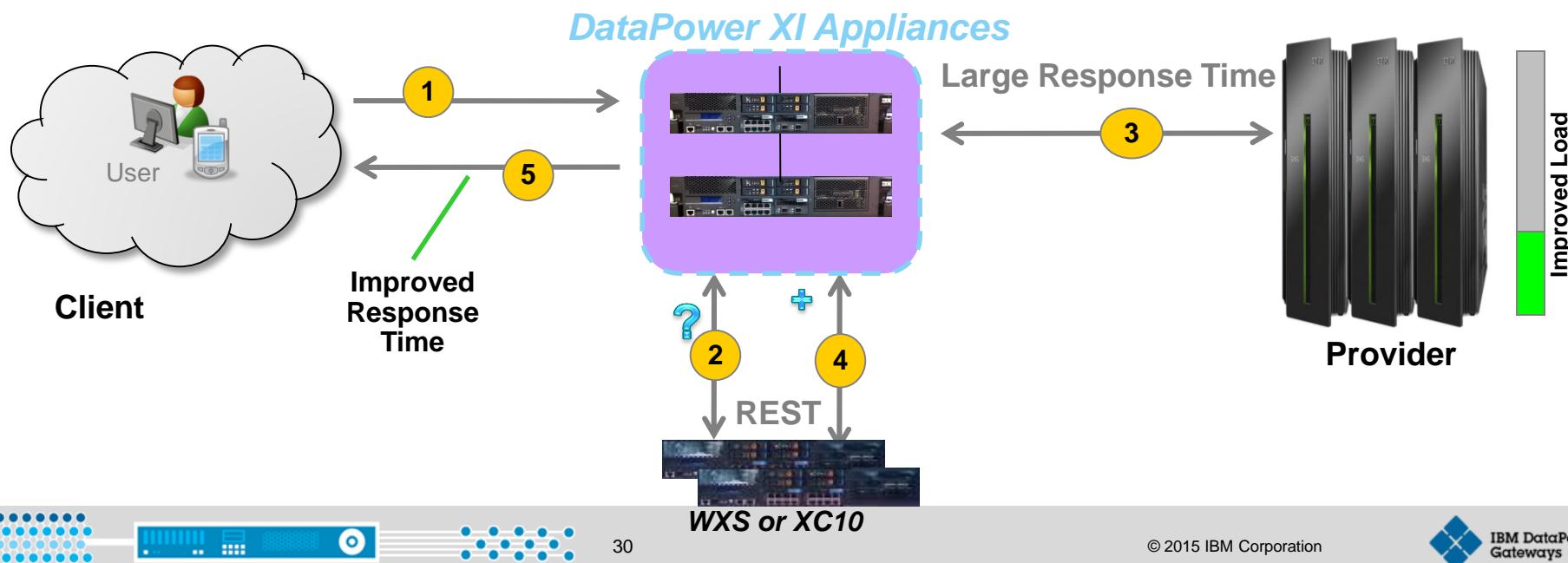


- Faster application response time
- Lower server load
- Improved system throughput



Using IBM WXS or XC10 As a Side Cache For DataPower

1. Client submits application request.
 2. DataPower XI parses request and queries WXS / XC10. On a hit, skip to step 5.
 3. On a miss, XI forwards request to target Provider.
 4. XI adds application response to WXS / XC10.
 5. Client receives response from XI.
- Easily integrates into the existing business process
 - No code changes to the client or back-end application
 - Simply add the side cache mediation
 - Significantly reduces the load on the back-end system by eliminating redundant requests
 - Improve client observed response time



DataPower Gateway + XC10: Travel and Transportation

Online Reservations

100x
performance
improvement



Reservations System

- **Before:** 3-5 sec response time
- **After:** .01 -.05 sec response time
- Caching service requests
- Improved the average response time of the Global Distribution System requests for Fare Availability and Category Availability
- 52% caching rate
- 10 minute cache resulted in 40% reduction in load on the back-end systems
- Maintained high data integrity. Faster responses were also accurate
- POC in 3.5 hrs

Improved reliability and scalability of reservation channels

Reduced traffic to backend systems

Deliver high performance & consistent response times

Scale with simplicity and lower TCO



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- ***Mobile Connectivity***
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Use Case: Mobile Connectivity

Securely & Rapidly connect Mobile Apps with
Enterprise Services



Key Mobile-specific Application & API issues?

Secure



- How to **protect** your back-end systems from harmful workloads and unauthorized mobile users & apps?

Control



- How to **limit & shape** mobile traffic based on service level agreements, and **route** based on message content?

Integrate



- How to **convert** mobile payloads, bridge transports and **connect** to existing services at wire-speed?

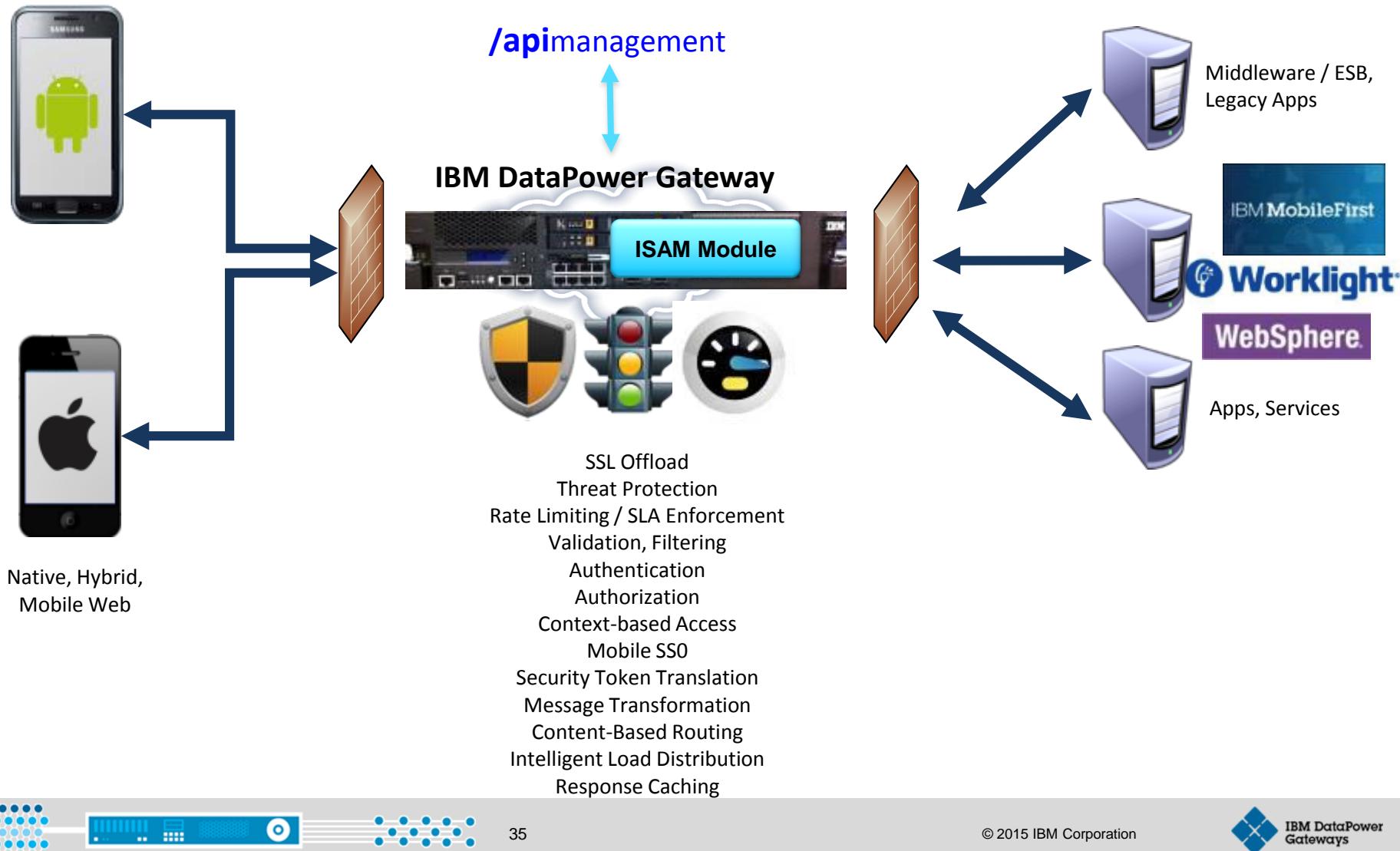
Optimize



- How to **improve** response time, **reduce** load on backend systems and intelligently **distribute** load?

Rapidly Connect Mobile Apps with Enterprise Services

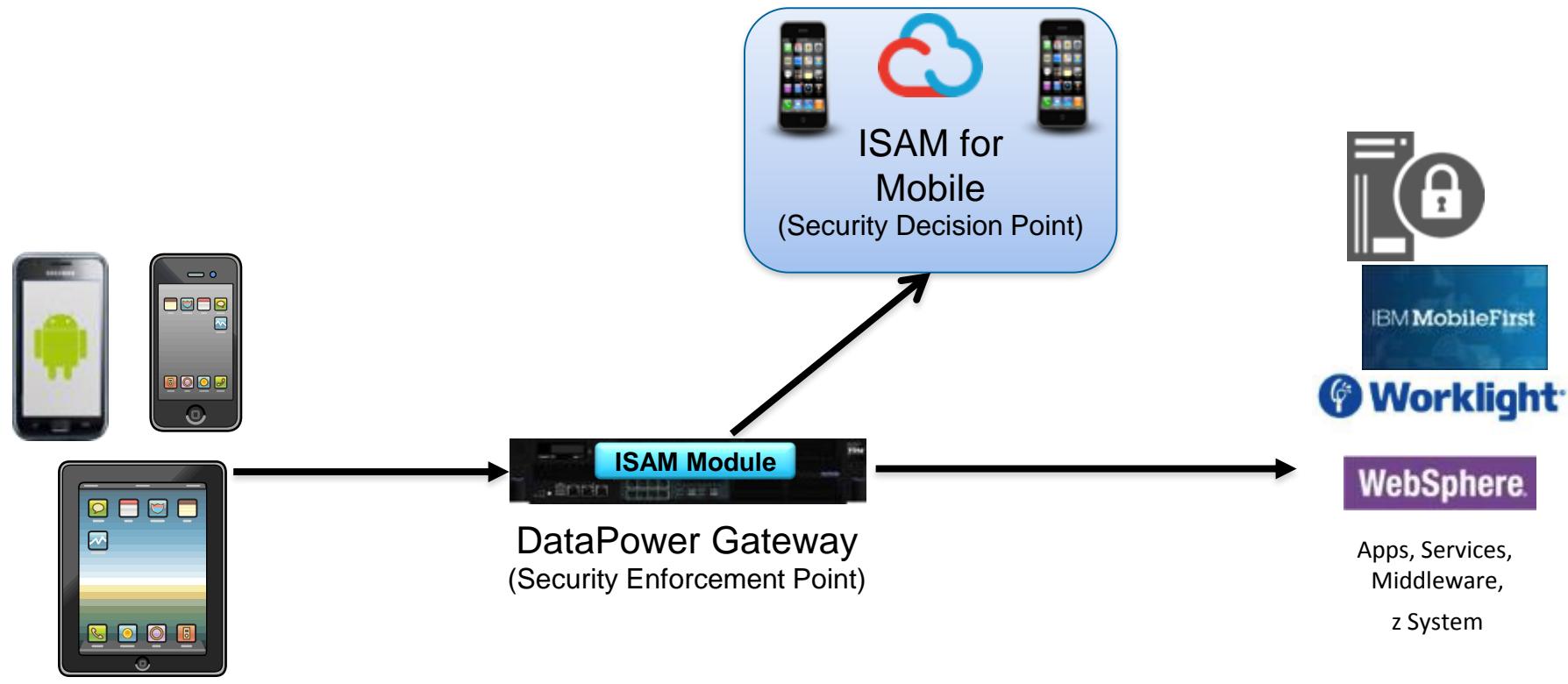
Securely expose enterprise **data & APIs** to Mobile Apps while optimizing delivery



Mobile Gateway solution for on-premise and cloud

Rapidly deliver secure integration & optimized access for **enterprise mobile applications**

- DataPower appliance with ISAM module for **security enforcement, traffic control & management, application acceleration, transport bridging & message transformation**
- ISAM for Mobile as decision point for **context based access (CBA), mobile SSO, strong authentication including one-time password (OTP) & multi-factor authentication (MFA)**



Closer look at some Mobile Connectivity scenarios

REST Service Gateway for Mobile Apps

- SSL offload
- Enforcement point for centralized security policies
 - Authentication, Authorization, OAuth 2.0, Audit
 - Threat protection for XML and JSON
 - Message validation and filtering

- Centralized management and monitoring point
 - Traffic control / Rate limiting
- Routing / Intelligent load distribution to Provider
- RESTful façade to non-REST Provider



Application Acceleration for Mobile Apps

- Offload heavy lifting of message transformation from the Provider
- Transform to a format best suited for the requesting Mobile App
 - JSON for native/hybrid app
 - HTML/XHTML for browser based

- Cache response data from Provider
 - Locally on the appliance
 - Externally to elastic caching XC10



Sportsbet leverages IBM DataPower appliances to drive mobile business growth

Challenges

Business

- Increase demand for mobile services while bolstering security & cost optimization

IT

- Securely integrate mobile apps with e-commerce platform & APIs to address performance, capacity management & decoupling front-end apps from back-end business logic

Benefits

Time to value

- Rapid implementation enabled the business to quickly integrate the middle layer in just 2 weeks vs. 2 months with a competitor's product

Performance

- Processed ~4000 transactions per minute increasing performance 4X

Security & Agility

- Separation of concern between consumer applications & core e-commerce system, through security, translation & transformation logic in the gateway

The Sportsbet logo, featuring the brand name in a stylized orange and white font with ".com.au" below it.

Solution

IBM DataPower appliance XG45 as a mobile security & integration gateway



"DataPower forms our mobile middle layer & our API infrastructure for all future consumer apps"

- Enterprise Architecture Manager, Sportsbet

Sprint leverages IBM DataPower appliances to rapidly & securely grow mobile revenue

Challenges

Business

- Grow mobile revenue while protecting customer privacy and optimizing costs

IT

- Integrate mobile devices, addressing security, speed, scalability and optimization of demand on existing application infrastructure



Solution

- **IBM DataPower Integration Appliance XI52** as a security & integration gateway for external and internal use
- **IBM DataPower Caching Appliance XC10** as a side cache to increase customer responsiveness

Benefits

Time to value

- Drop-in rack-ready solution for rapid deployment enables the business to quickly launch a new mobile device within a month

Scale on demand

- 50 billion transactions/month for external ad gateway
- 1 billion transactions/month for internal users



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Use Case: API Management

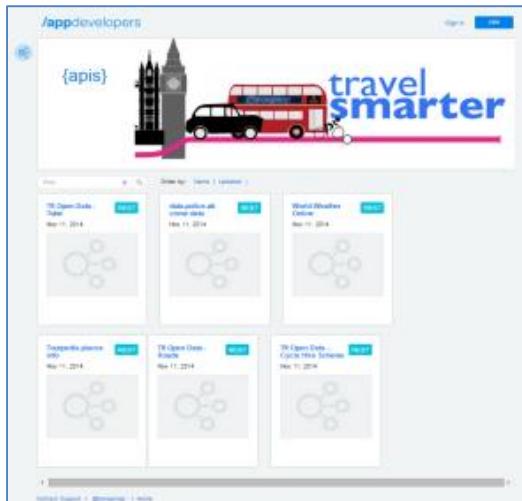
Securely & Rapidly Create, Socialize & Manage
Business APIs to engage with a Developer ecosystem



IBM API Management: One Integrated Platform

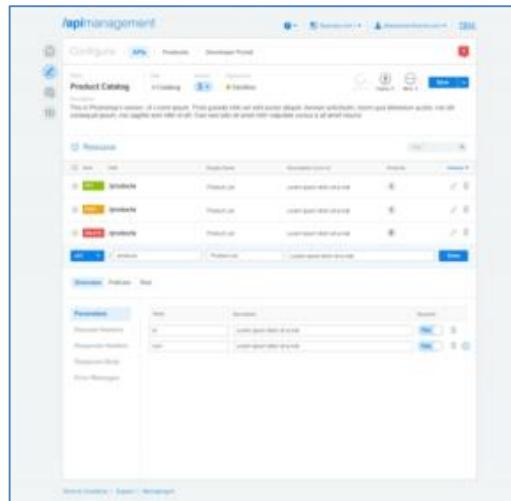
design, secure, control, publish, monitor & manage APIs

Developer Portal



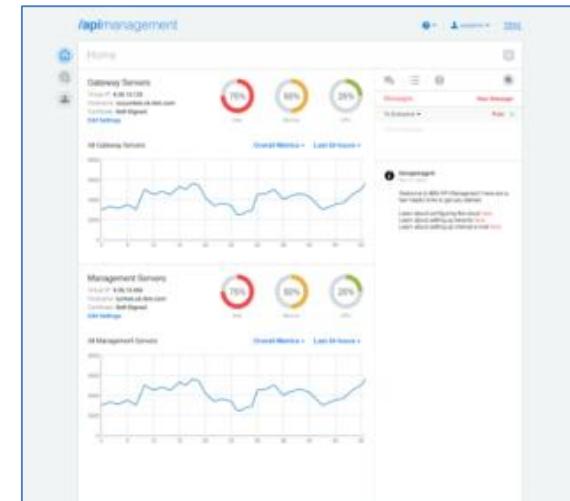
Explore API documentation
Provision application keys
Self-service experience

API Manager



Define and manage APIs
Explore API usage with analytics
Manage API user communities

Management Console



Provision system resources
Monitor runtime health
Scale the environment

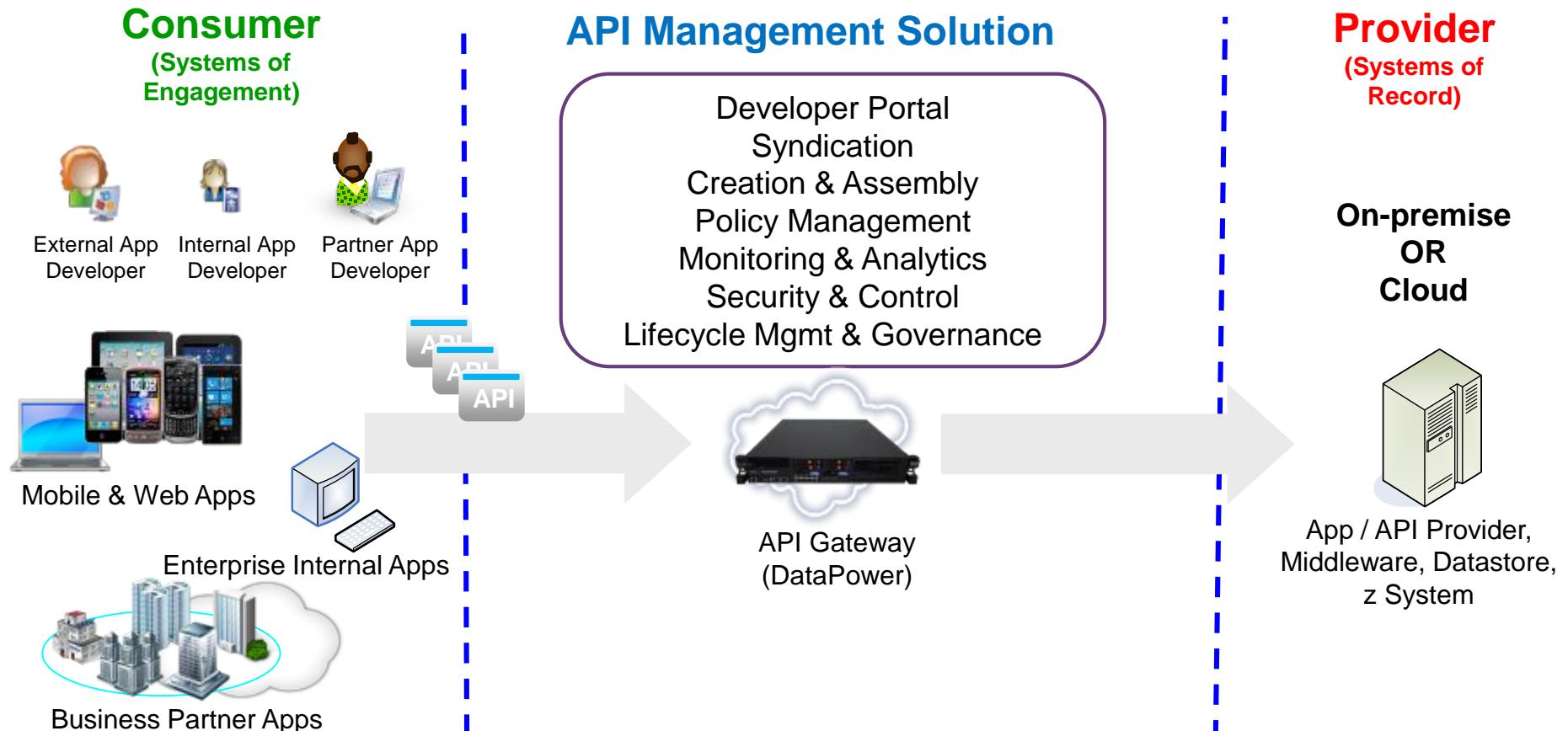


API Gateway
(IBM DataPower)

Enforce runtime policies to control API traffic



API Management



Large Financial institution provides secure mobile access to customer information



Business Challenge

- Accelerate end-to-end mobile application development
- Reduce time to configure and manage software, prepare test environments
- Enhanced analytics on the usage of their services
- Increased performance to handle peak seasonal volumes

Solution

- IBM API Management, DataPower, Worklight, PureSystems

Business Value

- Enhanced user experience enabling quick access to customer information using OAuth authentication replacing custom security solution
- Ability to access backend data through DataPower/API Management using RESTful services
- Easily handle traffic spikes, enabling easier capacity planning



Leading Global Commercial Bank provides easy & secure access to key financial services



Business Challenge

- Difficult for internal partners and developers to discover & access key financial services
- Lacked a standard ecosystem to manage internal partners including global credit card companies and merchants
- No visibility on Service consumption or ability to chargeback for LoB use of Services

Solution

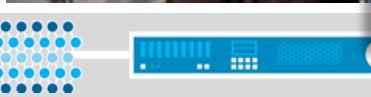
- IBM API Management & DataPower

Business Value

- Offers 3rd party merchants secure standards-based access to key business services as APIs, with a self-service experience
- Provides an internal ecosystem for partners and a central repository with usage analytics
- Drives innovation for Mobile application development



Large Airline in North America provides authorized access to flight services



Business Challenge

- ❑ External business partners retrieve flight information by scraping the company's website
- ❑ Unauthorized access to full flight information , with no usage analytics
- ❑ Delays in updating website – difficult for authorized partner to test changes
- ❑ REST-based API had just been built but security was not in place

Solution

- ✓ IBM API Management & DataPower

Business Value

- ✓ Easily and securely connect company Website to new APIs, saving cost of building OAuth based secure access
- ✓ Enable secure exposure of APIs to External Business Partners, saving the implementation cost of building a developer support infrastructure with access management
- ✓ Ability to leverage existing investment in IBM DataPower gateway and internal team skillset
- ✓ Enable secure Mobile app integration with Enterprise APIs

Leading European Auto Manufacturer provides innovative vehicle connectivity with IBM API Management



Business Challenge

- ❑ Offer innovative connectivity services to customers, improve the driver experience, improve safety, and create new revenue sources
 - ❑ Improve driving conditions with driver profiling, eco-driving, fleet management, reduce accident risk
 - ❑ Collect data to monetize them for partners

Solution

- ✓ IBM API Management, DataPower & MessageSight

Business Value

- ✓ “Always connected” low-latency reliable communications with the car systems/apps and customer mobile apps
- ✓ Vehicle data APIs published on secure developer portal
- ✓ Internal & external developers use vehicle data to develop mobile applications
- ✓ Drives innovation for Mobile application development



Leading Retailer in North America provides easy & secure access to retail services



Business Challenge

- Difficult for internal partners and developers to discover & access key retail services
- Leverage mobility as a revenue stream and manage internal and external business partners
- No visibility on Service consumption or ability to chargeback for LoB use of Services

Solution

- IBM API Management & DataPower

Business Value

- Offers 3rd party merchants secure standards-based access to key business services as APIs, with a self-service experience
- Provides an internal ecosystem for partners and a central repository with usage analytics
- Drives innovation for Mobile application development



Agenda



- DataPower Gateway Overview
- Security & Optimization Gateway
- Mobile Connectivity
- API Management
- ***Integration***
- Mainframe Integration & Enablement
- B2B



Use Case: Enterprise Integration

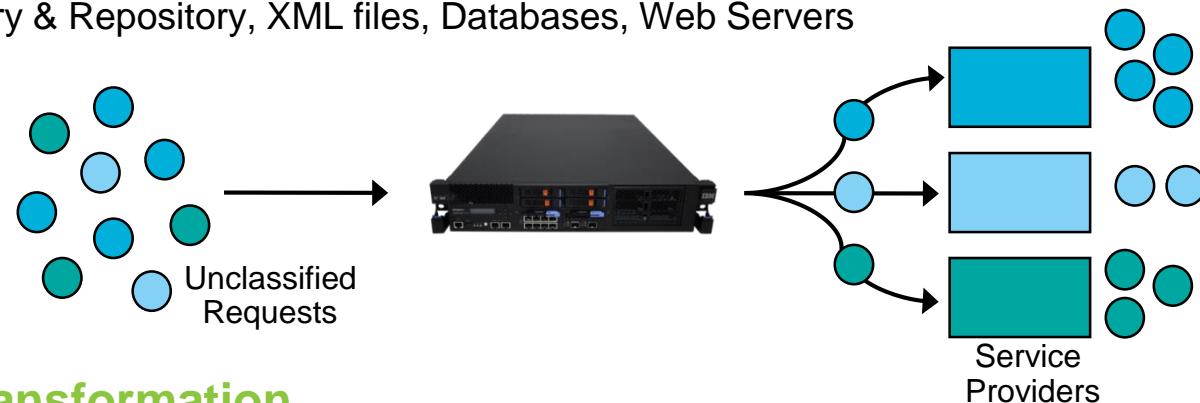
Consumable integration solution for securely connecting applications & services while optimizing delivery of workload



Integration

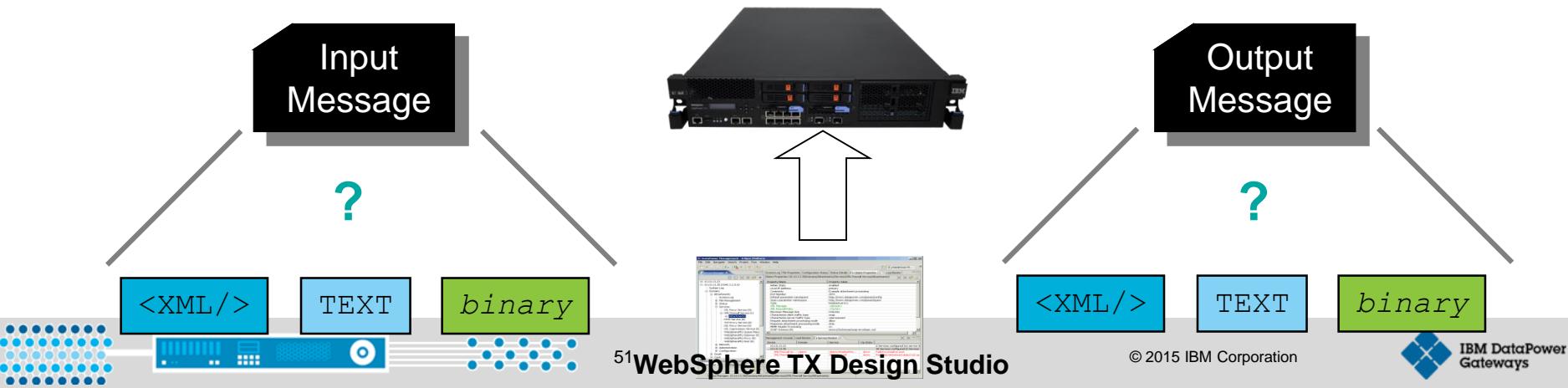
Content-Based Routing

- Dynamically route based on **any** message content
 - Attributes such as the originating IP, requested URL, protocol headers, etc.
 - Data within the message such as SOAP Headers, XML, Non-XML content, etc.
- Query **a repository** for routing information
 - WebSphere Service Registry & Repository, XML files, Databases, Web Servers



Any-To-Any Message Transformation

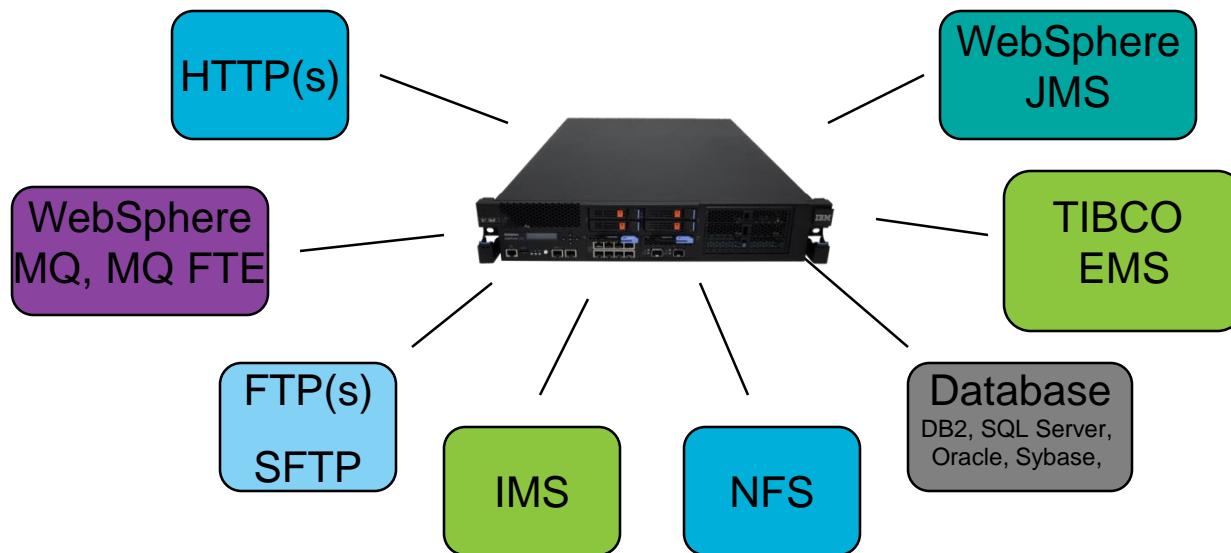
- Transform the **message format** with ultimate flexibility
 - Leverage **WebSphere Transformation Extender** for data mapping



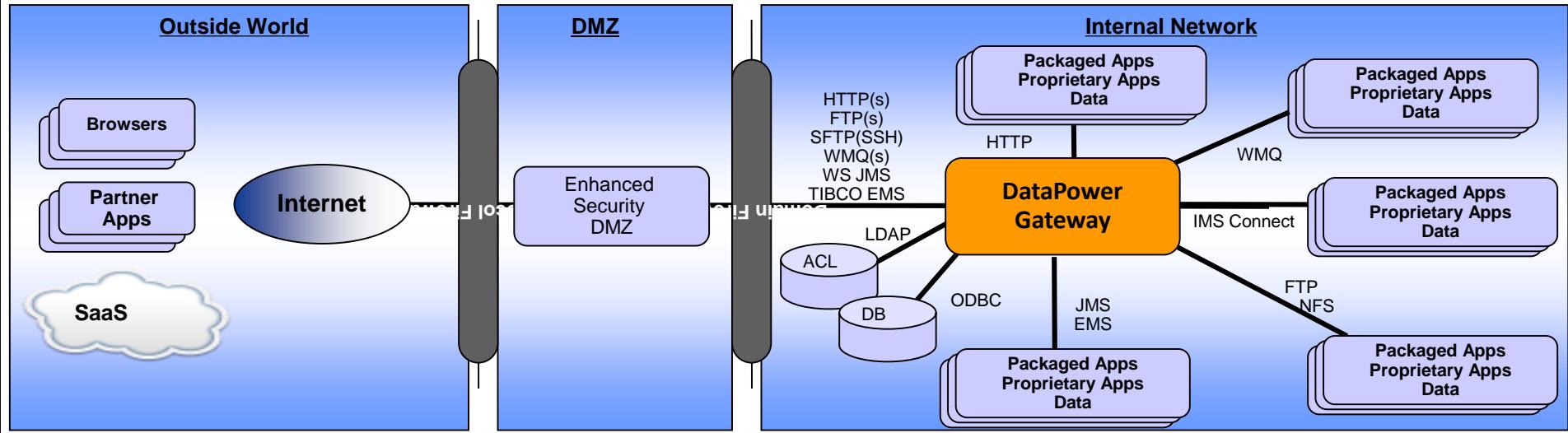
Integration

Transport Protocol Translation

- Integrate disparate **transport protocols** with extreme ease
 - No dependencies between inbound “front-side” and outbound “back-side”
 - Examples: HTTP(s), WebSphere MQ, WebSphere MQ FTE, WebSphere JMS, Tibco EMS, SFTP, FTP(s), NFS, IMS, Database (DB2, Oracle, Sybase, SQL Server)
- Support synchronous, asynchronous, pub-sub, assured-delivery, once-and-only once message patterns



Integration



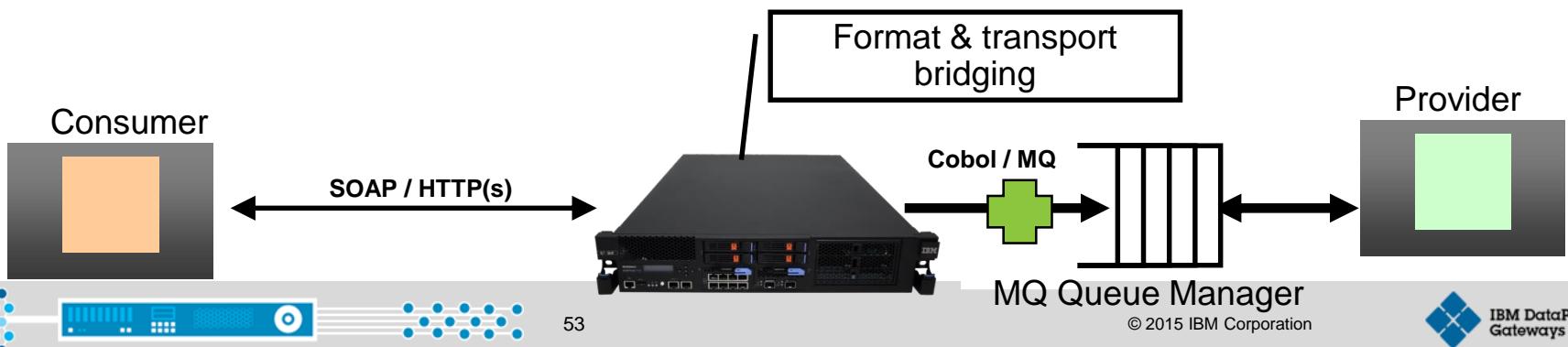
- Content based routing
- Message enrichment
- Message transformation
- Transport protocol translation

Integration Scenario

- AAA, Threat protection
- Message validation & filtering
- Traffic control / Rate limiting

- Intelligent content based routing
- Intelligent load distribution
- Local and distributed caching

Message Format & Transport Protocol Mediation Example



UK Government Agency

Enables integration capabilities using DataPower

Challenge

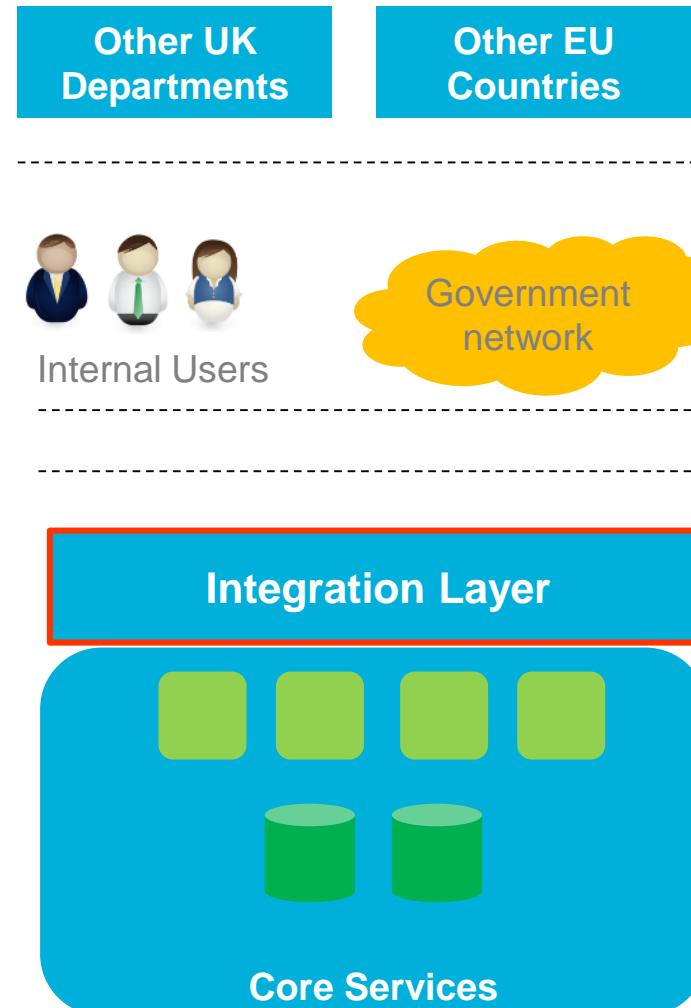
- Data held in the back-end systems vital to delivering citizen services, fraud detection across various layers of the Governments across the EU
- Vulnerable back-end services
 - Security
 - Capacity/ SLA
- Consistent usability experience for internal or external service consumers

Solution

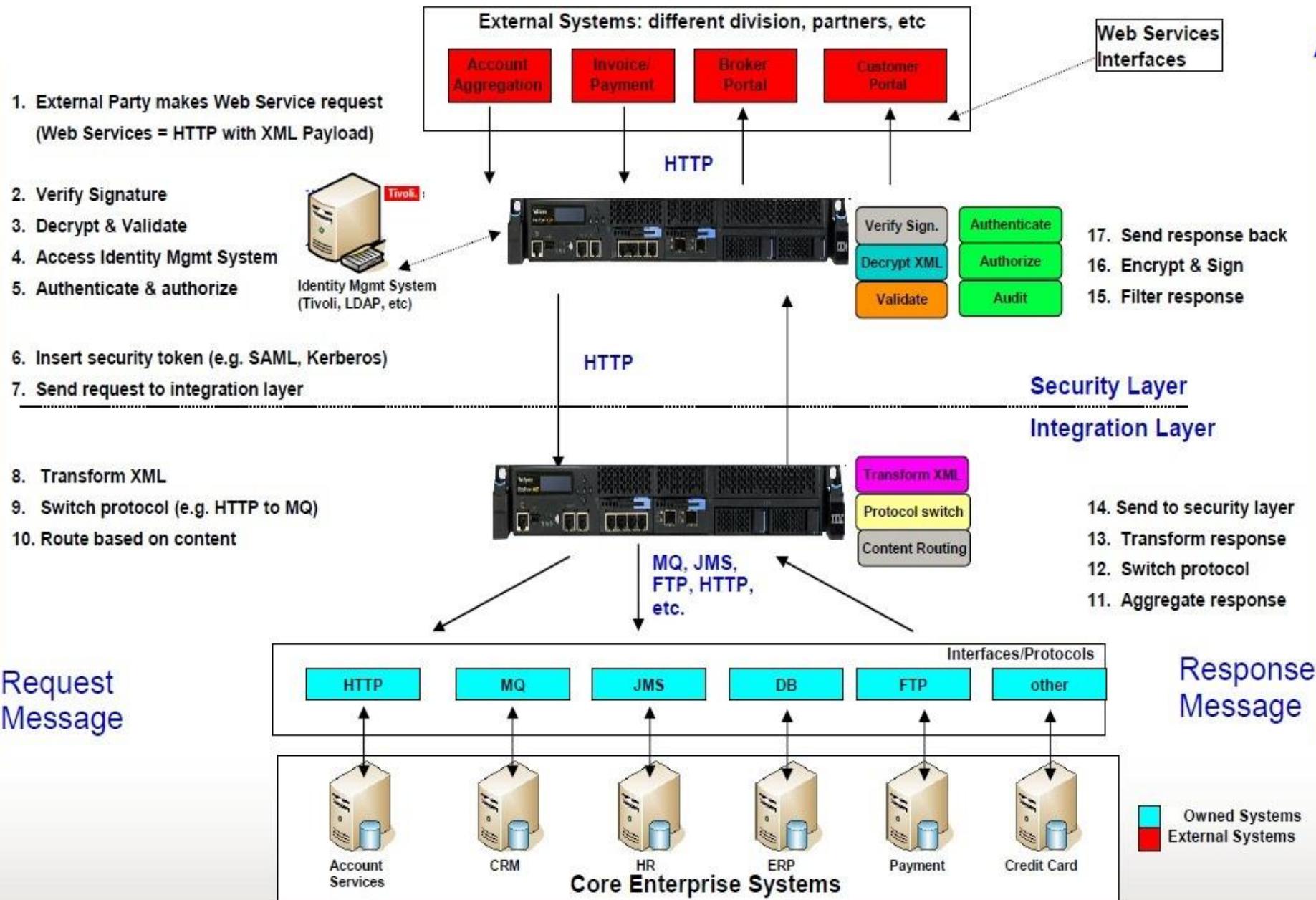
- DataPower in key network zones within and outside of the department
- Thorough content-based validation, routing, and security policy enforcement
- Integrated seamlessly into heterogeneous environment increasing interoperability & promoting reuse

Benefits

- Ease of integration
- Security assurance of the architecture
- Secure SOA on standards-based platform
- Consistent experience and policy for all users

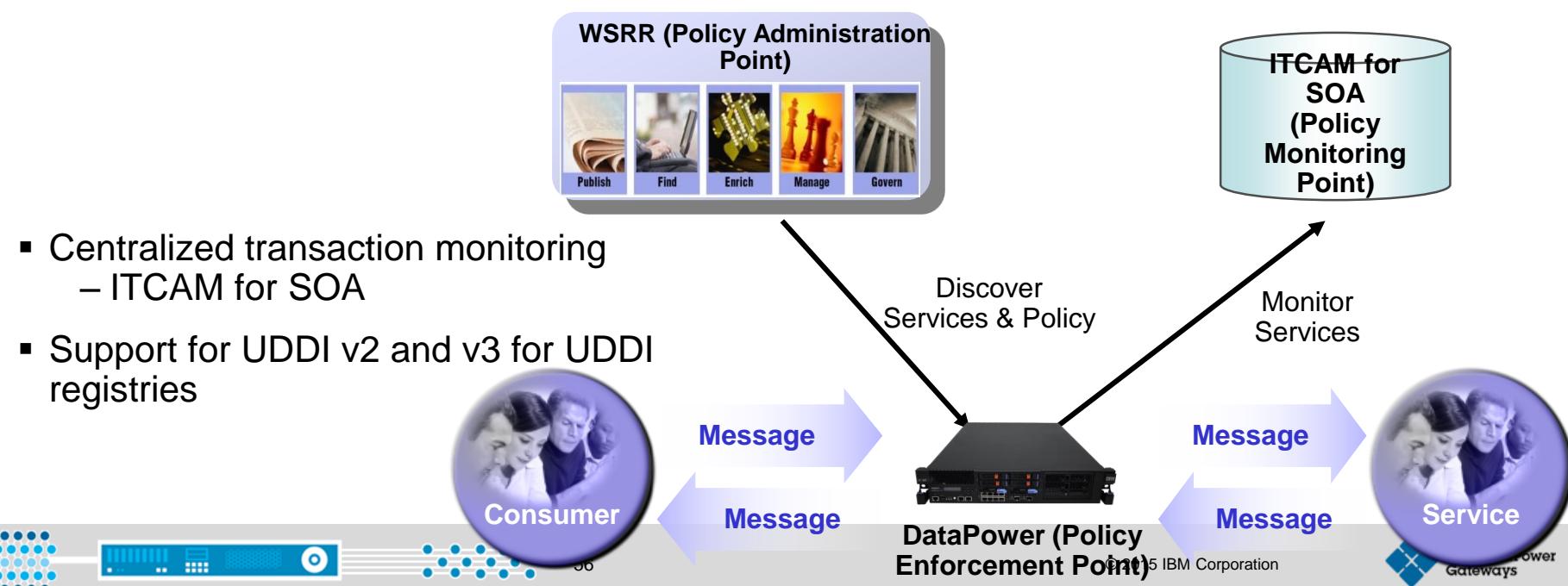


Security & Integration Scenario – Financial Firm



Centralized Service Governance & Policy Enforcement

- Use WebSphere Service Registry & Repository (WSRR) to store, publish, and govern your web services
 - DataPower can subscribe or poll web services information from WSRR
- Automatically expose services and policies in DataPower via WSRR subscription
 - Include WS-Policy, WS-Security Policy statements via WS-PolicyAttachment
 - Retrieve WSDLs by specific version number
- Dynamically retrieve run-time routing information from WSRR
- Complete **SOA Governance** solution
 - WSRR for web service life-cycle policy management
 - DataPower for web service run-time policy enforcement



Agenda



- DataPower Gateway Overview
- Security & Optimization Gateway
- Mobile Connectivity
- API Management
- Integration
- ***Mainframe Integration & Enablement***
- B2B



Use Case: Mainframe integration & enablement

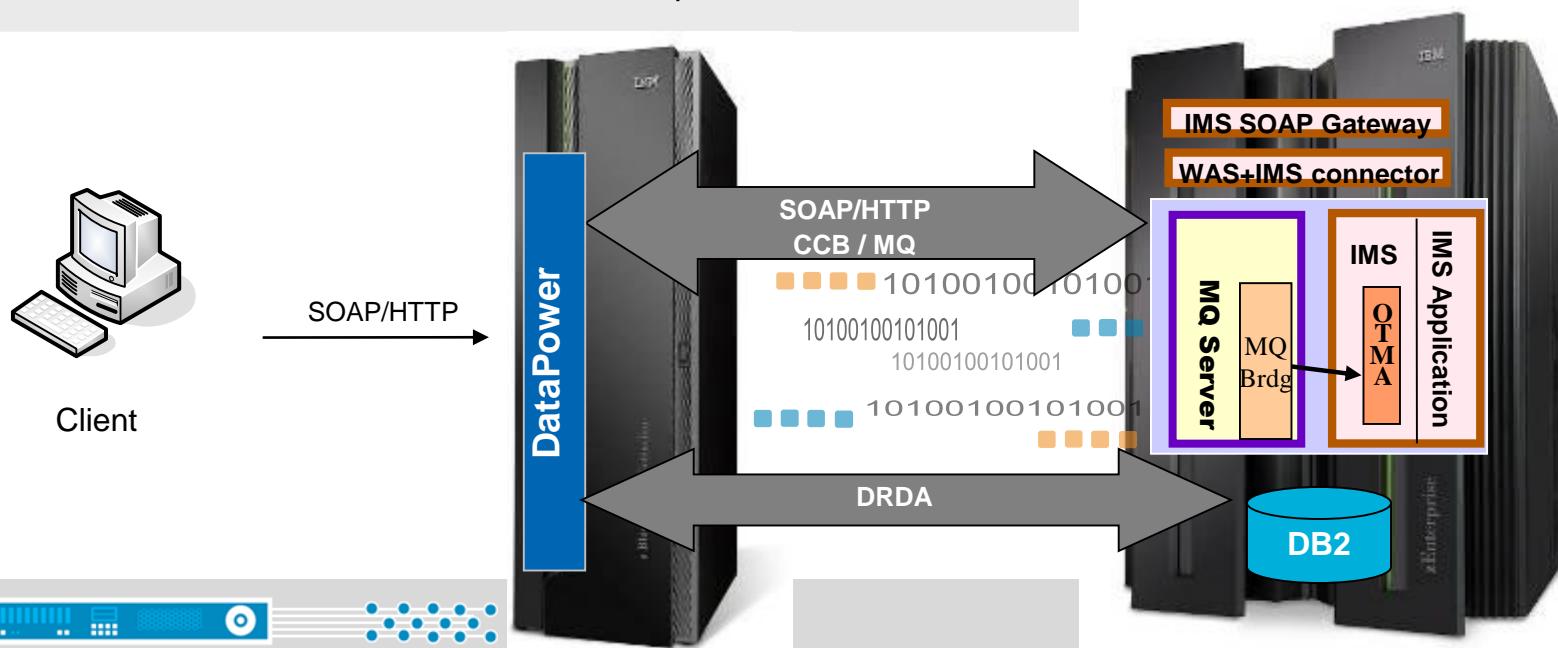
Offload processing for reduced MIPS

Web Services Enablement for IMS, CICS, DB2



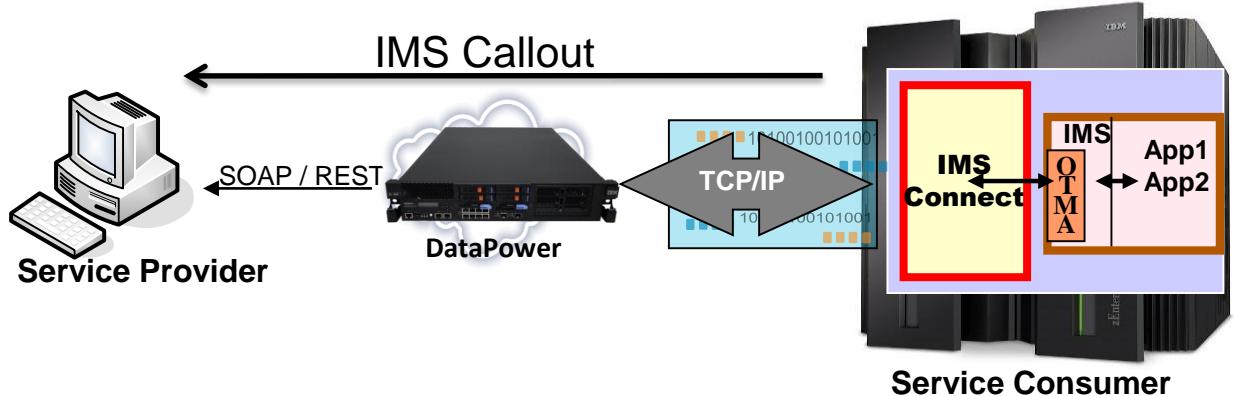
Broad integration with System z

- Connect to existing applications over WebSphere MQ, HTTP
- Transform XML to/from COBOL Copybook for legacy needs
- Integrate with RACF security from DataPower AAA
- Dynamic crypto material retrieval & caching, or offload crypto ops to z
- Connect to IMS
 - Via IMS Connect client
 - Via Web Services
 - Via WebSphere MQ
 - Via IMS DB
 - Connect from IMS via “Callout”
- Connect to CICS
 - Via WebSphere MQ
 - Via Web Service
- Connect to DB2
 - Via Web Service
 - Via direct ODBC call with ODBC Client option

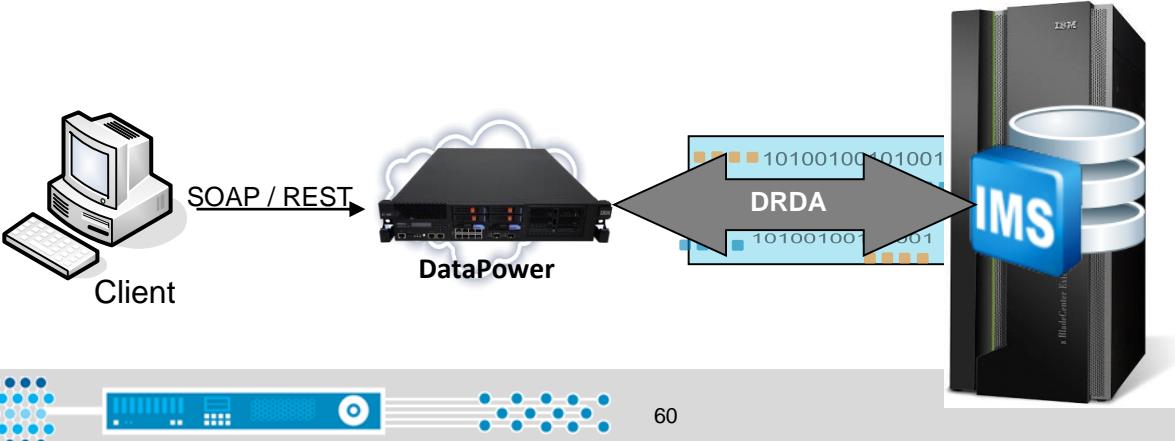


Enhanced value for System z & IMS

- **IMS Callout** feature allows IMS transactions to easily consume *external web services* via DataPower, with minimal application updates required



- **IMS DB** feature supports DataPower integration with IMS database through SQL interface
 - Enrich messages with database content
 - Expose data as a service to remote applications



SQL Data Source

Apply Cancel

Name *

Administrative State enabled disabled

Comments

Database Type *

Connection User Name *

Connection Password *

Data Source ID *

Data Source Host *

Data Source Port *

An Irish Bank

Enabling retail banking

Challenge

- Retail application contained 7000 screens; slow response times over dedicated proprietary network.
- Cost of processing XML on the mainframe.
- Message transformation needed before the core banking platform could process requests.

Solution

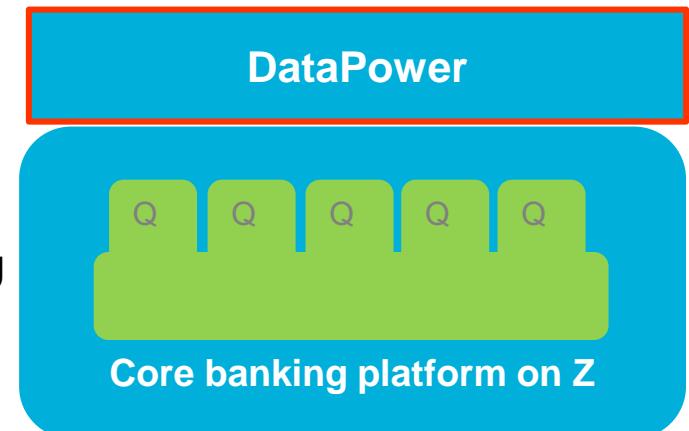
- DataPower in trusted network exposed services for XML/ HTTP(S) and protocol bridging to WebSphere MQ
- Message validation and transformation using WebSphere Transformation Extender (WTX)

Benefits

- Retail application acceleration through transformations and caching
- Optimized platform for handling, parsing and processing payloads



Branch Application (web based)



High Street Clothing and Fashion Accessories Retailer

Increase customer interaction and loyalty

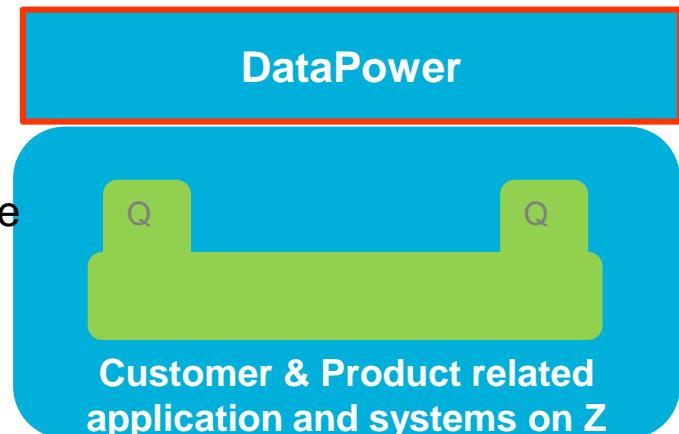
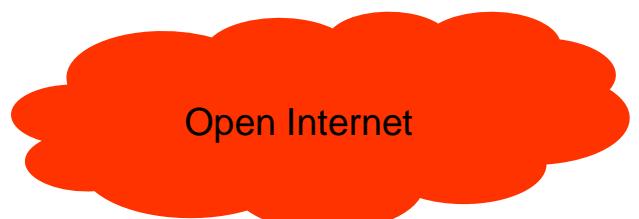
Challenge

- Highly competitive industry; first mover advantage
- Weak customer loyalty
- Multi channel customer experience
- Complex supply chain and service providers



Solution

- DataPower acted as a reverse proxy for:
 - Outbound messages via a service provider
 - Inbound customer updates/ delivery notifications
- Transform SOAP/ XML payload to COBOL copybook messages for CICS application



Benefits

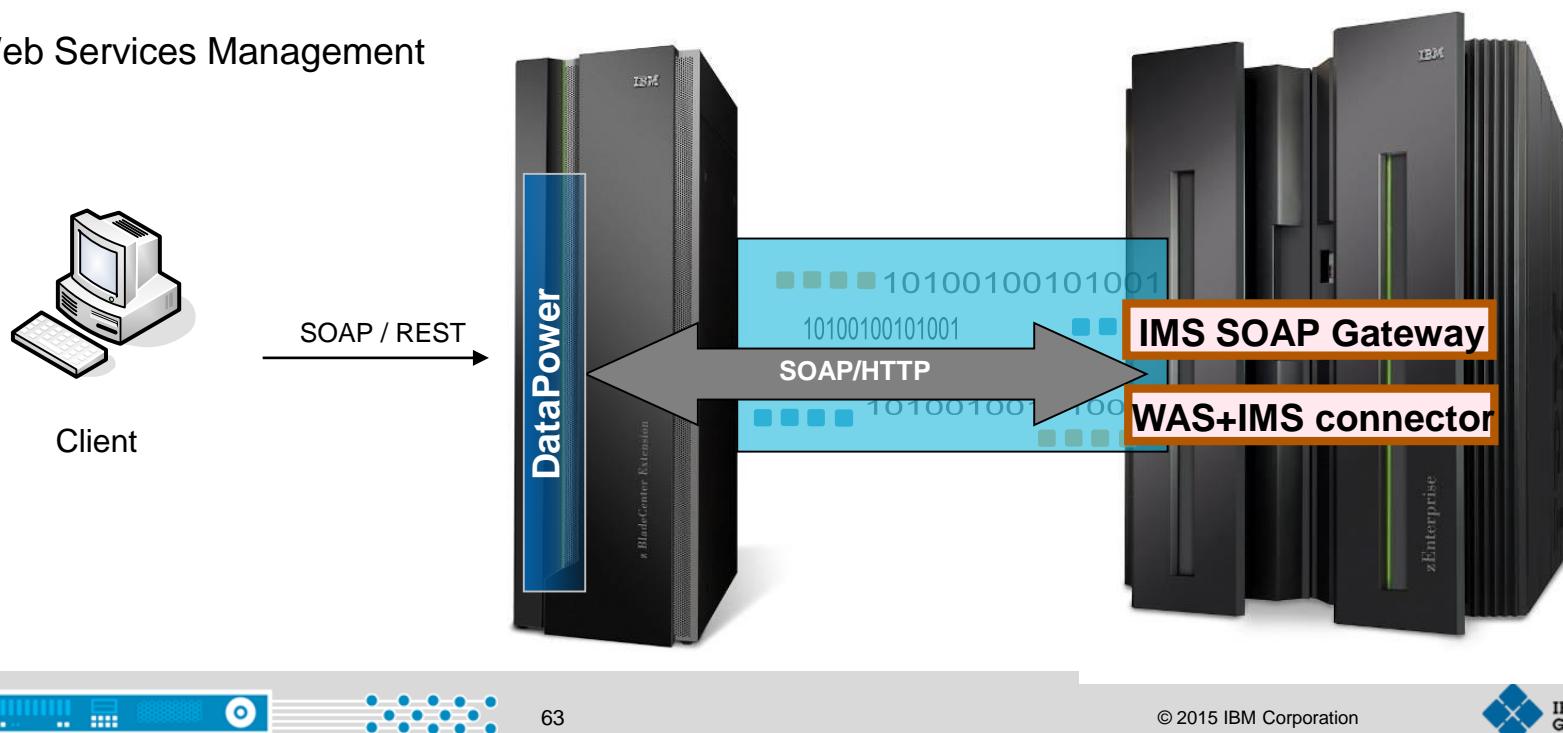
- Create customer interaction and value through innovative business strategy.
- Integrate various suppliers using standards based interfaces securely.
- Graphical configuration driven appliance; short learning curve



IMS Integration

Web Services Security and Management for IMS Web Services

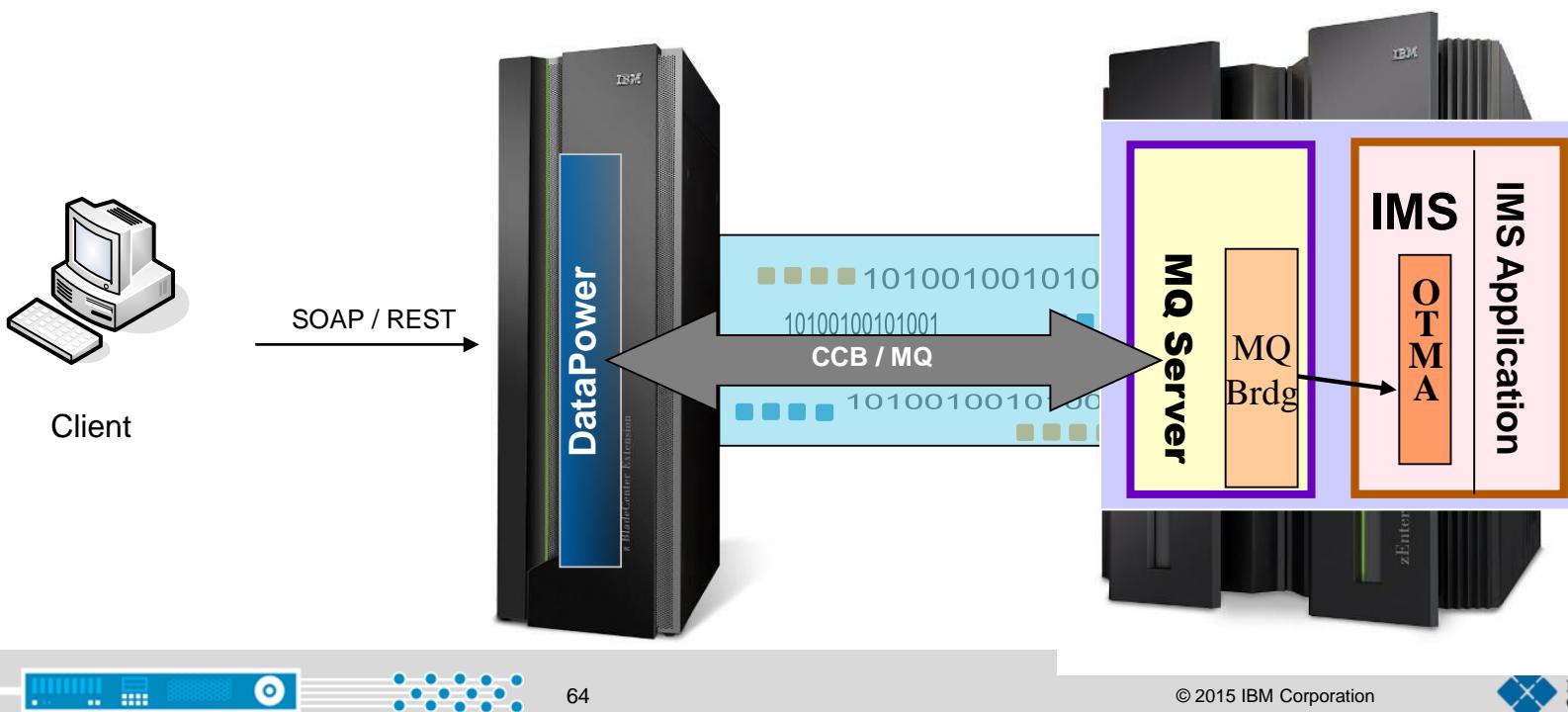
- Content-based Message Routing
- Protocol Bridging (HTTP, MQ, JMS, FTP, etc.)
- XML/SOAP Firewall
- Data Validation
- Field Level Security
- XML Web Services Access Control/AAA
- Web Services Management



IMS Integration

Web Services Enablement for IMS-based Services

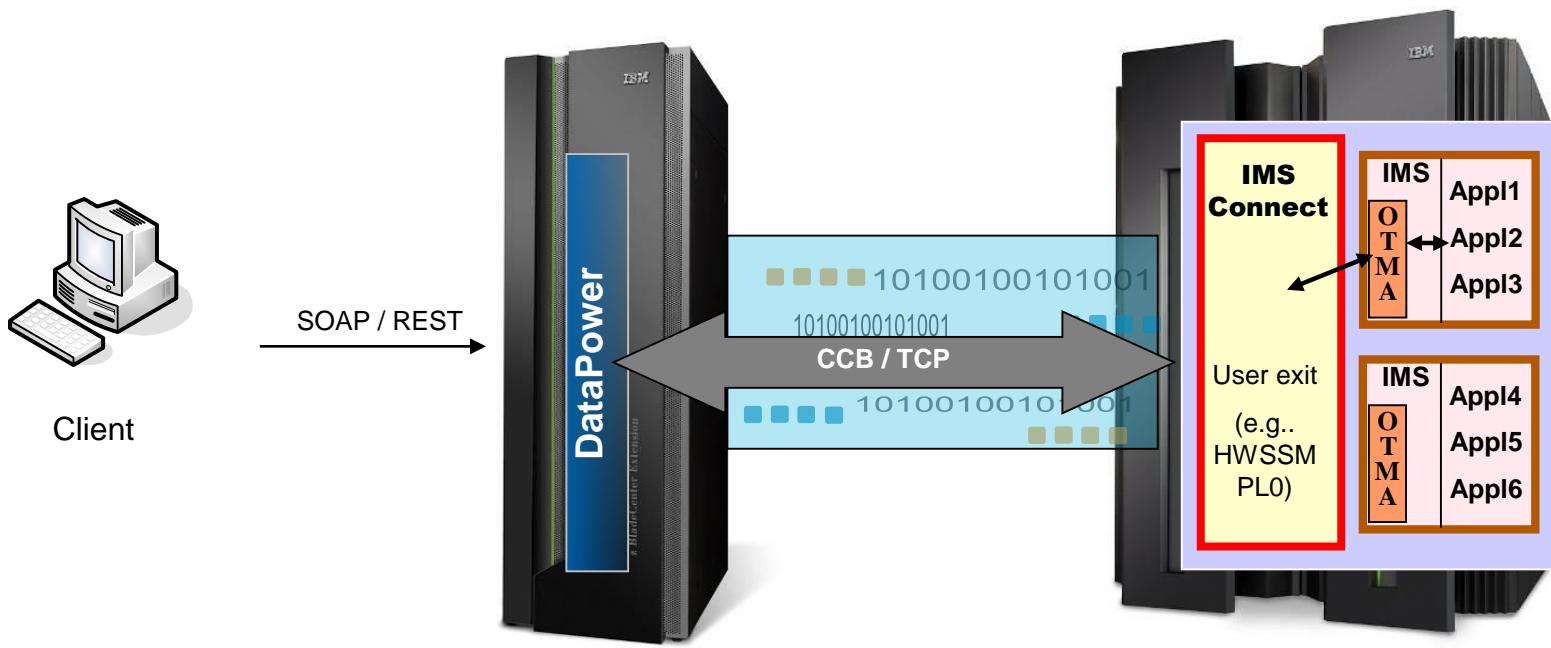
- DataPower provides WS-enablement to IMS applications
- User codes schema-dependent WTX data map to perform request/response mapping
- Requires WebSphere MQ for z/OS
 - MQ bridge to access IMS
 - MQ connectivity is embedded in DataPower



IMS Integration

Web Services Enablement for IMS-based Services (cont'd)

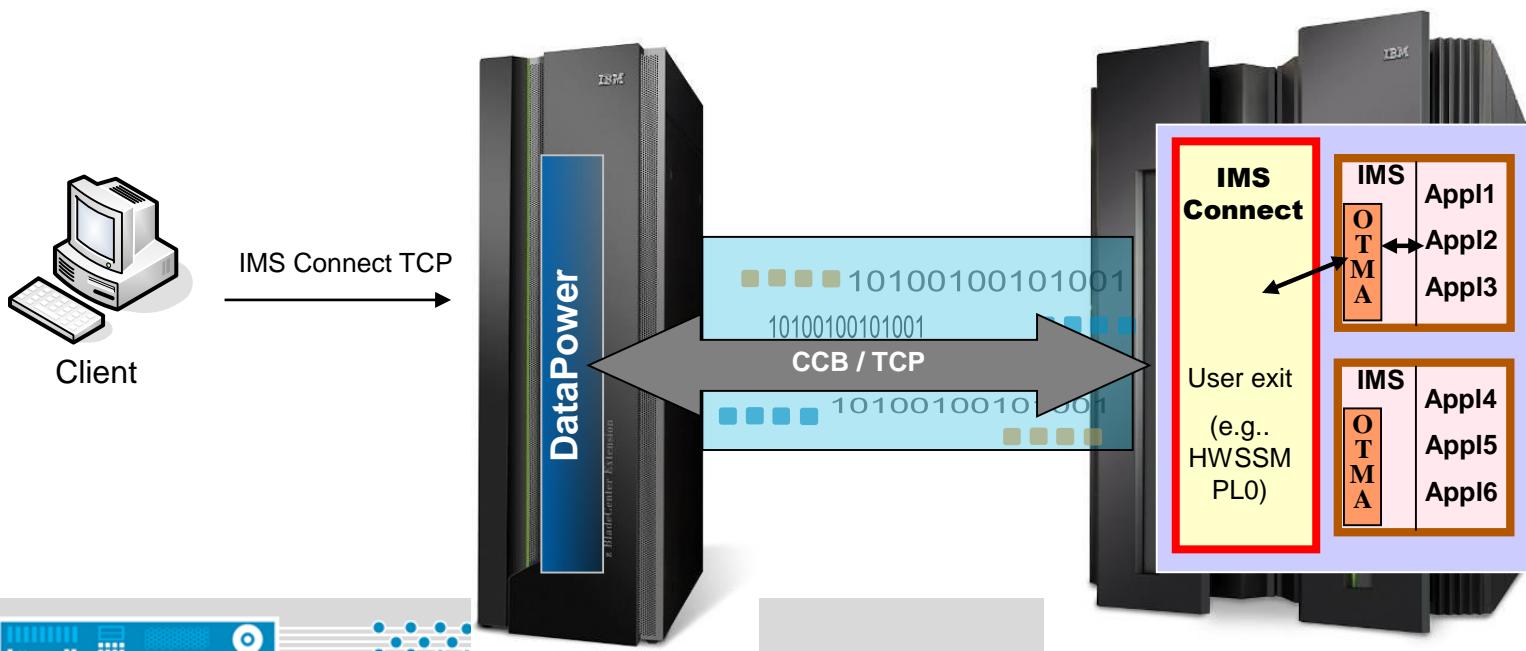
- DataPower provides WS-enablement to IMS applications
- User codes schema-dependent WTX data map to perform request/response mapping
- “IMS Connect Client” (back-side handler) natively connects to IMS Connect using its custom request/response protocol



IMS Integration

IMS Connect Reverse Proxy

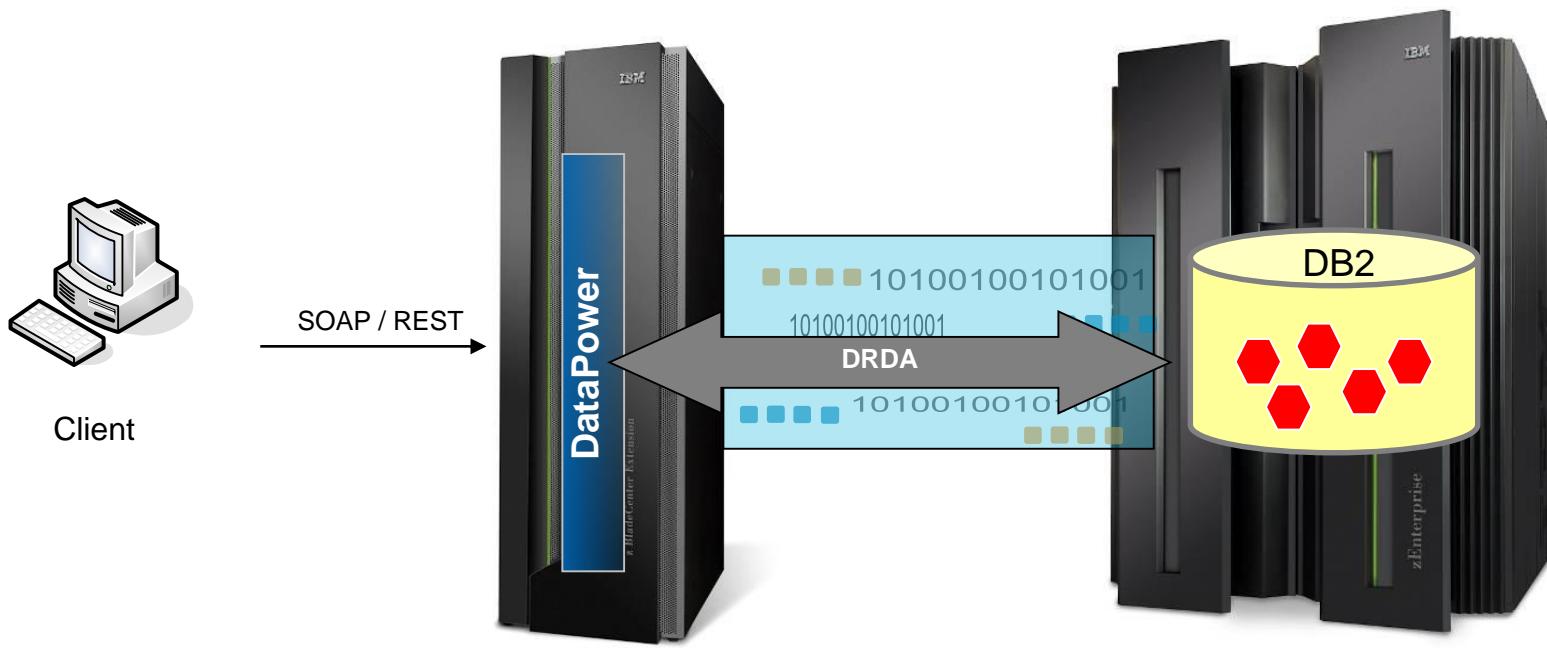
- Bring DataPower value add to standard IMS connect usage patterns
- Provide an “IMS Connect Client” on DataPower that natively connects to IMS Connect
- Provide an “IMS Connect Server” on DataPower that accepts IMS Connect client connections and provides an intermediation framework that leverages DataPower
 - Enables authentication checks, authorization, logging, SLM, transformation, route, DB look-up, SSL offload, etc.



DB2 Integration

“Information as a Service”

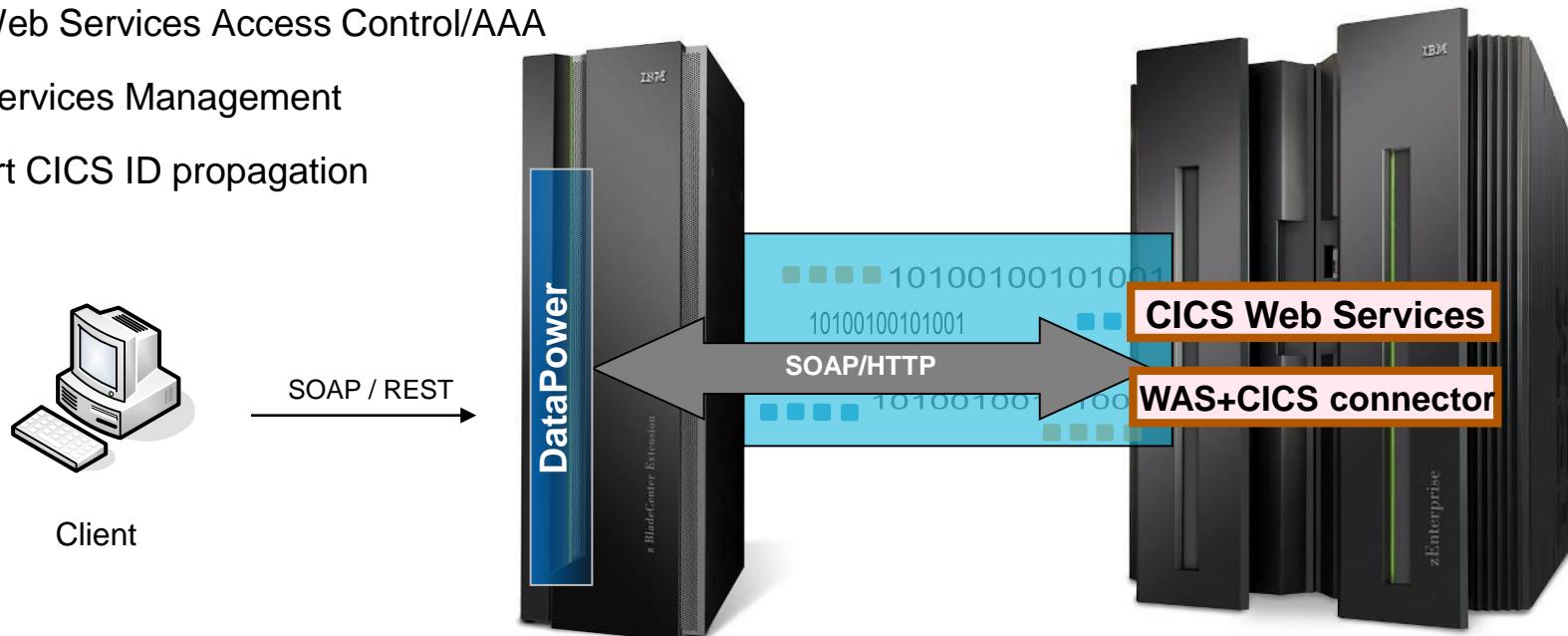
- DataPower provides a standard WS façade to DB/2
 - Common tool (IBM Data Studio 1.2+) to generate WSDL and data mapping in both Data Web Services runtime and DataPower
 - SOAP call is mapped to an ODBC (DRDA) invocation
- Exposes database content (information) as a service
- Leverages extensive Web Services security and management capabilities of DataPower to more securely expose critical data to the enterprise



CICS Integration

Web Services Security and Management for CICS Web Services

- Content-based Message Routing
- Protocol Bridging (HTTP, MQ, JMS, FTP, etc.)
- XML/SOAP Firewall
- Data Validation
- Field Level Security
- XML Web Services Access Control/AAA
- Web Services Management
- Support CICS ID propagation

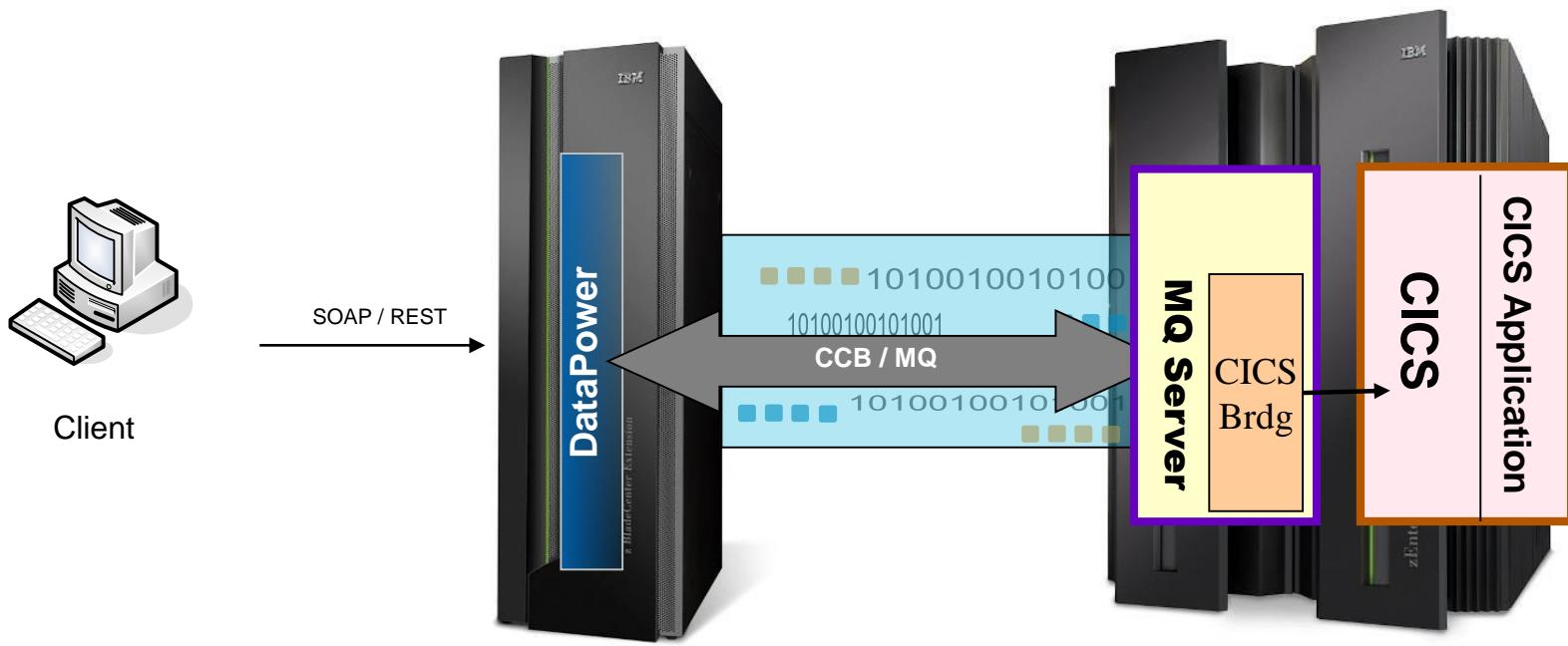


Generate an ICRX for a z/OS Extended Identity Token	<input checked="" type="radio"/> on <input type="radio"/> off
Actor/Role Identifier	<input type="text" value="testRole"/>
ICRX Realm	<input type="text" value="testRealm"/>

CICS Integration

Web Services Enablement for CICS Applications

- DataPower provides WS-enablement to CICS applications
- User codes schema-dependent WTX data map to perform request/response mapping
- Requires WebSphere MQ for z/OS
 - MQ bridge to access CICS
 - MQ connectivity is embedded in DataPower



Agenda



- DataPower Gateway Overview
- Security & Optimization Gateway
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- API Management
- Integration
- Mainframe Integration & Enablement
- **B2B**



Use Case: B2B integration

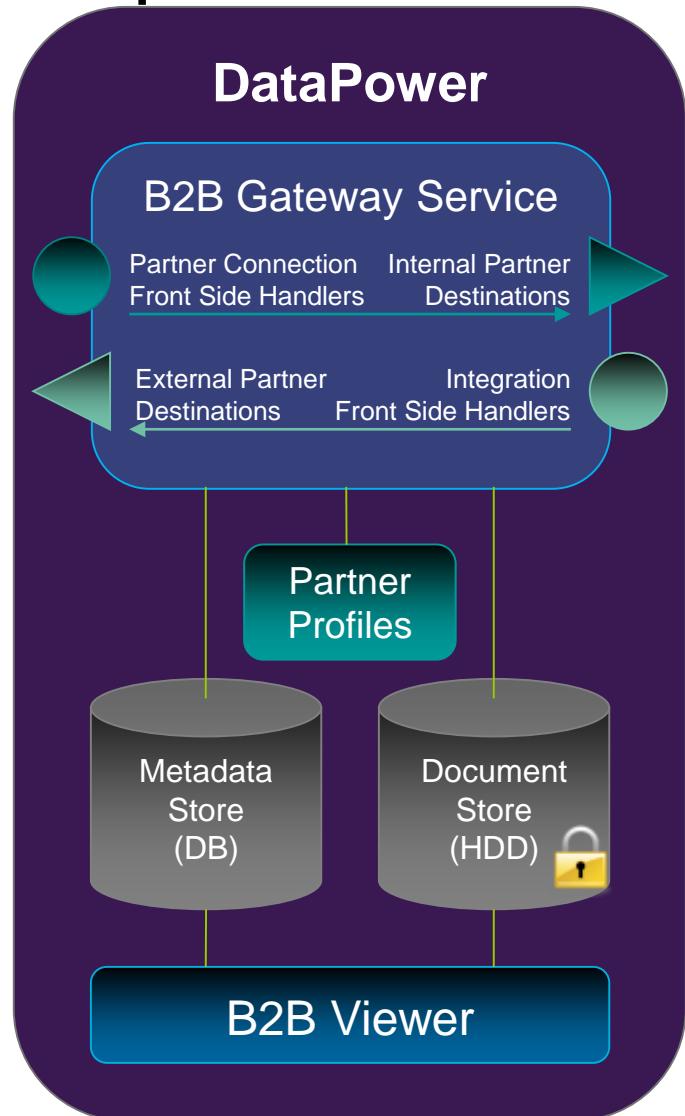
Extend integration beyond the enterprise
to partner community



DataPower B2B Functionality

Extend beyond the enterprise to integrate with partners

- **B2B Gateway Service**
 - AS1, AS2, AS3 and ebMS v2.0
 - Plaintext email support
 - EDI, XML and Binary Payload routing
 - Front Side Protocol Handlers
 - Hard Drive Archive/Purge policy
 - CPA and Partner Profile Associations
 - MQ File Transfer Edition integration
- **Trading Partner Profiles**
 - Two Types – Internal and External
 - ebXML CPPA v2.0
 - Multiple Business IDs
 - Multiple Destinations (URL Openers)
 - Certificate Management (S/MIME Security)
 - Multi-step processing policy
- **B2B Viewer**
 - B2B transaction viewing
 - MQ FTE transaction viewing
 - Transaction resend capabilities
 - Transaction and Acknowledgement correlation
 - Role based access
- **Persistent Storage**
 - AES Encrypted B2B document storage
 - Option for Off-Box Storage (NFS)
- **Transaction Store**
 - B2B metadata storage
 - B2B state management



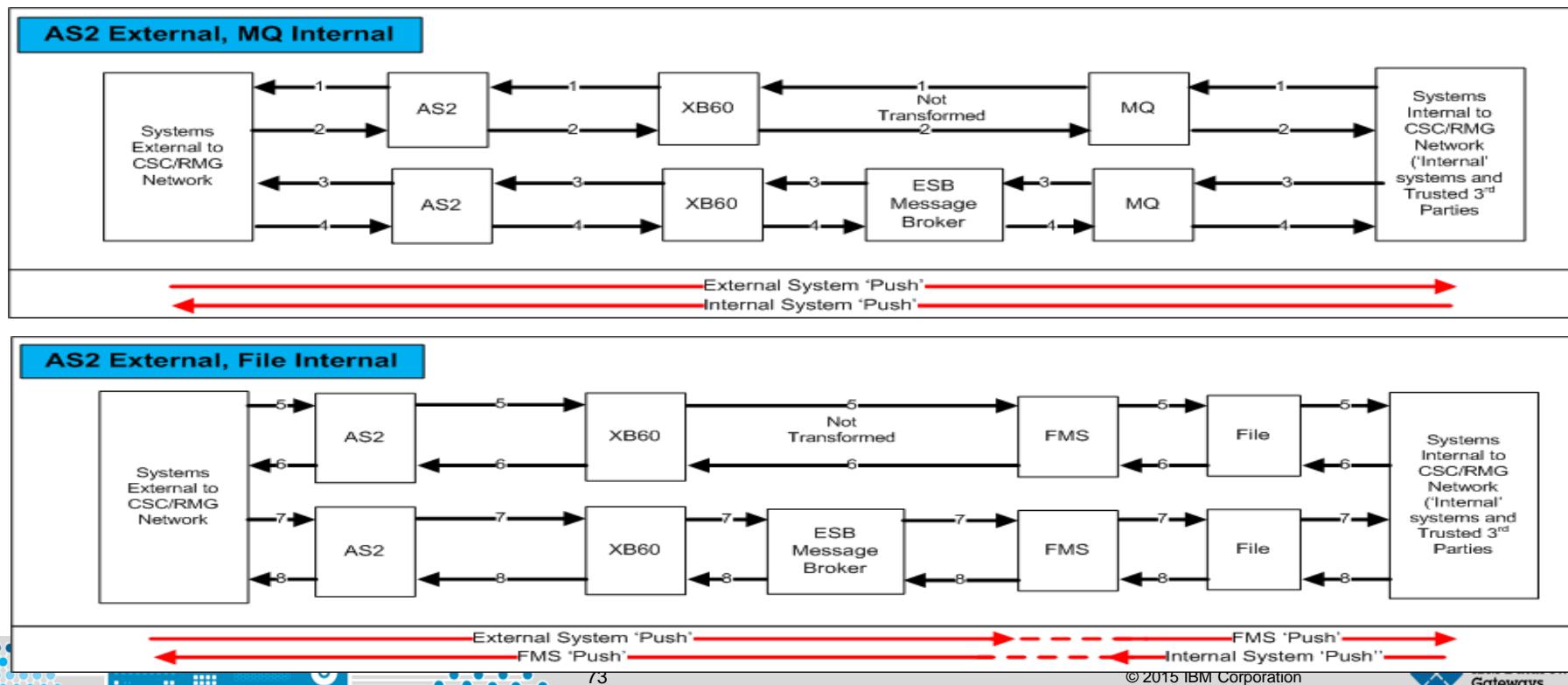
UK Logistics and Distribution

Challenge

- AS2, File and Web Services based interfaces to 100s of B2B customers.
- Messages are exchanged at least once a day
- Secure proxy solution in the DMZ
- Complex incumbent supplier chain

Benefits

- Create customer interaction and value through innovative business strategy.
- Integrate various suppliers using standards based interfaces securely.
- Graphical configuration driven appliance; short learning curve



Health Insurance Provider

Industry Pains:

- HIPAA Security requirements for transporting data over the Internet
- HL7 v3.0 XML threat protection
- Complexity of B2B for healthcare

Smarter Business Outcomes:

- Reliable and secure routing of customer sensitive data
- Easy to use and maintain; no additional skill needed
- XML Messages with attachments are authenticated, authorized, and virus scanned

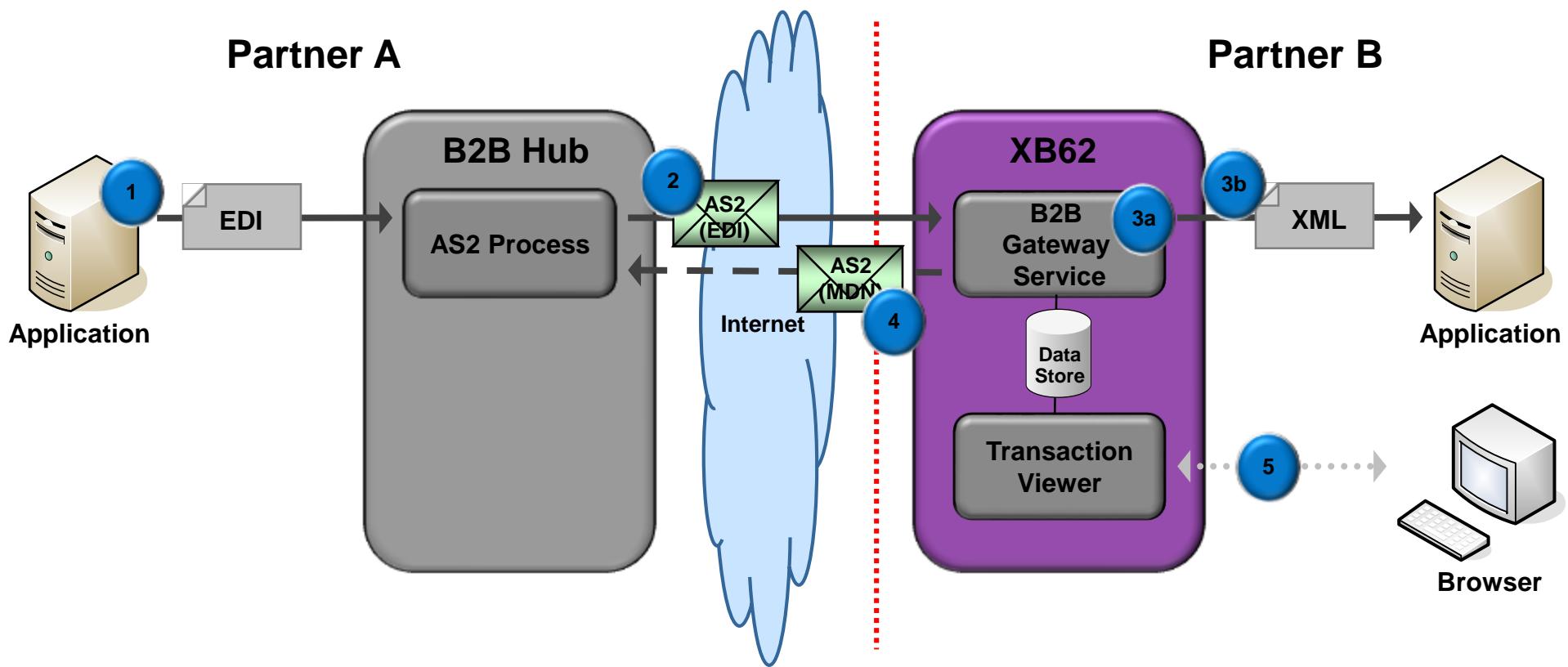


Value of DataPower B2B Appliances for Extending Connectivity?

Secure appliance form factor providing secure connections to trading partners, advanced threat protection and reliable file delivery of confidential medical information



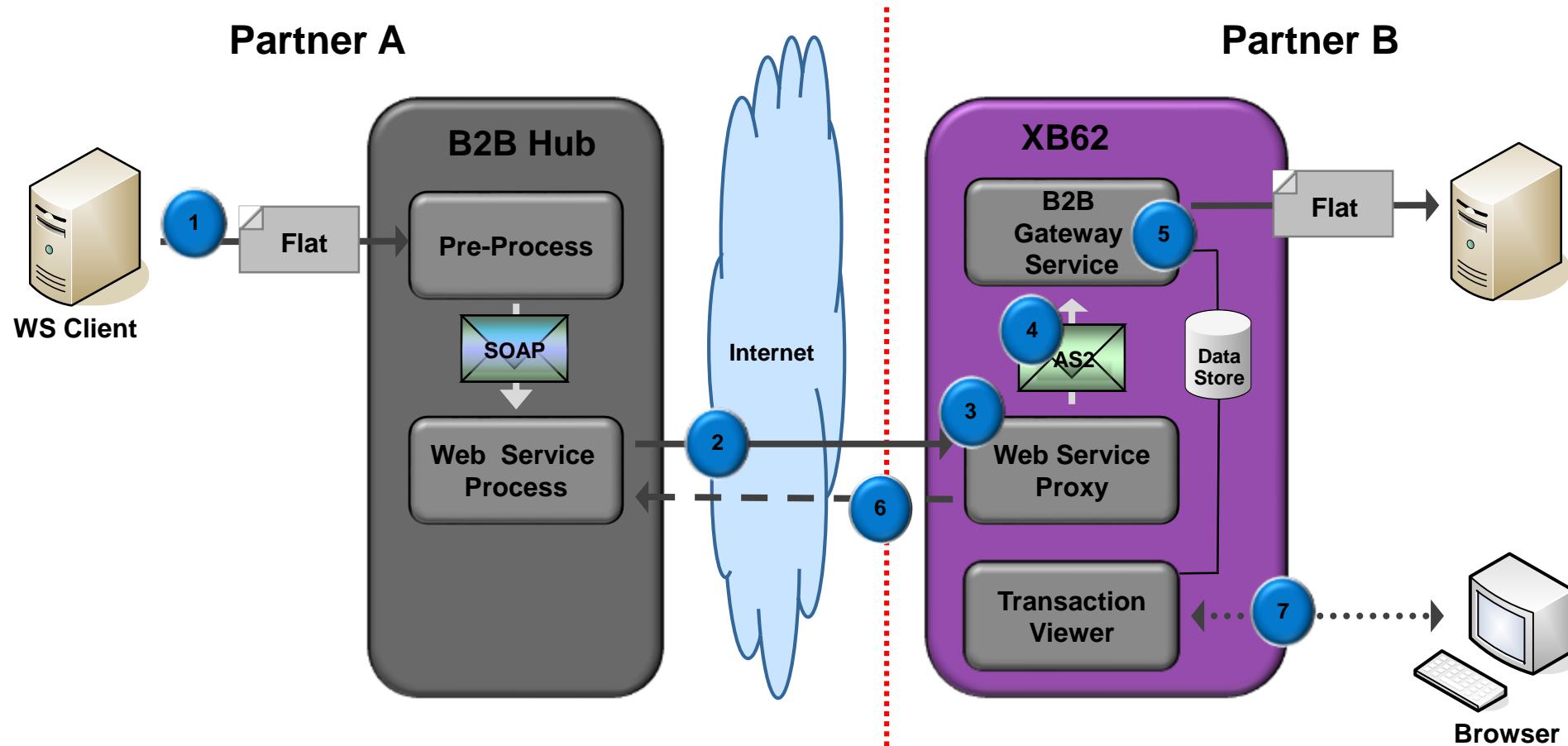
EDIINT Flow: Simple AS2 transaction flow with Transform



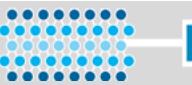
Note: This flow works the same for any AS protocol as well as for ebMS B2B messages.



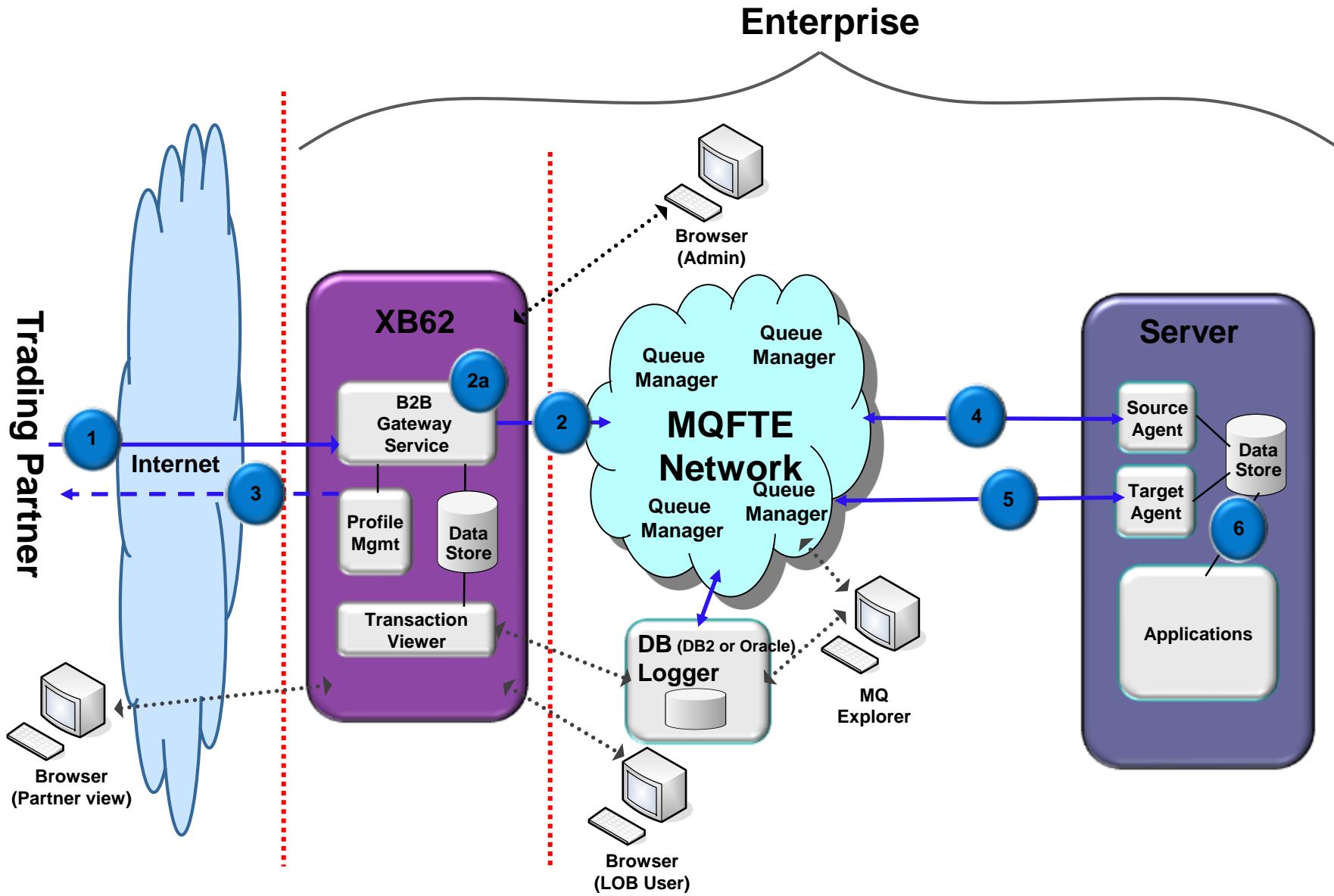
Web Services bridged to AS2 File Transfer Pattern



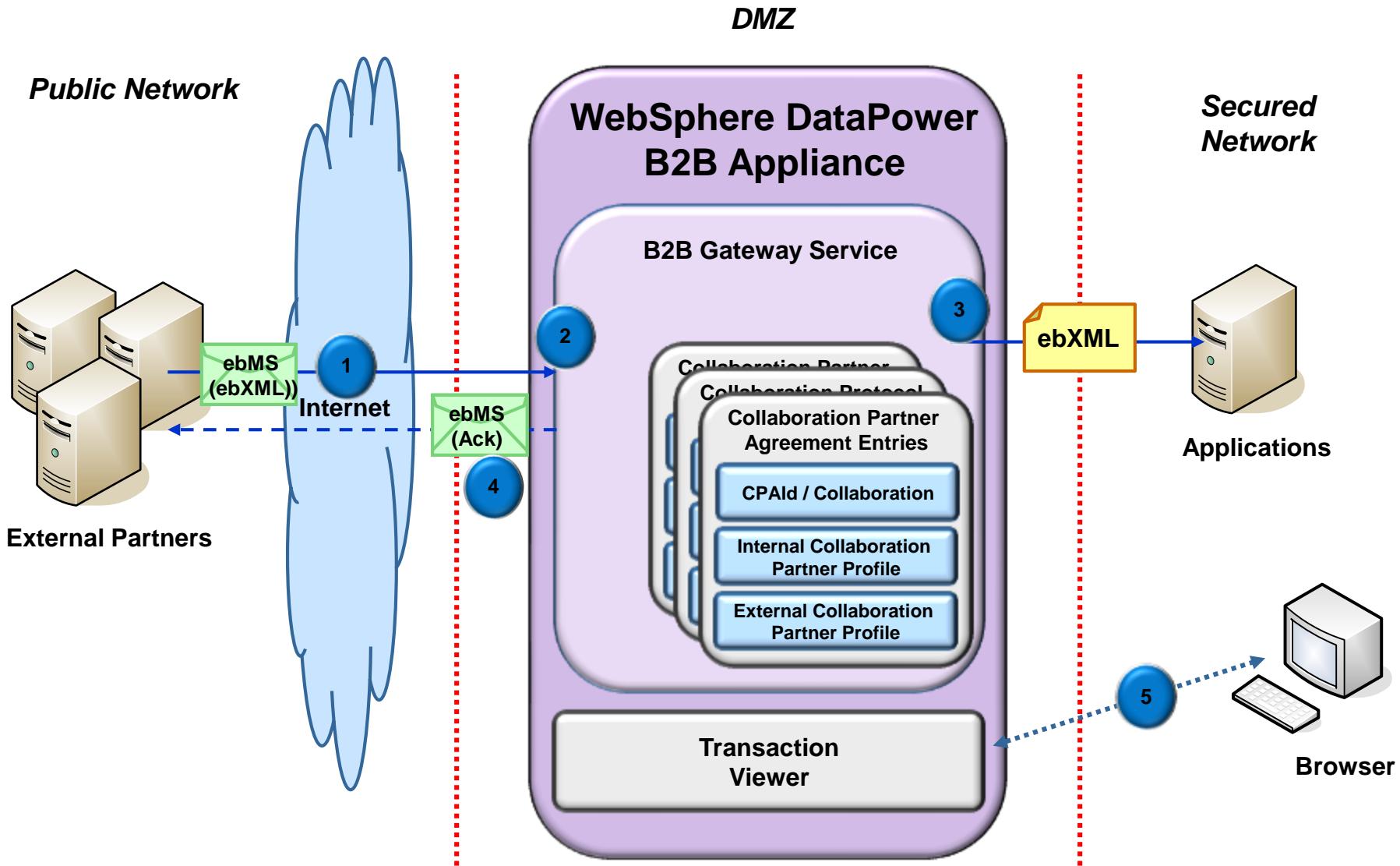
Note: A Multi-Protocol Gateway Service can also be used to support this flow as well as receiving and sending data over any of the 16 supported protocol handlers. When Services are tied together in front of or behind a B2B Gateway Service they are handled like pre and post processes.



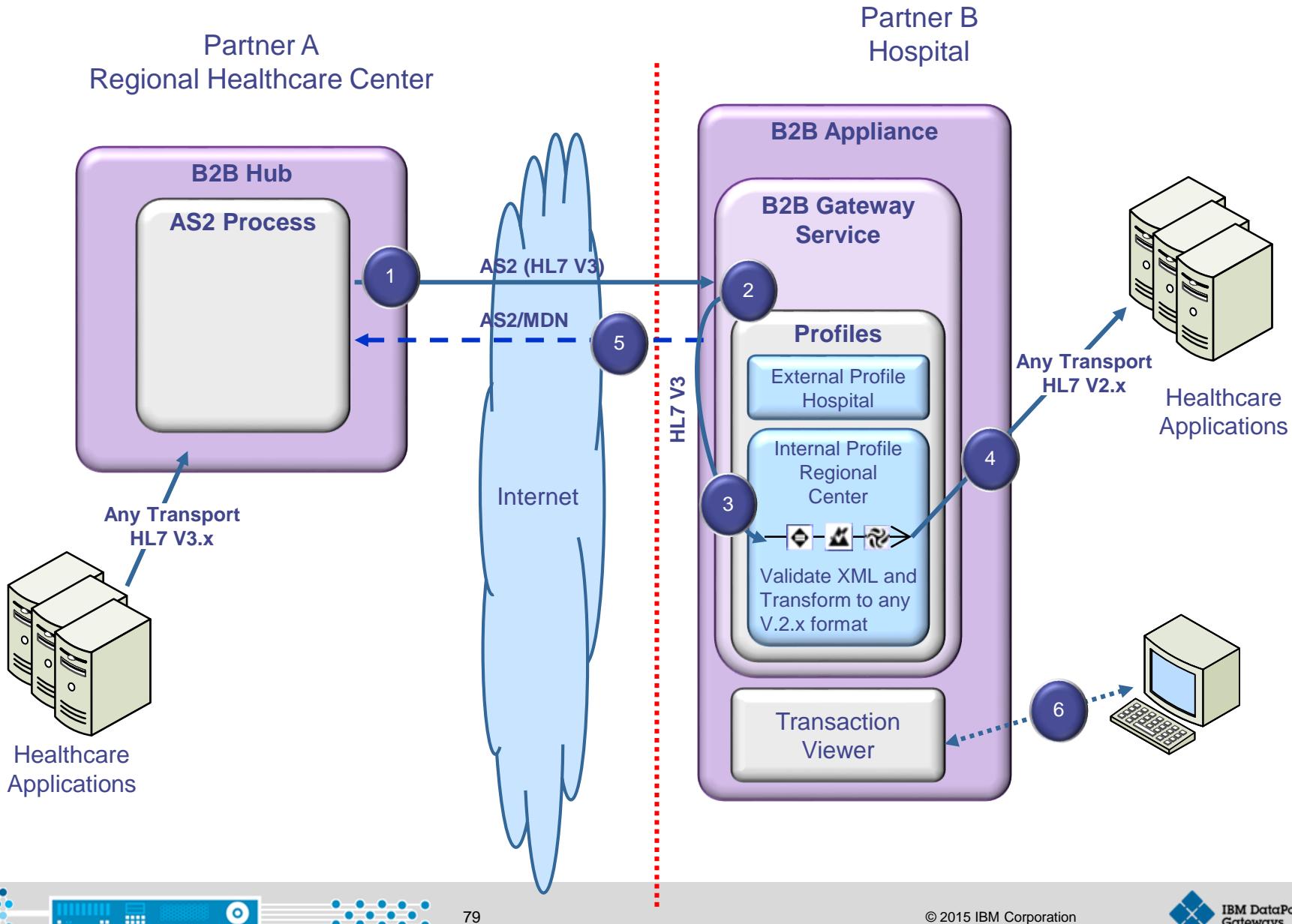
MQ FTE Integration Pattern – Inbound File to Message



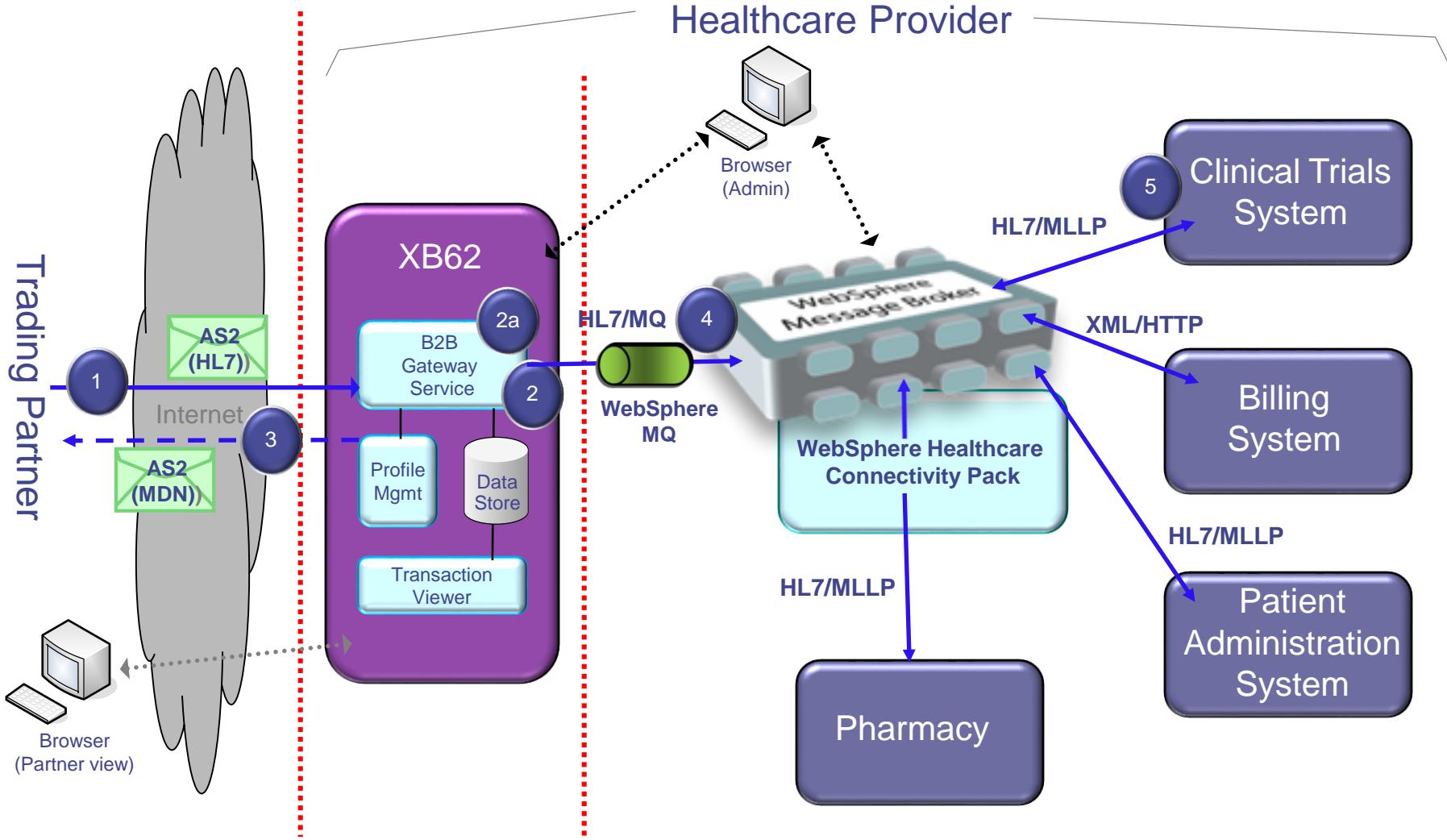
ebXML with CPPA Pattern



Health Level 7 3.x to 2.x Transform Pattern



Securing HL7 over the Internet with Integration to the WebSphere Healthcare Connectivity Pack



Resources



DataPower on GitHub

▪ Repository of DataPower related tools & collateral

- Open source
- Community driven: Use, collaborate, contribute
- <http://ibm-datapower.github.io/>

▪ DataPower Configuration Manager

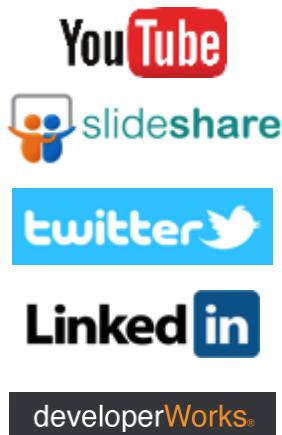
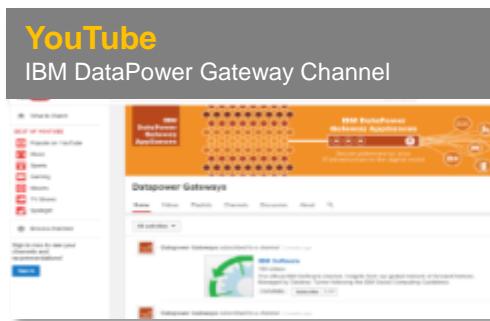
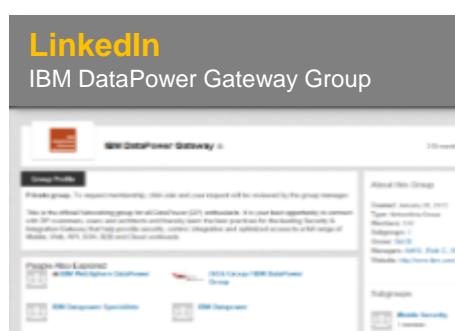
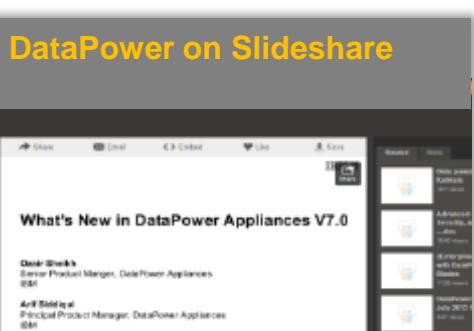
- Tool for DataPower configuration management & migration
- Standalone **command line** or IBM **UrbanCode Deploy plugin**
- <https://github.com/ibm-datapower/datapower-configuration-manager>
- <https://github.com/ibm-datapower/datapower-configuration-manager/wiki/Easy-On-Ramp>

▪ DPXMLSH

- Bash script / shell library for working with DataPower's XML Management interface
- Interactive & scripted use
- <https://github.com/ibm-datapower/datapower-xml-shell>



Getting Social with IBM DataPower Gateways



- **YouTube Channel:** [IBM DataPower Gateways](#)
- **Slideshare:** [IBM DataPower Gateway](#)
- **Twitter:** [@IBMGateways](#)
- **LinkedIn Group:** [IBM DataPower Gateway](#)
- **developerWorks blog:** [IBM DataPower Gateway](#)
- **GitHub:** [IBM DataPower Gateway](#)
- **Online User Forum**
- **Product page on ibm.com**
- **Product documentation**



Available Now: DataPower Handbook, Second Edition, Volume 1

- Known as the ‘bible’ of DataPower planning, implementation, and usage.
- New content to cover previous six years of new products/features, including 9006/7.1!
- Volume 1 consists of *Chap 1 DataPower Intro*, *Chap 2 Setup Guide*, new *Preface* and two invaluable new appendices for physical and virtual appliances.



COMING SOON

Volume 2: DataPower Networking

This volume concentrates on DataPower networking, and features chapters on beginning and advanced networking, as well as common topologies and network deployment.

Volume 3: DataPower Development

This volume focuses on all aspects of developing code for DataPower using both XSLT and Gateway Script methods.

Volume 4: DataPower B2B

This volume focuses on all aspects of B2B gateway functions including security, partner profile management, B2B messaging protocols like AS1, AS2 and AS3 and B2B process integration using ebXML.

Available in softcover and e-book formats

BARNES & NOBLE
www.bn.com

createspace
an Amazon company

amazon

amazon kindle



BACKUP



Simple and Secure Architecture

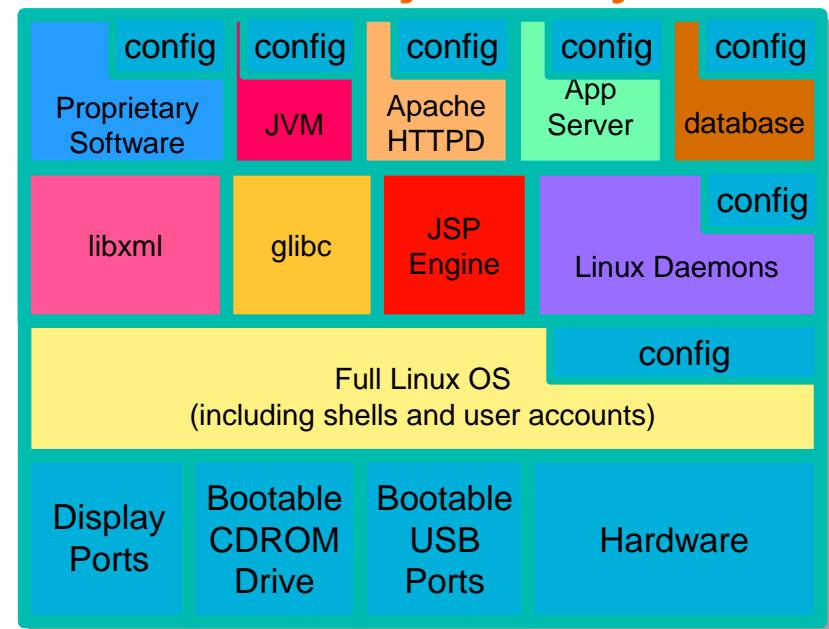
- Simple Architecture: Purpose-built firmware + hardware
 - Complete gateway platform delivered as firmware
- Guiding philosophy is to centralize common security, integration, control, traffic management, acceleration functions and optimize them in a security-hardened gateway appliance



Purpose-built Gateways



Commodity Gateways



Configuration-driven approach speeds time to market

- Enforce security standards with **zero coding**
- Uses intuitive pipeline message processing
- **Import/export** configurations between environments
- Transaction probe shows message content between actions for debugging

The screenshot illustrates the configuration-driven approach of the IBM DataPower Gateway. On the left, a rule editor window is open for a rule named "SecureServicePolicyRequestRule". It shows fields for Rule Name, Rule Direction (Client), and various configuration options like Envelope Method, Message Type, and WS-Security Version. A large blue callout box highlights the "Sign" section of the configuration panel. Below the editor, a message flow diagram shows a sequence of actions: Filter, Sign, Verify, Validate, Encrypt, Decrypt, Transform, and Route. The "Sign" action is highlighted with a red circle. The flow starts from a "CLIENT" icon, passes through several actions, and ends at an "ORIGIN SERVER" icon.

Rule Name: SecureServicePolicyRequestRule Rule Direction: Client

New Rule Delete Rule

Create rule: Click New, drag action icons onto line. Edit rule: Click on action icons

Filter Sign Verify Validate Encrypt Decrypt Transform Route

Envelope Method

- Enveloped Method
- Enveloping Method
- SOAPSec Method
- WSSec Method**
- Advanced
- *

Message Type

- SOAP Message**
- SOAP With Attachments
- Raw XML Document
- Selected Elements (Field-Level)
- Advanced
- *

Asynchronous

- on **○ off**

WS-Security Version

1.0

Use Asymmetric Key

- on** off

Signing Algorithm

rsa

Key

(none)

Certificate

(none)

CLIENT

ORIGIN SERVER

Capabilities

Rapidly deliver secure integration & optimized access for a full range of workloads

Secure



- **Secure & protect** your back-end systems from harmful workloads and unauthorized users & apps
- **Convert** payloads, bridge transports and **connect** to existing services at wire-speed
- **Limit & shape** traffic based on service level agreements, and **route** based on message content
- **Improve** response times, **reduce** load on backend systems and intelligently **distribute** load

Integrate



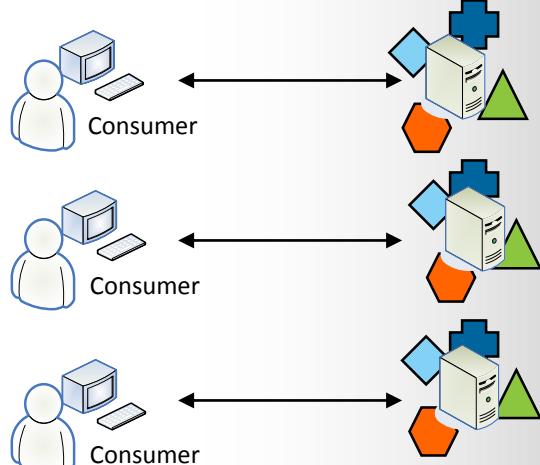
Control



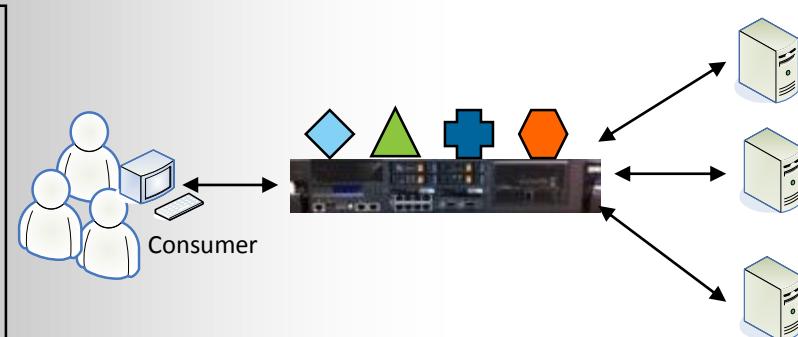
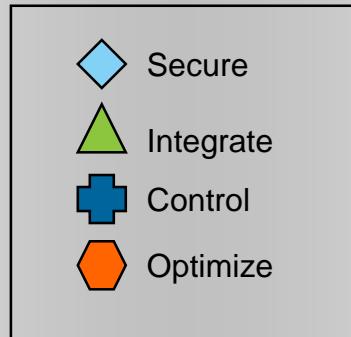
Optimize



Before DataPower Gateway

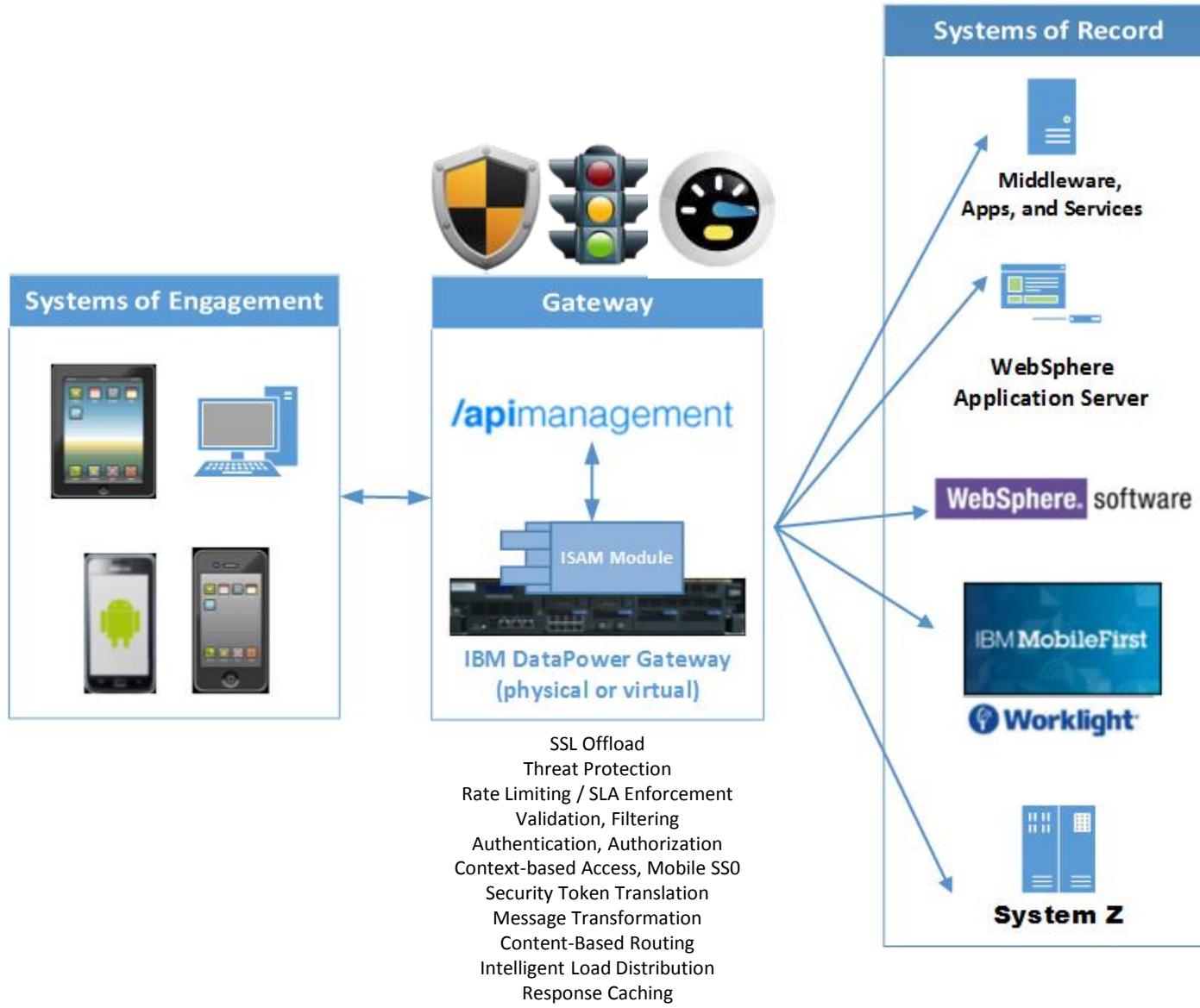


After DataPower Gateway



Connect Mobile Apps with Enterprise Services

Securely expose enterprise systems & APIs to **Mobile Apps** while optimizing delivery



DataPower Gateway: Supported standards & protocols

- Data format & language
 - JavaScript
 - JSON
 - JSON Schema
 - JSONiq
 - REST
 - SOAP 1.1, 1.2
 - WSDL 1.1
 - XML 1.0
 - XML Schema 1.0
 - XPath 1.0
 - XPath 2.0 (XQuery only)
 - XSLT 1.0
 - XQuery 1.0
- Security policy enforcement
 - OAuth 2.0
 - SAML 1.0, 1.1 and 2.0, SAML Token Profile, SAML queries
 - XACML 2.0
 - Kerberos (including S4U2Self, S4U2Proxy)
 - SPNEGO
 - RADIUS
 - RSA SecurID OTP using RADIUS
 - LDAP versions 2 and 3
 - Lightweight Third-Party Authentication
 - Microsoft Active Directory
 - FIPS 140-2 Level 3 (w/ optional HSM)
 - FIPS 140-2 Level 1 (w/ certified crypto module)
 - SAF & IBM RACF® integration with z/OS
 - Internet Content Adaptation Protocol
 - W3C XML Encryption
 - W3C XML Signature
 - S/MIME encryption and digital signature
 - WS-Security 1.0, 1.1
 - WS-I Basic Security Profile 1.0, 1.1
 - WS-SecurityPolicy
 - WS-SecureConversation 1.3
- Transport & connectivity
 - HTTP, HTTPS, **WebSocket Proxy**
 - FTP, FTPS, SFTP
 - WebSphere MQ
 - WebSphere MQ File Transfer Edition
 - TIBCO EMS
 - WebSphere Java Message Service
 - IBM IMS Connect, & IMS Callout
 - NFS
 - AS1, AS2, AS3, ebMS 2.0, CPPA 2.0, POP, SMTP (XB62)
 - DB2, Microsoft SQL Server, Oracle, Sybase, IMS
- Transport Layer Security
 - TLS versions 1.0, 1.1, and 1.2
 - SSL versions 2 and 3
- Public key infrastructure (PKI)
 - RSA, 3DES, DES, AES, SHA, X.509, CRLs, OCSP
 - PKCS#1, PKCS#5, PKCS#7, PKCS#8, PKCS#10, PKCS#12
 - XKMS for integration with Tivoli Security Policy Manager (TSPM)
- Management
 - Simple Network Management Protocol
 - SYSLOG
 - IPv4, IPv6
- Open File Formats
 - Distributed Management Task Force (DMTF) Open Virtualization Format (OVF)
 - Virtual Machine Disk Format (VMDK)
 - Virtual Hard Disk (VHD)
- Web services
 - WS-I Basic Profile 1.0, 1.1
 - WS-I Simple SOAP Basic Profile
 - WS-Policy Framework
 - WS-Policy 1.2, 1.5
 - WS-Trust 1.3
 - WS-Addressing
 - WS-Enumeration
 - WS-Eventing
 - WS-Notification
 - Web Services Distributed Management
 - WS-Management
 - WS-I Attachments Profile
 - SOAP Attachment Feature 1.2
 - SOAP with Attachments (SwA)
 - Direct Internet Message Encapsulation
 - Multipurpose Internet Mail Extensions
 - XML-binary Optimized Packaging (XOP)
 - Message Transmission Optimization Mechanism (MTOM)
 - WS-MediationPolicy (IBM standard)
 - Universal Description, Discovery, and Integration (UDDI versions 2 and 3), UDDI version 3 subscription
 - WebSphere Service Registry and Repository (WSRR)



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