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Performance is based on measurements and projections using standard IBM benchmarks in a controlled environment. The actual throughput or performance that any user will experience will vary depending upon many factors, including considerations such as the amount of multiprogramming in the user’s job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve results similar to those stated here.
Agenda

• **DataPower Quick Overview**
• Security & Optimization Gateway
• Mobile Connectivity
• API Management
• Integration
• Mainframe Integration & Enablement
• B2B
Introduction to DataPower Gateway Appliances

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

- **Securely expose** enterprise data to external consumers/partners, while **optimizing** delivery of the workload
- **Securely connect** apps/services within the enterprise, while **optimizing** delivery of the workload and providing **integration** including XML offload, message validation/filtering, message/transport protocol transformation, traffic control/quota enforcement, SOA governance & management, dynamic routing & intelligent load distribution
- **Physical** appliance that is purpose-built, tamper-evident with simplified deployment combining superior performance, hardened security, increased ROI and reduced TCO
- Provides high levels of certified **Security assurance**
  - e.g. Transport Protocol Security (SSL/TLS), Message Level Security, and Authentication, Authorization, Audit
- **Simplified** maintenance model
  - Drop-in appliance form-factor, Secures traffic in minutes, and Push-button flash upgrade process
- Over a **decade of innovation. 2000 worldwide** installations. 10,000+ physical units sold
- **Virtual** appliance provides deployment flexibility & reduced cost for development and test environments
DataPower appliances used across a variety of scenarios

1. Security Gateway
   (Web Services/Apps/APIs)
2. Intelligent Content
   Routing & Load Distribution
3. B2B Partner Gateway
4. Internal Security Enforcement
5. Integration
6. Runtime SOA Governance
7. Web Service Management
8. Legacy Integration

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Use appliances to simplify & centralize critical functions

- Secure, control, integrate & optimize multiple applications without code changes
- Lower cost and complexity
- Enable new business with unmatched performance

Before DataPower Appliances  
Update application servers individually

After DataPower Appliances  
Secure, control, integrate, & optimize all applications instantly
No changes to applications
IBM DataPower Gateway Appliance capabilities

- **Security**
  - OAuth, SAML, XACML, WS-Security, LTPA, Kerberos, etc
  - Authentication & authorization
  - Security token translation
  - Message & transport protection

- **Integration**
  - Convert payloads (JSON, XML, CSV, Cobol, binary, etc)
  - Bridge transports (HTTP, MQ, FTP, WAS JMS, TIBCO EMS, etc)
  - Database connectivity (DB2, IMS, Oracle, MS SQL, Sybase)
  - Mainframe integration (IMS Connect, IMS Callout, CICS, etc)
  - B2B integration (AS1, AS2, AS3, etc)

- **Resilience**
  - Operation admission control
  - Failure re-routing
  - XML threat protection
  - JSON threat protection
  - Schema validation
  - Messages filtering

- **Control**
  - Service-level agreements
  - Traffic control
  - Message accounting
  - Content-based routing
  - Governance & management

- **Optimization**
  - SSL & TLS offload
  - Hardware accelerated crypto ops
  - XSLT & XQuery acceleration
  - JSONiq acceleration
  - Connection pooling, offload
  - Intelligent load distribution
  - Caching: Local & external (XC10)
DataPower Family

Service Gateway XG45
- Entry-level device, slim footprint (1U)
- Security gateway (AAA, XML threat, etc)
- Service level management and monitoring
- Intelligent load distribution & dynamic routing
- Lightweight integration functions (optional)
- Available in Virtual Edition

Integration Appliance XI52
- High density 2U form, XG45 functionality plus
- “Any-to-Any” conversion at wire-speed
- Bridges multiple transport protocols
- Mainframe integration & enablement
- Available in Virtual Edition

Integration Blade XI50B/XI50z
- Functionally equivalent to XI52
- Form factor flexibility
- XI50B: BladeCenter form factor
- XI50z: zEnterprise BladeCenter Extension (zBX) form factor

B2B Appliance XB62
- High density 2U form, XI52 functionality plus
- Trading Partner Profile Management
- B2B Transaction Viewer
DataPower Appliances

Over a decade of innovation & over 2000 worldwide 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
- etc.
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Use Case: Security & Optimization Gateway
Securing the Enterprise & providing optimized access
DataPower security roles and objectives

- 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
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, ...

**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

**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)

**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

**Extract Identity**
- HTTP Headers
- WS-Security Tokens
- WS-SecureConversation
- WS-Trust
- Kerberos
- X.509/SSL
- SAML Assertion
- IP Address
- LTPA Token
- HTML Form
- OAuth
- Custom

**Extract Resource**
- URL
- XPath
- SOAP Operation
- HTTP Operation
- Custom

**Authenticate**
- LDAP/Active Directory
- System/z NSS (RACF, SAF)
- IBM Security Access Manager
- Kerberos
- WS-Trust
- Netegrity SiteMinder
- RADIUS
- SAML
- LTPA
- Verify Signature
- Custom

**Map Identity**
- LDAP/ActiveDirectory
- System/z NSS
- IBM Security Access Manager
- Netegrity SiteMinder
- SAML
- XACML
- OAuth
- Custom

**Authorize**
- LDAP/ActiveDirectory
- System/z NSS
- IBM Security Access Manager
- Netegrity SiteMinder
- SAML
- XACML
- OAuth
- Custom

**Audit & Post-Process**
- Add WS-Security
- Generate z/OS ICRX Token
- Generate Kerberos
- Generate Spnego
- Generate SAML
- Generate LTPA
- Map Tivoli Federated Identity

External Access Control Server or Onboard Identity Management Store

input

output
**Security Gateway**

### Proxying and Enforcement

- Terminate incoming connection
- Terminate transport-level security (SSL/TLS offload)
- Threat protection
- Enforce Service Level Agreement policies
- Inspect message content and filter (Schema validate)
- Enforce security policies on message content (Encrypt/decrypt, Verify/sign digital signatures)
- Authentication, Authorization, Auditing (AAA)
- Call out to virus checker
- Transform content & enrich message
- Translate security token
- Dynamically route based on content and load balance (Establish a new connection to pass results)
- Cache data on-box or in centralized, shared XC10 grid

---

**Outside World**
- Browsers
- Partner Apps
- SaaS

**Internet**
- HTTP(s)
- XML, JSON, XML, SOAP, MIME, DIME, MTOM, XMLDSIG, XMLENC
- WS-Security, WS-Security Policy, WS-Trust, SAML, OAuth 2.0

**DMZ**
- Outgoing access control; SAML injection etc
- Threat protection
- Enforce security policies on message content (Encrypt/decrypt, Verify/sign digital signatures)
- Authentication, Authorization, Auditing (AAA)
- Call out to virus checker
- Transform content & enrich message
- Translate security token
- Dynamically route based on content and load balance (Establish a new connection to pass results)

**Domain Firewall**

**Internal Network**
- Internal Consumer
- Security Gateway
- Packaged Apps
- Proprietary Apps
- Data

**SaaS**

**Partner Apps**

**Browsers**

**Provider**
- Web Service Request
- SAML, LTPA, Kerberos
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
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

- Centralized transaction monitoring
  - ITCAM for SOA
- Support for UDDI v2 and v3 for UDDI registries
Service Level Monitor (SLM): 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)
Application Optimization Example

User WAS Application

Scenario – JSON REST app to-do list
Issues – High server load – Slow response time

Slow Response (>10s)

User

WAS Application

Improve Server Load with SSL Offload
1. Client requests are secured via DP SSL concentrator

Public

DMZ

DataPower

Data Center

Configure HTTPS (SSL) Front Side Handler

WAS Application
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. Application results are cached at the edge using XC10 caching grid OR locally on-box

- Faster application response time
- Lower server load
- Improved system throughput
Using XC10 As a Side Cache For DataPower

1. Client submits application request.
3. On a miss, XI forwards request to target Provider.
4. XI adds application response to 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 XI Appliances

Client

DataPower XC10

Provider

User

REST
DataPower XI52 + 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
Agenda

• DataPower Quick Overview
• Security & Optimization Gateway
• **Mobile Connectivity**
• API Management
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• B2B
Use Case: Mobile Connectivity
Securely & Rapidly connect Mobile Apps with Enterprise Services
Connect Mobile Apps with Enterprise Apps & Services

Security, Control, Integration & Optimization of mobile workload

Securely expose enterprise data to Mobile Apps while optimizing delivery of the workload

** Available in DataPower firmware version 6.0

Enhanced form-based authentication support for quick integration with Worklight applications running on mobile devices **

Ready-to-use configuration pattern as reverse proxy & security policy enforcement point in front of Worklight Server**
A 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
Sprint leverages IBM DataPower appliances to rapidly & securely grow revenue

Challenges

Business
- Grow 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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Client examples using DataPower for Mobile use cases

Several examples of businesses using DataPower as a Mobile Gateway for their Security & Integration needs

- Large international **bank** has mobile banking goes through DataPower
- Large **Mobile** company in the UK has traffic from handsets, REST service calls, being secured via DataPower
- Large global **phone** company has their RESTful service calls using JSON and XML from Mobile devices and consumer browsers are secured and load balanced using DataPower
- Large **retailer** went live recently with DataPower proxying Mobile traffic
- **Retailer** secures their provisioning iPad traffic through DataPower
- A **wireless carrier** secures mobile traffic to account data through DataPower
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Use Case: API Management
Securely & Rapidly Create, Socialize & Manage Business APIs to engage with a Developer ecosystem
IBM API Management V2.0 (On-Premise)

Secure, control and optimize access to APIs through DataPower

Create, Manage, Socialize APIs
- **Dev Ops Dashboard** for easy assembly of new APIs and to secure and manage APIs from an IT Ops perspective, API lifecycle mgmt
- **Business Ops Dashboard** with analytics and controls to publish APIs, document APIs, set quotas, manage communities and monitor service levels
- **Application Developer Portal** with Self-Service registration and with hooks into social communities

On-Premise DMZ-ready API Gateway
- Rapid on-ramping of APIs
- API security; SSL termination, Threat protection, Authentication, Authorization with OAuth
- Quota enforcement / Traffic control; Enforce API consumption policies
- Monitors API use
- Caching support for both on-box local and remote caching using XC10
- Intelligent routing and load distribution
Secure Mobile App Integration + API Management

Mobile Apps & Web consumers

Security & Integration Gateway
IBM DataPower Appliance

Caching Appliance
IBM DataPower XC10

Applications & Services on App Servers
(WAS, WAS ND, Worklight or other Provider)

API consumers & App Developers

Create, Publish, Manage & Socialize APIs
IBM API Management**

Multi-device development
IBM Worklight

API owners

** Available in IBM API Management 2.0
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Use Case: Enterprise Integration
Consumable integration solution for securely connecting applications & services while optimizing delivery of workload
Integration Scenario

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

Format & transport bridging

Consumer

Cobol / MQ

MQ Queue Manager

Provider

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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

1. External Party makes Web Service request
   (Web Services = HTTP with XML Payload)
2. Verify Signature
3. Decrypt & Validate
4. Access Identity Mgmt System
5. Authenticate & authorize
6. Insert security token (e.g. SAML, Kerberos)
7. Send request to integration layer
8. Transform XML
9. Switch protocol (e.g. HTTP to MQ)
10. Route based on content
11. Aggregate response
12. Switch protocol
13. Transform response
14. Send to security layer
15. Filter response
16. Encrypt & Sign
17. Send response back

External Systems: different division, partners, etc

Account Aggregation
Invoice Payment
Broker Portal
Customer Portal

Web Services Interfaces

Verify Sign.
Decryption XML
Authenticate
Authorize

Identity Mgmt System
(Tivoli, LDAP, etc)

Security Layer
Integration Layer

Transform XML
Protocol switch
Content Routing

MQ, JMS,
FTP, HTTP,
etc.

Request Message

HTTP
MQ
JMS
DB
FTP
other

Response Message

Interfaces/Protocols

HTTP
MQ
JMS
DB
FTP
other

Owned Systems
External Systems

Account Services
CRM
HR
ERP
Payment
Credit Card

Core Enterprise Systems
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• **Mainframe Integration & Enablement**
• B2B
Use Case: Mainframe integration & enablement
Offload processing for reduced MIPS
Web Services Enablement for IMS, CICS, DB2
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
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
Broad integration with System z

- Connect to existing applications over WebSphere MQ
- 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
- Connect to CICS
  - Via WebSphere MQ
  - Via Web Service
- Connect to DB2
  - Via Web Service
  - As direct ODBC call with ODBC Client option

Additional benefits with integrated DataPower XI50z blade form factor
- Fast secure network between DataPower blade and target servers
- Virtual Network Provisioning
- Dynamic Load Balancing (via Sysplex Distributor)
- HMC Console Integration
- Blade Hardware Management
- Energy Monitoring and Management of DP Blades
- DP Firmware Load and Update
- Monitoring and Reporting
Enhanced value for System z & IMS

New integration capabilities between DataPower and 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
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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 or iSCSI)

- **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
UK Logistics and Distribution

AS2 External, MQ Internal

External Systems

AS2

XB60

MQ

Internal Systems

External System ‘Push’
Internal System ‘Push’

AS2 External, File Internal

External Systems

AS2

XB60

Internal System

File

Internal Systems

External System ‘Push’
FMS ‘Push’
Internal System ‘Push’
DataPower Appliances Benefits

- **Reduce Complexity**: Replace software servers functionality with DataPower Appliances, reduce infrastructure footprint, and off-load systems intensive processes.

- **Lower TCO**: DataPower Appliances have demonstrated reducing operational costs by as much as 50%.

- **Reduce Time to Market**: DataPower Appliances dramatically decrease the testing time and amount of development required to upgrade your environment, most policy are configuration driven as opposed to development driven.

- **Reduce Risk**: DataPower Appliances provide the communication layer without requiring application modification, and deliver improved security and audit.

- **Flexibility & Security**: DataPower Appliances shield business applications from security requirements, protocol changes and service versioning - no application modifications needed.
DataPower resources

IBM DataPower Web Page (support, technotes, doc)
http://www-01.ibm.com/software/integration/datapower/

developerWorks DataPower Discussion Area

Vast library of published articles:
(Also search for “DataPower” within “WebSphere”, “SOA/Web Services” and “XML”)

IBM Redbooks:
http://www.redbooks.ibm.com/cgi-bin/searchsite.cgi?query=datapower

IBM WebSphere DataPower SOA Appliance Handbook

YouTube:
http://www.youtube.com/watch?v=uWYBDViv5Ts&feature=channel

DataPower Podcasts:
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• Go to the Impact 2013 SmartSite (http://impactsmartsite/com):
  – Use the session ID number to locate the session
  – Click the “Take Survey” link
  – Submit your feedback
BACKUP Material
**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.
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Why use an Appliance for connectivity?

- Many functions incorporated in a **single device**
  - Service level management
  - Dynamic routing and load distribution
  - Transport and message level security
  - Policy enforcement
  - Transport and message transformation

- **Simplified** maintenance model
  - Drop-in appliance form-factor
  - Secures traffic in minutes
  - Push-button flash upgrade process
  - Integrates with existing operations

- Provides high levels of certified **security** assurance
  - Transport Protocol Security (SSL/TLS)
  - Message Level Security
  - Authentication, Authorization, Audit (AAA)
  - FIPS 140-2 Level 3

- Purpose-built, fine-tuned **consumable** platform
- Achieves **fast performance** with multiple layers of specialized acceleration
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DataPower & Tivoli Offerings

DataPower integrates with Tivoli offerings to provide authentication and authorization policy enforcement point solution

**Tivoli Security Policy manager (TSPM)**

Allows authoring of XACML policy to be enforced by DataPower. [PAP]

TSPM can also act as PDP to make Authorization decisions [PDP]

**Tivoli Access Manager (TAM)**

Provides a single point of decision making for Authentication and Authorization. [PDP]

**Tivoli Federated Identity Manager (TFIM)**

Provides federated identity management and a single IdP enterprise solution [Federation]

- **PAP**: Policy Authoring Point
- **PDP**: Policy Decision Point
- **PEP**: Policy Enforcement Point

Locally cached TAM policy database reduces network latency and traffic congestion
Application Optimization

Application Optimization (AO) is about leveraging application knowledge in the network to better optimize application behavior, conformance, and performance.
Application Optimization

- Self Balancing: Self balance across a cluster of appliances
  - Replace front-end IP load balancer
  - New support (introduced in firmware version 4.0.2) enables connections to be preserved, without loss, during failover scenario
- Dynamic and Intelligent Load Distribution to backend systems
  - Replace backend load balancer

Front-end IP load balancers not needed
Self balancing (IP spraying)
Application Optimization

Provides application-aware Intelligent Load Distribution

- Auto-discovers application targets and distributes load using dynamic feedback mechanism
  - Topology learning for WAS ND and VE
- Uses intelligent weighted distribution algorithms based on current server load
  - Weighted Least Connection load balancing algorithm
- Provides several options for enabling **Session Affinity**

DataPower performs dynamic back-side routing and load distribution (leveraging dynamic information from back-ends)

Failure of target appliances are masked by appropriate weighted distribution
Agenda

• DataPower Quick Overview
• Security & Optimization Gateway
• Mobile Connectivity
• API Management
• Integration
• Mainframe Integration & Enablement
• B2B
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
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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
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

![Diagram showing CICS Web Services and WAS+CICS connector](image)

Client → SOAP/HTTP → DataPower → SOAP/HTTP → CICS Web Services

Generate an ICRX for a z/OS Extended Identity Token
- Actor/Role Identifier: testRole
- ICRX Realm: testRealm
CICS Integration
Web Services Enablement for CICS Applications

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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

Enterprise

1. Trading Partner
   - Internet
   - XB62
     - B2B Gateway Service
     - Profile Mgmt
     - Data Store
     - Transaction Viewer
   - MQFTE Network
     - Queue Manager
     - Queue Manager
   - DB (DB2 or Oracle)
   - Logger
   - MQ Explorer
   - Browser (Admin)
   - Source Agent
   - Target Agent
   - Data Store
   - Applications

2. Server
   - Browser (Partner view)

3. Browser (LOB User)
ebXML with CPPA Pattern

Public Network

1. ebMS (ebXML)
   Internet

2. ebMS (Ack)

3. ebXML

DMZ

WebSphere DataPower B2B Appliance

B2B Gateway Service

Collaboration Partner Agreement Entries
- CPAId / Collaboration
- Internal Collaboration Partner Profile
- External Collaboration Partner Profile

Transaction Viewer

Secured Network

Applications

External Partners

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

Partner A
Regional Healthcare Center

B2B Hub
AS2 Process

Partner B
Hospital

B2B Appliance
B2B Gateway Service
Profiles
External Profile
Hospital
Internal Profile
Regional Center
Validate XML and Transform to any V.2.x format
Transaction Viewer

1. AS2 (HL7 V3)
2. AS2/MDN
3. HL7 V3
4. Any Transport HL7 V2.x
5. Healthcare Applications
6. Healthcare Applications

Any Transport
HL7 V3.x

Any Transport
HL7 V3.x
Securing HL7 over the Internet with Integration to the WebSphere Healthcare Connectivity Pack