Maximizing your self-help capabilities using IBM Support Assistant V4.1

Cliff Lau

www.ibm.com/software/support/isa

WebSphere software

IBM Support Assistant
Leveraging the Problem Determination Workbench

### Common Software Challenges and Opportunities

Challenge	Finding Information	Collecting Key Data	Troubleshooting Problems
	Difficult to locate common issues, fix information, technical tips and other helpful information provided by IBM	To resolve software issues, analyzing key data is essential but it is often hard to locate and collect in a timely manner	Complexity of certain problems/ configurations requires tooling

ISA FEATURES	Locate solutions faster	Shorten time to resolution	Apply Tools for Problem Determination
	Easily find the information through ISA's concurrent search. Targets include tech-docs, Redbooks, Apars, etc.	Quickly collect diagnostic files or run traces that are predefined for products. View files easily and optionally send to IBM swiftly	Problem determination tooling that allows analysis and problem resolution
	Discovery	**Data Gathering**	**Problem Analysis**

ISA provides the features and tools to allow customers to do more problem determination at their desktop
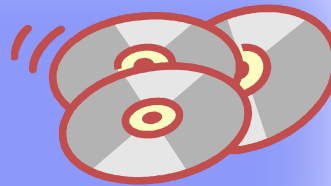
Getting started with IBM Support Assistant

- **The power of IBM Support Assistant is customizing its components/tools down to the specific products you need help on (Product/release/version)**
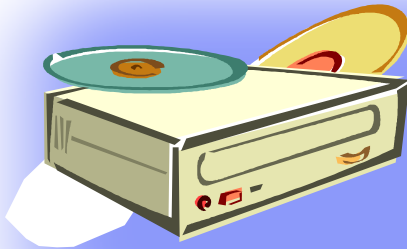
IBM Support Assistant Workbench   **Product add-ons**

- **Installing and customizing IBM Support Assistant is a simple two step process:**

  - Download the IBM Support Assistant Workbench: www.ibm.com/software/support/isa

  - Use the Updater to customize the IBM Support Assistant for preferred product and tool customization

IBM Support Assistant Download Site   **Step 1**   **New IBM Support Assistant Customer**   **Step 2**   **IBM Support Assistant Update Manager Site**

Find Information
Taking it to the next level

**Search Information** is used to search across multiple repositories concurrently
- Filter search results to specific types of documents (APARs, Redbooks, Infocenters, Forums, etc.) for specific IBM products
- Filter by product and version (e.g. WebSphere 6.1 or 7.0)

Product Information pages provide quick and easy access to relevant product resources
- Education (IEA)
- Troubleshooting guides
- Product specific fix information (e.g. WebSphere)

Media viewer creates custom play lists centered around education for IBM software products
- Integrated with the IBM Education Assistant to browse and view free educational
- Content can be downloaded for offline viewing
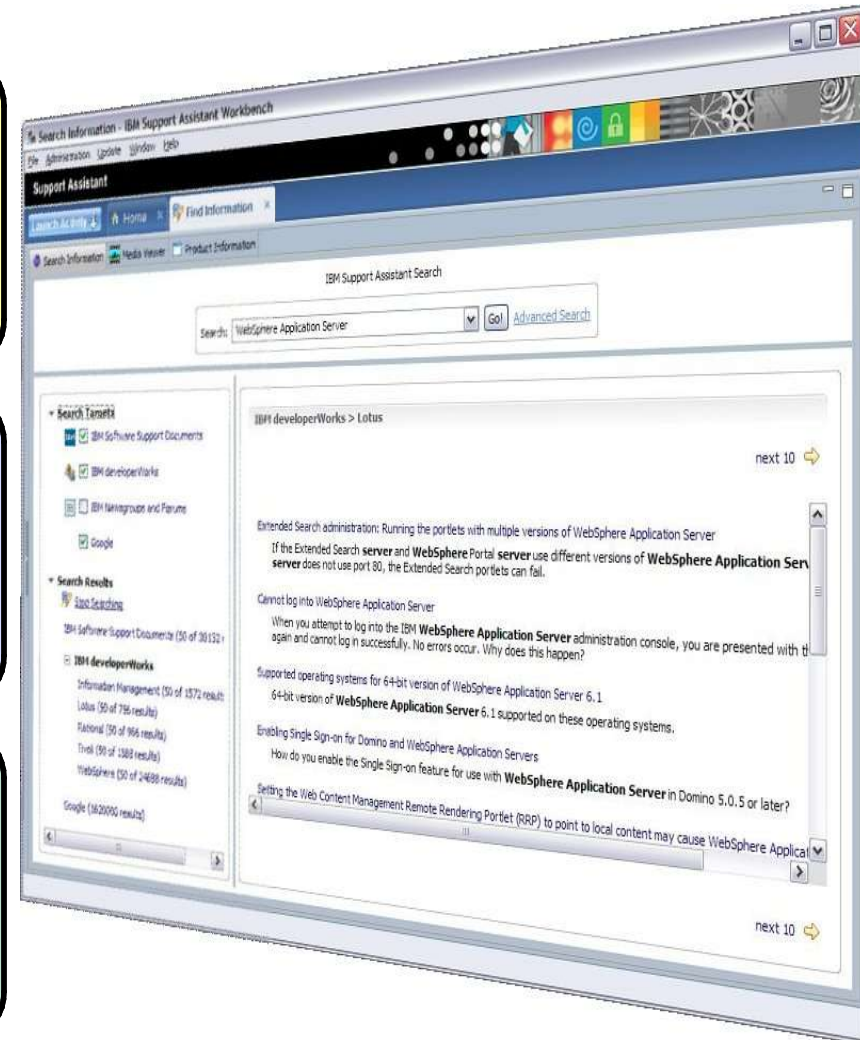
Why Automated Data Collection?

Customization

- Automated data collections are specific to products and symptoms
- Automated versions of many of the data collection (MustGather) procedures

Efficiency

- Much faster than following steps in a troubleshooting document
- Less time spent between a support analyst and the system operator
- Reduces the effort to send the collected data to IBM support

Repeatability

- Repeatable with similar inputs without fear of human error

Simplicity

- Executable by operators unfamiliar with the working nature of the product

Privacy

- Better customer privacy for sensitive information
- User information, such as passwords, is automatically hidden
- Collects equivalent of MustGather documents

IBM Support Assistant v4.1 Data Collection Options

Different solutions for different environments

Local collection using Workbench

- Collect data from desktop applications using the Workbench interface
- Performs data collection on system where Workbench is installed
- Simple installation and set up

Remote collection using IBM Support Assistant Lite

- Lightweight application containing all of the files to run a particular collection is generated from the Workbench for use on another system (equivalent to standalone IBM Support Assistant Lite available for download from IBM Support for selected products)
- Collect data from application middleware where no agents are set up
- No installation required
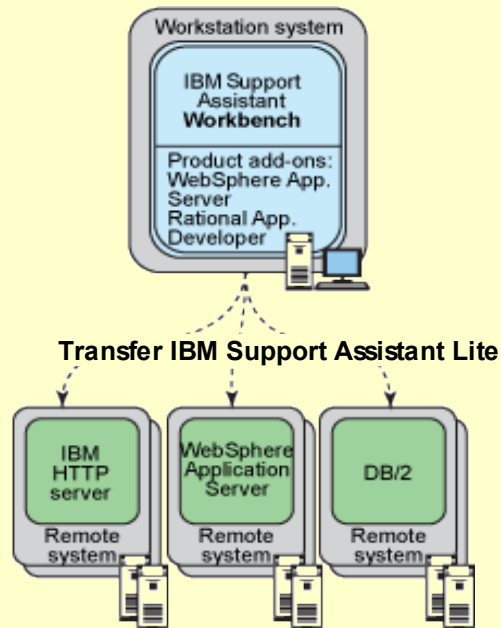
Remote collection using Agents

- Collect data via the Workbench's interface while running the actual collection on another system
- Requires IBM Support Assistant agents installed on remote systems
- Medium to complex installation and set up
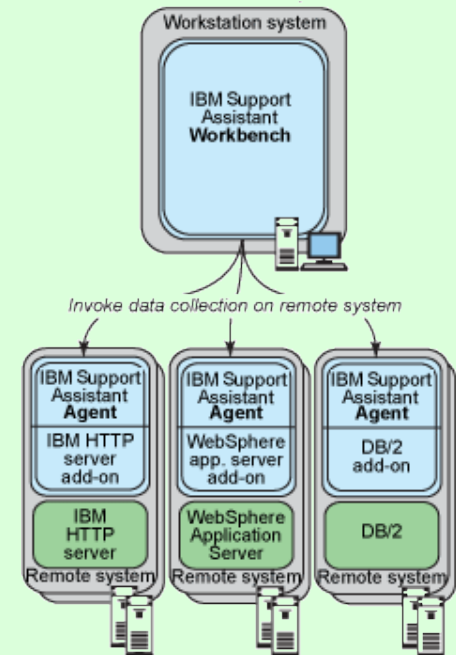
IBM Support Assistant Lite
Quick data collection

- Prepackaged and available for download from the IBM Support site for the following products:

  ▸ WebSphere Application Server

  ▸ WebSphere Process Server

  ▸ WebSphere Portal

  ▸ WebSphere InterChange Server 4.3

- Equivalent to the IBM Support Assistant Lite exported from the Workbench for the selected product

- Automate data collection for a service request when IBM Support Assistant Workbench is not installed in the environment

What to do with collected data?

Extract contents of zip file for analysis

- **Manual analysis**
- **Automated analyses** using tools
  - IBM provided tools
  - In house tools
  - Third-party tools

Upload zip file to IBM for analysis

Attach zip file to IBM service request (PMR) from the Workbench

Transfer the file using HTTPS or FTP directly from the collection script

FTP or email zip file to IBM using another tool

Remote System Diagnosis – Using Agents (optional component)

Securely access remote systems

- **Agent Manager** provides secure authentication and authorization

- **Agents** enforce local privileges

- **Encryption and authentication** provided by SSL

Gathering PD data remotely

- **Systems Explorer** is used to explore file systems

- **Data Collection** gathers data from remote systems for local analysis

- **Software Inventory** reports software running on remote systems
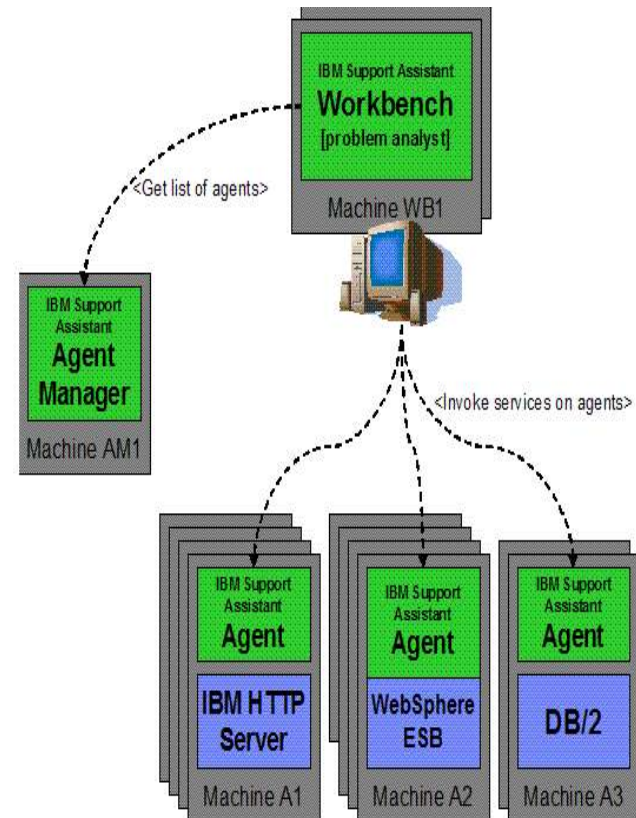
Case Manager – Organizing troubleshooting documentation

## Use Cases, Incidents and folders to organize data

- **Cases** are used to track a specific issue. A case could represent a PMR
- **Incidents** are used to track specific occurrences of the issue in a Case
- **Folders** are generic document holders which are optionally used with Incidents and Cases

Integrated with…

- **Systems Explorer** to locate files and store in a case
- **Data Collection** to store gathered data in a case
- **Software Inventory** to store the inventory report in a case

Analyzing documentation

- **Case Export** allows data to be sent to IBM for analysis or to other Workbench users
- **Archive Viewer** allows quick review of diagnostic data
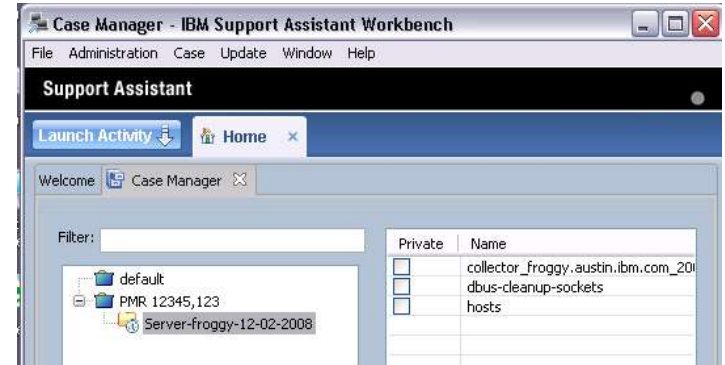
ISA Tools

Value of delivery through IBM Support Assistant

- Single repository for tools
- Ensures that tools are up-to-date
- Integration with data collection scripts
- Integration with IBM Guided Activity Assistant

Remote assistance	• Assist on-site - offers live remote assistance from IBM technical support
Java troubleshooting	• Dump analyzer - hang, crash, memory management • Garbage Collection and Memory Visualizer - memory usage and performance • Pattern Modeling and Analysis Tool (PMAT) - analyze Java Verbose Garbage Collection logs • Memory Dump Diagnostic for Java - troubleshoot memory leaks • IBM Thread and Monitor Dump Analyzer for Java - analyzes Java heap dump
WebSphere troubleshooting	• IBM Trace and Request Analyzer for WAS - Reads WAS and HTTP plug-in traces
Cross-product environment troubleshooting	• IBM Port Scanning Tool – OS level configuration verification • Log Analyzer - Correlate and browse logs from different products • Symptom Editor - Extends Log Analyzer, lets you create your own log correlations • Visual Configuration Explorer - Visually explores cross-product configurations • IBM Guided Activity Assistant - Guides you through solving problems

What's new in IBM Support Assistant v4.1?

New serviceability features and expanded components include:

- Workbench installs in multi-user mode on both Windows and Linux

- Ability to specify the location of user data at time of install

- RPM installer for the IBM Support Assistant Workbench on Linux

- Migration wizard to preserve ISA 3.x/4.0.x product tool add-on and proxy settings to 4.1

- Improved proxy support to enhance compatibility with enterprise security

- A comprehensive data collection viewer to review and analyze collected data

- Access to IBM's Service Request and IBMLink/ServiceLink

- Usage metrics that records what views, editors, perspectives, and commands are used

Improvements to existing features include:

- Intuitive navigation for various data collection options

- Secure file transfer (HTTPS) of collected data to IBM

- Simplified launchpad based installer for Agent and Agent Manager

- Improved automated data collectors for the IBM Support Assistant

Platform support

- **Workbench**

    - Microsoft® Windows XP Professional with Service Pack 2

    - Microsoft Windows Vista, Vista Business, or Vista Enterprise with Service Pack 1

    - Red Hat Enterprise Linux V5.2 Desktop with GTK and Update 1

    - SUSE Linux Enterprise Desktop V10 with Fix Pack 2 with XGL

- **Agent**

    - Windows XP Professional with Service Pack 1

    - Windows Server 2003 Standard, Enterprise, or Datacenter

    - Red Hat Enterprise Linux AS V4.0 or V5.0

    - SUSE Linux Enterprise Server V9.0 or V10.0

    - Solaris V10.0 (lacks support for inventory reporting)

    - AIX 5L V5.3 (requires APAR IY91085), AIX V6.1

Support Information
Open a service request for IBM Support Assistant

- Contact IBM Support through the IBM product support team that is associated with the product add-on you are experiencing an issue on

    ▸ For example, if you are using IBM Support Assistant to troubleshoot Lotus® Domino, you should contact the IBM product support team for Lotus Domino

    ▸ Entitlement for IBM Support Assistant support is provided by the associated product add-on

- The product support team will provide assistance and determine if the issue is with the product add-on or with IBM Support Assistant itself

- You can open a service request at the following site: http://www.ibm.com/software/awdtools/isa/support/probsub.html

Summary

- Simplify Problem Determination with IBM Support Assistant

- Shorten time to resolution

- Locate solutions faster

- Apply Tools for Problem Determination

Download IBM Support Assistant from

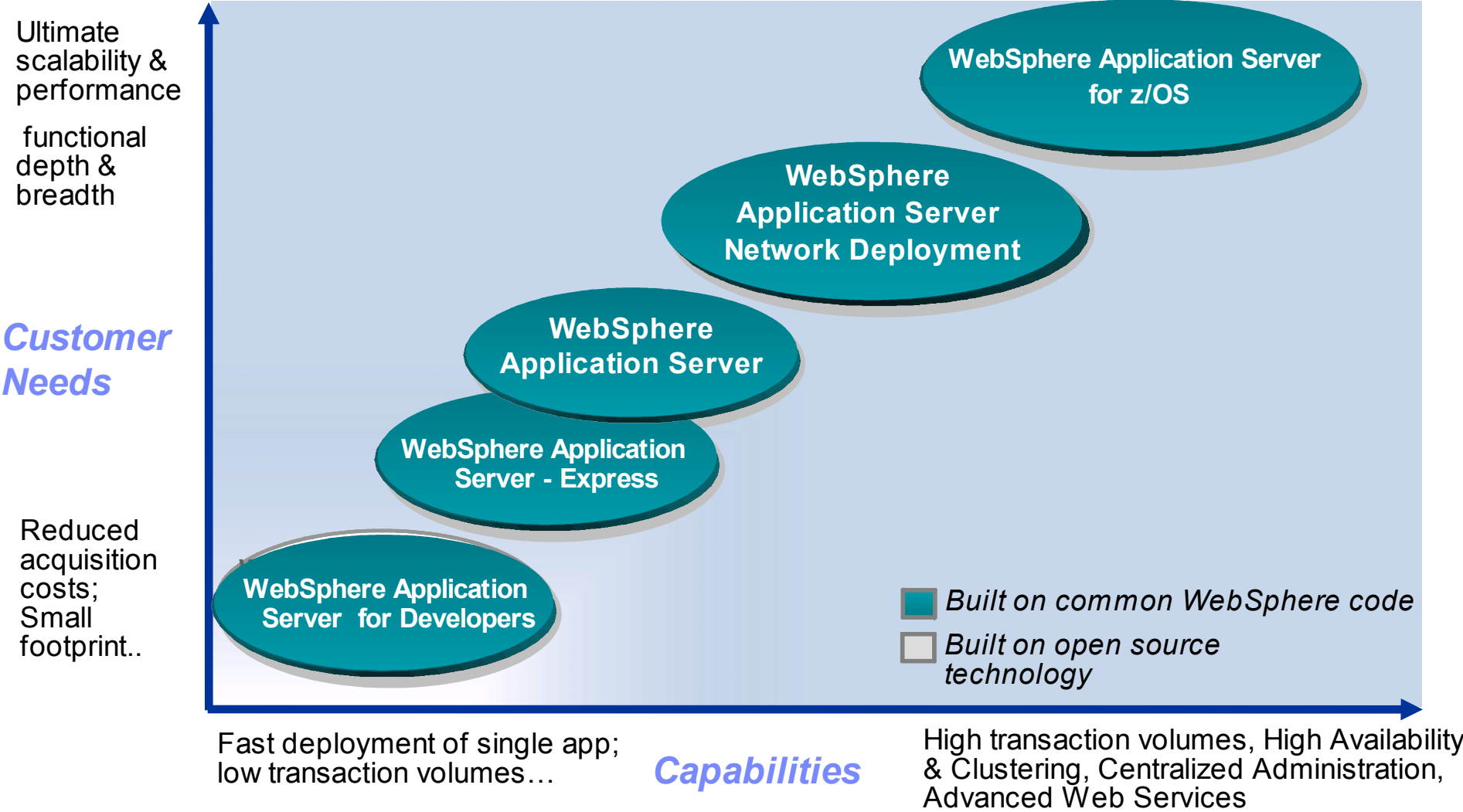 **http://www.ibm.com/software/support/isa**

WebSphere Application Server v7.0 Update

WebSphere software

WebSphere Application Server Family
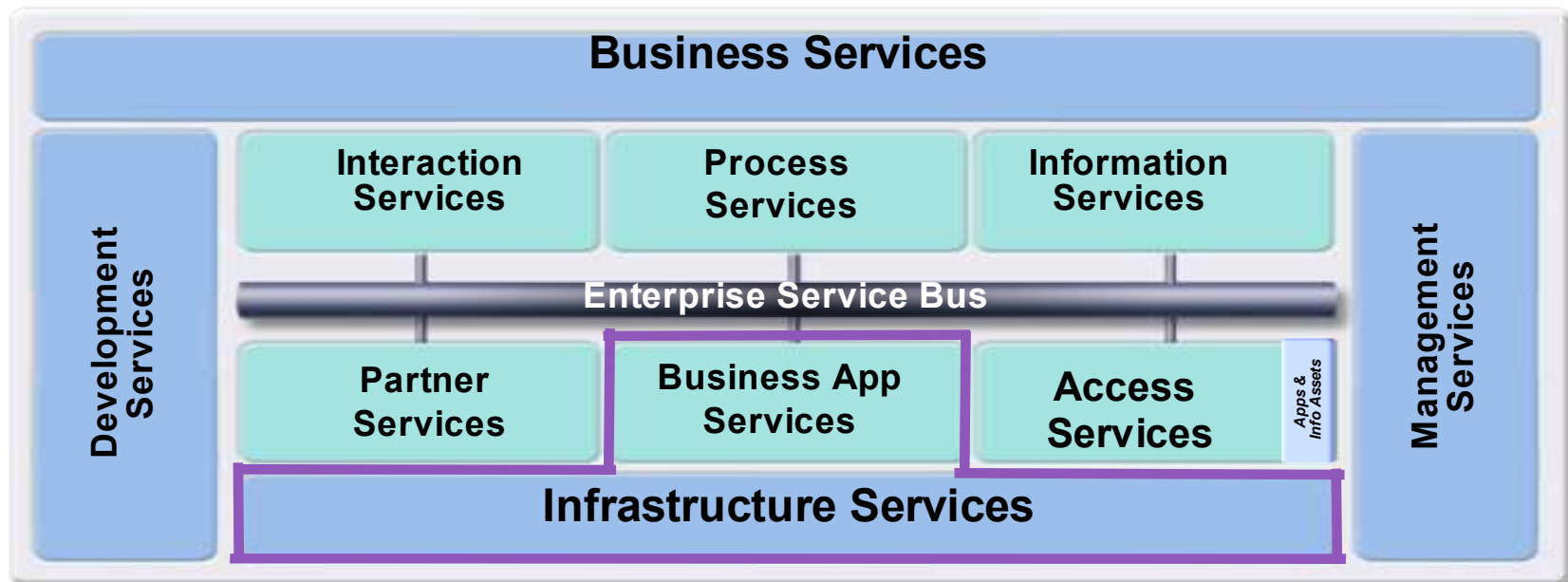
Multiple Business Models, Multiple Deployment Options

Ultimate scalability & performance

 functional depth & breadth

Customer Needs

Reduced acquisition costs; Small footprint..

WebSphere Application Server for z/OS

WebSphere Application Server Network Deployment

WebSphere Application Server

WebSphere Application Server - Express

WebSphere Application Server for Developers

Built on common WebSphere code

Built on open source technology

Fast deployment of single app; low transaction volumes…

Capabilities

High transaction volumes, High Availability & Clustering, Centralized Administration, Advanced Web Services

http://www.ibm.com/software/webservers/appserv/developer/index.html

Nobody does it better…

WebSphere Application Server Version 7 brings …

▶ Simplification for Developers

▶ High Performance SOA Environment

▶ Innovation that Matters

WebSphere Application Server v7 … for IT Architects

IT Leaders (CIO)

Provide: strategy a...

Receive: operationa...
business decisions

> **Leading application servers for backbone enterprise SOA architecture**

IT Architects

Provide: Solution architecture, integration expertise and infrastructure focus.

Receive: Operational performance information for continuous process improvement and optimization.

Systems Administration

Provide: Technical expertise in resources for implementing BPM solutions.

Receive: Clear business requirements and flexible IT design pattern for lower TCO.

Developers

Provide: Work activity, content, and resources to execute business processes.

Receive: Streamlined and intelligent work environments for increase productivity.
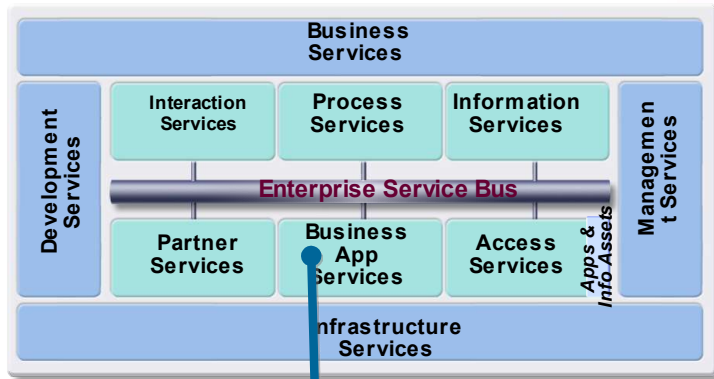
Goal: Exploit Infrastructure for High Performance SOA

You want to…

- Achieve maximum flexibility and high productivity for SOA initiatives
- Protect your critical applications with strong security management
- Increase effectiveness of application infrastructure management

Business Services

| Development Services | Interaction Services | Process Services | Information Services | | Managemen t Services |

Enterprise Service Bus

| Partner Services | Business App Services | Access Services | Apps & Info Assets | |

Infrastructure Services

WebSphere Application Server

Deliver maximum flexibility and high productivity application serving

IBM Solution

▸ JEE 5 certified environment for application serving

▸ Critical set of Web services standards

▸ Extensive Web 2.0 support

▸ Security domains and security auditing support

▸ Runtime provisioning and flexible management

Exploiting Infrastructure for High Performance SOA

WebSphere Application Server v7.0 Strengthens Your High Performance Foundation

- New, enhanced standards support delivers maximum flexibility and significantly improves productivity

    ▸ Java EE5 certification including Java Development Kit (JDK) 6.0, EJB 3.0 support, and Java Persistence API (JPA)

    ▸ Expanded Web services support

    ▸ Web 2.0 support extending service-oriented architecture (SOA) by connecting external Web services, internal SOA services, and Java Platform Enterprise Edition (JEE) objects

    ▸ Spring Certification

    ▸ Portlet JSR 286

Exploiting Infrastructure for High Performance SOA
WebSphere Application Server v7.0 Strengthens Your High Performance Foundation

- Security management and auditing improvements with new tools and capabilities.
  - ▶ WebSphere Security Domains, new security auditing capabilities, new DMZ-hardened Proxy, Kerberos enhancements

- New management and administration options to help reduce cost and increase effectiveness.
  - ▶ New runtime provisioning selects only the needed function for memory and space improvements.
  - ▶ New Flexible Management feature reduces the cost of administering large deployments

WebSphere Application Server v7 … for Developers

IT Leaders (CIO)

Provide: Domain expertise on business strategy and business function

Receive: Actionable insight into operational performance to make better business decisions

IT Architects

Provide: Solution architecture, integration expertise and infrastructure focus.

Receive: Operational performance information for continuous process improvement and optimization.

Systems Administration

Provide: for impleme

Receive: Clear business requirements and flexible IT design pattern for lower TCO.

Leading application development, deployment environment for high performing SOA

Developers

Provide: Work activity, content, and resources to execute business processes

Receive: Streamlined and intelligent work environments for increase productivity.

Goal: Leverage Benefits of SOA Programming Model

You want to…

- Build and deploy new flexible, agile applications/services
- Reuse, extend existing applications
- Leverage programming standards to enable service composition

IBM Solution

▸ Core JEE 5 programming model

▸ Support for latest Web services profiles

▸ Support for Java portlets

▸ EJB 3.0, JPA standards for simplified programming
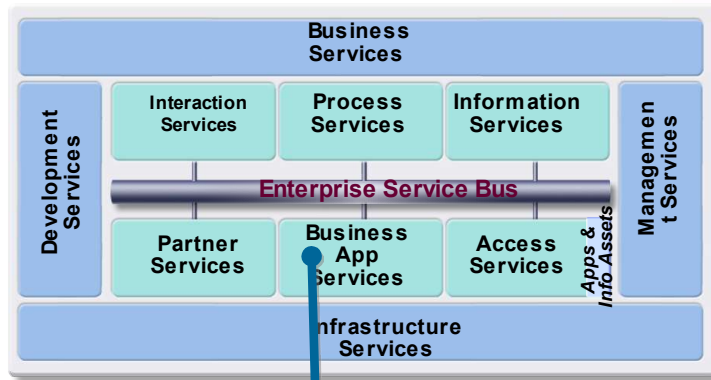
WebSphere Application Server

Supporting the strongest, most com-prehensive SOA programming model

Leveraging Benefits of SOA Programming Model
WebSphere Application Server v7 Ensures Programming Model Currency

- ## Support for core programming model standards
  - ▶ Java EE 5.0
  - ▶ Java SE 6.0

- ## Support for latest Web services profiles
  - ▶ WS-I Basic Profile 1.2 and 2.0, WS-I Reliable Secure Profile
  - ▶ IBM's Federated Identity Profile

- ## Support for Java Portlets (JSR 286)

Programming Model Standards Increase Application Value

Java SE 6.0

- XML and Web services support

  – Full Web services client stack

    • Streaming API for XML (StAX)
    • Java Architecture for XML Binding (JAXB) 2.0
    • Java API for XML-based Web Services (JAX-WS) 2.0
    • Web services metadata
    • XML digital signature API

- JDBC 4.0 support

- Java compiler APIs (JSR 199)

- Client enhancements

  – Swing and AWT

Annotation based development

- Introduced in Java 5.0

- Developers can embed metadata directly into Java source code

- Java 6 specification includes some built in annotation types and APIs

  - JSR 181 – Web services metadata

  - JSR 250 – Common Annotations

  - JSR 269 – Pluggable Annotation Processing API

Leveraging Benefits of SOA Programming Model
WebSphere Application Server v7 Strengthens the Portlet Programming Model
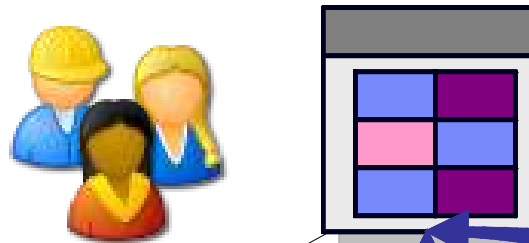
Remote WSRP 2.0 Portlets participate in Context

- Optionally use multiple JVMs for running your Portal
  - Isolate "untrusted" Portlets from Portal
  - Execute Portlets in their own JVM
  - Enhanced scalability for "heavy" Portlets

Portal Users

WSRP 1.0 + 2.0

WSRP 1.0

WSRP 1.0 + 2.0

Portlet Container

Portlet Container

Portlet Container

Portal Server (User Access)

WAS (Portlet Server)

Portal Server (Portlet Server)
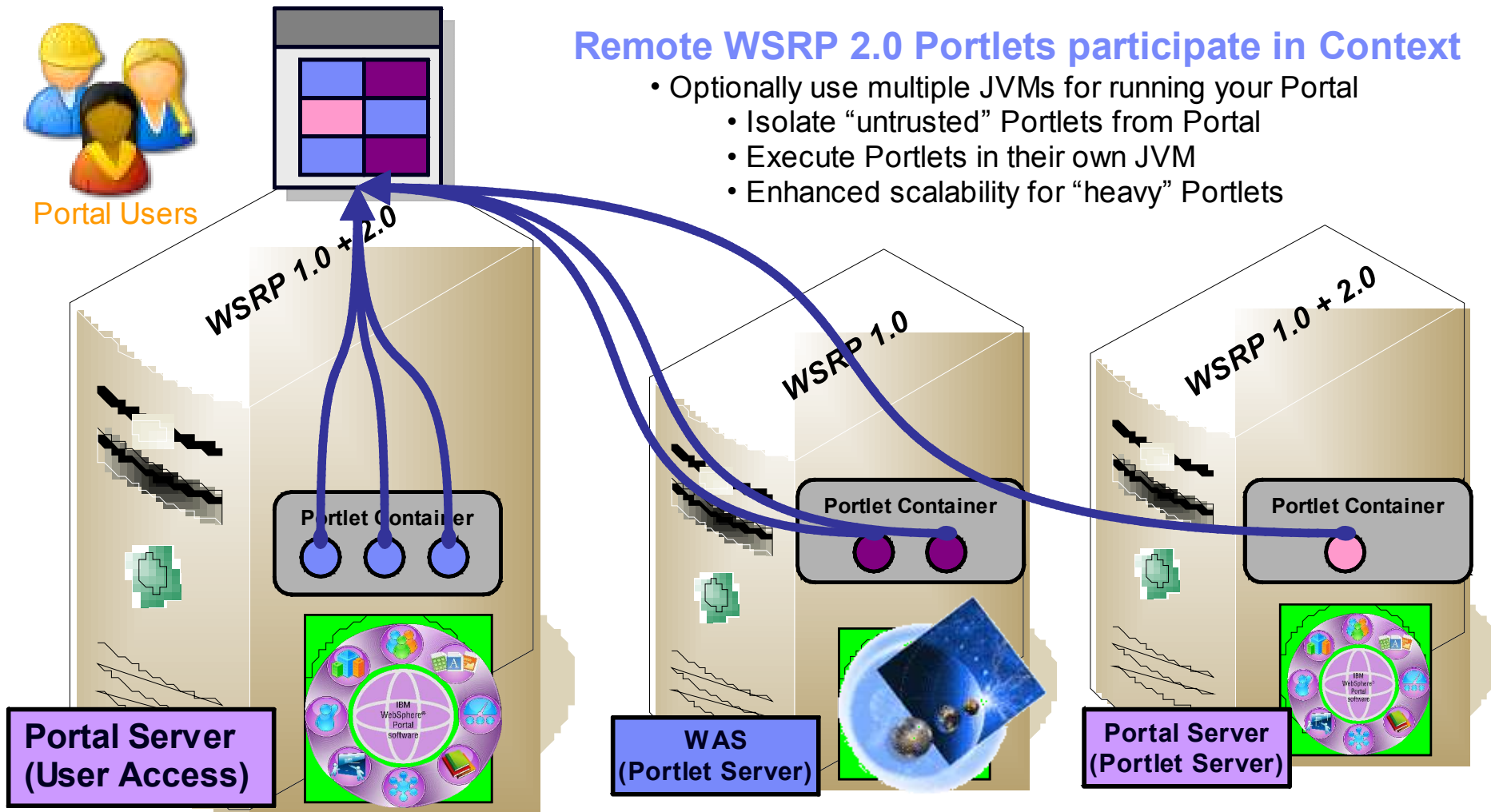
Leveraging Benefits of SOA Programming Model
Spring Certified WebSphere Application Server as a Deployment Platform

- The Spring model offers ease of development, like EJB3. Spring IoC container provides some abstraction between Java SE/EE – good for unit test.

- Significant collaboration between IBM and Interface21 in 2007 tested Spring with WebSphere Application Server on all Base WebSphere Application Server platforms and under load.

  - Framework integration points added to WebSphere Application Server and exploited by Spring 2.5

    - Early availability of these delivered in 6.1.0.9 and 6.0.2.19.

  - Spring certified WebSphere Application Server as a deployment platform for the Spring framework

    - http://www.springsource.com/pressreleases/2007/ibmwebsphere062007

  - Spring distribution is not shipped with WebSphere Application Server , nor does WebSphere Application Server provide support for the Spring framework itself

- Recommended best practices when using Spring with WebSphere Application Server :
  http://www-128.ibm.com/developerworks/websphere/techjournal/0609_alcott/0609_alcott.html

Leveraging Benefits of SOA Programming Model
WebSphere Application Server v7 Keeps Pace with Industry Advancements

Feature Packs enable you to selectively take advantage of new standards and features while maintaining a more stable internal release cycle.

Web services	EJB 3.0	Web 2.0

WAS 6.1

Web 2.0	SCA	CEA	XML

Web services	EJB 3.0

WAS 7.0
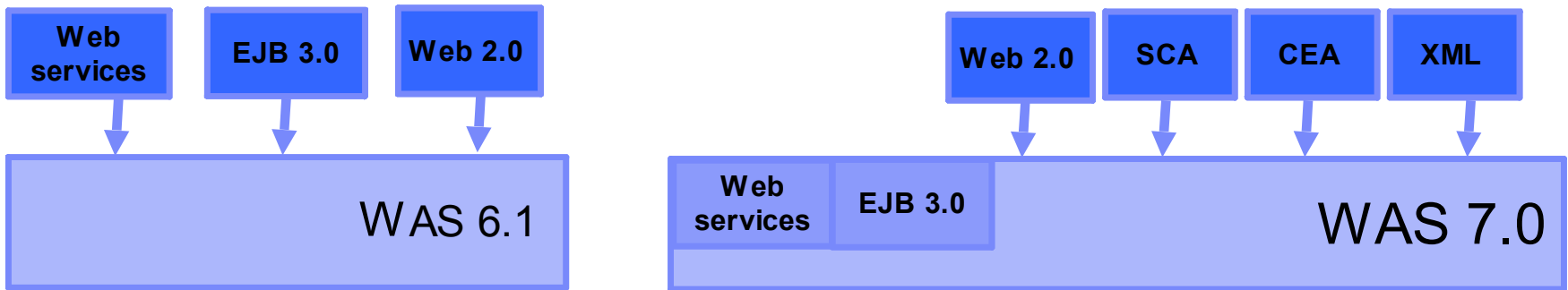
1. Choose the application server technology you need.

2. Install additional functionality on core WebSphere Application Server 7

3. Build the Application Server you want without waiting for new releases.

Goal: Provide Powerful, but Simplified RAD

You want to…

- Build and deploy flexible, agile applications/services
- Take advantage of modern IDEs for rapid development/deployment
- Leverage programming standards to enable service composition

IBM Solution

▸ Rapid Assembly and Deployment Module for WebSphere

▸ Advanced tooling

- ▪ J2EE 1.4 support
- ▪ Java EE 5 support
- ▪ Java EE 5 XML form-based DD editors
- ▪ SIP tools

▸ Visual editing

▸ Adapters for simplified, enhanced integration
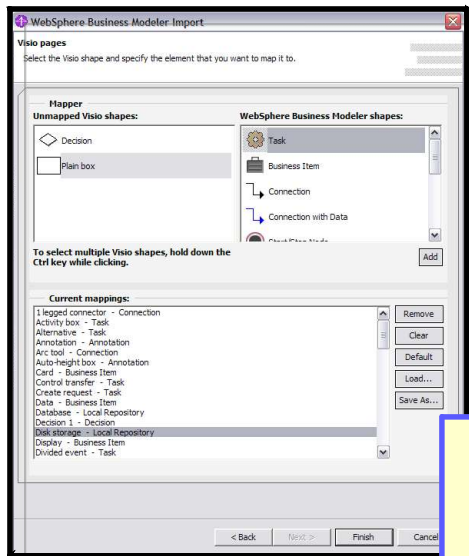
Enabling fast, efficient development of critical applcations and services

Providing Powerful, but Simplified RAD

RAD for WebSphere Improves Programmer Productivity

RAD for WebSphere
Programming model tools:
- EJB3 productivity features
- Domain modeling (visual edit)
  - Java, EJB, XSD, WSDL, Data
- Web Development (visual edit)
- Web Services productivity features
- Portlet JSR
- Relational Data Tools

Miscellaneous:
- XML productivity features
- Extra Debuggers (XSLT, stored procedures.
- WAS Test servers: v6.0, v6.1, v7.0
- WAS n-2 support
- J2C
  - CICS and IMS Adapters

Licensed but supplied separately:
  - RequisitePro integration
  - RUP
  - IBM Support Assistant
- More…

RAD Assembly & Deploy
- Profile Management tools
- Jython Tools
- J2EE 1.4 (same level as AST 6.1)
- JEE5 XML-form based DD editors
- JEE5 application support
- WebSphere Application Server 7 support only
- SIP

EIS Adapters
- SAP, Siebel, JDE, Oracle, PeopleSoft

Portal (Lotus)
- Portal Tools

SCA (Post v7.5)
- SCA 1 (Public)

WebSphere Application Server v7 … for System Administrators

IT Leaders (CIO)

Provide: Domain expertise on business strategy and business function

Receive: Actionable insight into operational performance to make better business decisions

IT Architects

Provide: Solution architecture, integration expertise and infrastructure focus.

Receive: Operational performance information for continuous process improvement and optimization.

Systems Administration

Provide: Technical expertise in resources for implementing BPM solutions.

Receive: Clear business requirements and flexible IT design pattern for lower TCO.

Developers

Leading management architecture and features to reduce the overhead of administration

Receive: Streamlined and intelligent work environments for increase productivity.

Goal: Ease Application Serving Management Burden

You want to…

- Invoke key runtime provisioning of applications to meet business demands
- Improve infrastructure management efficiency, reducing resources/skills

IBM Solution

▸ Dynamic start of app server components

▸ Simplified administration of web services

▸ Straightforward configuration of integrated messaging capabilities

Enabling fast, efficient development of critical applcations and services

Easing Application Serving Management Burden
WebSphere Application Server v7 Provides Key Runtime Provisioning Capabilities

- Dynamic start of app server components based on application needs

- Reduces the runtime footprint – less memory required

- Can significantly reduce startup times

V6.1 Server

Web Container
EJB Container
Web Services
SIP Container
Security
HA Manager
Infrastructure…

All Activated

V7 Server

Web Container
EJB Container
Web Services
SIP Container
Security
HA Manager
Infrastructure…

Dynamically Activated!!
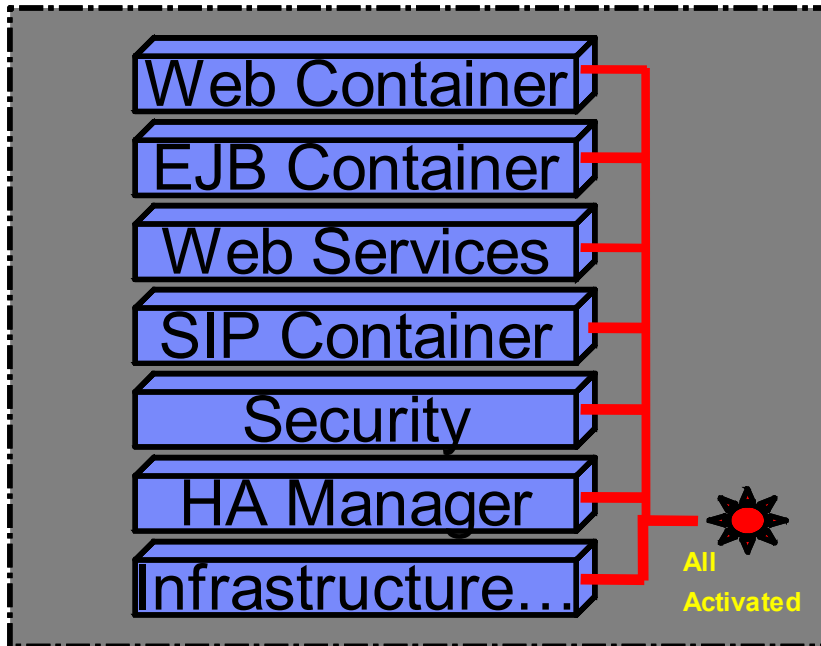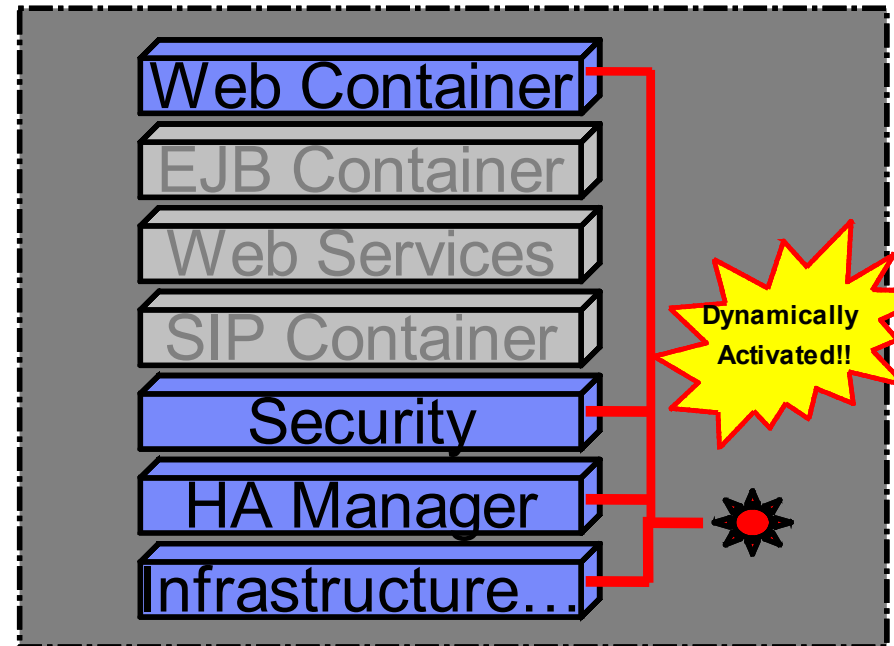
Easing Application Serving Management Burden
New WebSphere Application Server v7 SOA Capabilities Ease Management of Web Services

Goal: Capitalize on Intelligent App Server Management

You want to…

- Reduce SOA infrastructure administrative overhead
- Provide remote management for expanded topologies

Cell config

Node A configuration

Server configuration

Admin Agent

App Server

Node A

Admin console

Admin scripts

IBM Solution

▸ Flexible, "loosely coupled" application server management

▸ Introduction of admin agents – enabling asynchronous agent execution

▸ Expanded multi-node remote management

▸ Improved support of development/unit testing/QA environments
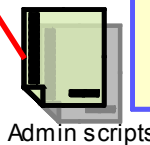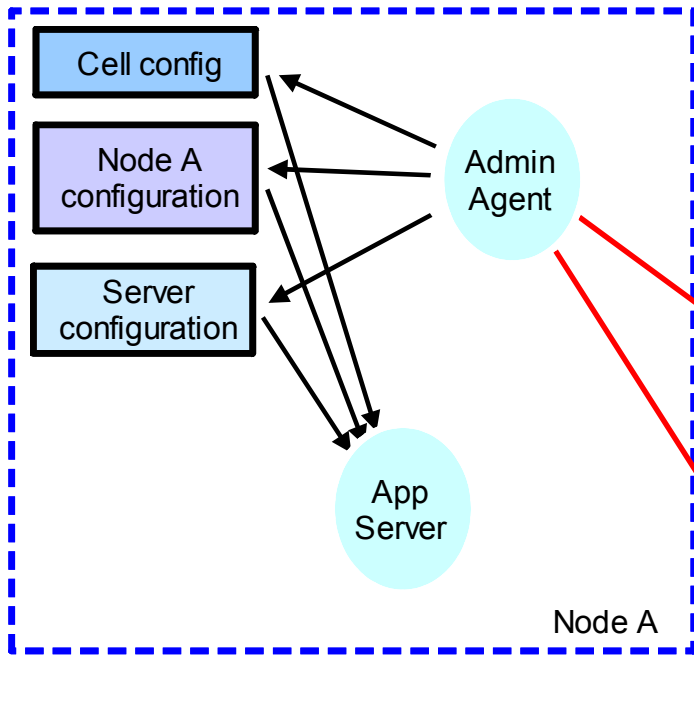
Intelligent management features ease admin. open new opportunities

Capitalizing on Intelligent App Server Management
WebSphere Application Server v7 Allows Flexible Management of Branch Organizations

- Supports high latency remote branch servers
- Supports geographically separated data centers
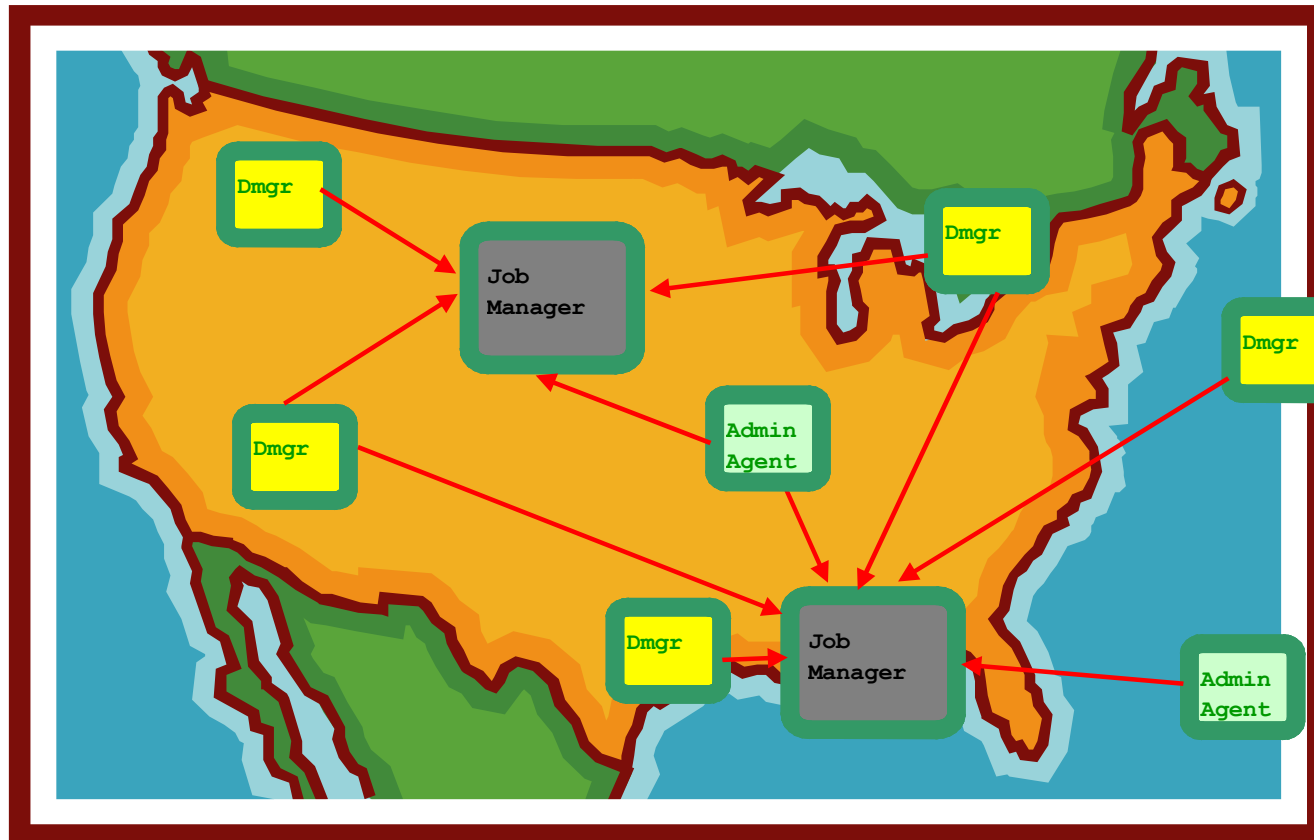
Capitalizing on Intelligent App Server Management
WebSphere Application Server v7 Addresses the Server Farm Dilemma with New Ideas

Loosely coupled Job Manager

Local node "Autonomy" unlike ND topology

Loose federation – Not "slave" to Deployment Manager

Develop/Unit Test/QA scenarios
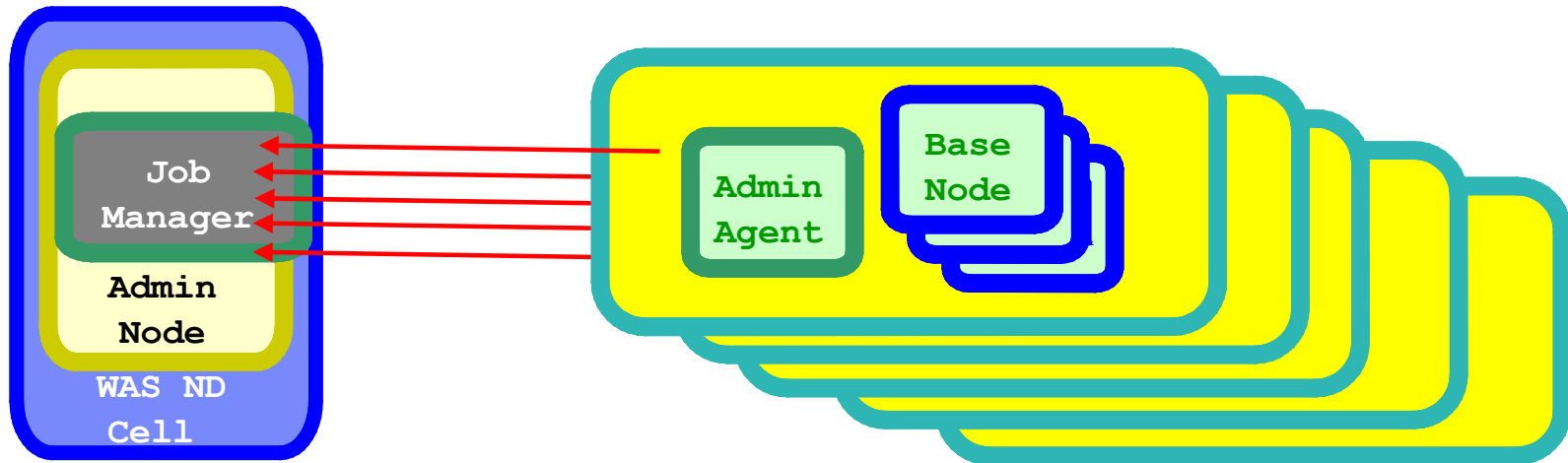
Capitalizing on Intelligent App Server Management

WebSphere Application Server v7 Overcomes Challenges of Existing Base Management

Current Base Management

Cell config

Node A configuration

Server configuration

App Server

Node A

Node Agent NOT included in Base product

WebSphere Application Server V5 & V6 Base Product Architecture

Admin console

Admin scripts
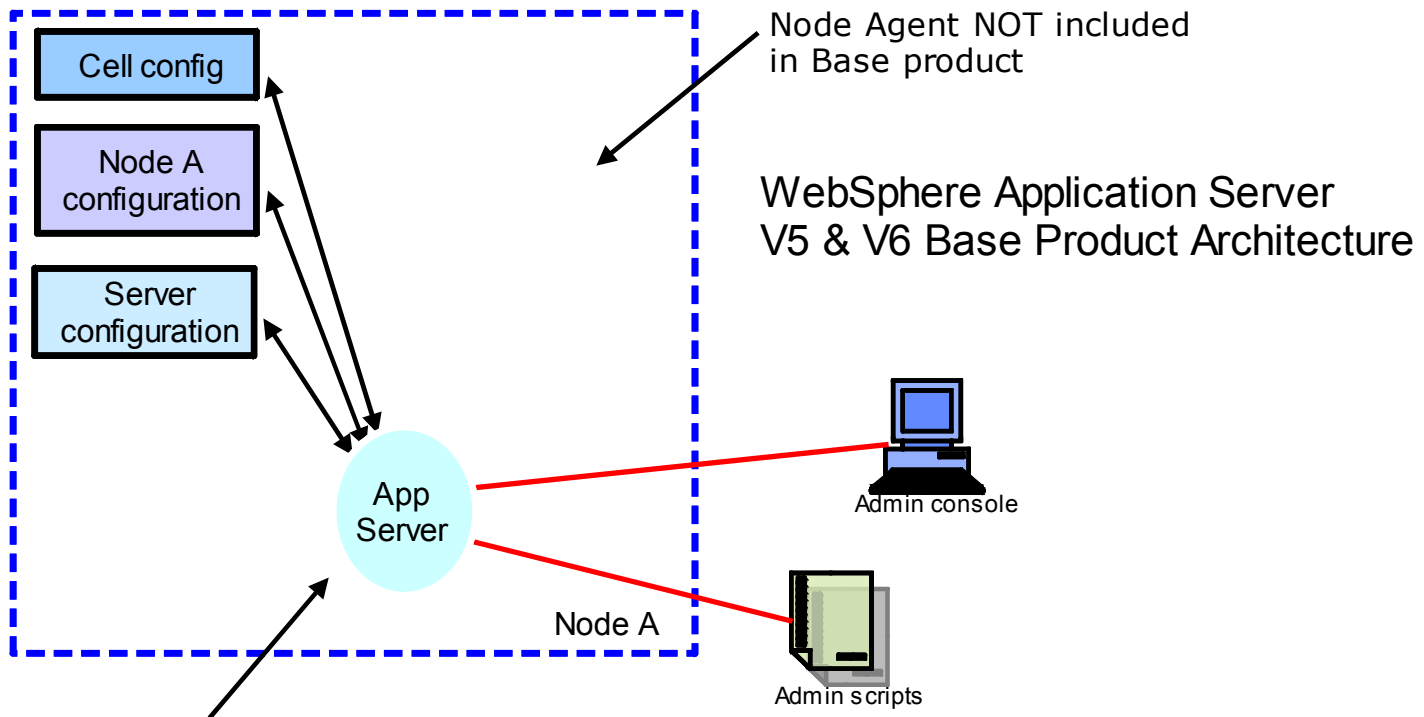
Admin logic hosted in the same JVM as application server and customer applications.

Capitalizing on Intelligent App Server Management

WebSphere Application Server v7 Overcomes Challenges of Existing Base Management (*cont*.)

New Flexible Management Option

Admin Agent included in Base product

Cell config

Node A configuration

Server configuration

Admin Agent

App Server

WebSphere Application Server V7 Base Product Architecture

Admin console

Admin scripts

Node A
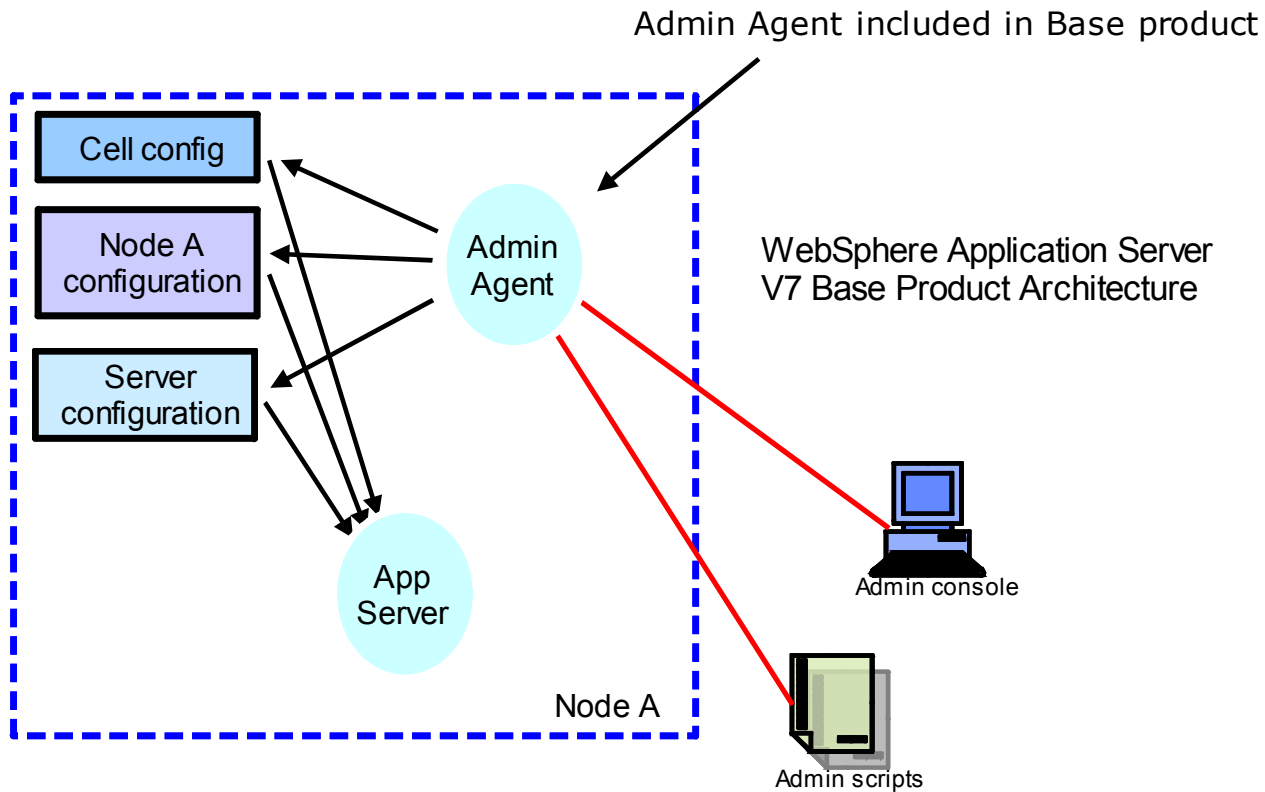
Capitalizing on Intelligent App Server Management
WebSphere Application Server v7 ND Allows Loose Federation for Multi-node Management

New Flexible Job Manager

Cell config

Node A configuration

Server configuration

Job Manager

Admin scripts

Admin console

WAS ND Node X

Admin Agent

Admin scripts

Admin console

Cell config

Node A configuration

Server configuration

WAS Base Node A
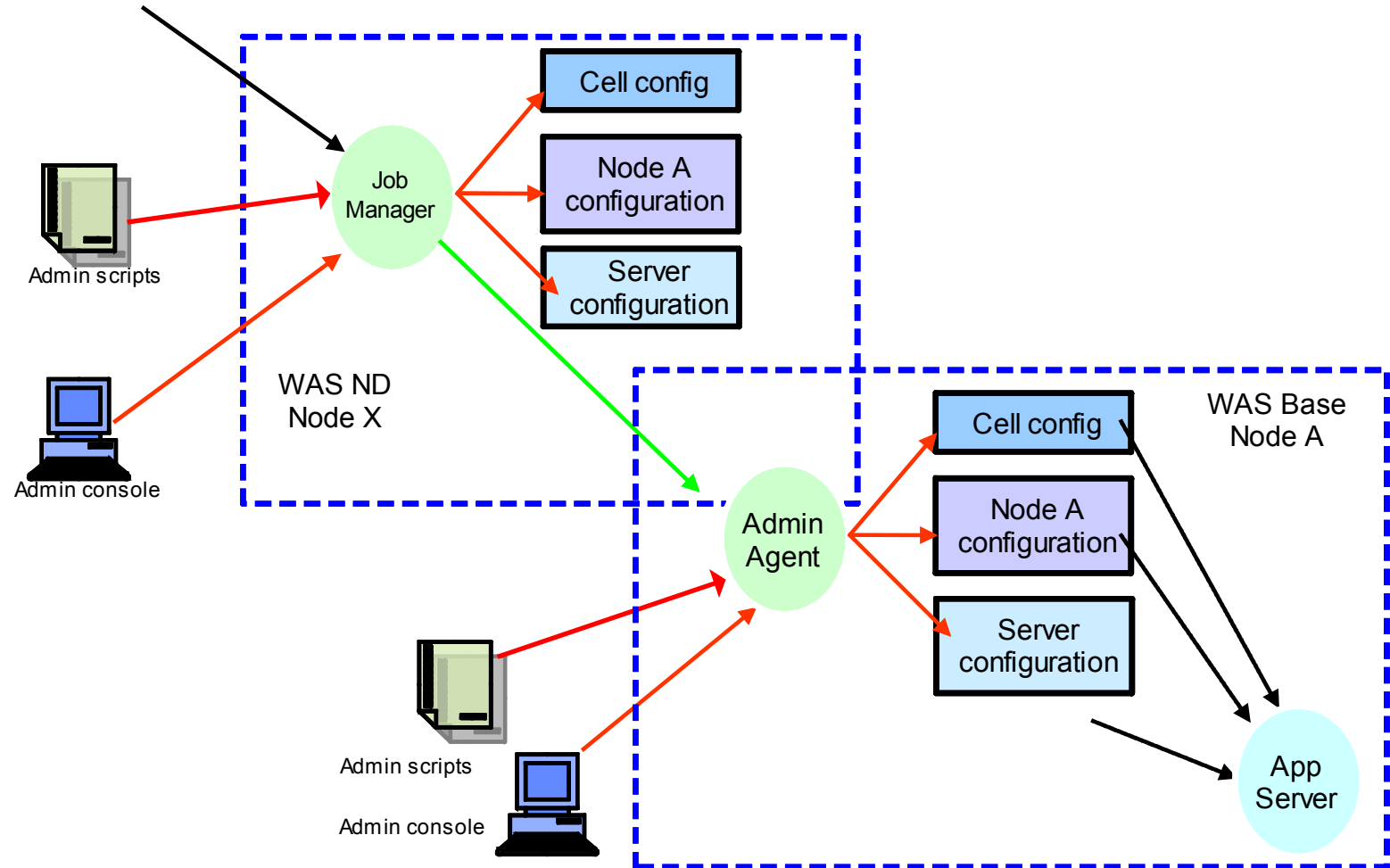
App Server

Capitalizing on Intelligent App Server Management
WebSphere Application Server v7 Sets the Stage for More Flexible Management Topologies

Job Manager
- Control multiple endpoints
- Remote management
- Loose Coupling

Manager

Admin Agent

Admin Agent

Admin Agent

Server

Server

Server

Deploy-ment Mgr

Deploy-ment Mgr

Base Application Server
- Programming Model
- QoS
- Security
- Administration

WebSphere Application Server

Server
Server
Server
Server
Server

Server
Server
Server
Server
Server

Network Deployment Cell
- Administration
- Clustering
- Workload Management

Goal: Use Technology Innovation to Meet Evolving Needs

You want to…

- Broadened concept and capabilities for SOA application support
- Strengthened security and security management across domains
- Improved security visibility through admin consoles

IBM Solution

▸ Expanded support for business applications beyond J2EE

▸ Multiple security domains under central management

▸ Expanded security auditability

▸ Configuration utilities and console management to reduce manual effort

▸ Enhanced Kerberos support
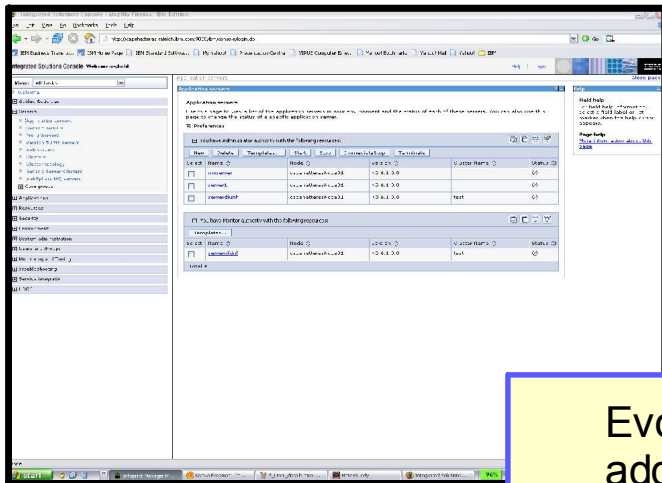
Evolving WebSphere technology addresses previous mgt challenges

Using Technology Innovation to Meet Evolving Needs
WebSphere Application Server v7 Expands Support through Business Level Applications

- Expanding the notion of "Application" beyond J2EE

- Extensible deployment logic framework

- Supports more than Application Server deployment target runtimes
  - ▸ for example: Proxy Server, Web Server, CE, files, etc.

- Full lifecycle management of applications
  - ▸ Install, distribute, activate, monitor, update, remove
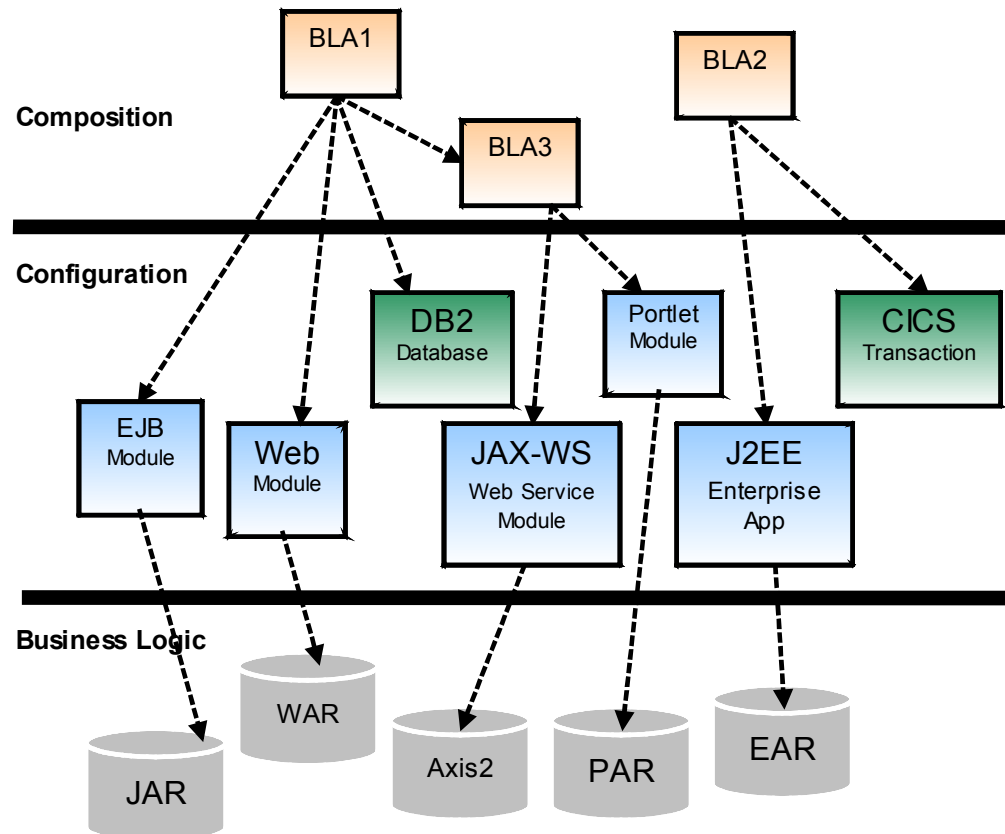
Using Technology Innovation to Meet Evolving Needs
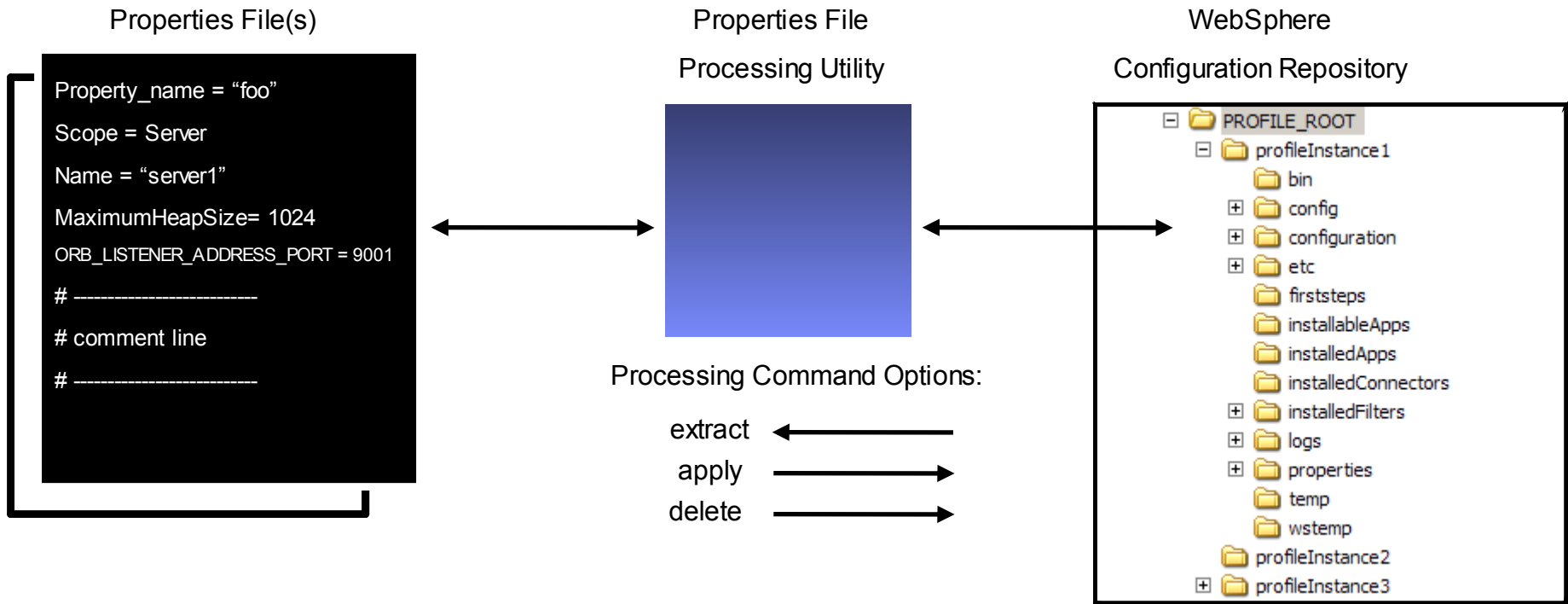## WebSphere Application Server v7 Offers Enhanced Kerberos Support

Broader implementation of Kerberos delivers improved interoperability with other applications and environments
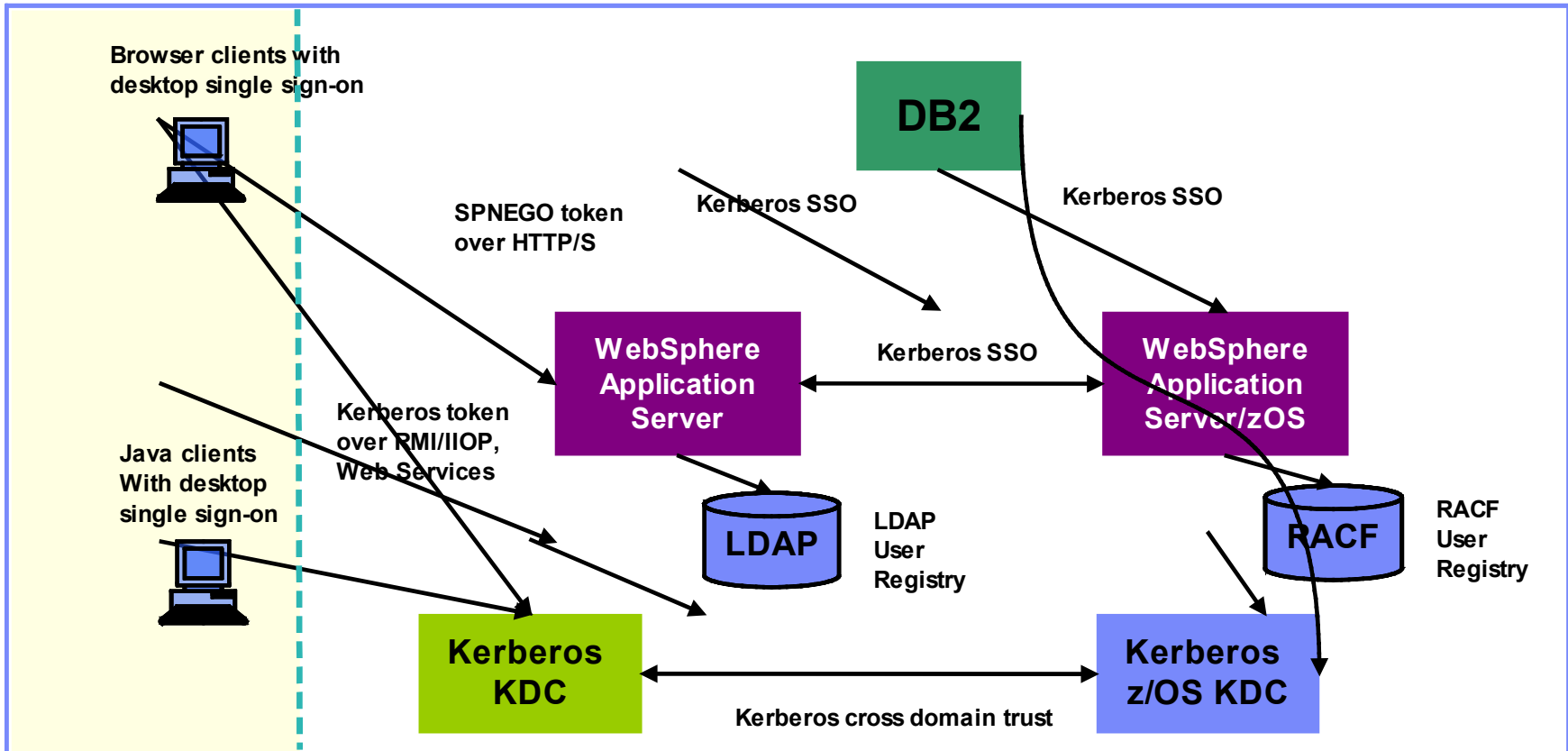
Easing Application Serving Management Burden
WebSphere Application Server v7 Properties File Based Configuration Utility Reduces Manual Effort

Properties File(s)

```
Property_name = "foo"

Scope = Server

Name = "server1"

MaximumHeapSize= 1024

ORB_LISTENER_ADDRESS_PORT = 9001

# -------------------------

# comment line

# -------------------------
```

Properties File

Processing Utility

WebSphere

Configuration Repository

Processing Command Options:

extract

apply

delete

- PROFILE_ROOT
  - profileInstance1
    - bin
    - config
    - configuration
    - etc
    - firststeps
    - installableApps
    - installedApps
    - installedConnectors
    - installedFilters
    - logs
    - properties
    - temp
    - wstemp
  - profileInstance2
  - profileInstance3

Nobody does it better…

WebSphere Application Server Version 7 brings …

- ▶ Simplification for Developers
- ▶ High Performance SOA Environment
- ▶ Innovation that Matters
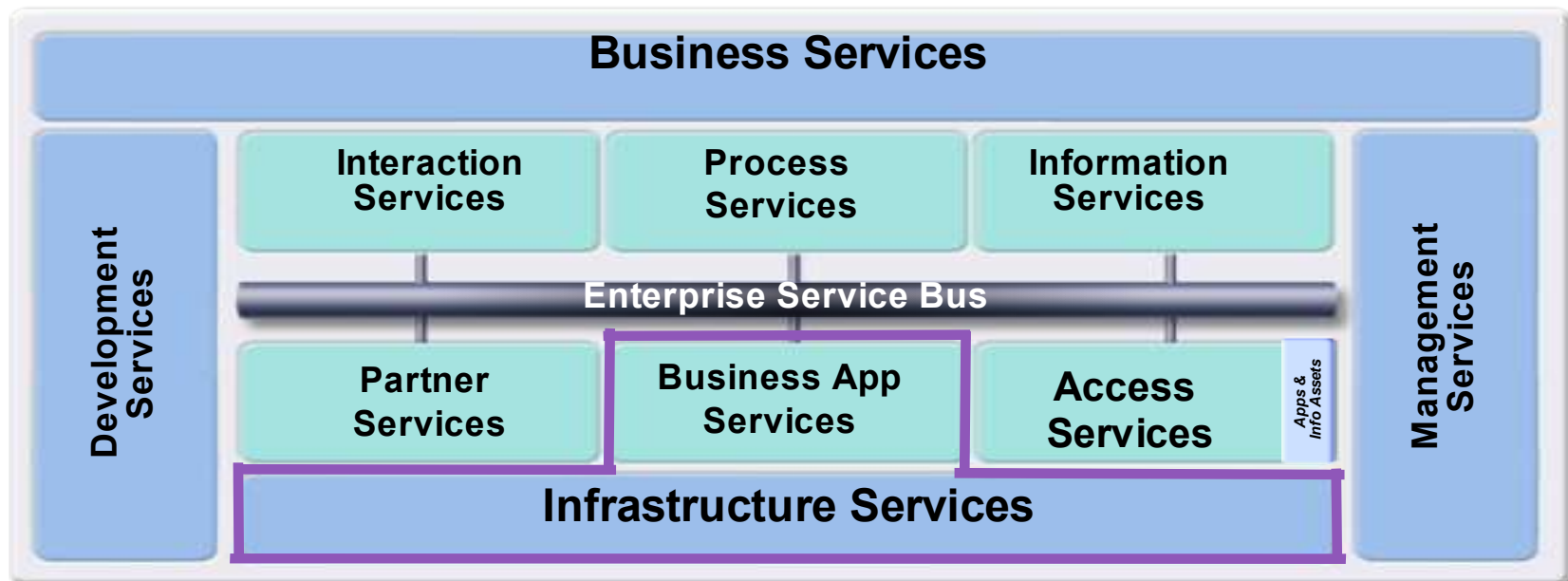
Interface21 Certifies The Spring Framework on IBM WebSphere® Application Server®

Interface21 Certifies The Spring Framework on IBM WebSphere® Application Server®

ANTWERP, Belgium—SPRINGONE CONFERENCE 2007—June 20, 2007—Interface21, a leading provider of trusted open source software for building and deploying enterprise applications, today announced it has certified and will support IBM's WebSphere(R) Application Server as a deployment platform for the Spring application development framework.
Spring is a comprehensive open source application framework that has been downloaded more than three million times. IBM WebSphere Application Server is the market leading standards-based middleware foundation for building, running and integrating business applications across a variety of computing platforms. Interface21's certification of Spring with WebSphere Application Server ensures that enterprise developers have additional choice and flexibility to maximize their organizations' investment in IBM technology.

"IBM is committed to ensuring that our technology solutions are interoperable and can be deployed in conjunction with a range of complementary technologies," said Paul Buck, Director, WebSphere Open Source, IBM. "Some WebSphere customers have already deployed Spring with WebSphere Application Server. Today's announcement ensures that they can get structured support from Interface21 and the confidence that IBM and Interface21 have collaborated to position WebSphere Application Server as the premier environment for Spring applications."
"Today's certification of the Spring Framework on IBM WebSphere Application Server highlights Interface21's commitment to providing a simple, powerful development and deployment model that integrates with a wide variety of application infrastructure components," said Rod Johnson, CEO, Interface21.

About Interface21
Interface21 is a leading provider of trusted open source software for mission-critical enterprise applications. Interface21 created and sustains the development of the Spring Framework, the leading Java™ and Java EE™ application framework. Through the Spring family of products, Interface21has helped hundreds of organizations, including some of the world's largest financial institutions and public sector clients, build and deploy mission-critical applications that boost developer productivity and increase enterprise ROI. For more information, please visit http://www.interface21.com.