



IBM Software Group

The IBM Express Runtime Architecture

IBM Virtual Innovation Center



IBM Express Runtime

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Objectives

- The objective of this module is to explain the architecture for:
 - Express Runtime for solution development
 - Express Runtime for middleware deployment

Express Runtime architecture

- There are two cases:
 - Express Runtime architecture in the development environment
 - Express Runtime architecture in the deployment environment

Components of Express Runtime

- Rational Web Developer is the development environment for creating Web application. Express Runtime includes a single license of this product.
- Application Development Toolkit installs the development tools that you can use to help you create applications and solutions.
- **Express Runtime Developer**, an Eclipse-based plug-in that helps you to assemble your application, along with the middleware components, quickly and effectively
- **Development Wizard** that helps you to deploy your solution to the target system.
- The preloaded workspace in the Express Runtime Developer has all the sample wrappers and documentation.
- The images of the IBM middleware components and Integrated Solution Console are stored on the system and are installed only during the deployment process. The IBM middleware components include IBM HTTP Plug-in for WebSphere Application Server, WebSphere Application Server – Express, IBM HTTP Server, and DB2 Universal Database (UDB) Express.

Key components in Express Runtime

■ IBM Middleware

- IBM WebSphere Application Server 6.0 Express
 - Provides a standards-based application server that can support both servlets and JavaServer Pages (JSPs), as well as Enterprise JavaBeans (EJBs) and Java Messaging Service (JMS); can easily tie into the relational database (RDB) and other system services

- IBM DB2 Universal Database Express Edition V8.2
 - Provides a fully functional, standards-based RDB designed to support medium business applications

- IBM HTTP Server 6.0
 - Provides a fast, secure standards-based Web environment

- IBM HTTP Plug-in for WebSphere Application Server
 - Helps automate the configuration of the IBM HTTP Server and WebSphere Application Server - Express, which greatly reduces the time to establish and configure a secure, functional Web environment

Scenario 1: Express Runtime for solution development

Express Runtime for solution development

- When you install Express Runtime on a development platform, the following components can be installed.

Application Development Toolkit

- A variety of tooling that you can use to make the most of your applications, and to get the most benefits from the IBM middleware components.

Express Runtime

- Sample wrappers
- Sample application
- First Steps for Express Runtime
- Deployment Wizard
- Solution Assembly Toolkit
- IBM Help System
- Documentation/Help

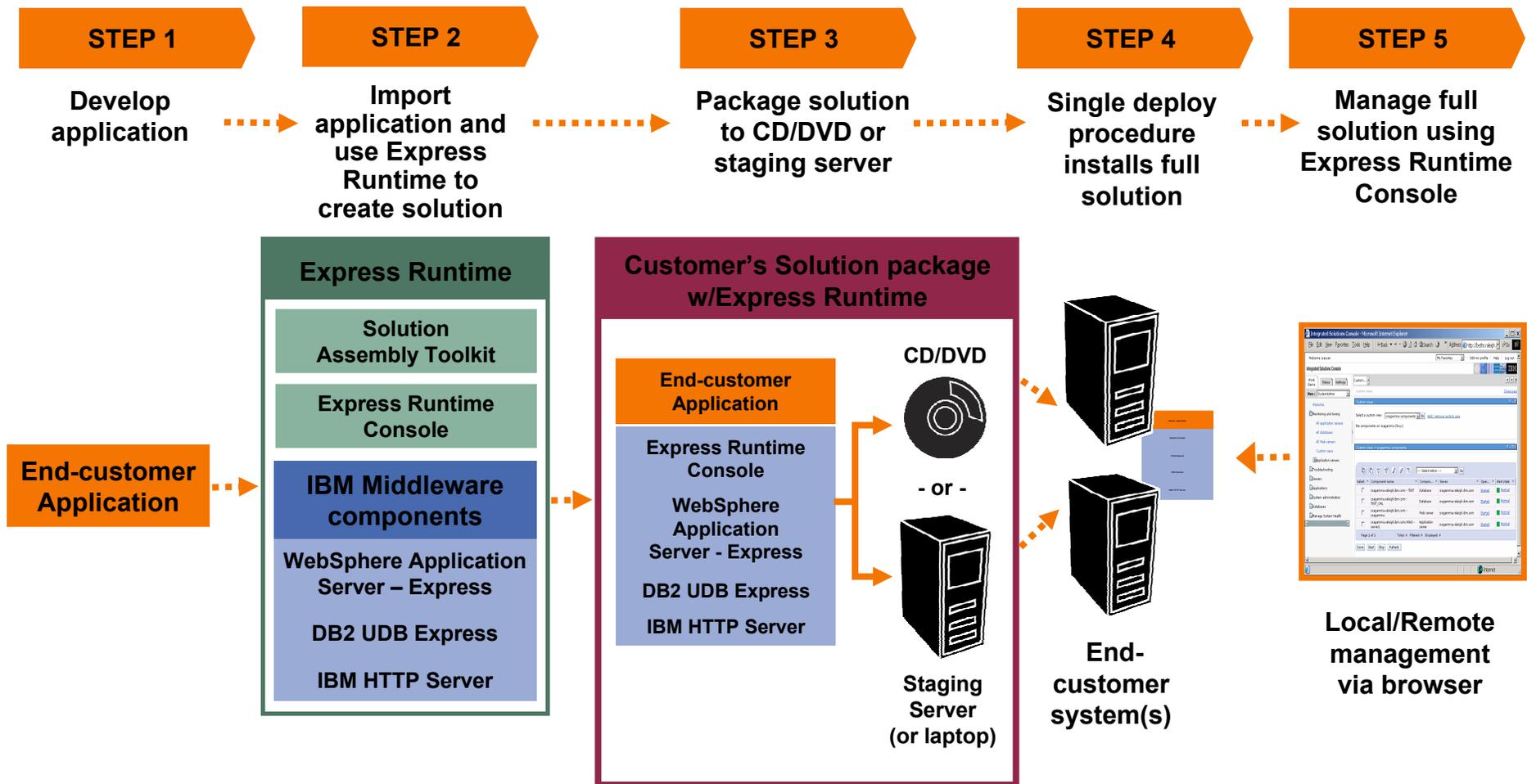
Images for the following products:

- WebSphere Application Server Express 6.0
- DB2 UDB Express 8.2
- IBM HTTP Server 6.0
- Web Server Plugin
- Integrated Solution Console

A typical scenario for Express Runtime for solution development

- Scenario for using Express Runtime for solution development
 - A fictitious retailer end -customer, ITSOZYX Inc., decides to build a new Web-based application for its business.
 - Prior to Express Runtime, besides allocating time to develop the application, the end-customer had to spend a substantial amount of time in obtaining middleware components from different vendors and then installing and configuring those components.
 - With Express Runtime, as soon as the end-customer finishes developing the application, the application can be packaged with the middleware components in a single, complete solution.
 - The solution can be placed on a set of CDs or staging server and then be deployed on their system.
 - The end-customer not only saves the hassle of obtaining middleware components from multiple vendors, but also saves time in installing, configuring, and supporting those components.

How End-Customers use Express Runtime for solution development



Step 1: Develop an application

STEP 1

- End-customer's can use the Rational Web Developer* that is included in the Express Runtime, to build, test, and deploy Web, Web services, and Java applications.
- Any Java 2 Platform, Enterprise Edition (J2EE) applications in enterprise archive (EAR) or Web archive (WAR) format can be used with Express Runtime.
- Alternatively, end-customers can use their own application development tools to develop their own J2EE applications.

* One license is included with Express Runtime V2.1

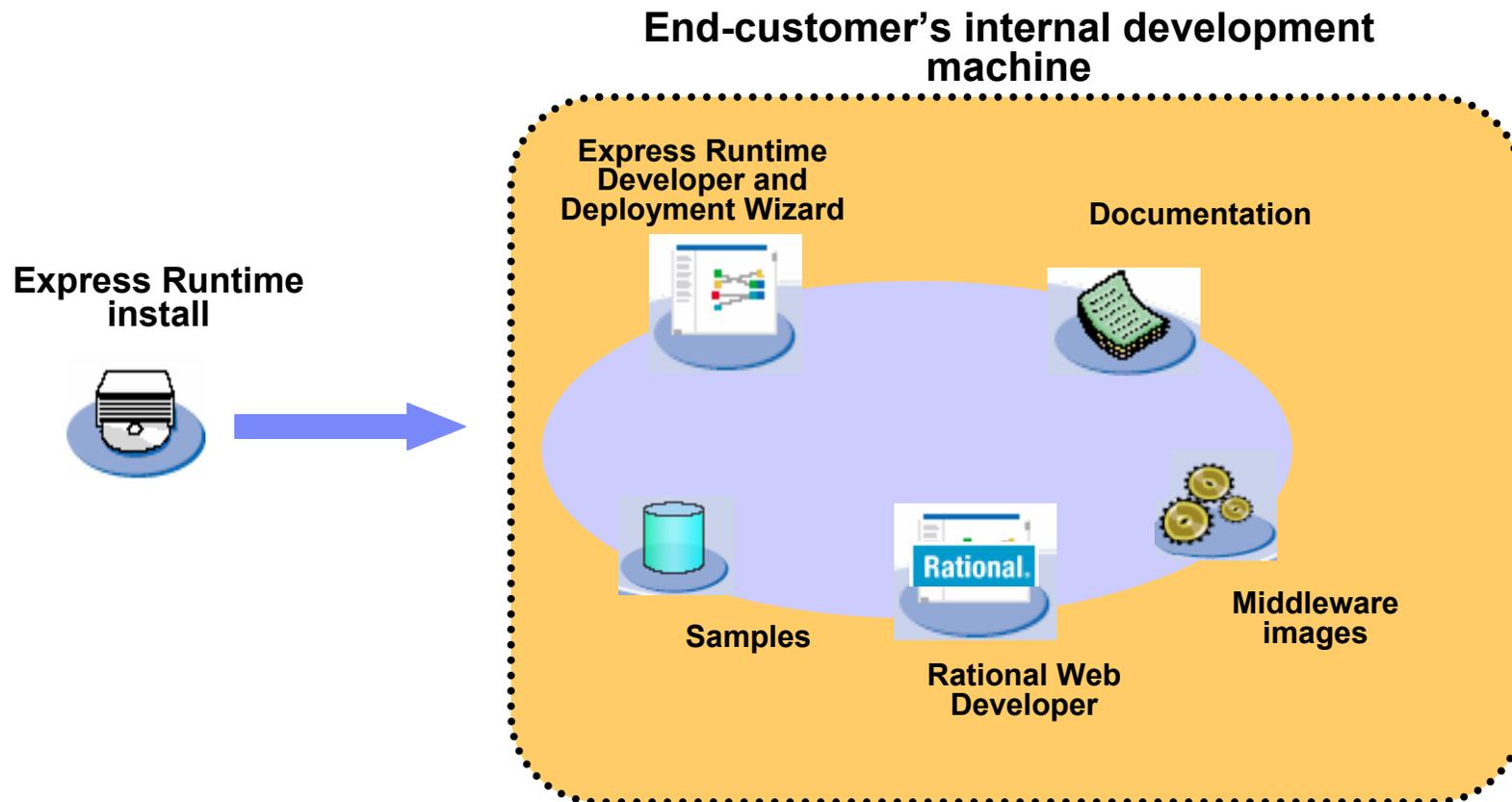


Rational. software

Step 2: Build a complete solution with Express Runtime Developer STEP 2

Install

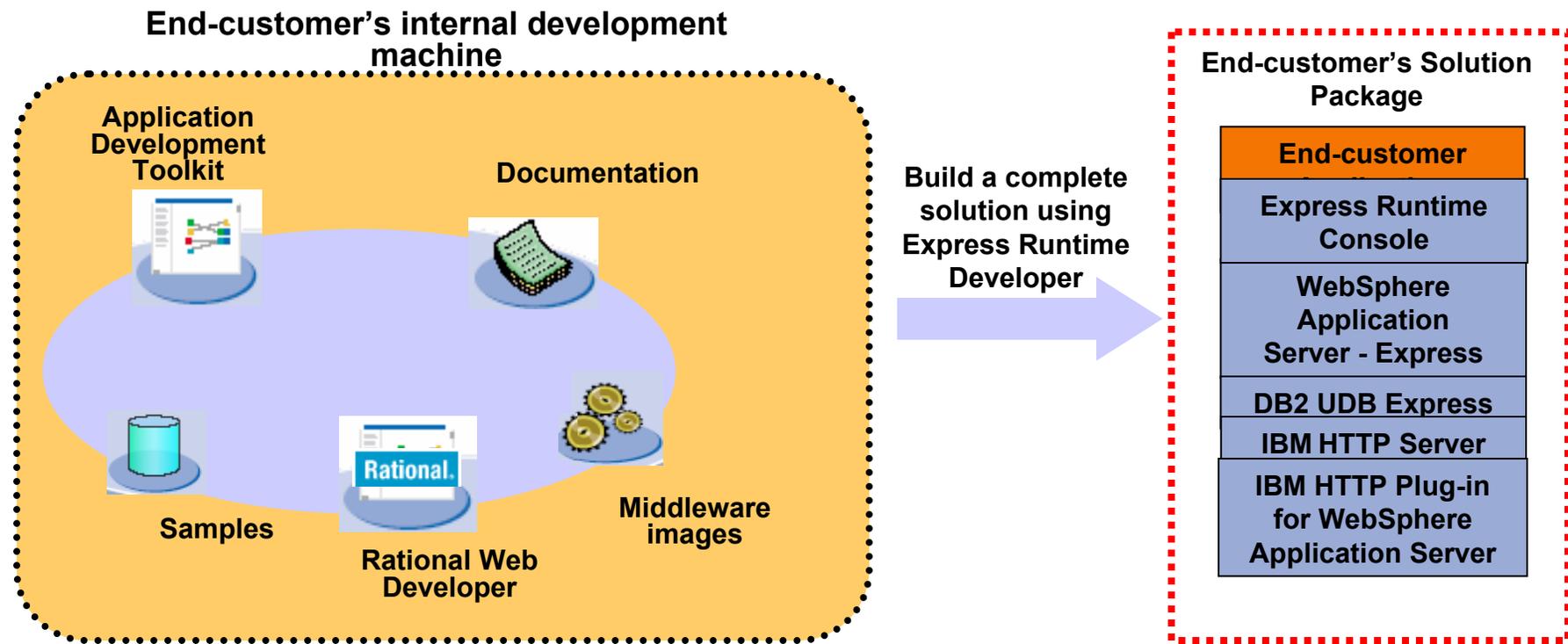
- When Express Runtime is installed on your development machine, the following artifacts are installed.



Step 2: Build a complete solution with Express Runtime Developer Integration

STEP 2

- End-customer integrates its application with the required middleware components.
- The result of this development effort is an end-customer solution, which:
 - Includes all required components to run the end-customer's application
 - Uses a single installation process for all components, including the end-customer application



Step 2: Build a complete solution with Express Runtime Developer STEP 2

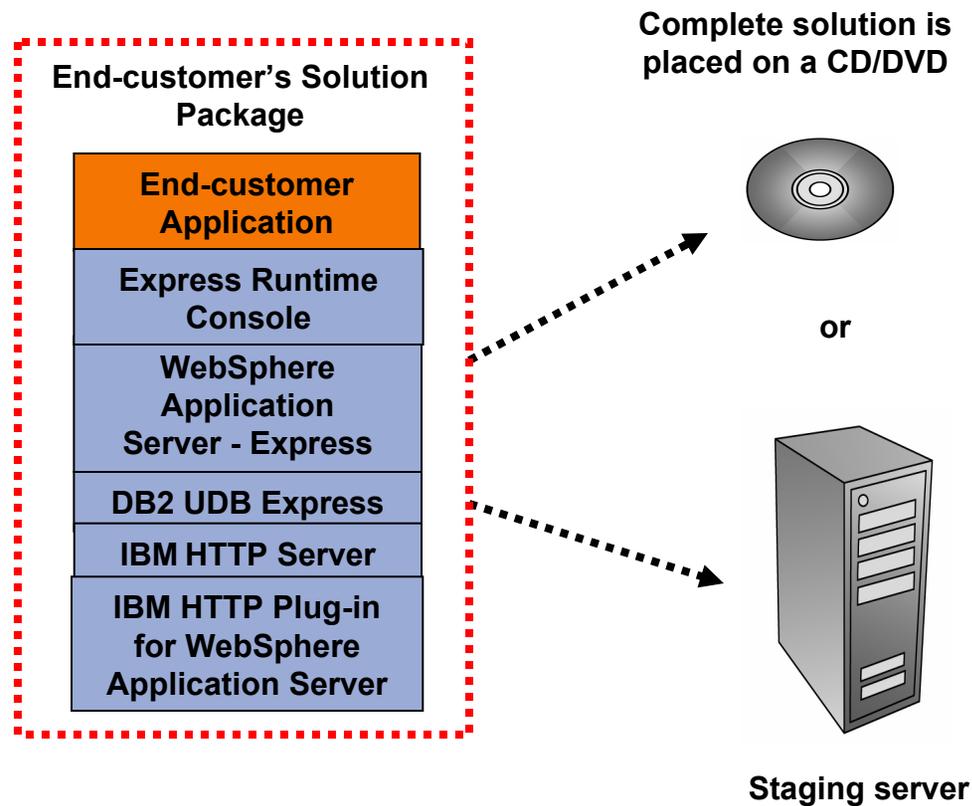
Create Application Wrapper

- Express Runtime uses an **application wrapper** to integrate an end-customer's application with other components, such as IBM middleware.
 - The application wrapper can help to check for prerequisites, drive the installation process, and perform post-installation configuration activities, such as creating WebSphere Application Server – Express data sources, establishing port configuration, or creating database tables.
 - Creating an application wrapper is the main development effort in building a complete solution.
 - The wrappers do not replace the installation technology for the middleware components. Rather, they allow you to use existing installation technology along with additional non-installation technology, such as configuration scripts, to drive the complete installation and configuration process.
 - When an application wrapper is created, the wrapper, along with images of the middleware components may be stored on CDs or on a staging server for later deployment to the customer's system.

Step 3: Package a solution

STEP 3

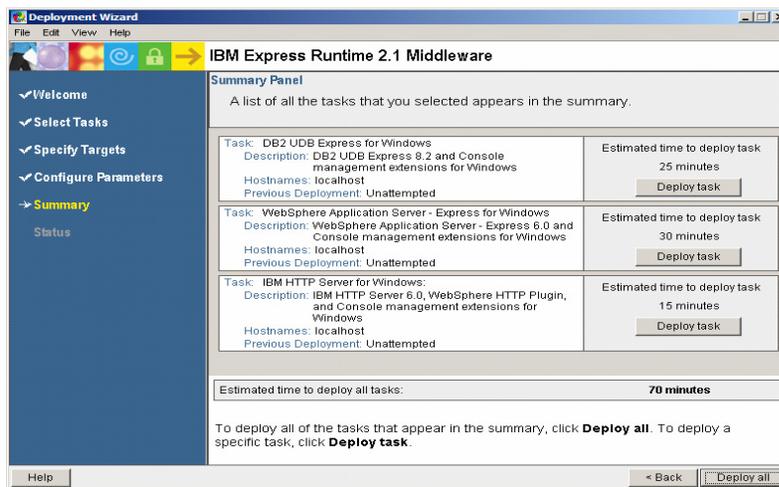
- After a solution is developed, package a solution on CDs or DVDs or a staging server that uses Express Runtime Developer.



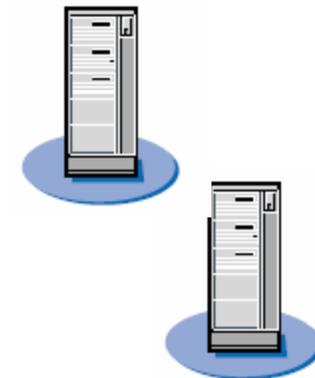
Step 4: Deploy the solution on end-customer systems

STEP 4

- There are two distinct ways to deploy a solution:
 - From CD/DVD
 - From a staging server
- In both cases, the **Deployment Wizard** drives the deployment process.



Deploy locally or remotely using Deployment Wizard



Customer system or systems

Step 4: Deploy the solution on end-customer systems Deployment via CD

STEP 4

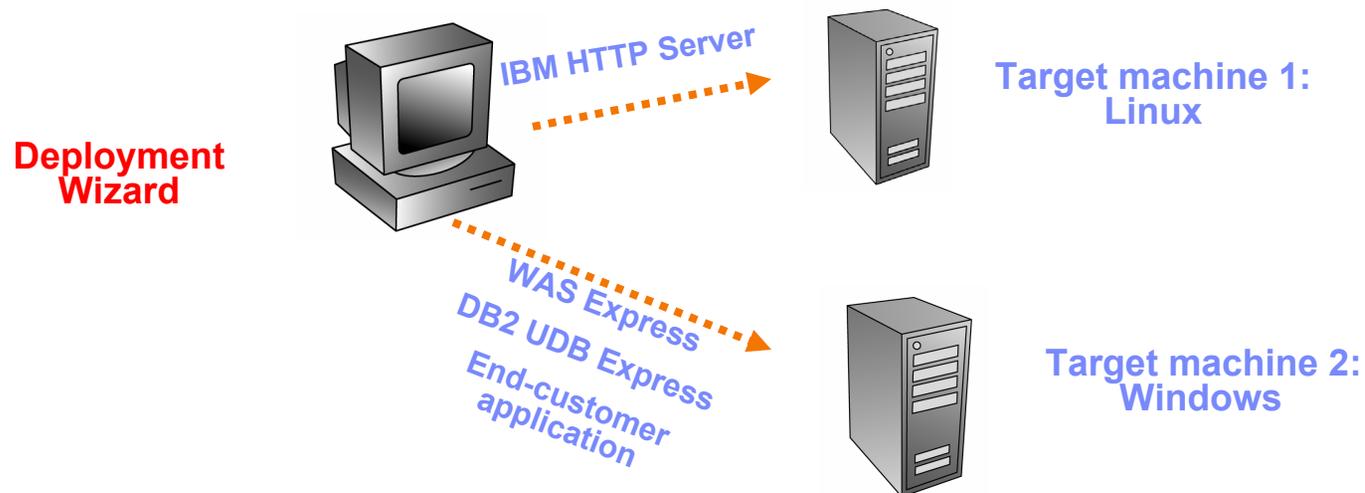
- In the first approach, the solution is placed on a set of CDs. The deployer loads the CDs into the target machine and the **Solution Launcher** starts the installation from the CD. It gathers the information required to complete the deployment and then starts the Deployment Wizard.



Step 4: Deploy the solution on end-customer systems Deployment via Staging Server

STEP 4

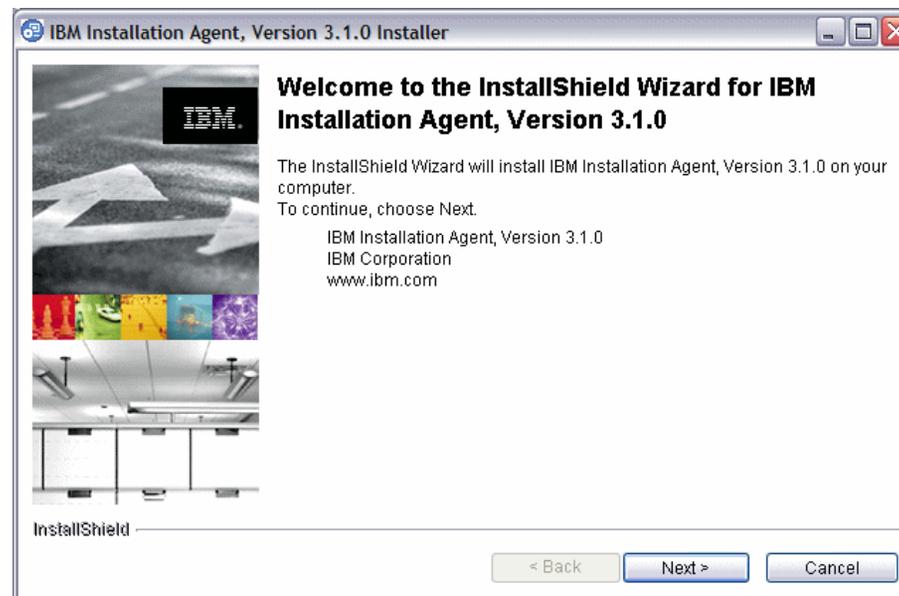
- In the second approach, the solution is placed on a staging server to drive the deployment. You can choose from either of these types:
 - Local deployment
 - Remote deployment
- For remote deployment, you can deploy your solution to multiple systems. For example, the implementation of a solution may dictate deployment of the HTTP Server to one system and DB2 UDB Express, WebSphere Application Server – Express, and your application to another system.



Step 4: Deploy the solution on end-customer systems IBM Installation Agent

STEP 4

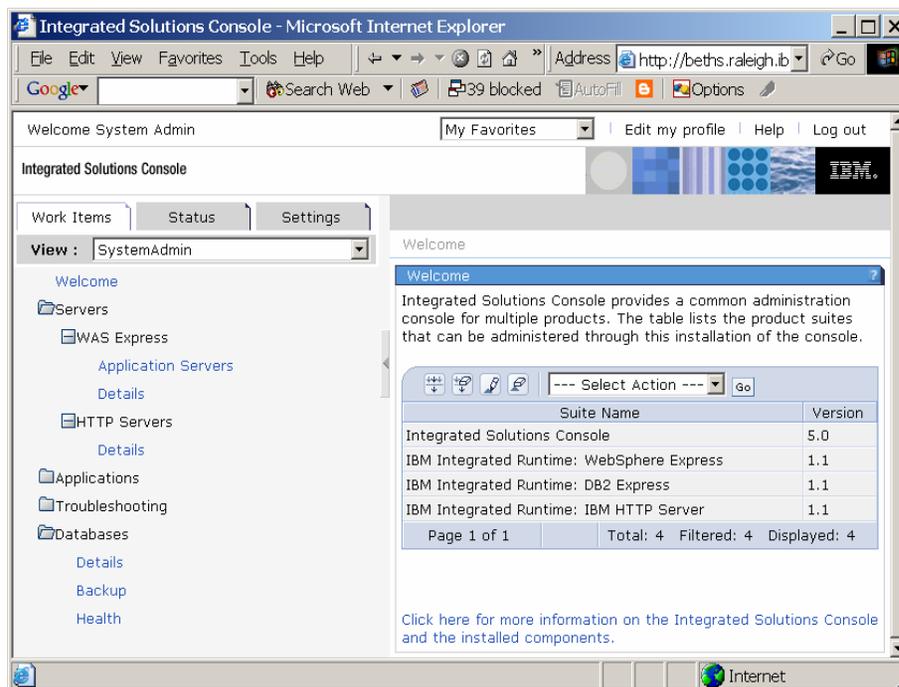
- To do a remote deployment, the end customer system must be installed with **IBM Installation Agent** (provided by Express Runtime). It's used to:
 - Establish communication between the staging server and the target system
 - Drive the installation process



Step 5: Manage the system using Console for Express Runtime

STEP 5

- Console for Express Runtime** is used to manage the middleware components. It's an integrated Web-based console that provides consolidated administration of WebSphere Application Server - Express, DB2 UDB Express, and IBM HTTP Server.



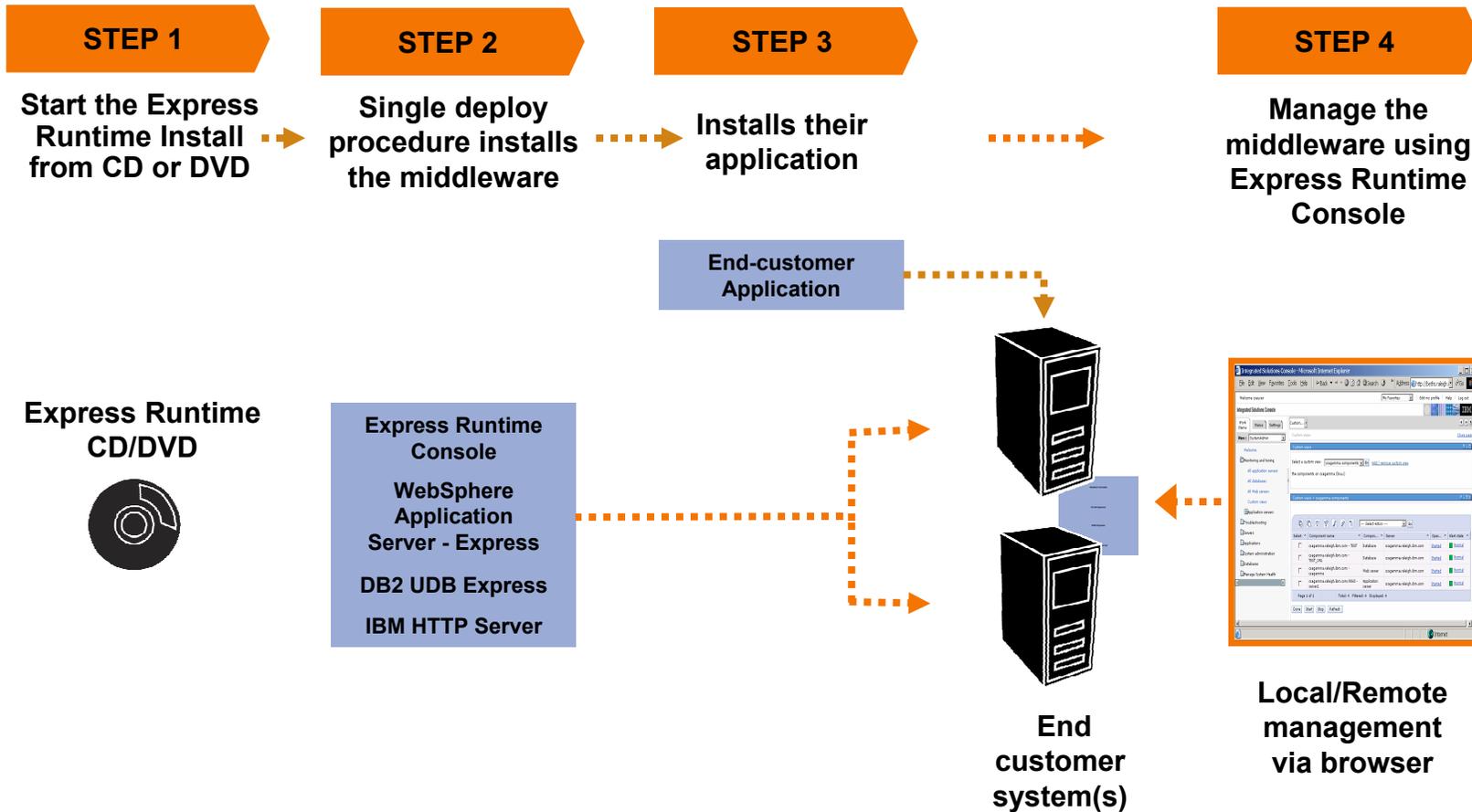
- ✓ Manage multiple instances of WebSphere Application Server – Express, DB2 UDB Express and IBM HTTP Server on the Windows, Linux, and iSeries platform
- ✓ Check the status of, and start and stop, the Application Server, HTTP Servers, and DB2 databases
- ✓ Configure log settings and view logs
- ✓ Check server status and database health
- ✓ Perform a one-step database backup
- ✓ Modify WebSphere Application Server configuration settings
- ✓ Filter tasks according to the role you perform

Scenario 2: Express Runtime for middleware deployment

Express Runtime for middleware deployment

- Scenario for using Express Runtime in a prerequisite environment
 - A fictitious retailer end-customer, ITSOZYX Inc., needs core middleware for its Web-based application.
 - The end-customer typically uses off the shelf software and hardware packages along with their own code and tools and integrates it into their solution.
 - Instead of spending time in gathering middleware components from different vendors, the end-customer uses Express Runtime, which allows them to have a single installation of all the middleware components required.
 - The middleware components are first deployed to their system from the Express Runtime CDs. This is followed by deploying the their application to the same system.

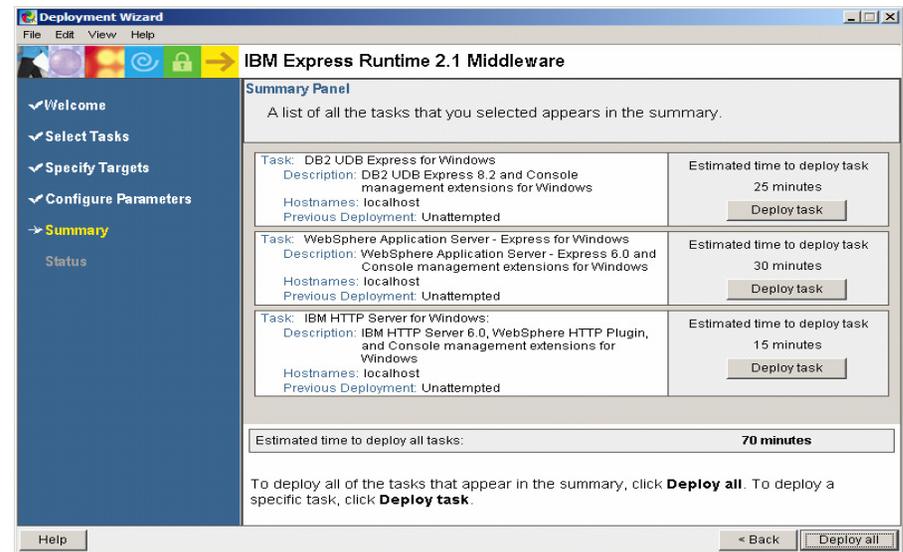
How End-Customer uses Express Runtime for middleware deployment



Step 1: Start the Express Runtime Install

STEP 1

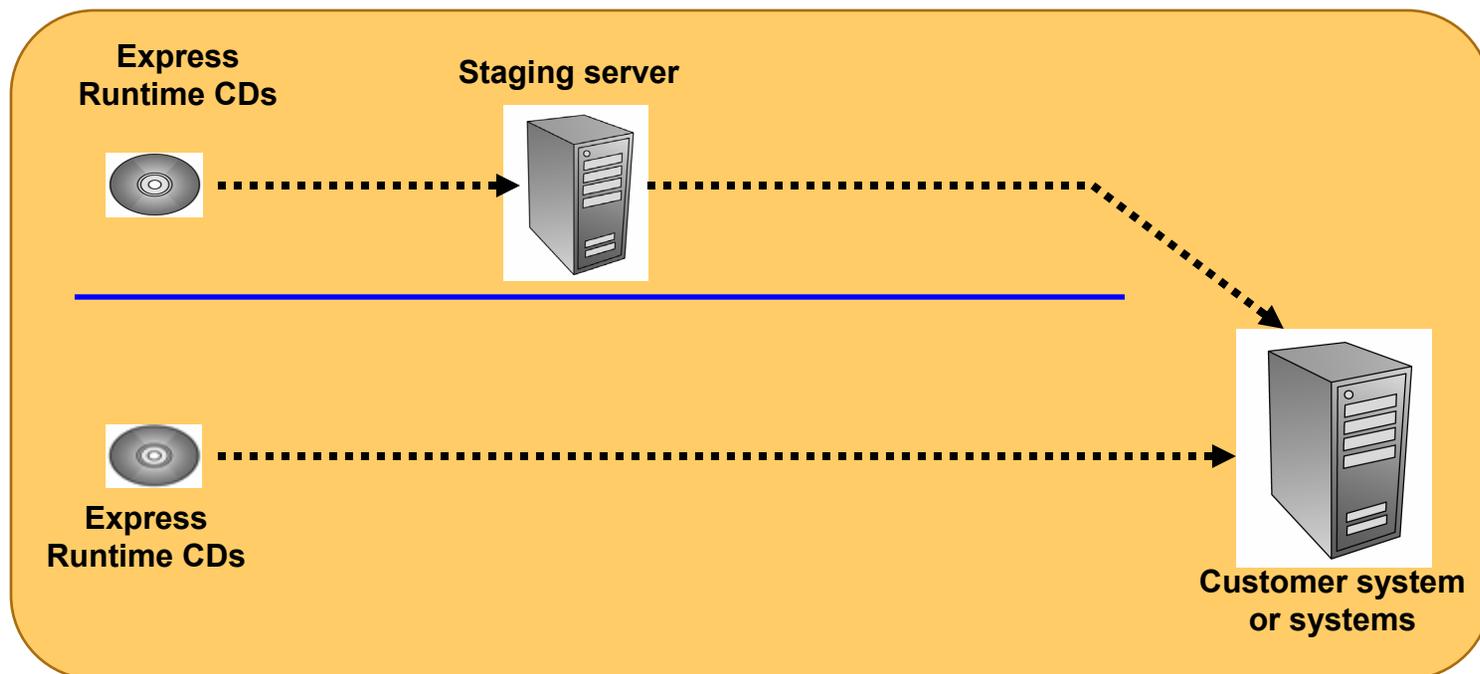
- On Windows® computers, the launchpad starts automatically from the installation CD or DVD.
 - If it does not start automatically, you can start it by using the WindowsLaunchpad.exe program on Windows.
- On Linux™ computers, initiate the launchpad using the LinuxLaunchpad program.
- On Linux on POWER™ computers initiate the launchpad program using the LinuxPPCLaunchpad program.
- By default, you find the launchpad programs on the first CD or DVD in the installation media.



Step 2: Deploy the middleware

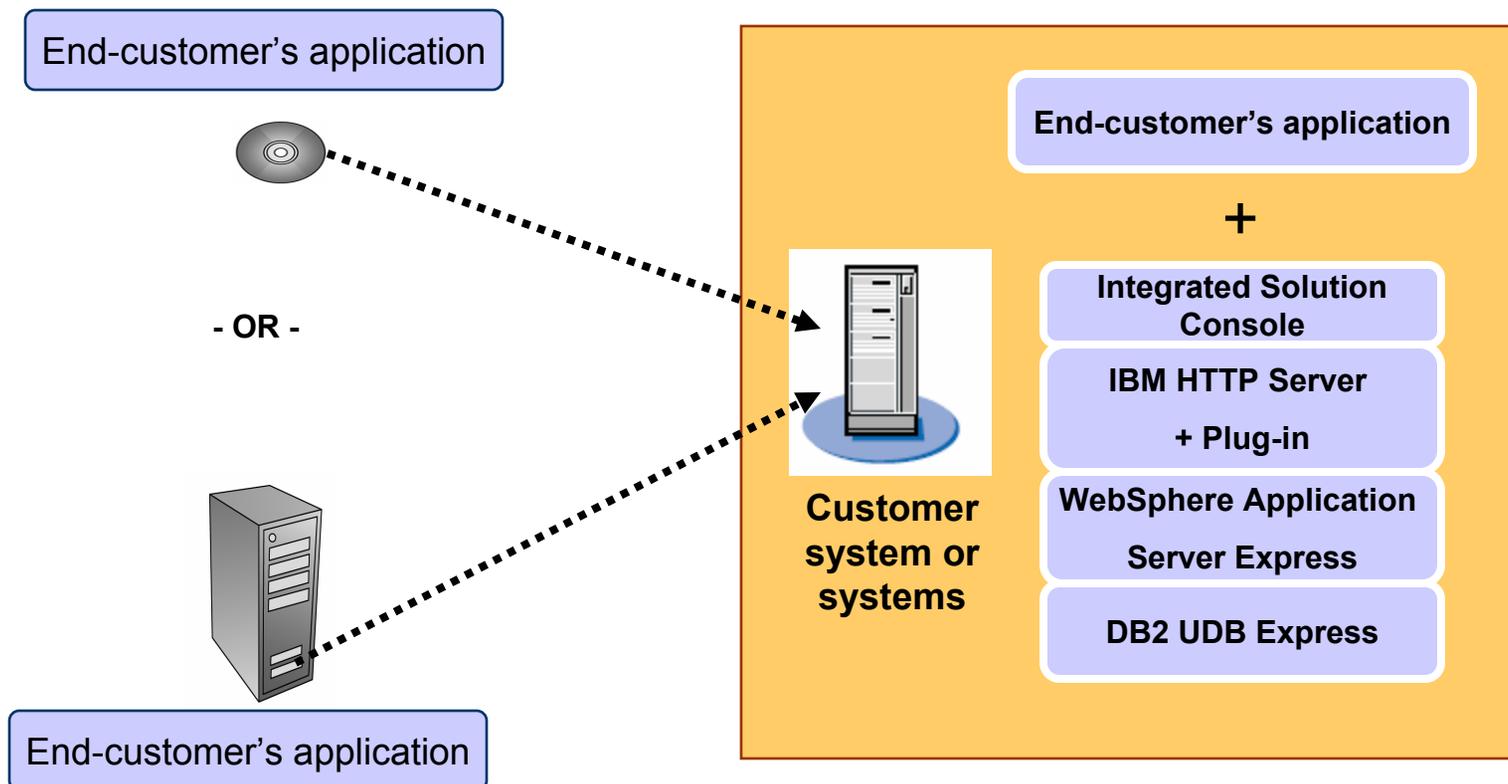
STEP 2

- The end-customer can choose to either place the image of the middleware components on the staging server or deploy them directly on the customer system from the CDs.
 - In the former case, IBM Installation Agent must be installed (provided by Express Runtime) on the target customer system. The deployment process is then launched from the staging server.



Step 3: Deploy the application

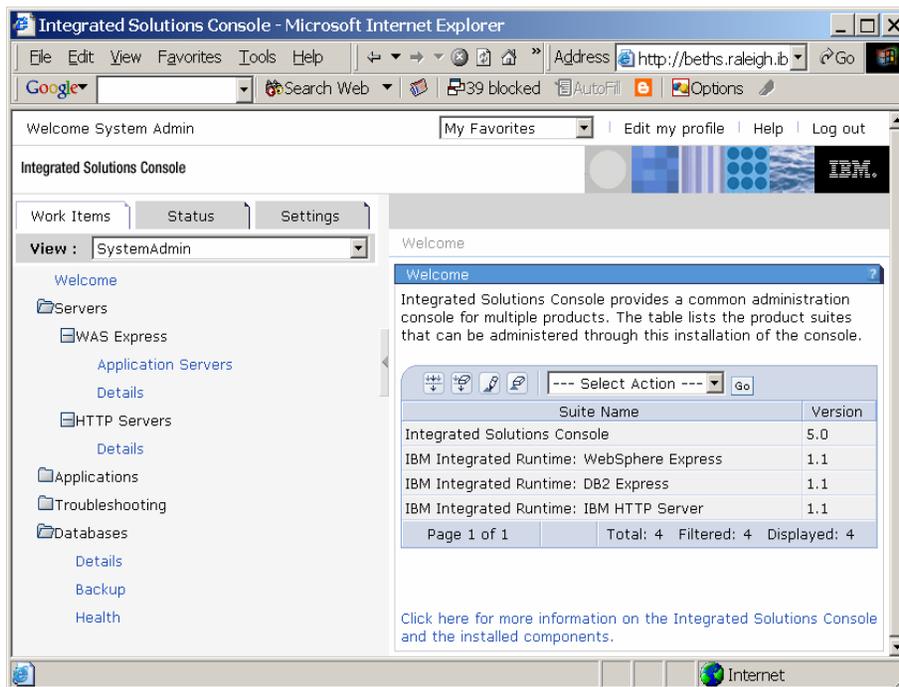
- After the middleware components are deployed to their system, they can then deploy their application.



Step 4: Manage the system using Console for Express Runtime

STEP 4

- Console for Express Runtime** helps to manage the middleware components. It's an integrated Web-based console that provides consolidated administration of WebSphere Application Server Express, DB2 UDB Express, and IBM HTTP Server.



- ✓ Manage multiple instances of WebSphere Application Server – Express, DB2 UDB Express and IBM HTTP Server on the Windows, Linux, and OS/400 (i5/OS) platform
- ✓ Check the status of, and start and stop Application Server, HTTP Servers, and DB2 databases
- ✓ Configure the log settings and view logs
- ✓ Check the server status and database health
- ✓ Perform a one step database backup
- ✓ Modify the WebSphere Application Server configuration settings
- ✓ Filter tasks according to the role you perform

Summary

- Express Runtime provides the basic middleware infrastructure required to deliver your midmarket applications.
- It contains the fully functional execution environment from IBM market-leading middleware products.
 - WebSphere Application Server - Express 6.0 satisfies your need for a robust application server.
 - DB2 Universal Database Express Edition 8.2 satisfies your RDB requirement
 - IBM HTTP Server and the associated plug-in enable rapid setup of a secure Web environment.
- Express Runtime for middleware development and deployment can be used for multiple solutions and is available via Passport Advantage

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