



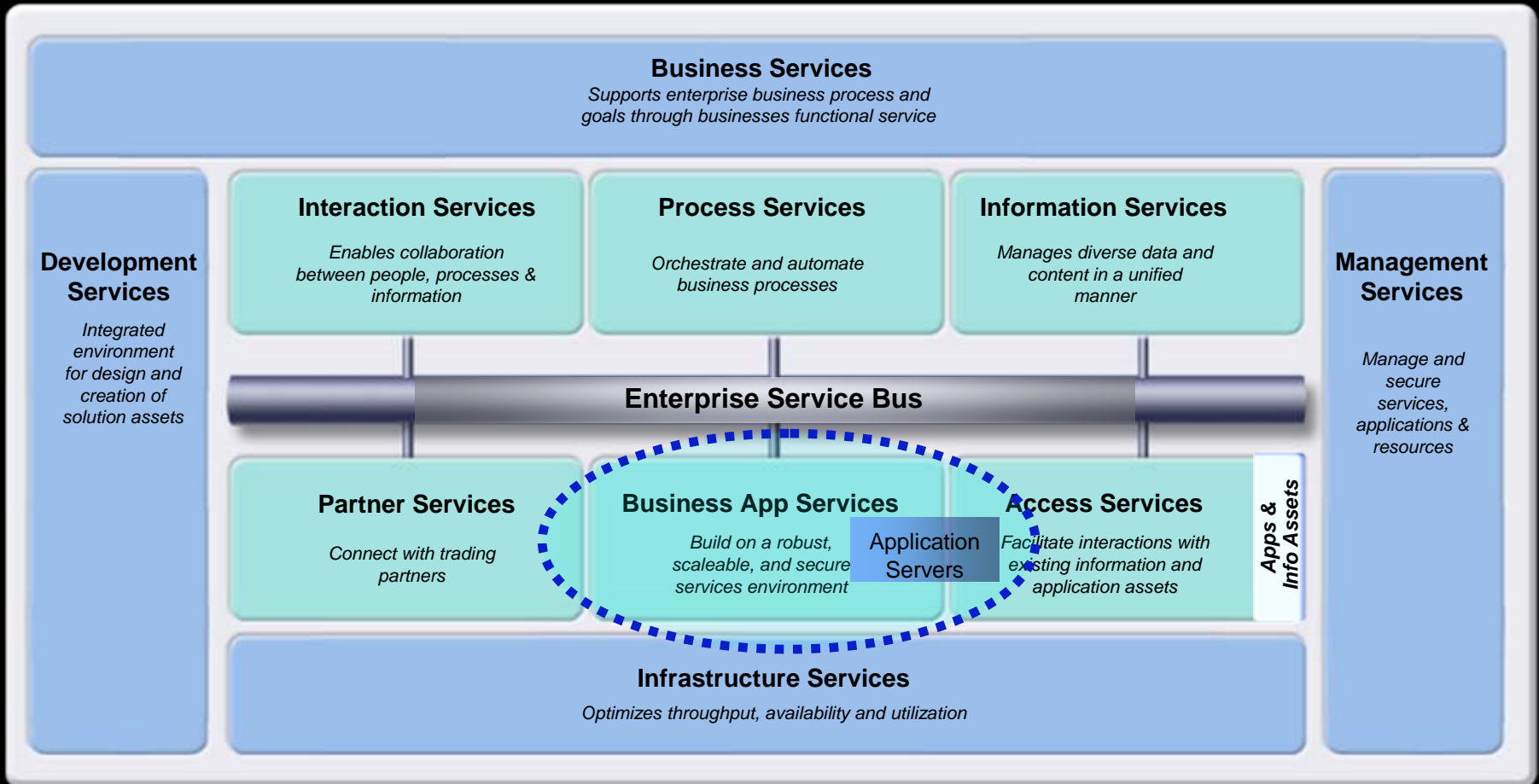
IBM WebSphere

WebSphere Application Server V7.0 Update

Ian Robinson, IBM Distinguished Engineer
Tim Francis, IBM Distinguished Engineer

Business App Services Key to SOA

Application Servers deliver Business App Services

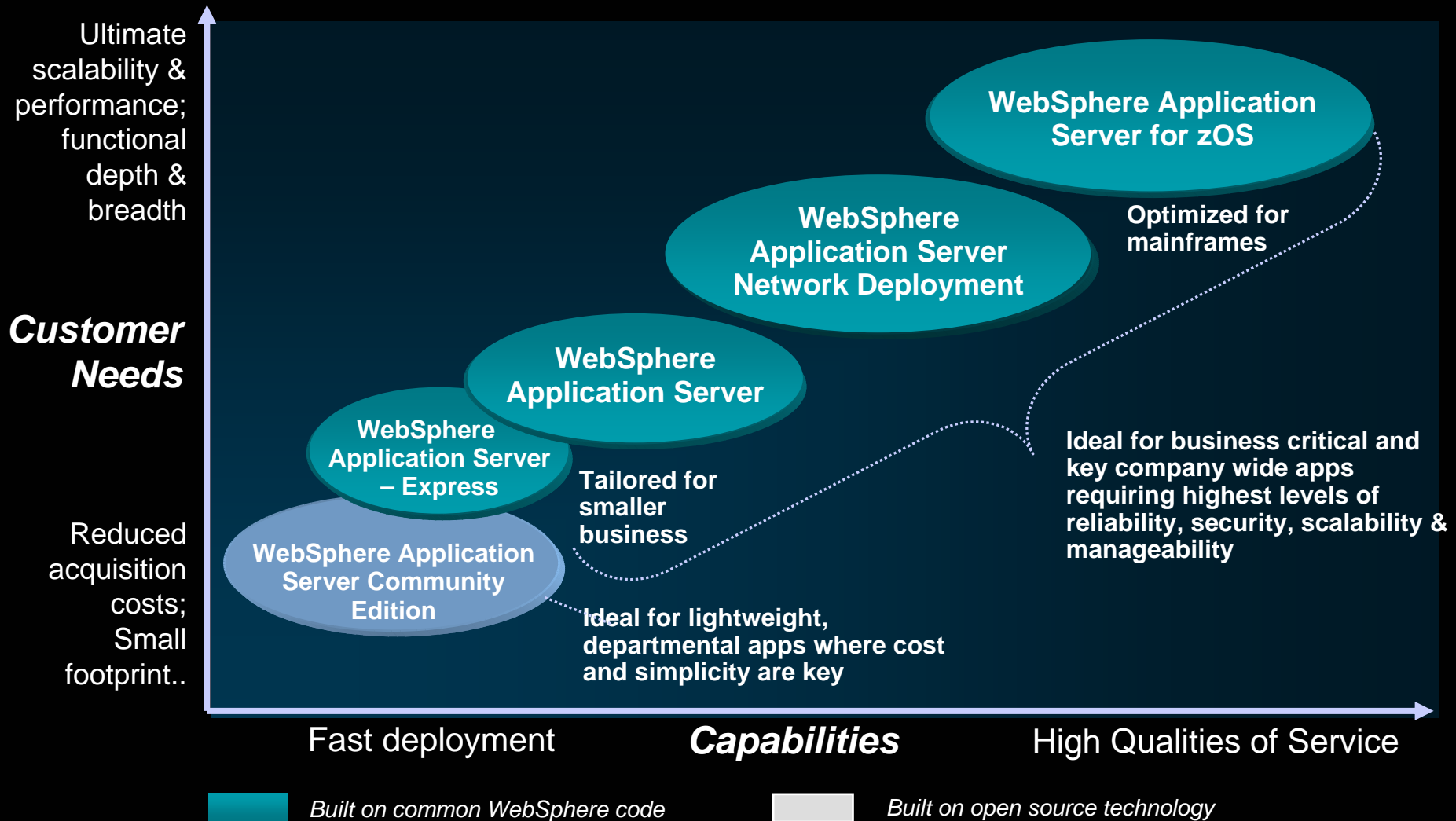


Agenda

- The IBM WebSphere Application Server Family
- IBM WebSphere Application Server V7 – A Closer Look
 - High Performance Foundation for SOA
 - Simplification for Developers
 - Intelligent Management
 - Innovation That Matters
- Summary

IBM WebSphere Application Server Family

Your Choice of Innovative Performance Based Application Foundations



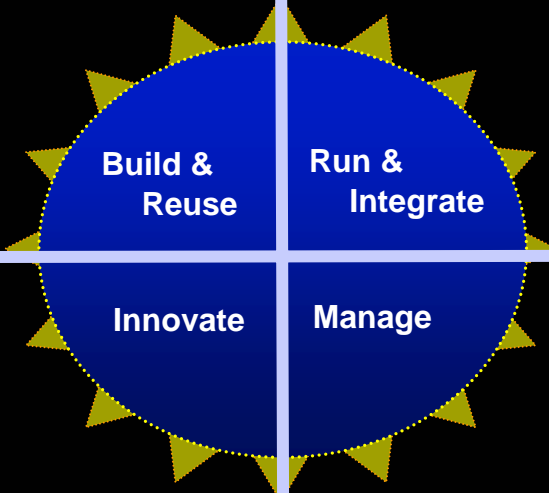
IBM WebSphere Application Server Version 7

Simplification for Developers

- New and enhanced Standards: Java EE 5 certification, EJB3, Web Services
- Web 2.0
- Feature Pack Strategy
- New Rational Application Developer Support

High Performance Foundation for SOA

- Performance leadership
- **New Runtime Provisioning**
- **New and Enhanced Security Features**
- Multi-Cell Support
- Application investment protection
- **New Consolidated WebSphere and DataPower administration**



Innovation that Matters

- Feature Pack for Web 2.0
- Feature Pack for SCA
- Broad support for new programming models; J2SE 6, Java EE 5, WS-I Reliable Secure Profile, SIP and more

Intelligent Management

- **New Flexible Management:** Job Manager, Admin Agent
- **New WebSphere Business Level Applications**
- **New Centralized Installation Manager**

News

WebSphere Application Server v7.0 was formally announced last week (Sept 9, 2008)
The product will be available on Sept 26, 2008

WebSphere Application Server v7.0

High Performance Foundation for SOA

- *Grow your business on a reliable, available, scalable, secure foundation that promotes business agility*

Intelligent Management

Simplification for Developers

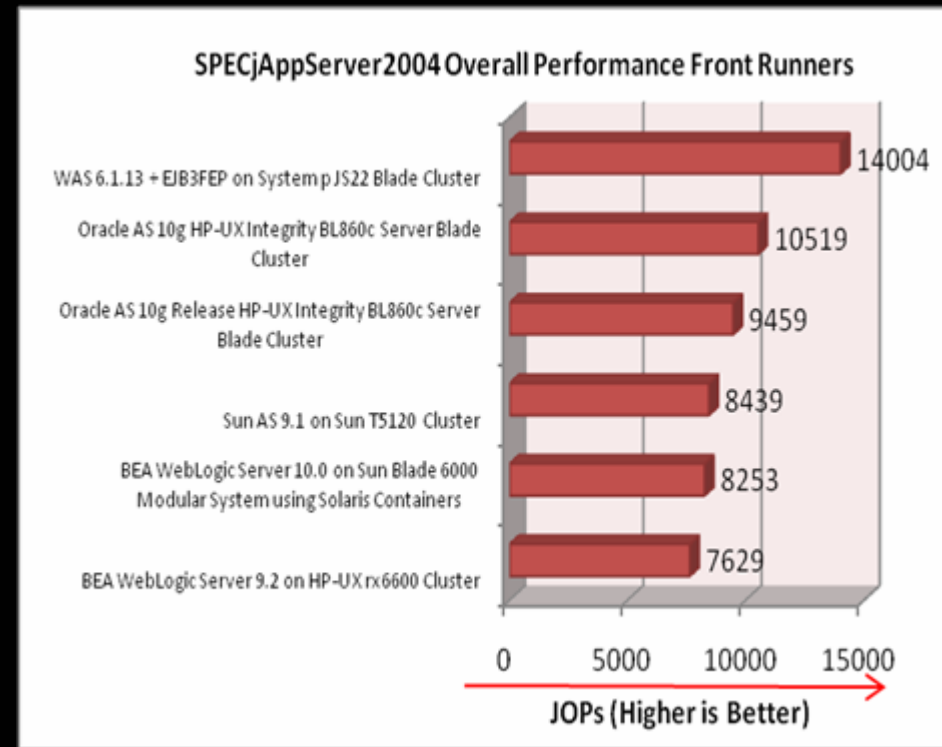
Innovation That Matters

Optimized Runtime Performance

Do more with less. Better performance means you need fewer processors = savings in hardware and energy!

WebSphere Application Server Performance Landscape

1. **Dominates the overall benchmark category by 33%**
2. **Technology that costs half the price of the competition running more than 75,000 transactions per second against a database.**
3. **Commanding lead in the throughput per core and single 4-core system categories**
 - **Leading Oracle/HP and Oracle/Sun by more than 16% in performance per CPU core**



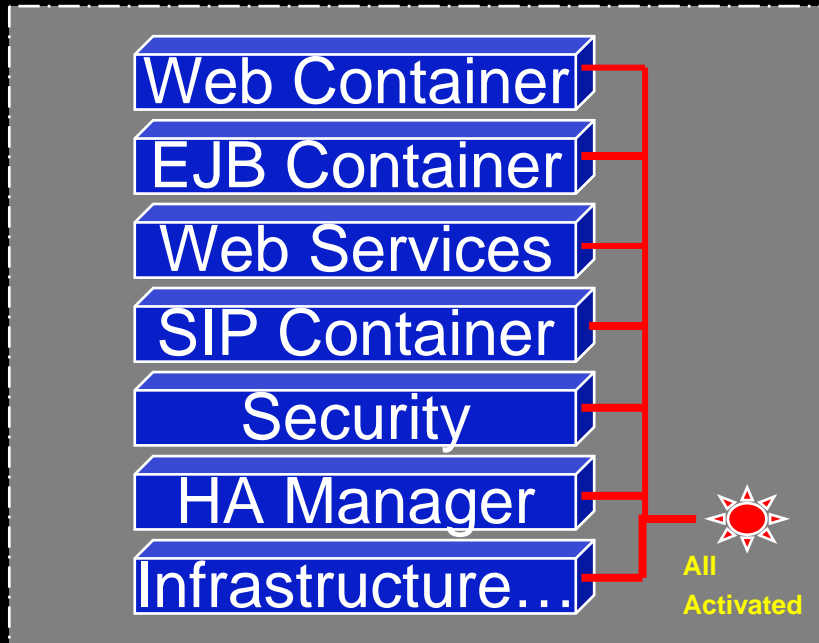
This publish:
 - WAS 6.1 with EJB3 Feature Pack on AIX 5L V5.3
 - IBM POWER6 BladeCenter servers
 26 servers powered by two dual-core IBM® POWER6® 4.0 GHz processors

And WAS v7 is faster...

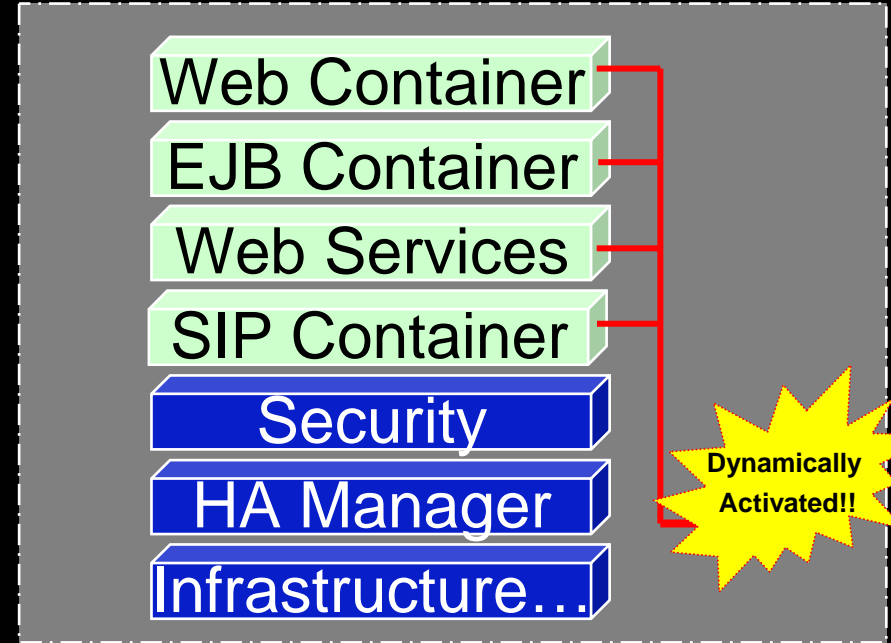
Runtime Provisioning

Selects only the needed functions for memory and space efficiencies significantly reducing the application server footprint and start-up times

V6.1 Server



V7 Server



Security Auditing

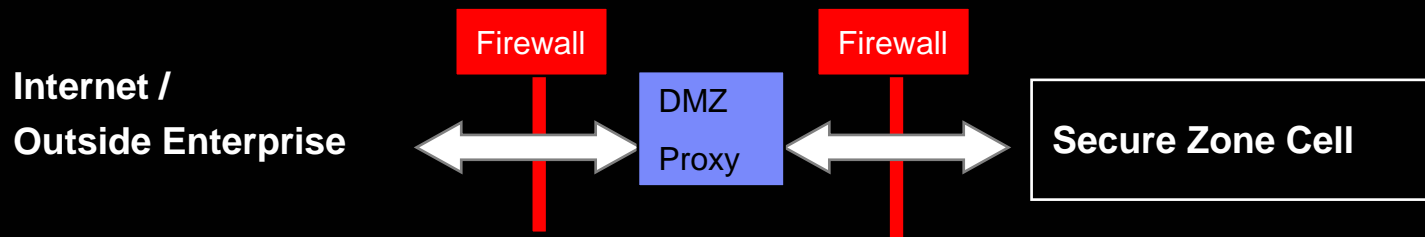
KNOW when, how, who and what changes are being made to your system!!

- Option to generate security auditing records of WebSphere administrative actions
- Option to generate security auditing records of business applications
- Ability to integrate with third party security auditing services
- Separation of administrative user privileges: Administrator and Auditor

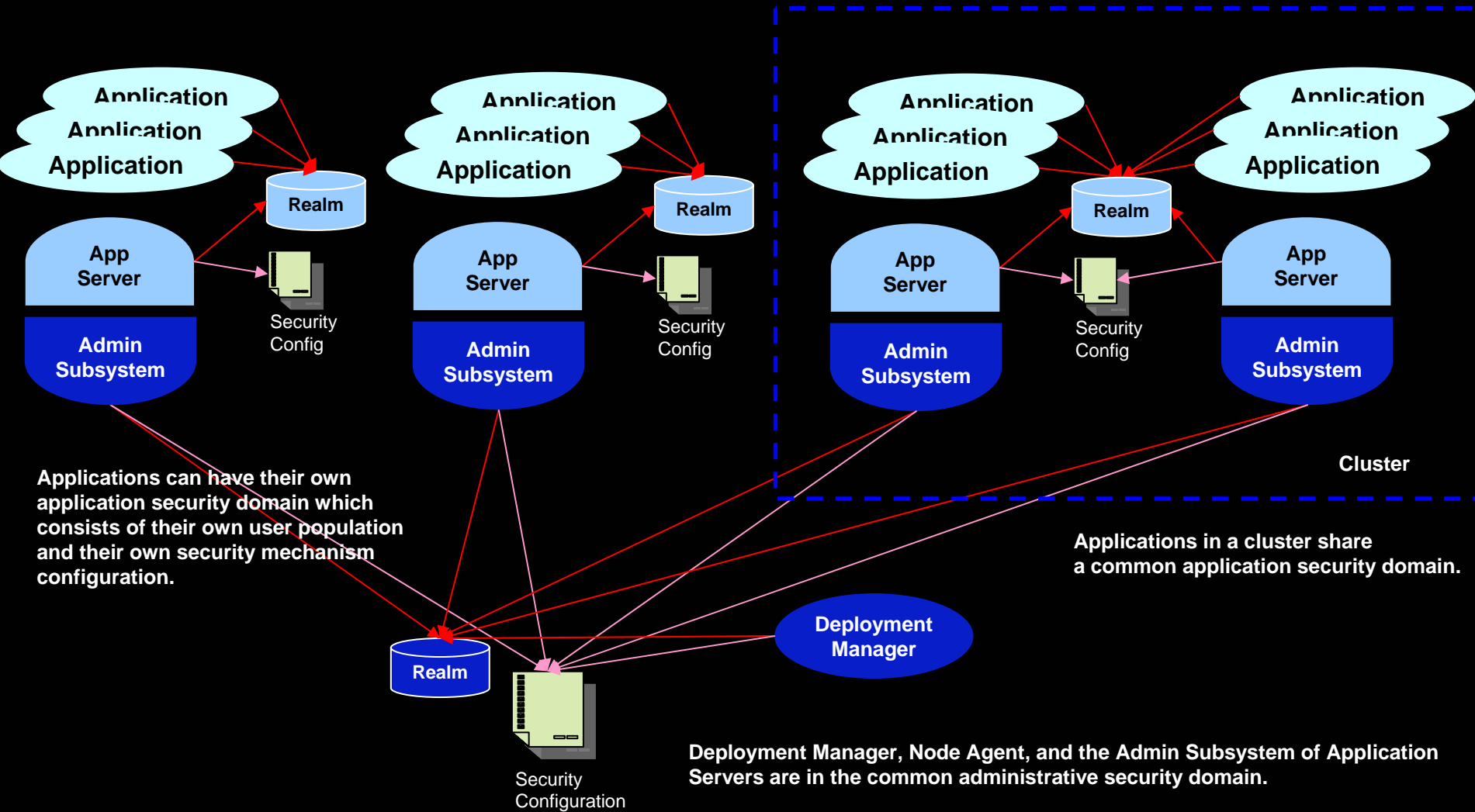


WebSphere Secure Proxy

- Proxy Server hardened for DMZ topologies
- External ports reduced to bare minimum to support proxying
- Loads only digitally signed jars
- Runs as unprivileged user while binding to well known ports

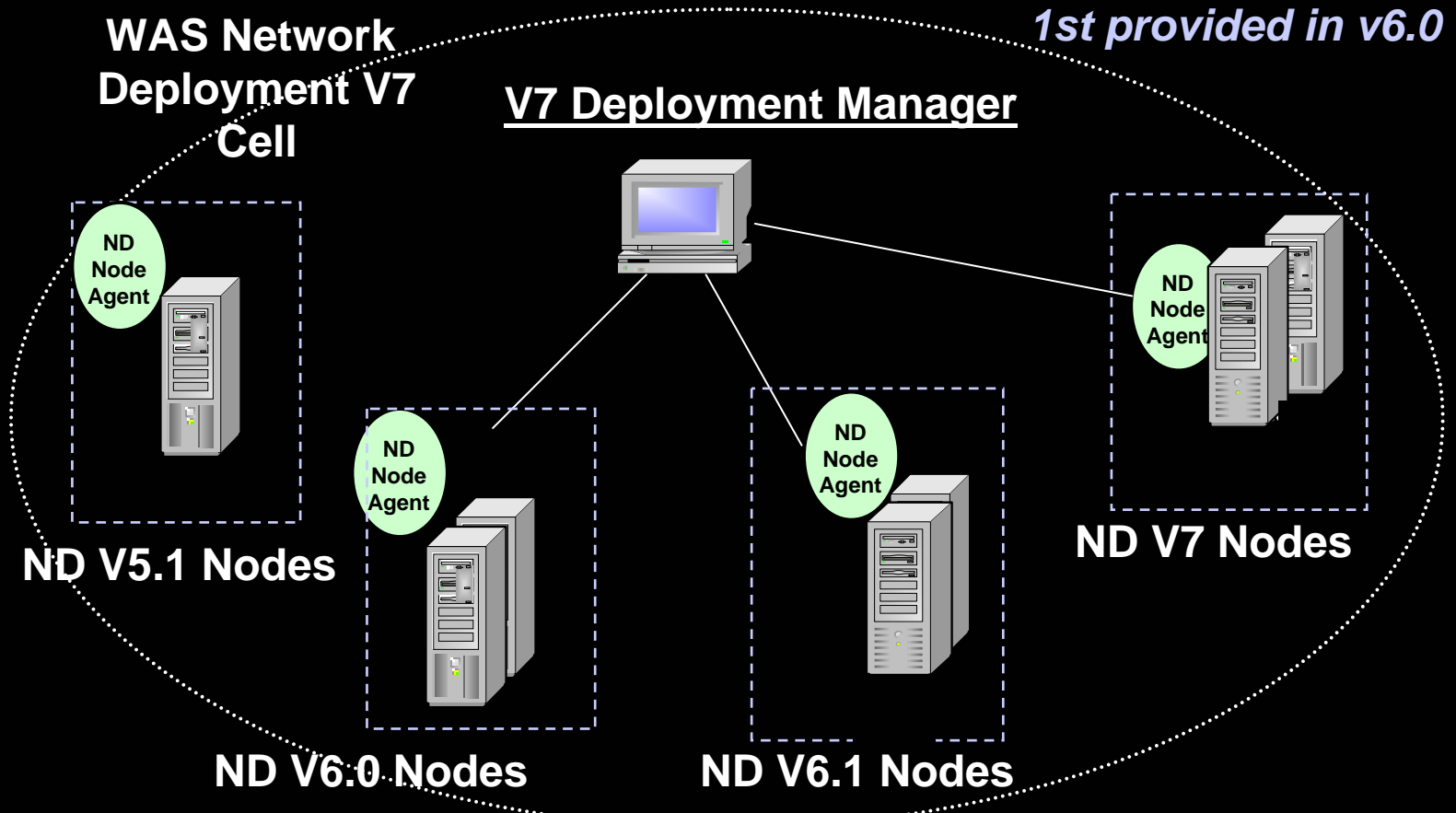


Multiple Security Domains



WAS Multi-cell Support

Adopt newer infrastructure as your plans require, saving time and money

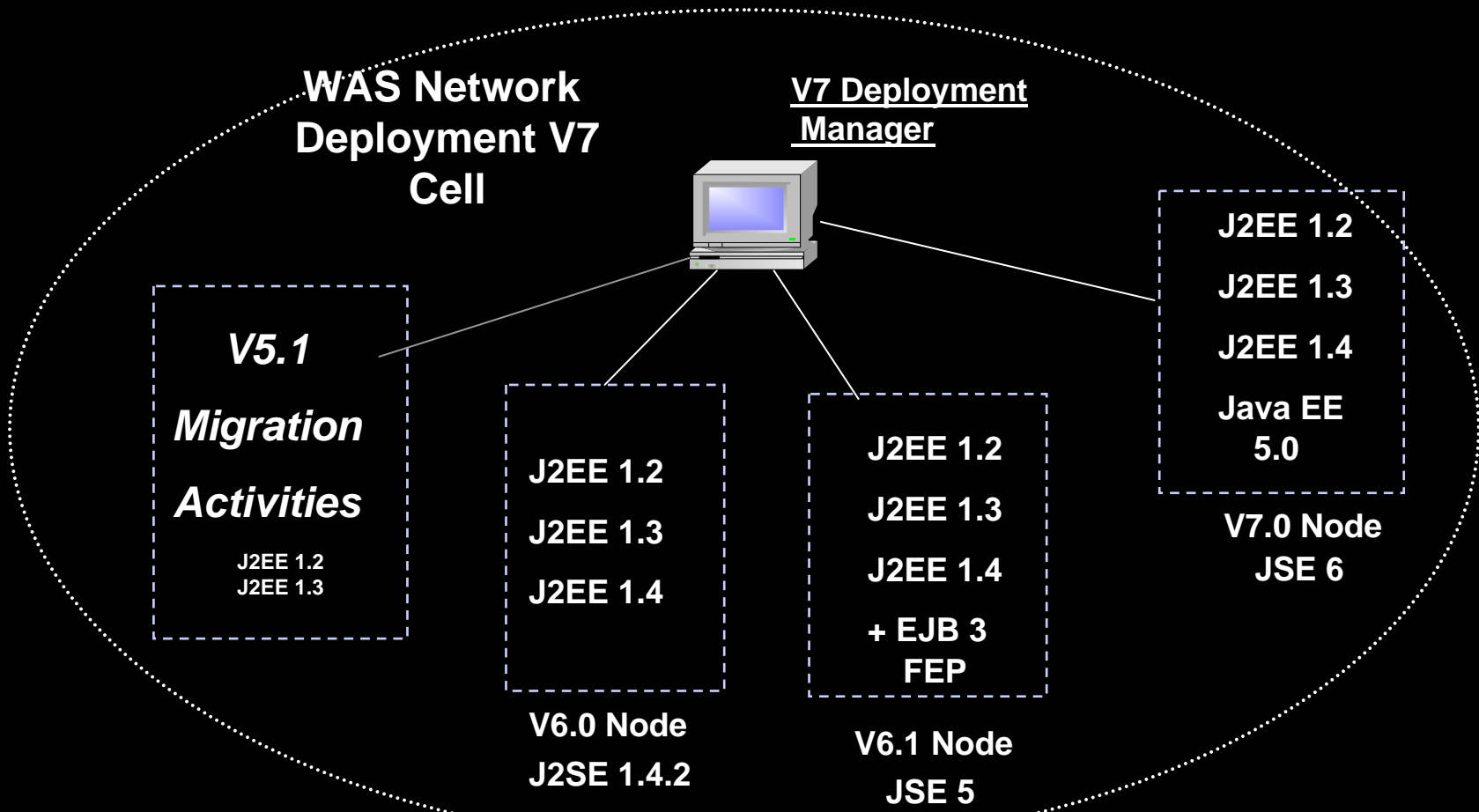


V7 Cell can contain 5.1 6.0, 6.1 & 7.0 nodes

Supported for continued operation as well as staging upgrades (5.1)

Continued Support for Existing Applications

Eliminate Intensive Cost and Development Resource

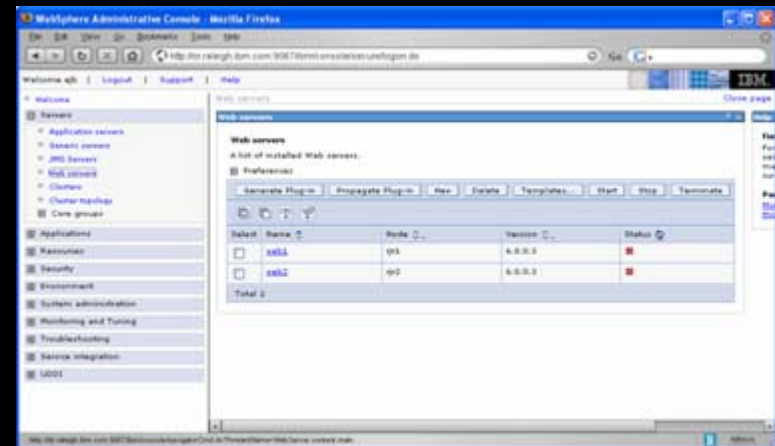


**Existing applications run unchanged in new WAS versions
Programming models added, not replaced**

WebSphere and DataPower

A next step in the evolution of broader administration integration across WebSphere.

- Single Admin interface for managing both WAS and DataPower
 - Tighter integration for management
- Admin interface for managing multiple DataPower boxes
 - Multi-box management (existing DataPower requirement)
- Single point of administration for solutions that combine WebSphere Application Server applications with DataPower



WebSphere Application Server v7.0

High Performance Foundation for SOA

Intelligent Management

- *Anticipate and adjust to evolving business and technology needs with infrastructure and application intelligence*

Simplification for Developers

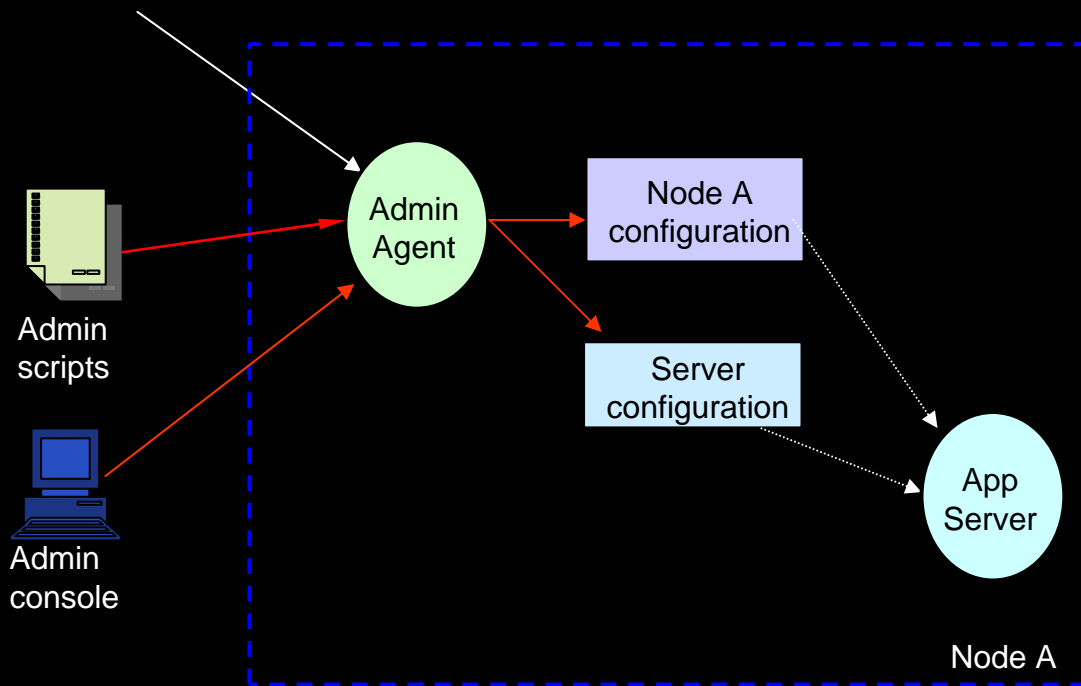
Innovation That Matters

Flexible Management Options

Improves control and eases administration

WebSphere Application Server
7.0 Base and Express Product
Architecture

Admin agent included in base and Express product

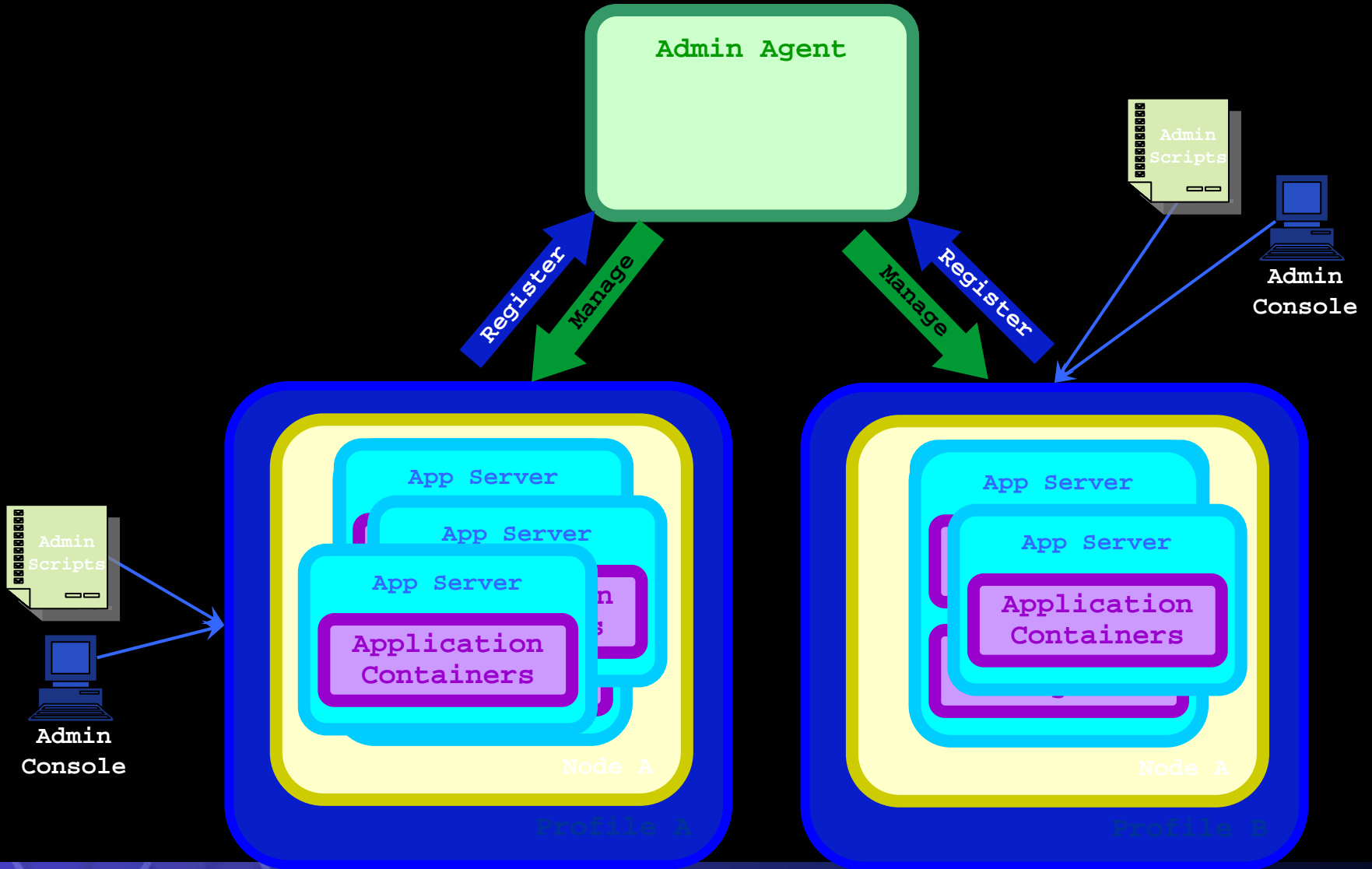


- Central administration of Express and Base servers

- Admin logic hosted in separate JVM from application server offloading the application server

- Admin agent can manage multiple local nodes

Admin Agent



Flexible Management

For cost effective worldwide growth

- Job Manager for expanded central administration
- Central administration agent for WAS Express and Base



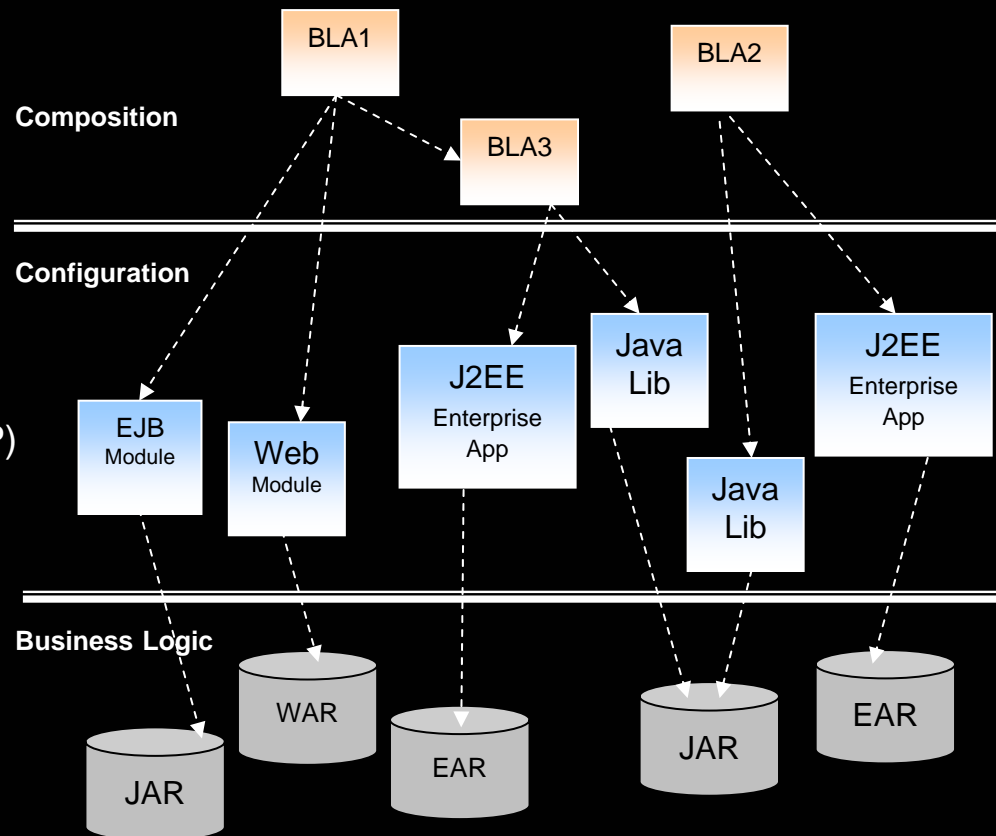
WebSphere Business Level Applications

Significantly improves the management of multi-component applications, simplifying administrative tasks

- **A composition model that extends the notion of “Application”**
 - Manages JEE and non-JEE artifacts like SCA packages, libraries, proxy filters etc.
 - Performs dependency management by tracking relationships between application components
 - Supports Application Service Provider (ASP) scenarios by allowing single application binaries to be shared between multiple deployments

- **Supports full lifecycle management of applications**
 - Install, distribute, activate, update, remove

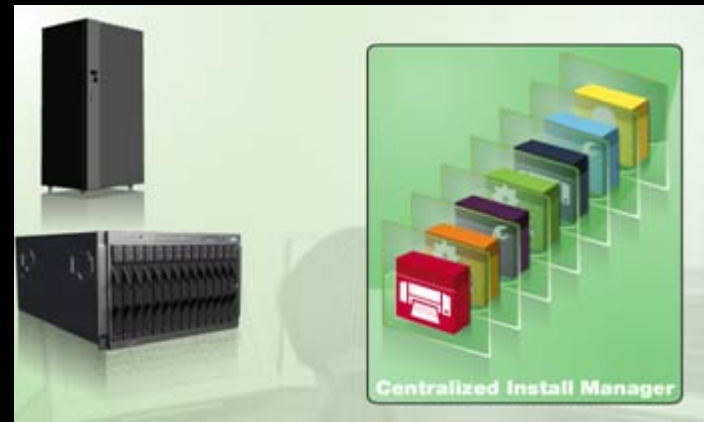
- **Aligns WebSphere Applications better with business as opposed to IT configuration**



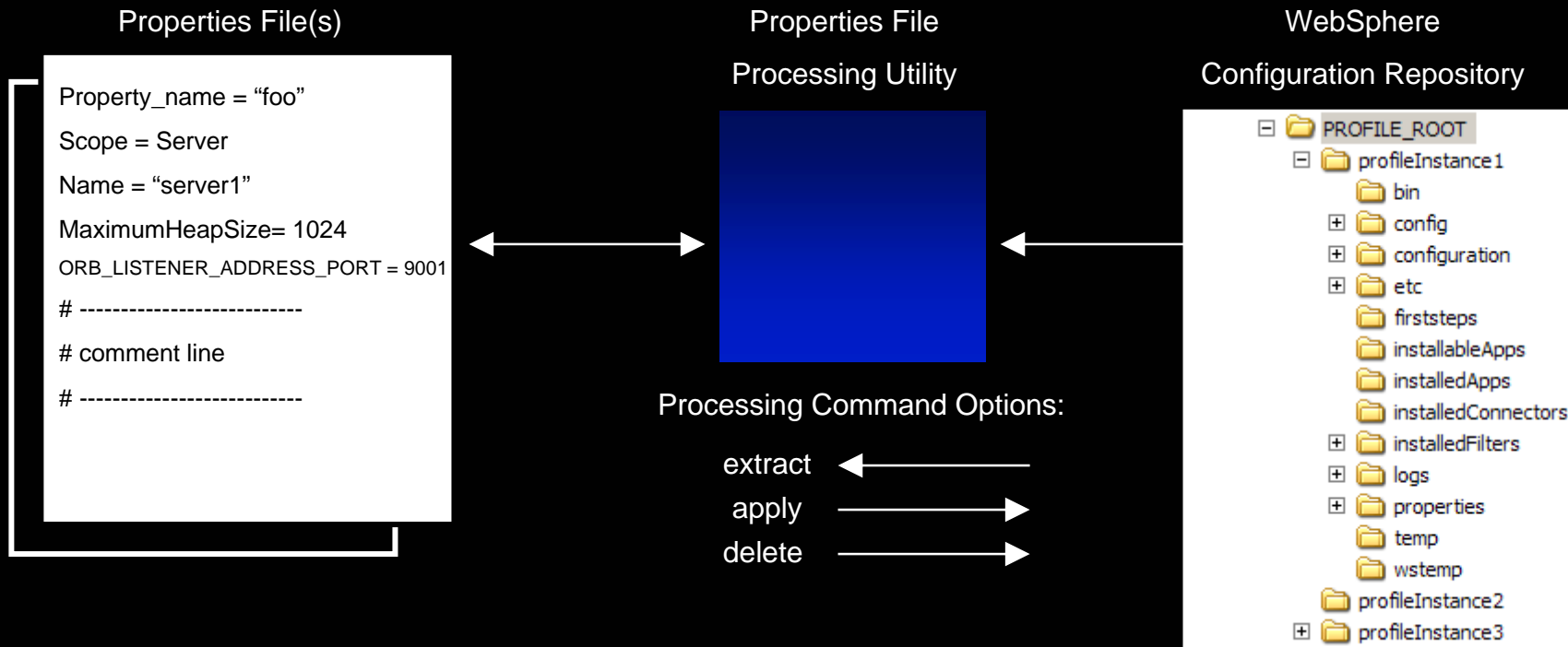
Centralized Installation Manager

Simplifying Installation & Deployment

- Supports centralized installation from the Deployment Manager to Nodes in the cell
- Single install to the Deployment Manager which allows Push install package from DMGR to endpoints
 - Select a set of hosts and push to those endpoints
 - Installs appropriate endpoint code based on type of endpoint
 - Agent-less
- Centralization of patch management



Properties File Based Configuration Utility



WebSphere Application Server v7.0

High Performance Foundation for SOA
Intelligent Management

Simplification for Developers

- *Increase developer productivity with a proven, standards based platform*

Innovation That Matters

Java EE version 5 – Simplification for developers

Simplified Java programming model for developers

- Ease of development
 - **EJBs** and **Web services** are developed as **Plain Old Java Objects (POJOs)**, very simple to develop and unit test
 - Exploits the **annotation support** added in Java SE V5, to reduce the number of artifacts required to build business applications
 - **Dependency injection** can be used instead of JNDI lookup.
 - New **Java Persistence API** that allows simpler, **portable entities** to be created using annotated POJO model
- Configuration by exception
 - Specify only what you don't want to default
- Unit test outside the container

What EJB3 Means for Developers

SessionBean Example

2.x Code

```
public interface ShoppingCart extends EJBLocalObject {
    public int someShoppingMethod();
}
```

Business Interface

```
public class CartBean implements ShoppingCart, SessionBean {
    private float total;
    private Vector productCodes;

    public int someShoppingMethod() { ... }

    public void ejbActivate() { }

    public void ejbPassivate() { }
}
```

Bean Implementation

```
Object obj = Context.lookup("java:comp/env/ejb/MyCartHome");
CartHome theCartHome = (CartHome) obj;
ShoppingCart myCart = theCartHome.create();

myCart.someShoppingMethod();
```

Client/Caller

...

3.0 Code

```
public interface ShoppingCart {
    public int someShoppingMethod();
}
```

```
@Stateful
public class CartBean implements ShoppingCart {
    private float total;
    private Vector productCodes;

    public int someShoppingMethod() { ... }
}
```

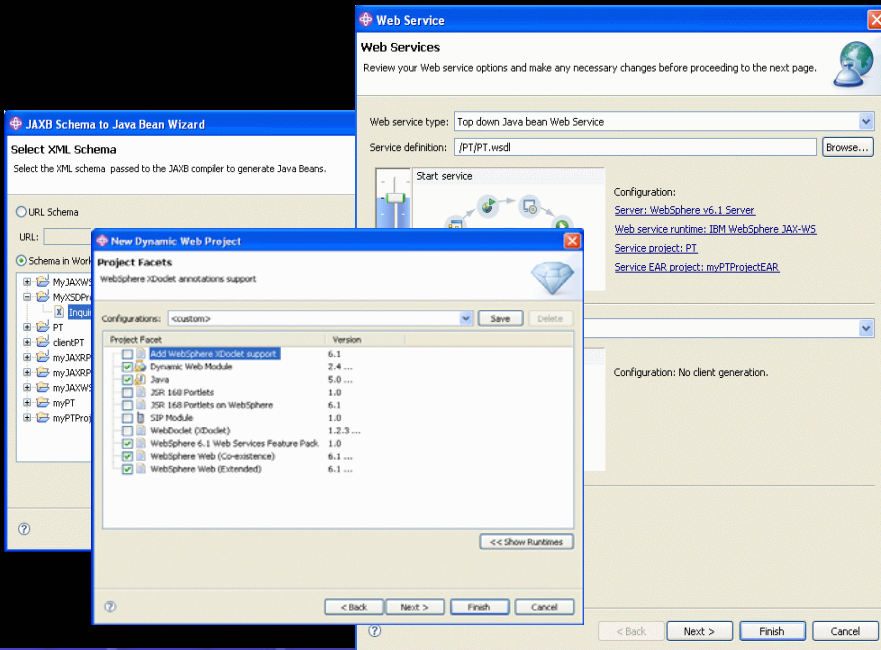
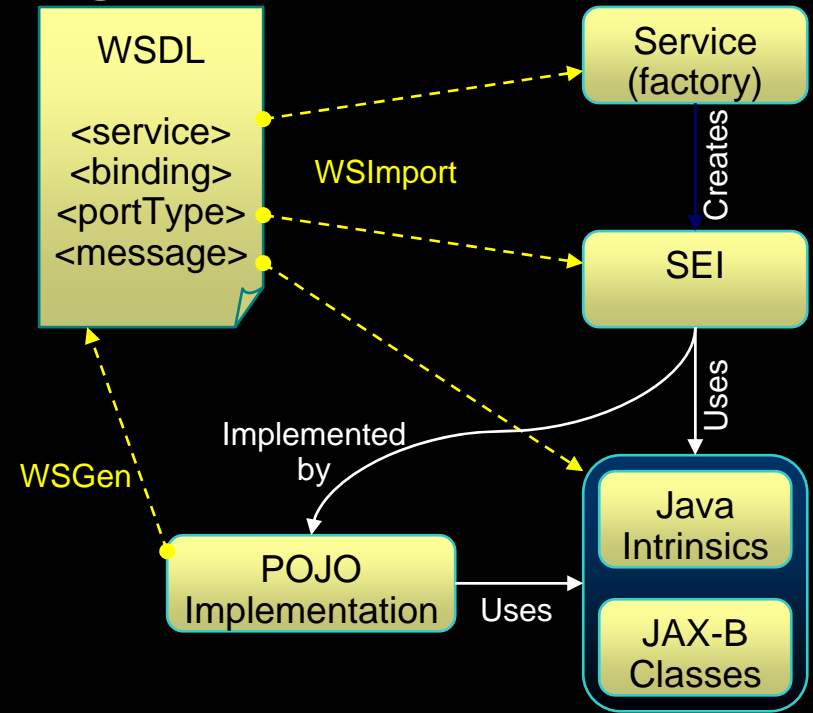
```
@EJB
ShoppingCart myCart;

myCart.someShoppingMethod();
```

Java EE 5 Web Services: JAX-WS

Command-line tooling

- JAXB 2.0 XSD->Java generation (xjc)
- JAX-WS 2.0 WSDL->Java (wsimport)
- JAX-WS 2.0 Java->WSDL (wsgen)



RAD tooling

- GUI Wizards to drive command-line tooling
- Annotation validation
 - WSDL / XSD validators
 - JAX-WS validators

What JAXWS Means for Developers

1.1 Code

```
public interface StockQuote extends Remote {  
    public float getQuote(String sym) throws  
        RemoteException;  
}
```

```
public class QuoteBean implements SessionBean {  
    public float getQuote(String sym) { ... }  
    public void ejbActivate() { }  
    public void ejbPassivate() { }  
}
```

On the client

```
Service svc =  
    Context.lookup("java:comp/env/service/StockQuote  
Service");  
StockQuote sq =  
    (StockQuote)svc.getPort(StockQuote.class);  
float price = sq.getQuote("IBM");
```

2.0 Code

```
@WebService public interface StockQuote {  
    public float getQuote(String sym);  
}
```

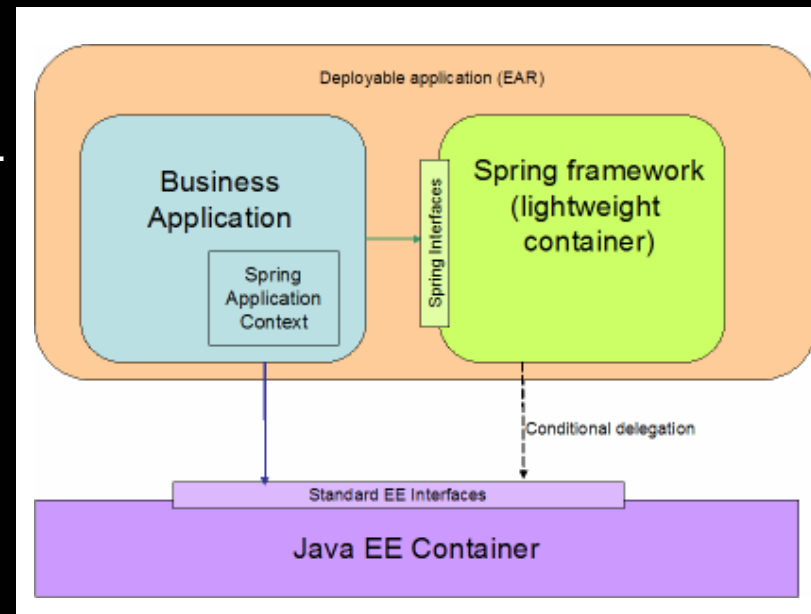
```
@Stateless public class QuoteBean implements  
    StockQuote {  
    public float getQuote(String sym) { ... }  
}
```

On the client

```
@WebServiceRef(StockQuote.class)  
private StockQuote sq;  
float price = sq.getQuote("IBM");
```

The Spring Framework

- The Spring model offers ease of development, like EJB3. Spring IoC container provides some abstraction between Java SE/EE – good for unit test.
- IBM and SpringSource collaborated to certify WAS with Spring on all WAS platforms and under load.
 - Framework integration points added to WAS and exploited by Spring 2.5
 - Early availability of these delivered in 6.1.0.9 and 6.0.2.19.
 - WAS/Spring integration testing focussed on core Spring capabilities.
 - Spring distribution is not shipped with WAS, nor does WAS provide support for the Spring framework itself
- Recommended best practices when using Spring with WAS:
http://www-128.ibm.com/developerworks/websphere/techjournal/0609_alcott/0609_alcott.html

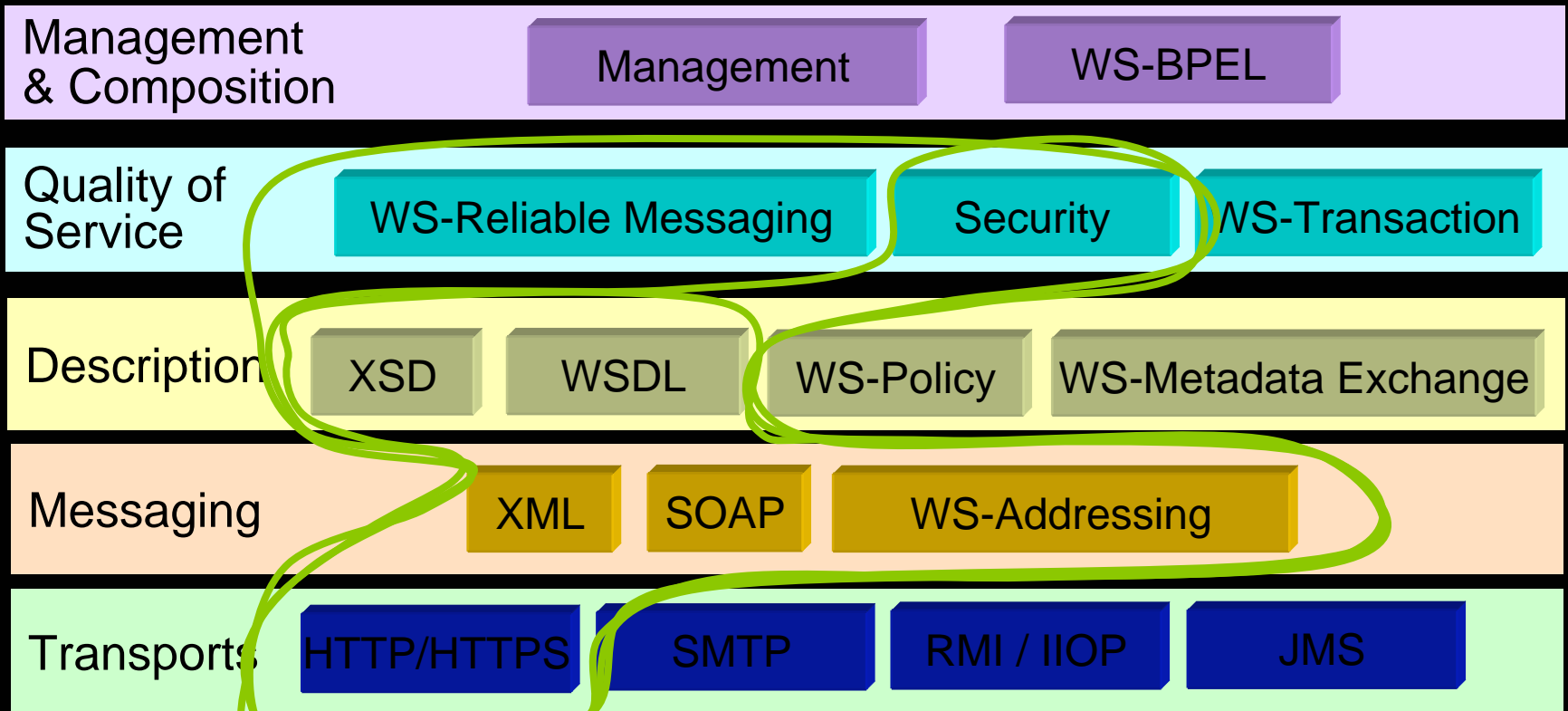


Interoperability through Standards

Virtualization of both business services and the enterprise QoS they need

- Web service standards enable all externalizable aspects of an enterprise service be described in an interoperable fashion, independent of implementation.
 - Application-level message exchange
 - Enterprise qualities of service which can be administratively applied to services through policy attachment
- A broad industry collaboration has specified a cohesive set of Web service standards that cover most aspects of distributed enterprise computing.
 - Darwinian selection has eliminated most cases where there were similar standards competing in the same space.
- Profiles focussing on specific sets of standards define convenient “collective nouns” for most-used cases.

Web services composeable architecture

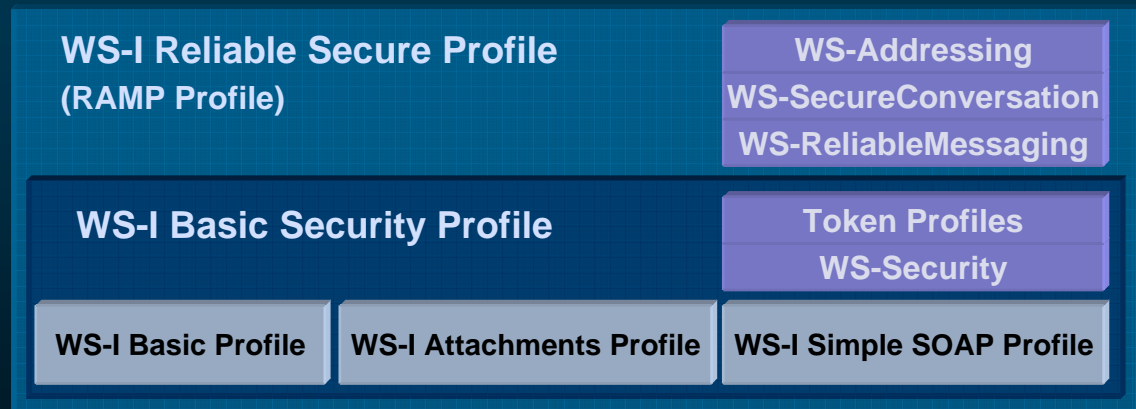


WS-I Basic Profile
WS-I Basic Secure Profile
WS-I Reliable Secure Profile

WS-I Profiles

Simplifies interoperability across heterogeneous environment

- Constrain composition alternatives
- Profile common interoperability scenarios
- Show real business value to what standards bring



Configuring a JAX-WS Application Using Policy Sets

Create Policy Set and from Policy Types (or skip this step and re-use an existing Policy Set configuration)



Attach Policy Set to application at desired level (application, service, endpoint or operation)



Optionally assign Policy Set bindings (either 'custom' binding specific to attach point or pre-created shared 'named' binding).

Application policy sets
Use this page to manage, create, copy, or export policy sets.

Preferences:

Select	Name	Editable	Description
<input type="checkbox"/>	Julia	Editable	my set
<input type="checkbox"/>	LTPA.RAMP.default	Read only	This policy set enables WS-ReliableMessaging which provides the ability to deliver a message reliably to its intended receiver. Message integrity is provided by digitally signing the body, the time stamp, and the WS-Addressing headers. Message confidentiality is provided by encrypting the body and the signature. Message authentication is provided by using the Lightweight Third Party Authentication (LTPA) Token. This policy set follows the WS-SecureConversation and WS-Security specifications.
<input type="checkbox"/>	LTPA.SecureConversation	Read only	This policy set provides message integrity by digitally signing the body, the time stamp, and the WS-Addressing headers. Message confidentiality is provided by encrypting the body and the signature. Message authentication is provided by using the Lightweight Third Party Authentication (LTPA) Token. This policy set follows the WS-SecureConversation and WS-Security specifications.
<input type="checkbox"/>	LTPA.WSSecurity.default	Read only	This policy set provides message integrity by digitally signing the body, time stamp, and WS-Addressing headers using RSA encryption. Message confidentiality is provided by encrypting the body and signature using RSA encryption. Message authentication is provided by using the Lightweight Third Party Authentication (LTPA) Token. This policy set follows the WS-Security specifications.
<input type="checkbox"/>	RAMP.default	Read only	This policy set enables WS-ReliableMessaging which provides the ability to deliver a message reliably to its intended receiver. Message integrity is provided by digitally signing the body, the time stamp, and the WS-Addressing headers. Message confidentiality is provided by encrypting the body and the signature. This policy set follows the WS-SecureConversation and WS-Security specifications.



Service provider policy sets and bindings

Attach a policy set to the application, its services, endpoints, or operations. Access the Policy Sharing link to allow clients to acquire the provider policy. Complete the attachment by providing system-specific configuration when you assign the appropriate binding.

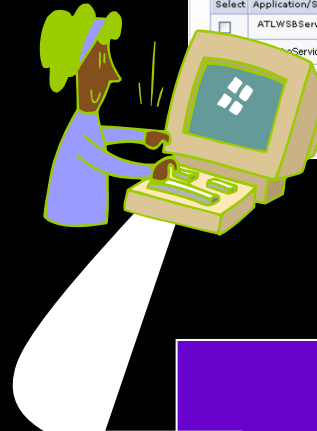
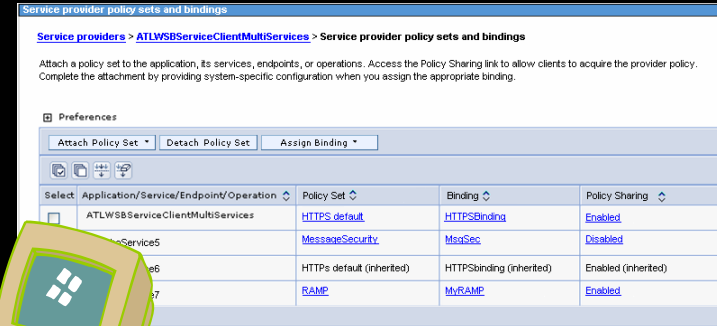
Preferences:

Select	Application/Service/Endpoint/Operation	Policy Set	Binding	Policy Sharing
<input type="checkbox"/>	ATLWSBServiceClientMultiServices	HTTPS.default	HTTPSBinding	Enabled
<input type="checkbox"/>	EchoService5	MessageSecurity	MsgSec	Disabled
<input type="checkbox"/>	EchoService6	HTTPS default (inherited)	HTTPSBinding (inherited)	Enabled (inherited)
<input type="checkbox"/>	EchoService7	RAMP	MyRAMP	Enabled

Total 4

Service Policy exposed as interoperable WS-Policy

Share Policy Set configuration
(administratively or via RAD tools)



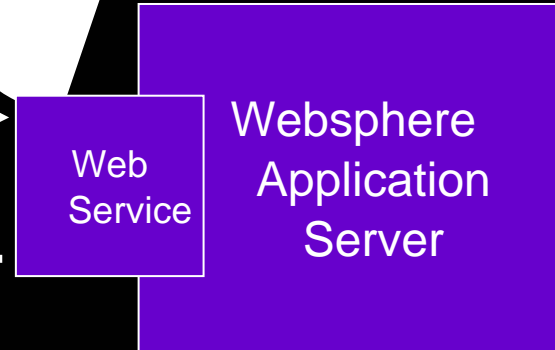
HTTP GET

or

WS-MetadataExchange GetMetadata request



WSDL document
containing
configuration in ws-
policy format



Applying Policy to the Service Client

- **No policy**
- **Client policy**
 - Policy calculated based on *static* client policy configuration. This is implicitly supported in the WAS 6.1 Web Services Feature Pack.
- **Provider Policy – New in V7**
 - Policy calculated based on *dynamically* acquired provider policy. Administrator says “be guided by the provider’s policy requirements”
- **Client and Provider Policy – New in V7**
 - Policy calculated based on dynamically acquired provider policy *and* static client policy configuration. Administrator says “choose the best intersection between the provider’s policy requirements and the client’s requirements/capabilities”.

WAS v7 Tools Packaging

RAD for WebSphere

Programming Model Tools

- EJB3 productivity features
- Domain Modeling (visual edit)
 - Java, EJB, XSD, WSDL, Data,
- Web Development (visual edit)
- Web 2.0
 - REST Style Services, Javascript, Dojo
- Web Services productivity features
- Basic Code Review, Java & EJB
- Portlet and Portal Tools

Miscellaneous

- Extra Debuggers (XSLT, stored proc...)
- XML productivity features
- Code Coverage
- Relational Data
- Crystal Reports (tools only)
- WAS n-2 support
- WAS test servers v6.0, v6.1, v7.0
- JCA
 - CICS and IMS Adapters
- WAS Adapters
 - SAP, Siebel, JDE, Oracle, PeopleSoft
- RTC Client
- CC SCM Adapter
- ReqPro
- RUP

RAD Assembly and Deploy

- Jython tools
- J2EE 1.4 (same level as AST 6.1)
- JEE5 XML-form based DD editors
- JEE5 application support
- WAS 7.0 support only
- WAS debug extensinos
- Application Deployment Support (WAS7.0)
- RAC

RAD for WebSphere Features

- Comprehensive tools to improve developer productivity...targeting IBM Middleware
- Full-featured Integrated Dev Environment (IDE)
- Tutorials, demos, wizards and sample code

RAD Assembly and Deploy Features

- Perpetual license as part of WAS
- Support for creating, building, testing and deploying J2EE 1.4 applications
- Basic support for Java EE 5 applications
- Support for building, testing and deploying Java EE 5 applications

WebSphere Application Server v7.0

High Performance Foundation for SOA

Intelligent Management

Simplification for Developers

Innovation That Matters

- *Our innovations support yours with support for the hottest technology now and in the future: JEE5, Web 2.0, EJB3, SCA*

Innovation that Matters – Feature Packs

Revolutionizing the way customers consume application server technology now and in the future



1. Choose the application server technology you need.
2. Install additional functionality on core WAS 7
3. Run the Application Server you want without waiting for new releases.

As new technology evolves, so does WAS – get the technology you need now without waiting for a new release!

Web 2.0 Support

Bring all your most important services to the forefront in an application that gives you immediate insight and interaction with customers, partners, suppliers & retailers

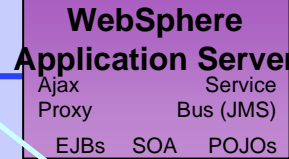
Web 2.0 to SOA Connectivity

For enabling connectivity from Ajax clients to SOA services and other JEE assets. Extends enterprise data to customers and partners through web feeds.

Ajax Messaging

For connecting Ajax clients to real-time updated data like stock quotes or instant messaging.

External Web Services



Event-Driven Data

IBM \$125.25 +\$2.50... MSFT \$43.75 -\$1.50



Web Feeds

Ajax Development Toolkit

Based on Dojo (dojotoolkit.org) with IBM extensions. Reduces time to market and helps lower Ajax adoption costs.



Ajax Application

Feature Pack for SCA Highlights

Simplify SOA Development

Service Composition

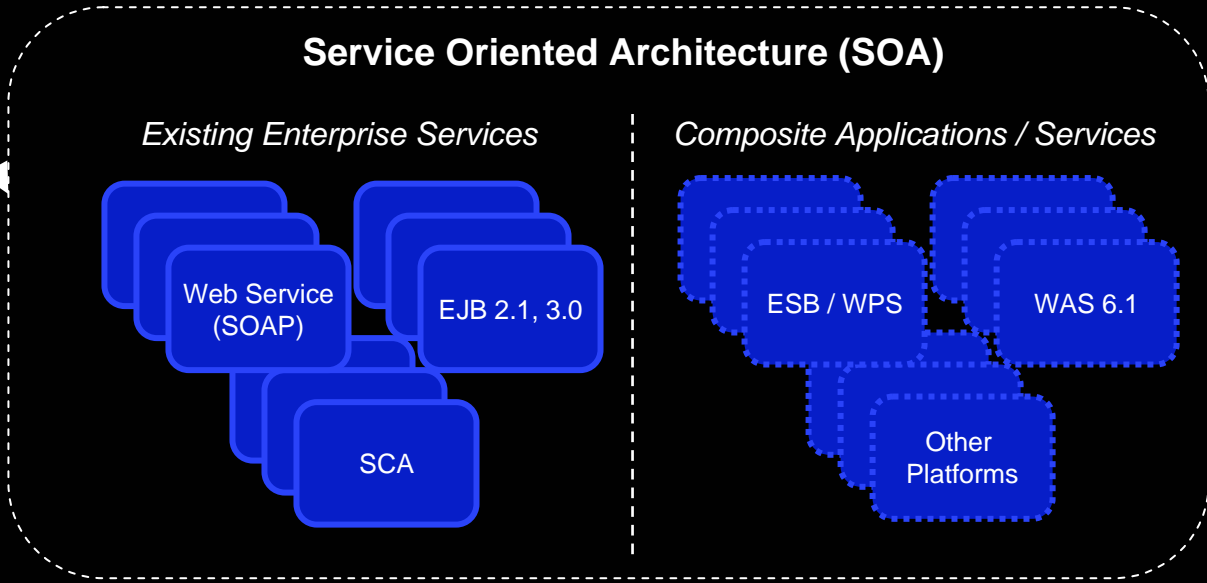
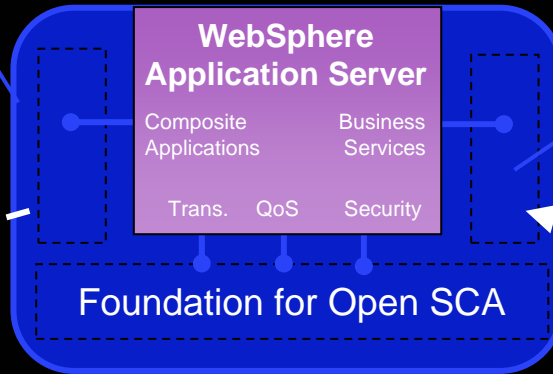
Programming model support for building composite applications to leverage services that reside within a Services Oriented Architecture.

Service Assembly

Programming model for building and deploying services that can be leveraged within a Services Oriented Architecture.

Supported Bindings:
WS, EJB2-3, SCA

Supported Bindings:
WS, EJB2-3, SCA



WebSphere Application Server V7 Highlights

- High Performance Foundation for SOA
 - Performance leadership
 - New Security Auditing
 - New WebSphere Secure Proxy
 - New WebSphere Multiple Security Domains
 - Kerberos Enhancements
 - Multi-Cell Support
 - Application investment protection
 - New Consolidated WebSphere and DataPower administration
- Intelligent Management
 - New Flexible Management: Job Manager, Admin Agent
 - New Runtime Provisioning
 - New WebSphere Business Level Applications
 - New Centralized Installation Manager
- Simplification for Developers
 - New and enhanced Standards: Java EE 5 certification, EJB3, Web Services
 - Web 2.0
 - Feature Pack Strategy
 - New Rational Application Developer Support
- Innovation That Matters
 - Feature Pack for Web 2.0
 - Feature Pack for SCA

WebSphere Application Infrastructure

- 1. 3,600 partner apps built on WAS**
- 2. 700 patents since 1998**
- 3. #1 in Market Share¹**



Source: Gartner, Inc.: Market Share: Application Infrastructure and Middleware Software, Worldwide, 2007, by Fabrizio Biscotti, Teresa Jones, Asheesh Raina and Joanne Correia, June, 2008 (NOTE: The data is based on total software revenue.)

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IBM WebSphere

Questions?

