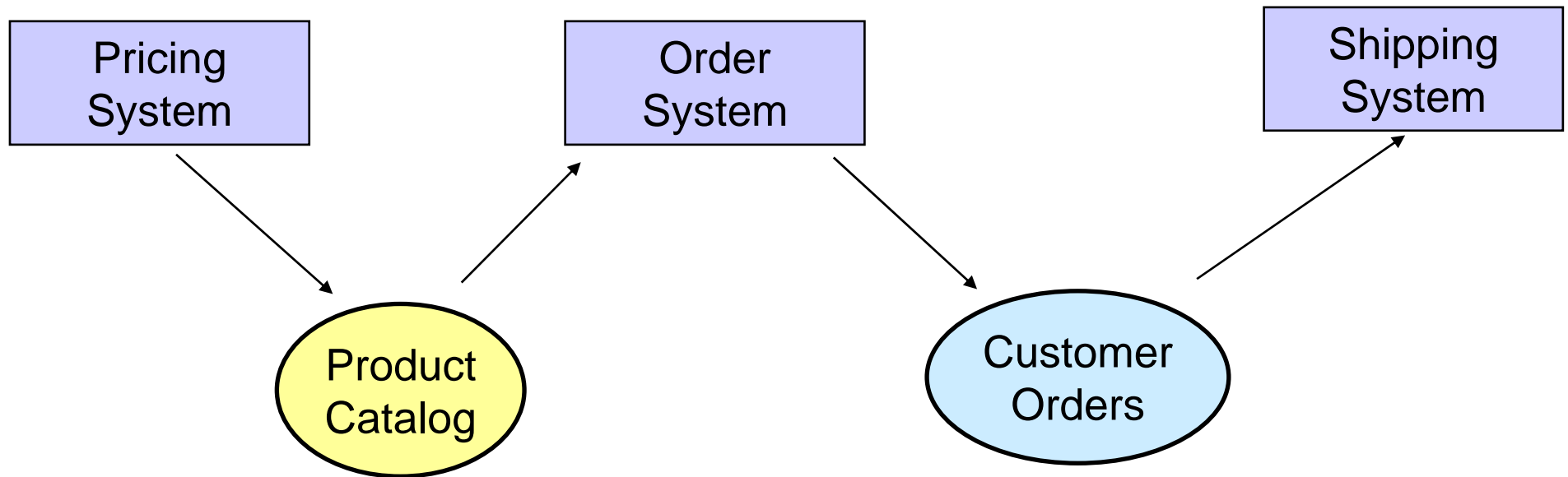# WebSphere's Advanced Technology Improves Business
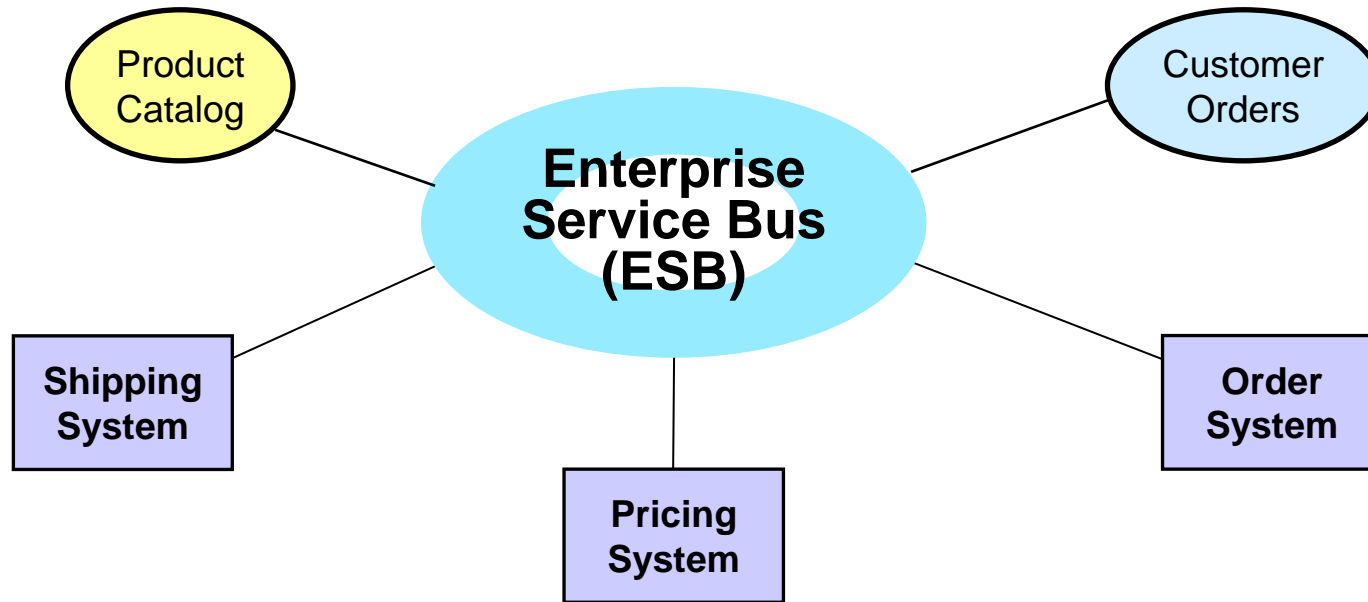
Integrate Cross-Enterprise Applications

Connected Systems Can Enhance Business Value

- **Reduce delays** by eliminating batch copies
- **Reduce errors** by avoiding manual re-entry of data
- **Reduce inconsistencies** by eliminating duplicate data

Connecting Your Systems Allows Your Company To Work Smarter


- An Enterprise Service Bus (ESB) provides
  - ▶ Instant processing
  - ▶ Transactional updates
  - ▶ Error-free sharing of data
  - ▶ Flexibility and agility of interconnected systems

Connecting Systems Is More Than Just Physical Cabling And TCP/IP Settings

- **Application messaging layer**
  - ▶ Deals with **application connectivity**
  - ▶ Fixes mismatches in message formats or protocols
  - ▶ Content-based routing, message augmentation
  - ▶ Transactional control

- **Logical networking layer**
  - ▶ Deals with packets and endpoints
  - ▶ TCP/IP, DNS, DHCP
  - ▶ Firewall, security

- **Physical networking layer**
  - ▶ Deals with cables and switches
  - ▶ Ethernet, wireless, InfiniBand
  - ▶ Network speeds

Enterprise Service Bus

Shipping System

Pricing System

Order System
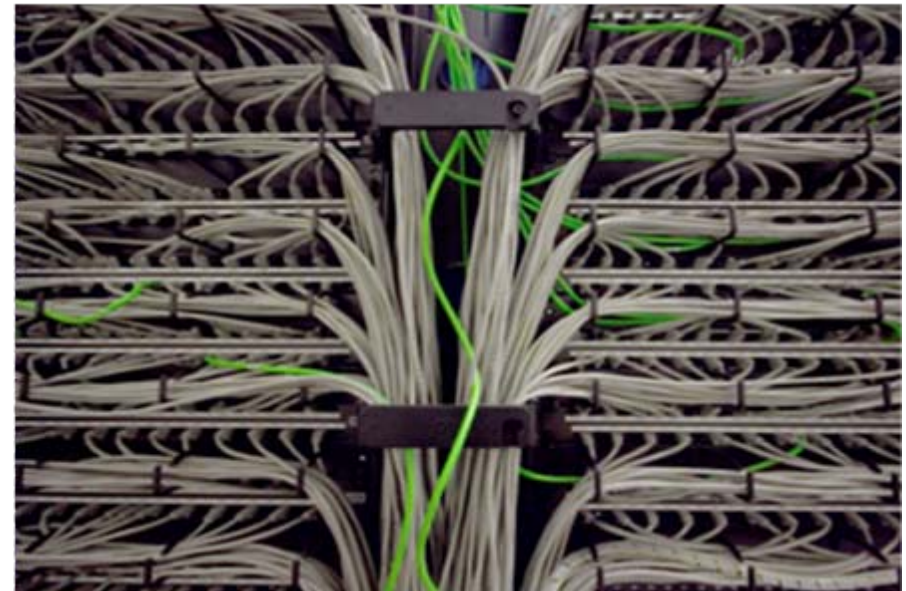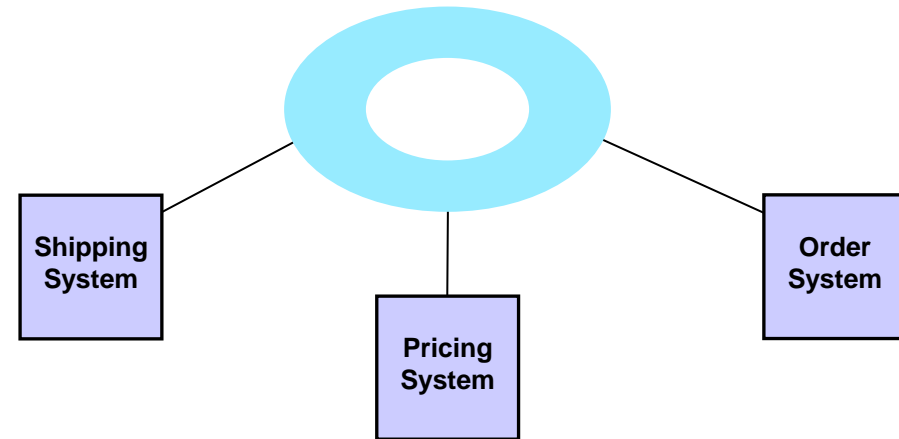
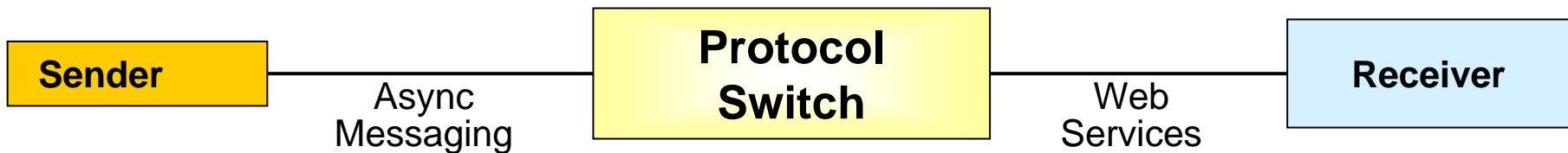# An ESB Makes It Easy To Connect Systems, Even If They Use Different Formats And Protocols

Applications may use different formats

| Sender | | XML | | Data Transformation | | Fixed Structure | | Receiver |
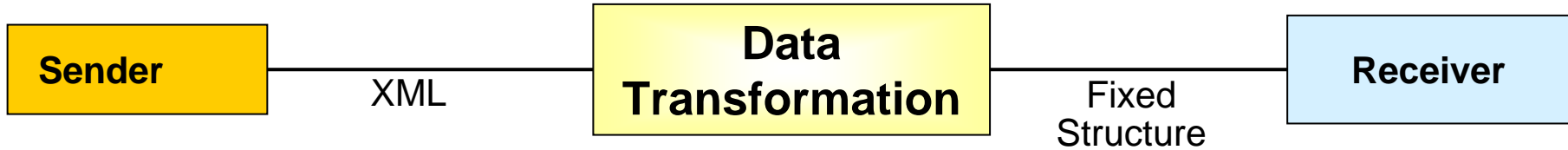
Applications may use different transport protocols

| Sender | | Async Messaging | | Protocol Switch | | Web Services | | Receiver |

An ESB Allows Loose Coupling Between Applications For More Flexibility

Decisions about destinations for messages can be made at runtime rather than compiled into code
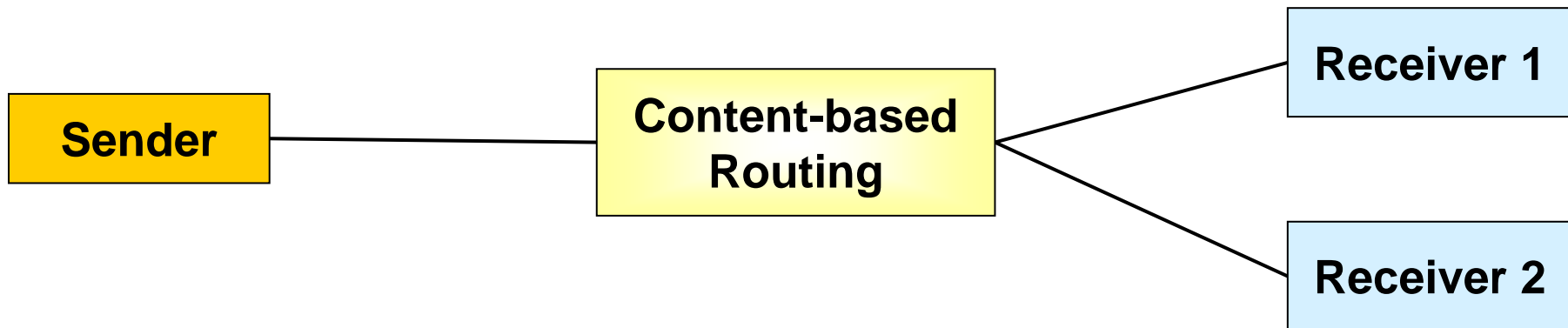
Companies Typically Need To Connect Both Internally And Externally

External partners and customers

Cloud or SaaS applications

Security Gateway ESB

DMZ

Packaged Application ESB

Corporate Intranet ESB

Shipping System

Pricing System

Order System
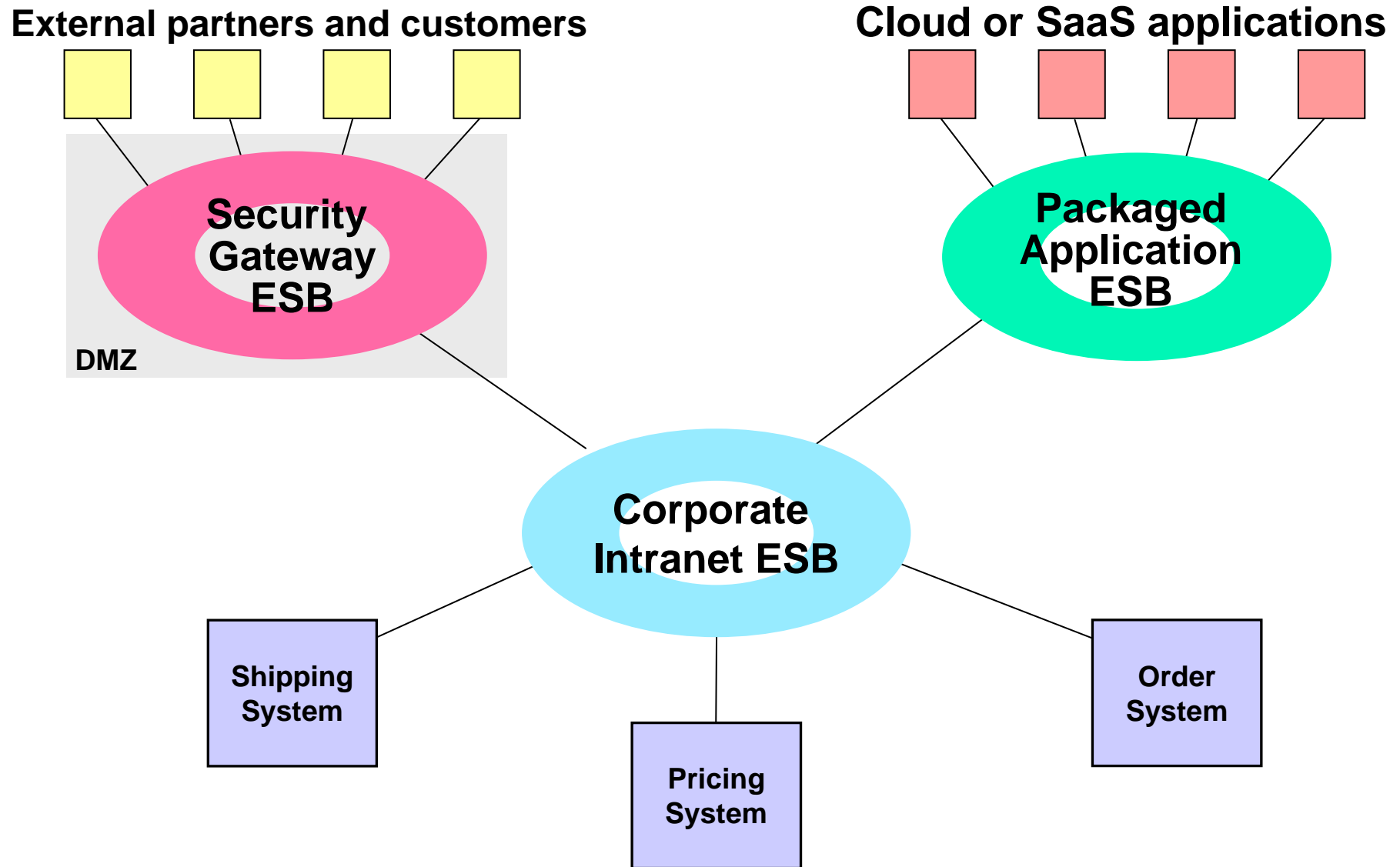
Different types of connections have different requirements

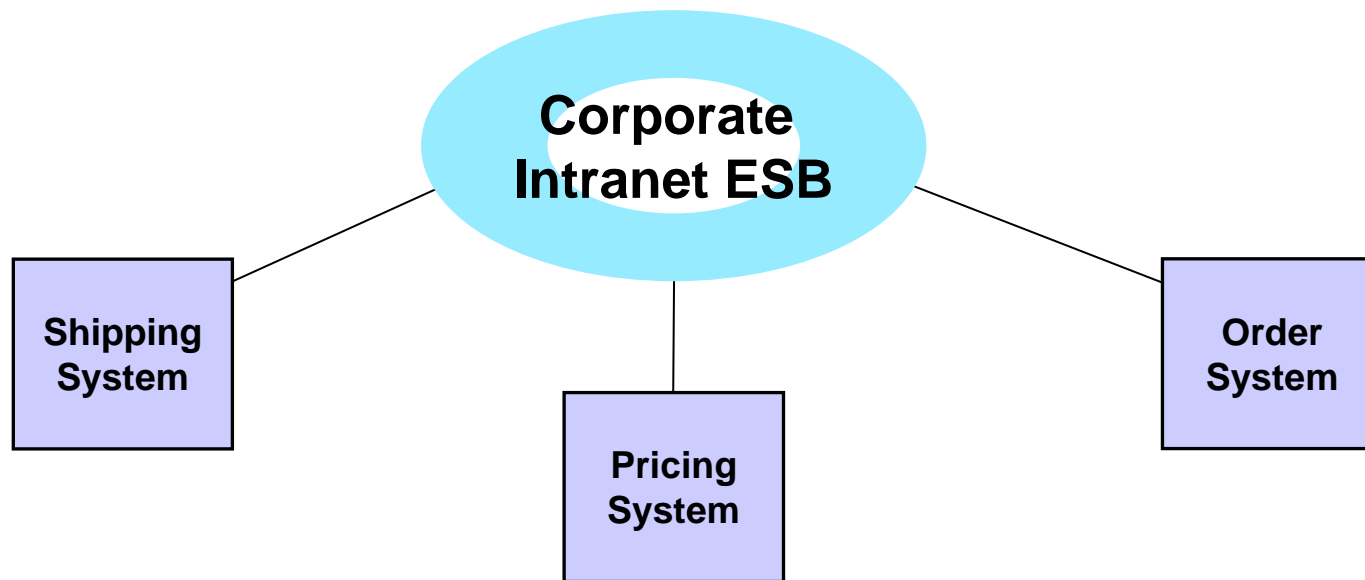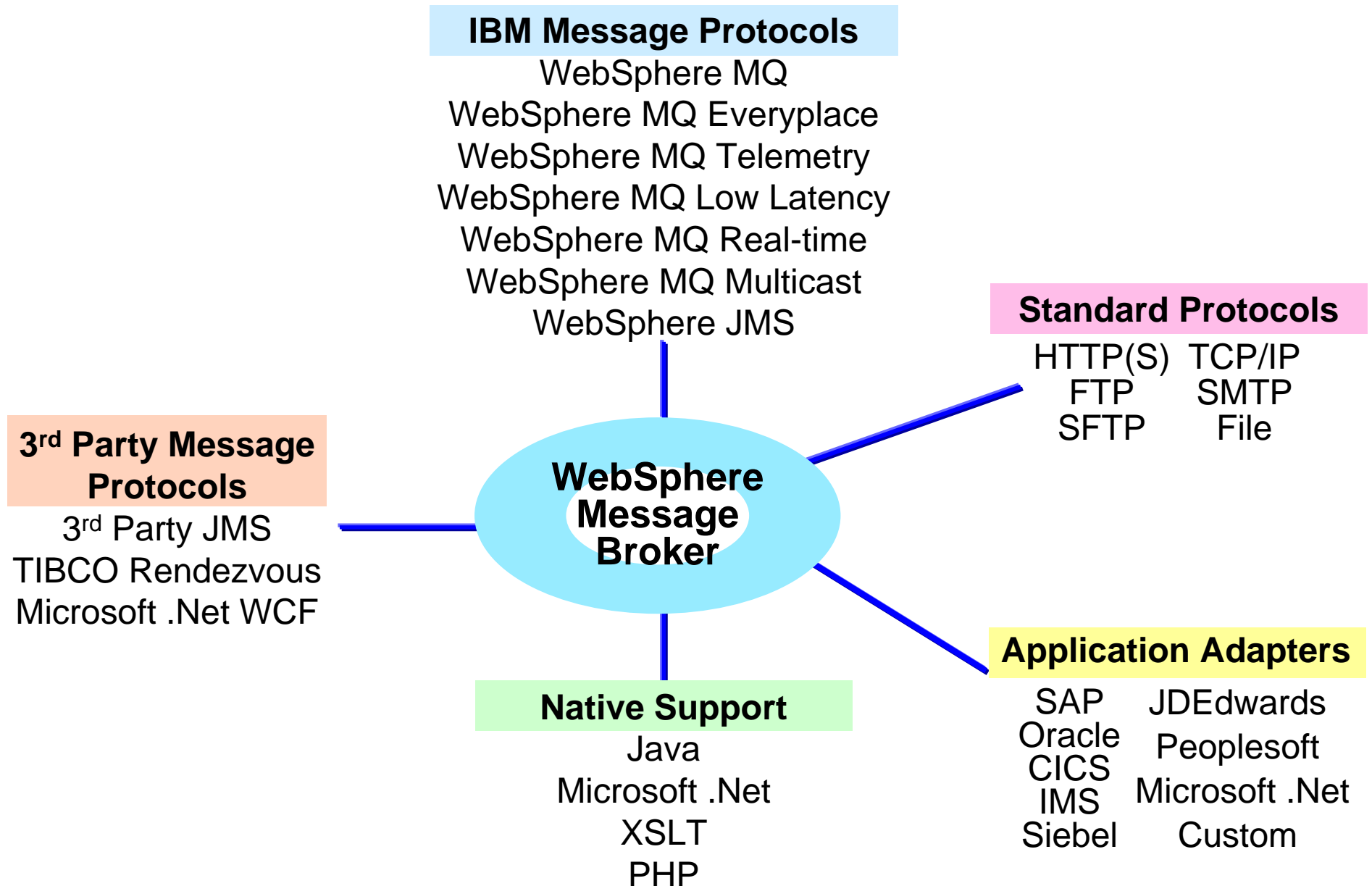# Internal Systems Require High Performance And A Broad Range of Protocols And Formats

A Corporate Intranet ESB requires

- The broadest range of protocols and formats

- Full programming capabilities

- High performance

WebSphere Message Broker Connects To A Broad Range Of Message Formats And Protocols

IBM Message Protocols

WebSphere MQ
WebSphere MQ Everyplace
WebSphere MQ Telemetry
WebSphere MQ Low Latency
WebSphere MQ Real-time
WebSphere MQ Multicast
WebSphere JMS

Standard Protocols

HTTP(S)   TCP/IP
FTP   SMTP
SFTP   File

3rd Party Message Protocols

3rd Party JMS
TIBCO Rendezvous
Microsoft .Net WCF

WebSphere Message Broker

Application Adapters

SAP   JDEdwards
Oracle   Peoplesoft
CICS
IMS   Microsoft .Net
Siebel   Custom

Native Support

Java
Microsoft .Net
XSLT
PHP

WebSphere Message Broker Supports Enhanced Mediations To Simplify Applications

- **Database interaction**
  - ▶ Post content to database for logging
  - ▶ Retrieve from database to augment record contents

- **Message filtering**
  - ▶ De-select messages based on criteria to reduce traffic to application

- **Message aggregation**
  - ▶ Combine multiple individual messages into composite message

- **Message sequencing / resequencing**
  - ▶ Control the order of message delivery to the target application

Using these mediations in WebSphere Message Broker can simplify applications, and let them focus on the **business logic** instead of **message handling**.

WebSphere Message Broker Is Available In Multiple Editions To Meet Differing Needs

Advanced

Standard

Express
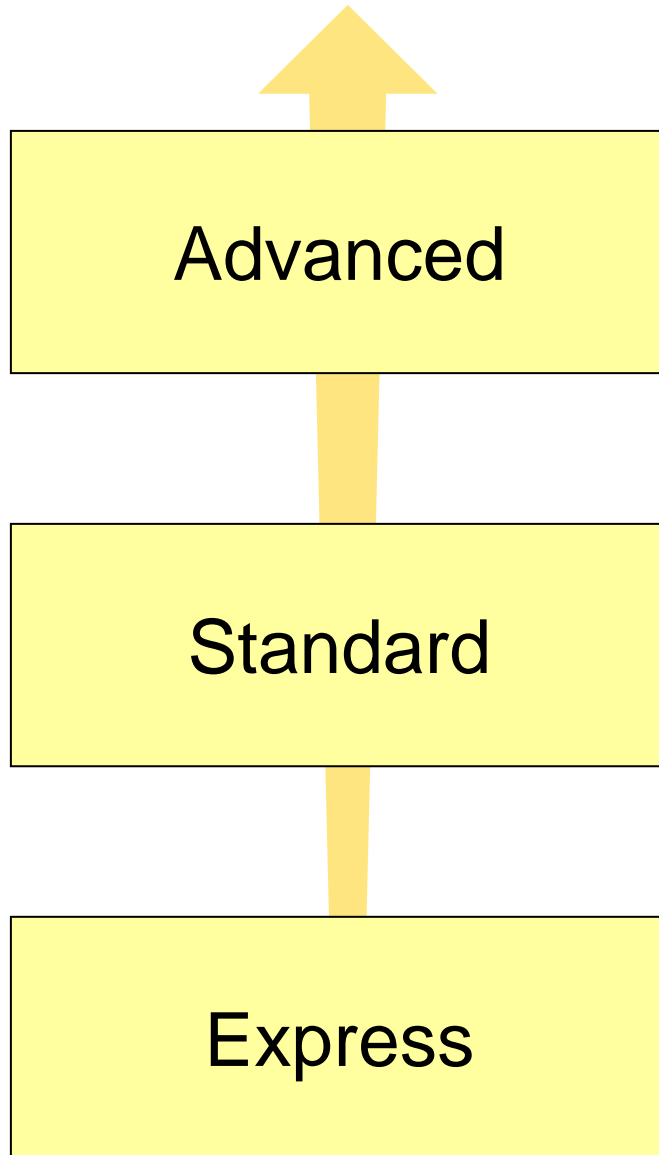
- **Large business and enterprise**
  - ▶ Handle highest volumes of data with highest quality-of-service
  - ▶ No restrictions – can use multiple processes for high performance

- **Mid market**
  - ▶ Full function – additional mediations for more sophisticated ESB needs
  - ▶ Single Execution Group (process)

- **Small business or departmental**
  - ▶ Low volume, low complexity integrations
  - ▶ Easily connect and integrate with .Net applications

Message Broker Hypervisor Edition Provides Fast Deployment In Virtualized Environments

- Supports the creation of private cloud deployments

- Hypervisor editions for Red Hat Enterprise Linux 5.5 and IBM AIX

- Deployed by IBM Workload Deployer or IBM PureApplication System
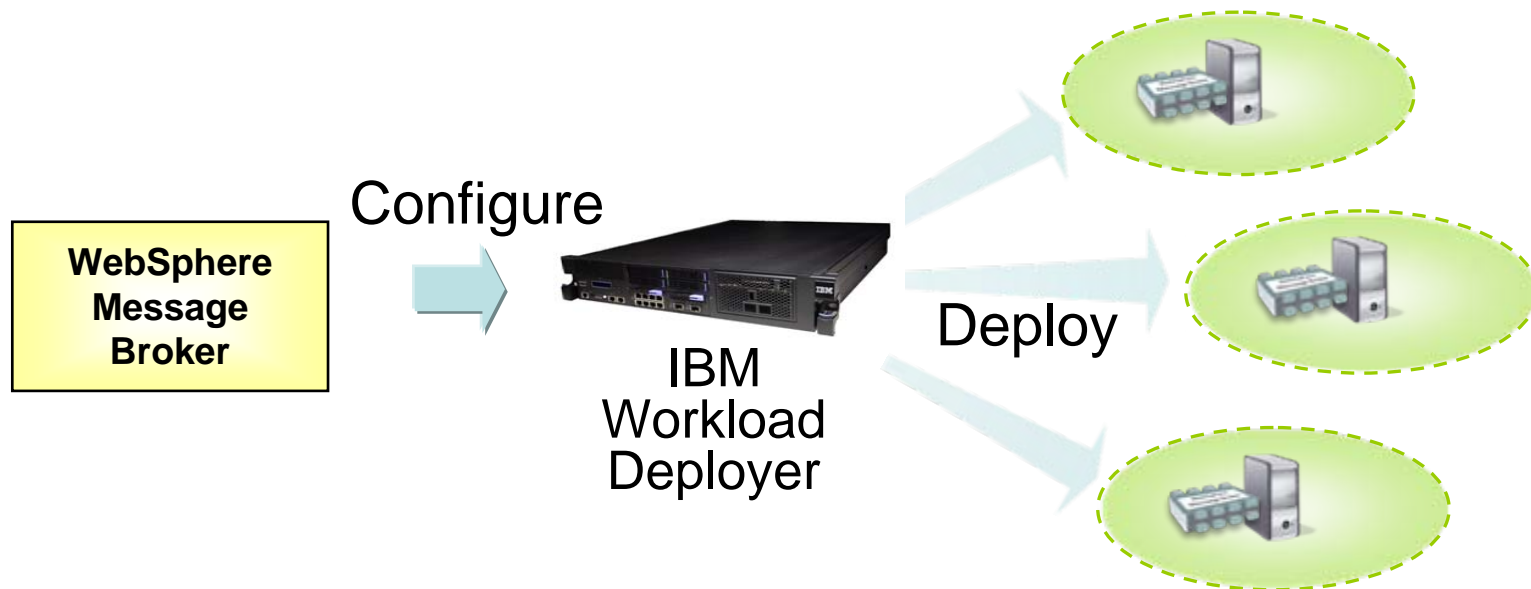
Learn more about Workload Deployer and PureApplication System later today!

ESB Performance Is An Important Consideration

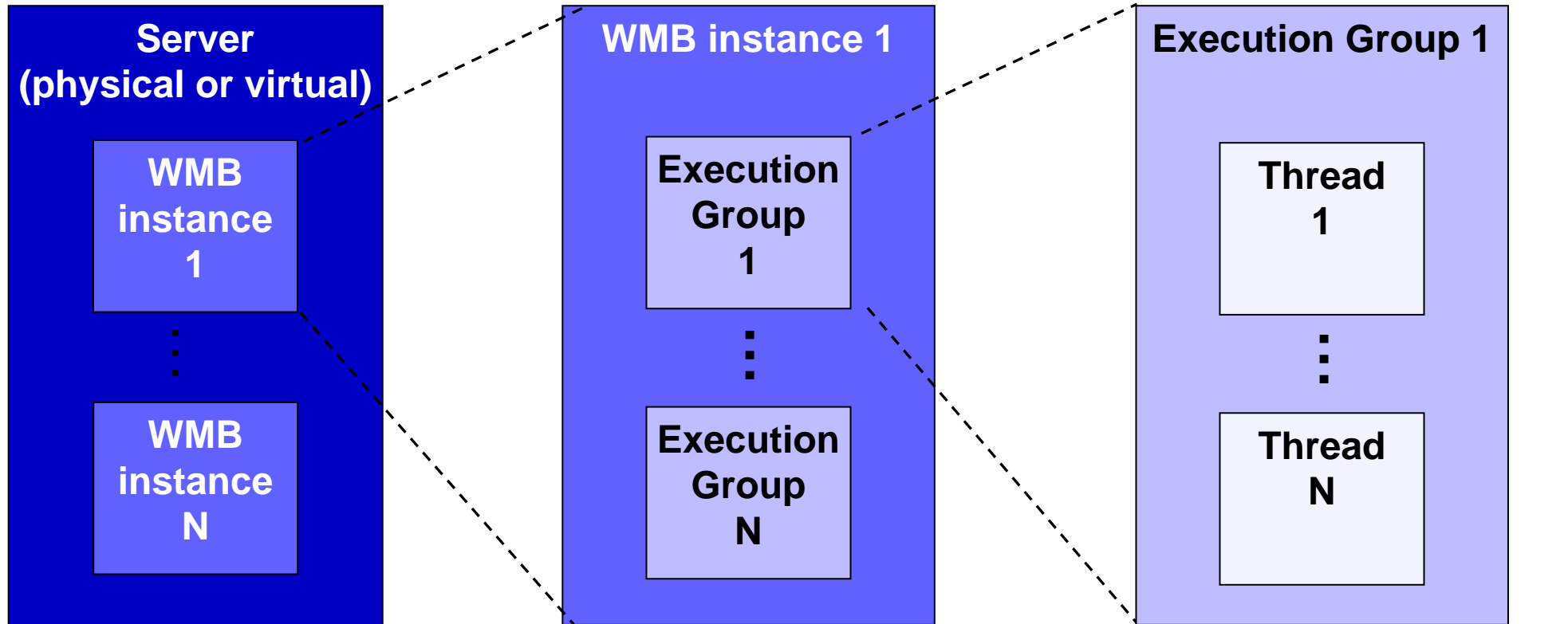The traffic on our message backbone is very heavy.

WebSphere Message Broker is the industry leader in performance. Let me show you…

Service Oriented Finance CIO

IBM

WebSphere Message Broker Is Designed To Scale On Large Servers

Server (physical or virtual)

- WMB instance 1

⋮

- WMB instance N

WMB instance 1

- Execution Group 1

⋮

- Execution Group N

Execution Group 1

- Thread 1

⋮

- Thread N

- There can be multiple instances of WMB running in a physical or virtual server

- Running in a virtual image allows fine control over license costs

- Each instance is independent for security and management

- Each execution group is a separate process, so is isolated from others at run-time

- Unit of management and deployment

- Message flows can be deployed to one or more execution groups for higher parallelism

- An execution group can execute in multiple threads, specified by simple parameter change

- Easiest way to provide for higher parallelism

WebSphere Message Broker Is Ideal To Feed Business Events To Operational Decision Manager
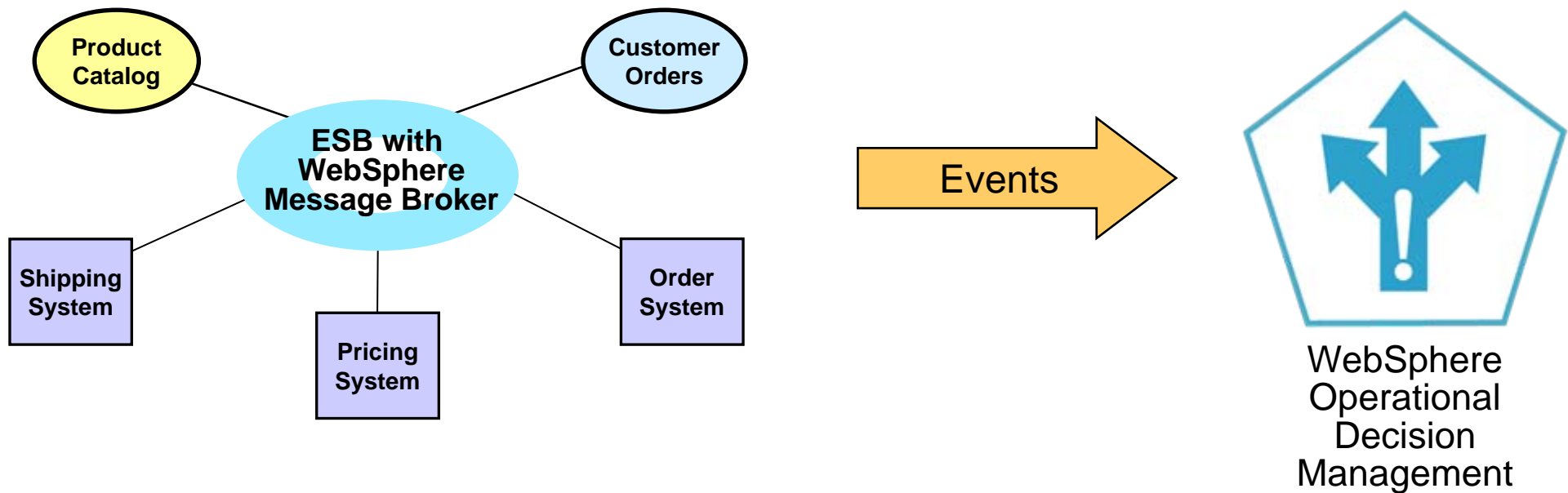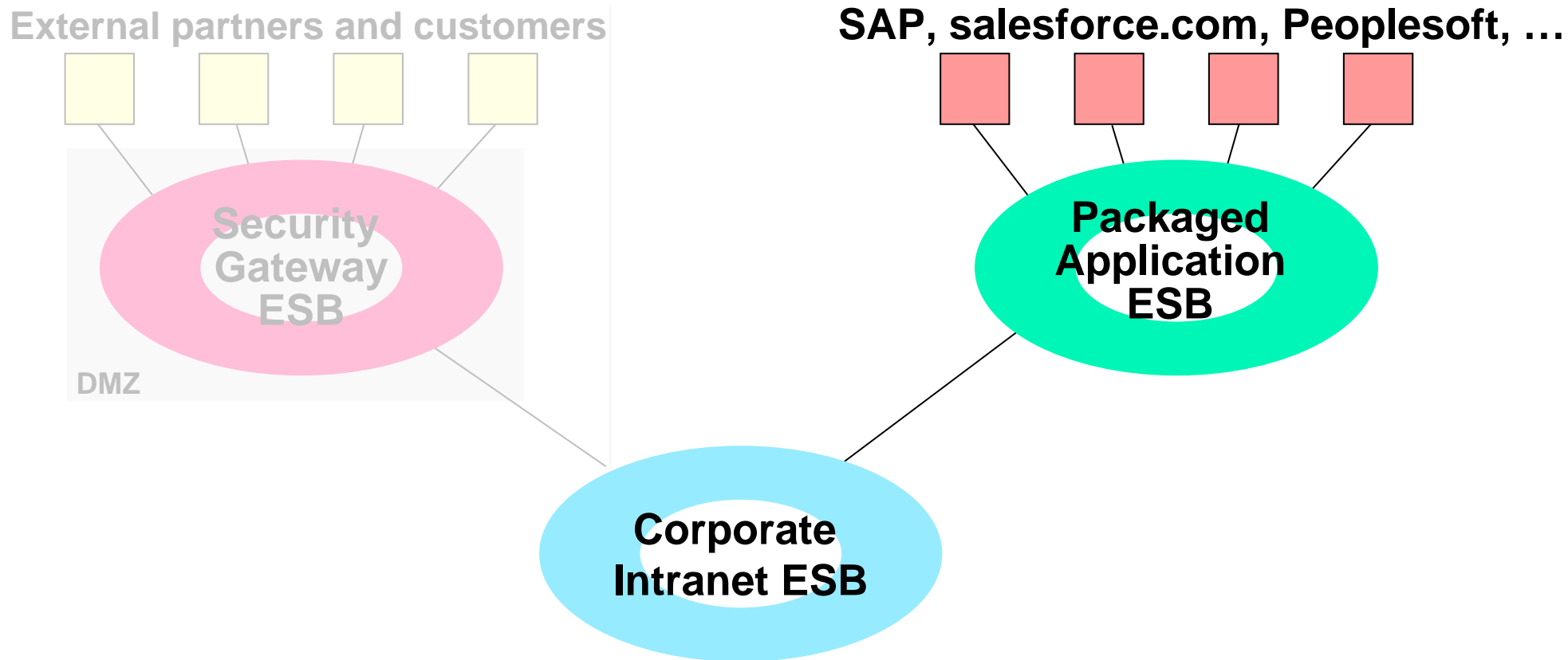

- Central location is ideal to monitor any relevant messages
- Message Broker can duplicate and redirect messages, so the original applications are unaffected
- High performance can keep up with occurrences of business events

WebSphere Enterprise Service Bus Is An Important Part Of SOA

- Runs on top of WebSphere Application server for an integrated platform
  - Shares common registry, security, administrative and development tools

- Standards-based integration for easy integration with Java Enterprise Edition (JEE) solutions
  - Web Services
  - Java Message Services (JMS)
  - XML Transformation (XSLT)

- Supports Service Component Architecture (SCA) for easy integration of services in SOA solutions
 - A key component of IBM Business Process Manager

Cloud or SaaS Applications Need Quick Integration To Well-Known Solutions

External partners and customers

SAP, salesforce.com, Peoplesoft, …

Security Gateway ESB

DMZ

Packaged Application ESB

Corporate Intranet ESB

- Need to integrate <u>quickly</u> to SAP, salesforce.com, Peoplesoft and many others
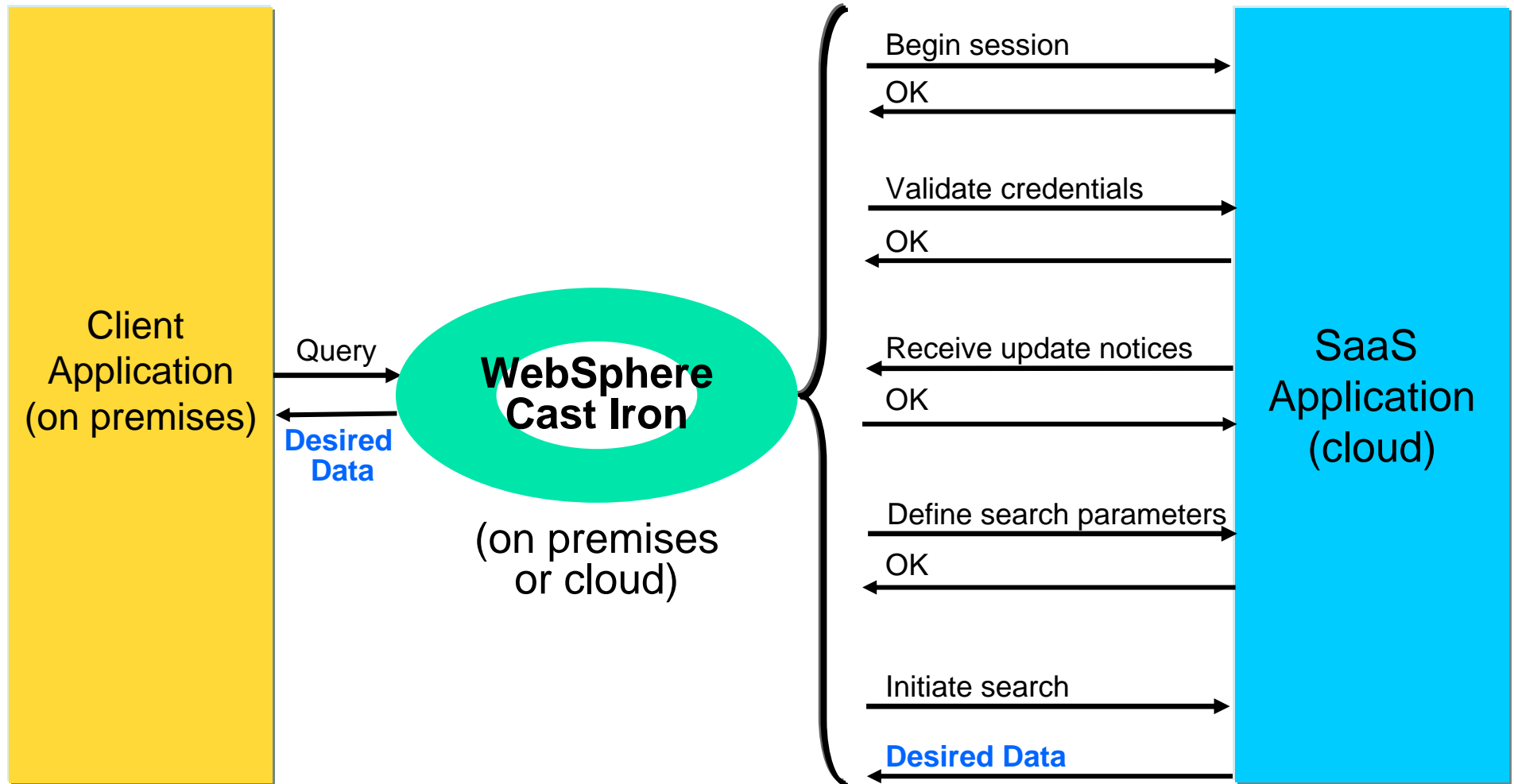- Need to interact at <u>application</u> level, not just Web services or FTP

SaaS Connections Require Additional Support

Complex interaction sequences are often required to achieve the desired result
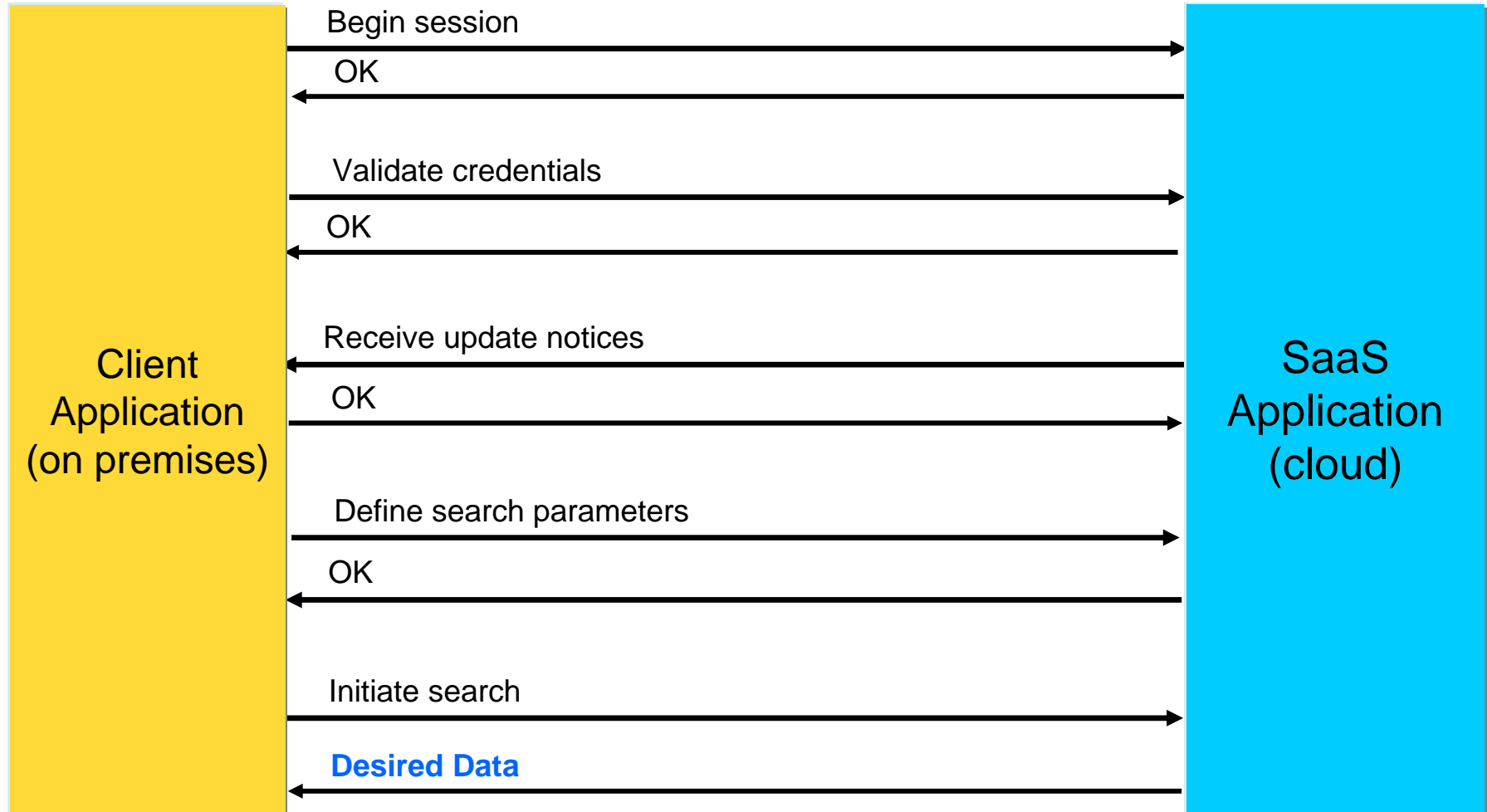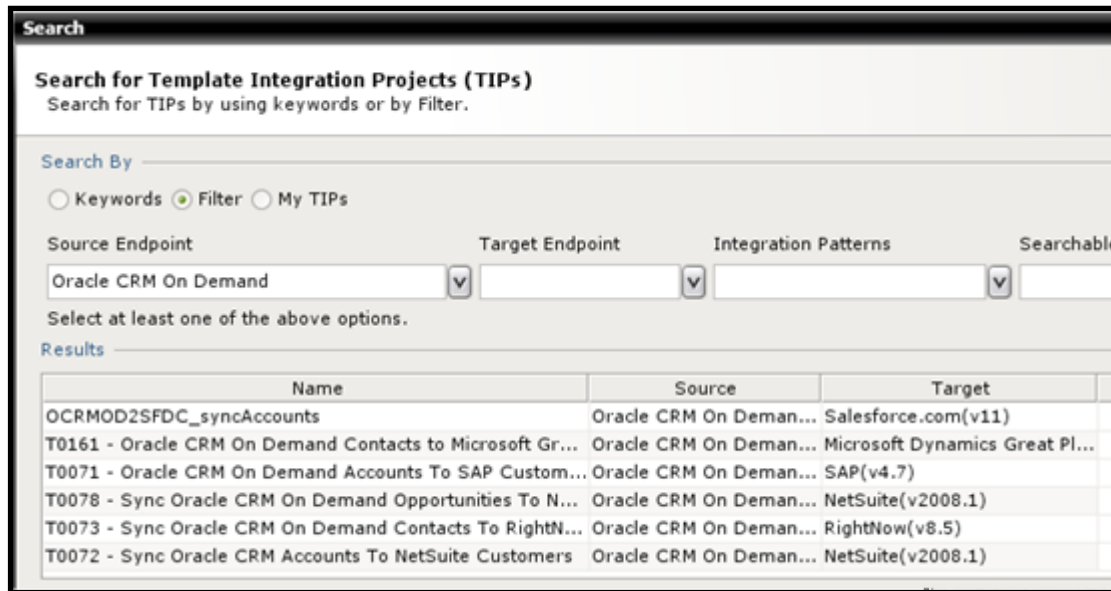
# WebSphere Cast Iron Greatly Simplifies SaaS Integration

Cast Iron handles the SaaS interactions, removing complexity from the client application

Client Application (on premises)

Query →
← **Desired Data**

WebSphere Cast Iron
(on premises or cloud)

Begin session →
← OK

Validate credentials →
← OK

← Receive update notices
OK →

Define search parameters →
← OK

Initiate search →
← **Desired Data**
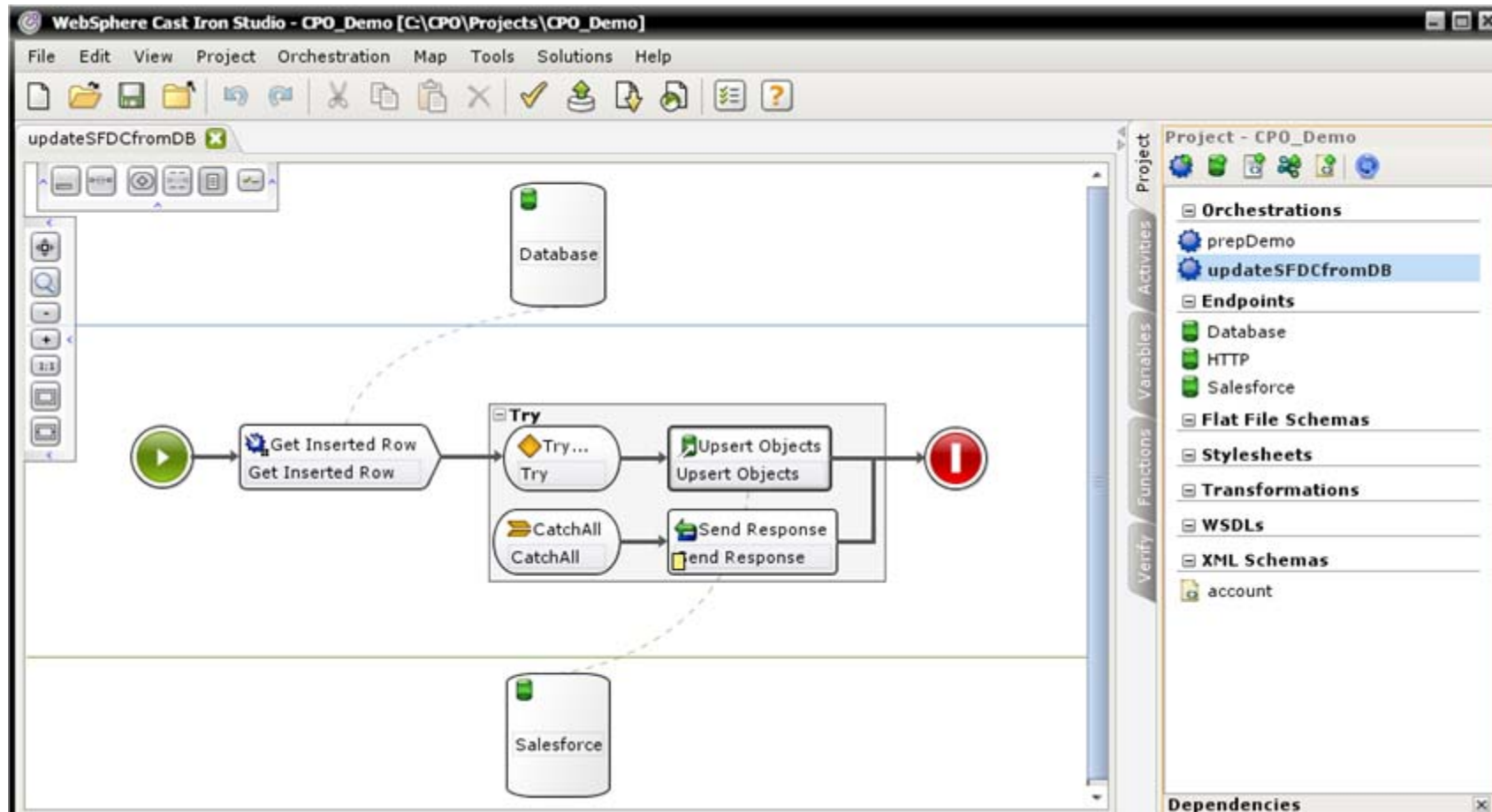
SaaS Application (cloud)

Cast Iron Template Integration Projects Make It Easy To Do Common Integrations

- Implements best practices

- Supports most major SaaS offerings

- Wizard-driven configuration for your environment

- Can be tailored after installation
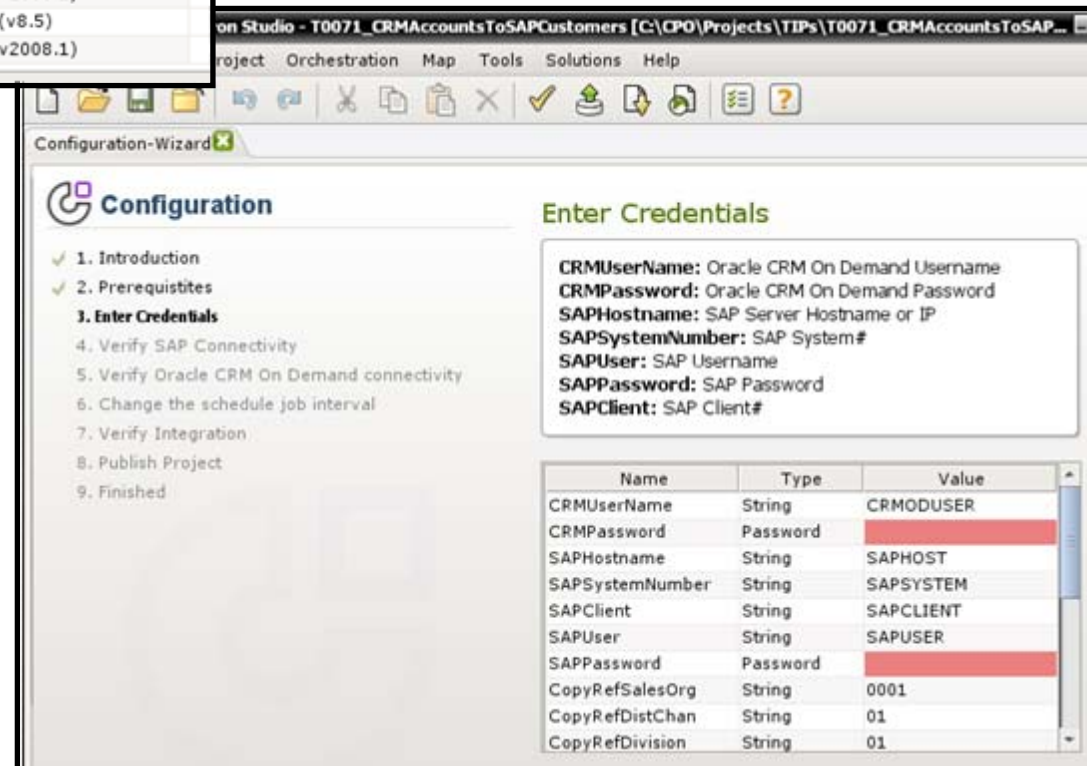
Demo: Integrate Salesforce.com Customer Information With DB2

- Add new customer to DB2
- Cast Iron orchestration detects change and adds customer to salesforce.com
- Library of Template Integration Projects for "best practices" integrations

Cast Iron Delivery Options Provide Flexibility

Physical Appliance

WebSphere DataPower Cast Iron Appliance XH40

A self-contained physical appliance built on market-leading IBM technology

Virtual Appliance

WebSphere Cast Iron Hypervisor Edition

A virtual appliance that can be installed on your existing servers by using virtualization technology. It provides the same functionality as the physical appliance.
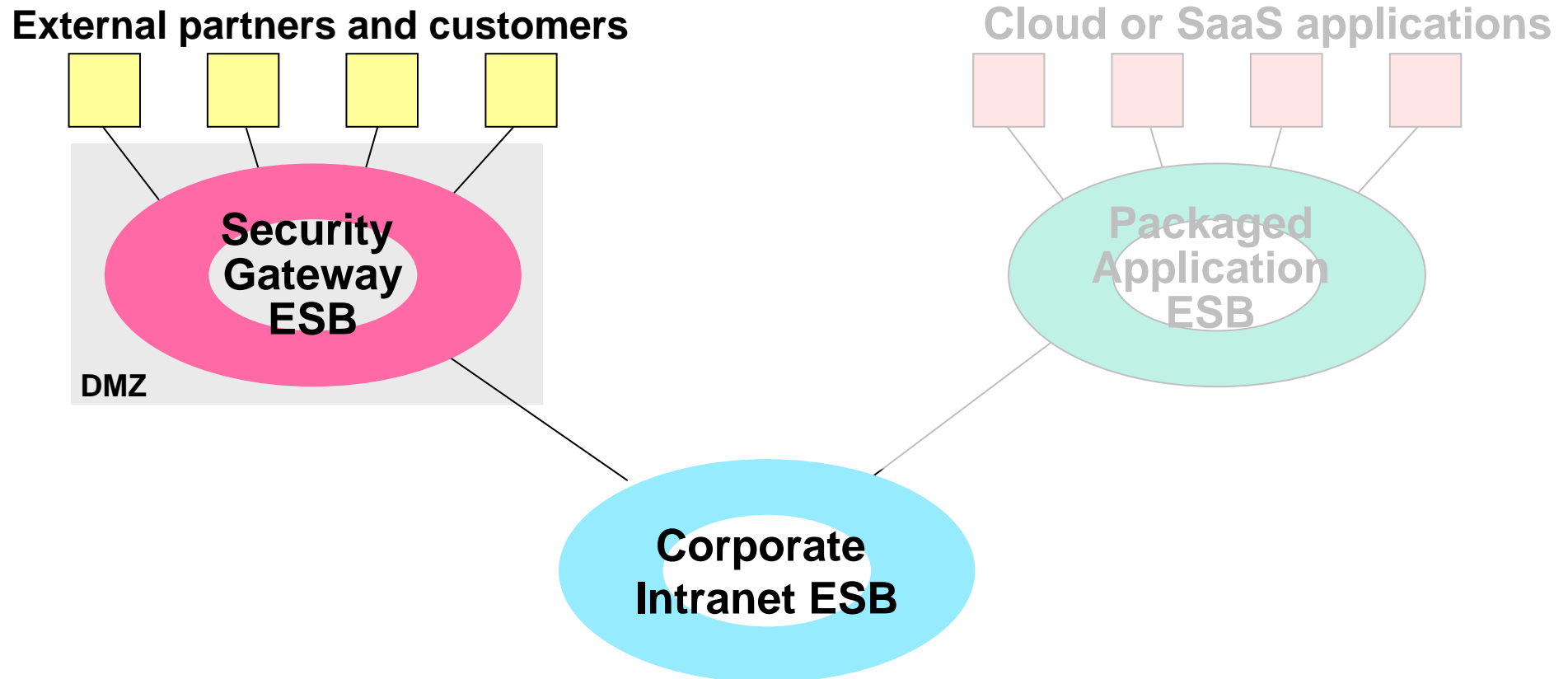
Cast Iron Cloud2™

WebSphere Cast Iron Live

A complete multi-tenant cloud service that you can use to design, run, and manage all of your integrations in the cloud.

External Connections Have Greater Security And XML Translation, Validation Requirements

External partners and customers

Cloud or SaaS applications

Security Gateway ESB

DMZ

Packaged Application ESB

Corporate Intranet ESB

- The Security Gateway ESB is positioned in the DMZ, between internal and external networks

- It must be highly secure, and requires support for many security protocol and credential standards

- High speed XML validation / translation is a must

WebSphere DataPower Appliances Are Ideal For External Gateway ESBs

DataPower XI50
DataPower XI52

Rack mounted
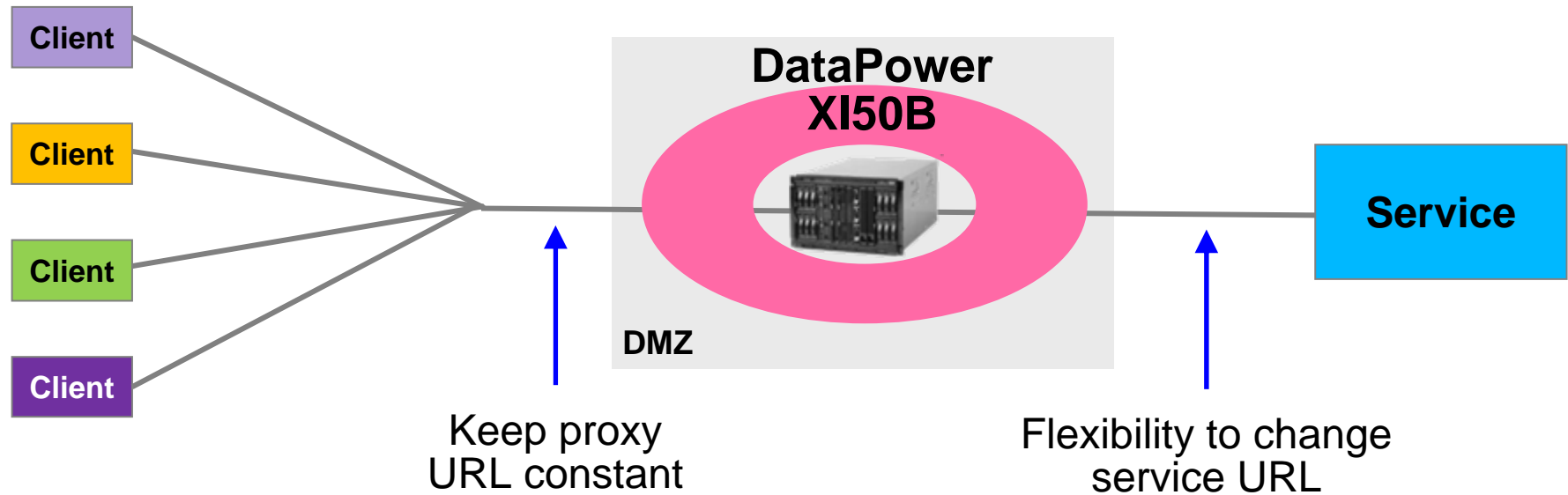
DataPower
XI50B

BladeCenter

DataPower
XI50z

zEnterprise
BladeCenter Extension
(zBX)

- Highly secure appliance format
  - ► No local program execution
  - ► Tamper-proof physical device

- High speed XML processing (parsing, schema validation, encryption / decryption)

- Configuration, not programming
  - ► Reduces learning curve
  - ► Reduces risk of error
  - ► Decreases time to solution

Web Service Proxy Pattern Decouples Clients From Services

Client

Client

Client

Client

DataPower XI50B

DMZ

Service

Keep proxy
URL constant

Flexibility to change
service URL

- **Reduce the impact of change**
  - ▶ When details of a service change (e.g., URL),
    then update proxy instead of each individual client

- **Increase security**
  - ▶ Hide implementation details (e.g., server name)

- **Can be combined with transformation, routing, authorization, and other message processing**

DataPower Provides High Security For External Access
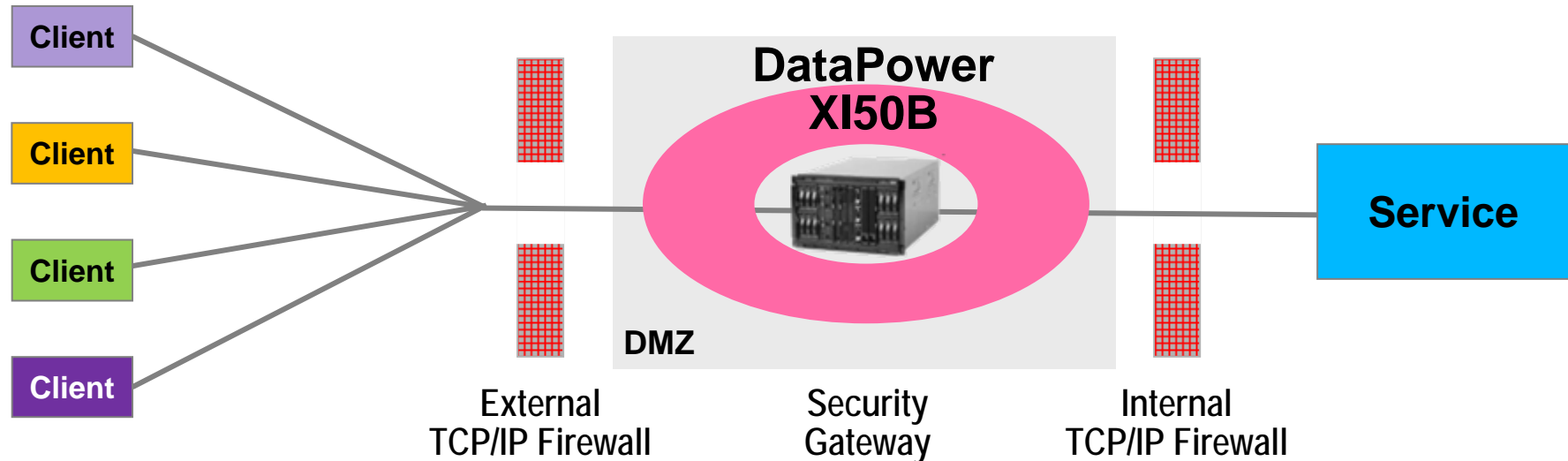
Perform XML firewall functions

▶ Identification, authentication, encryption/decryption

▶ XML message validation

Perform ESB functions

▶ Routing to backend server with appropriate transformation

Security features:
SSL, HTTP Authentication Header
WS-Security, WS-SecureConversation
WS-Trust Base
Kerberos, SAML, LPTA, DER, PEM
PKCS #7, PKCS #8, PKCS #12
NSS, XML Encryption, Digital Signatures
(and more)

Service Lookup With WebSphere Service Registry And Repository (WSRR) Provides Even More Flexibility

- Payments are not routed to fixed end point destinations
- ESB dynamically selects the best end point service by comparing message content with information about registered end point services
- Fewer mediation design changes are needed as end points change
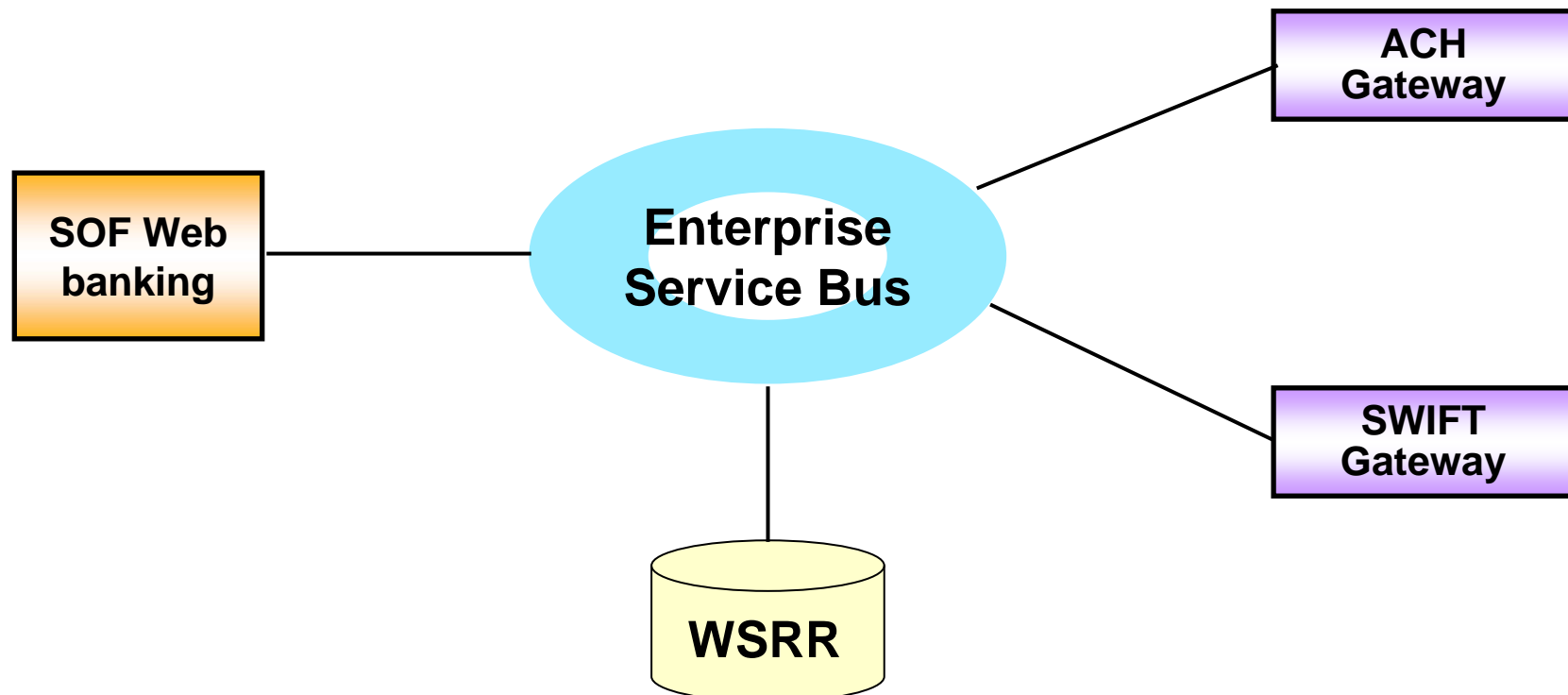
DEMO: Dynamic, Flexible Routing And Transformation Of Payments Using Service Lookup

- Payments are dynamically routed to end point services by comparing payment amount to payment limits stored in WSRR
- Transformation from to SWIFT and ACH formats
- Payments are processed the same for both gateways
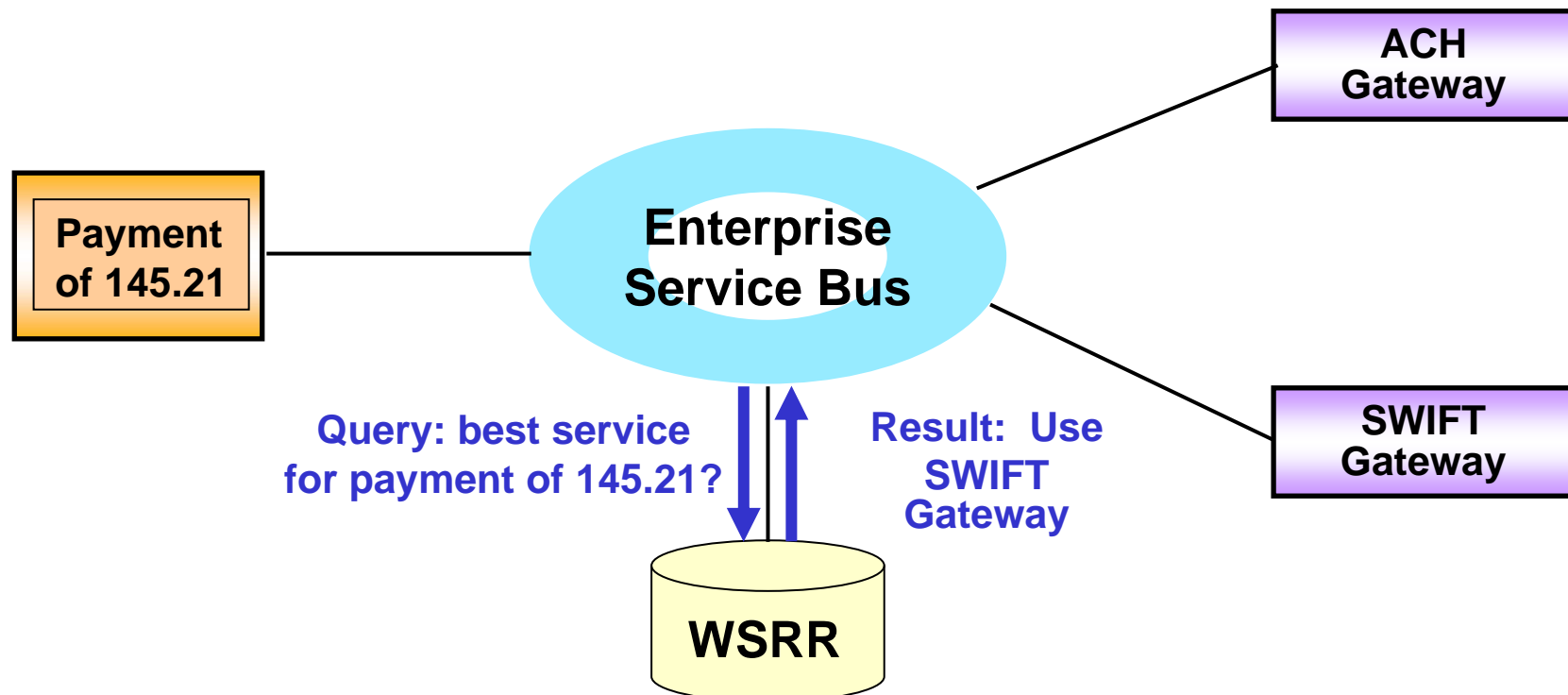
Adding Or Removing An End Point Can Be Done With Minimal Changes

- Adding an end point only requires a new end point service and registry change. No code or design changes are required.

- Removing an end point requires no code or design changes
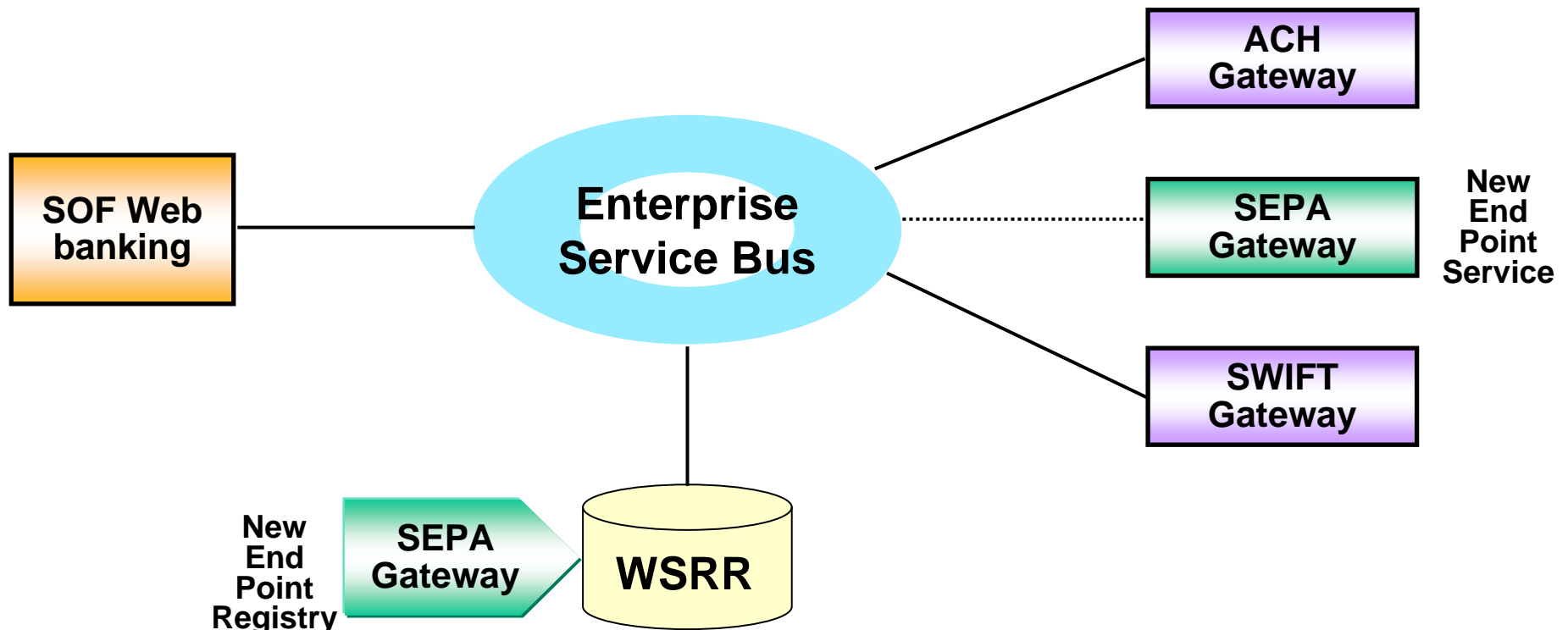
Connecting Your Systems Allows Your Company To Work Smarter

- **IBM WebSphere Message Broker** has the broadest reach and gives the highest throughput

- **IBM WebSphere ESB** simplifies integration of JEE and SOA applications

- **IBM WebSphere DataPower** speeds up, simplifies, and secures connectivity

- **IBM WebSphere Cast Iron** simplifies integration of SaaS applications

- **IBM WebSphere Service Registry and Repository** adds flexibility to an ESB