"Planning" table of contents

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1: WebSphere Application Server environment overview

This section provides high-level information about the WebSphere Application Serverenvironment, including how to find product prerequisites, and a summary of support for scalability, security, andother features.

Several components are discussed briefly, as an introduction to the kindsof components that might exist in a WebSphere environment. Links are provided to the various articles about the component, throughout the InfoCenter. In some cases, you are routed directly to another section of the InfoCenter.

Select a component to learn about.
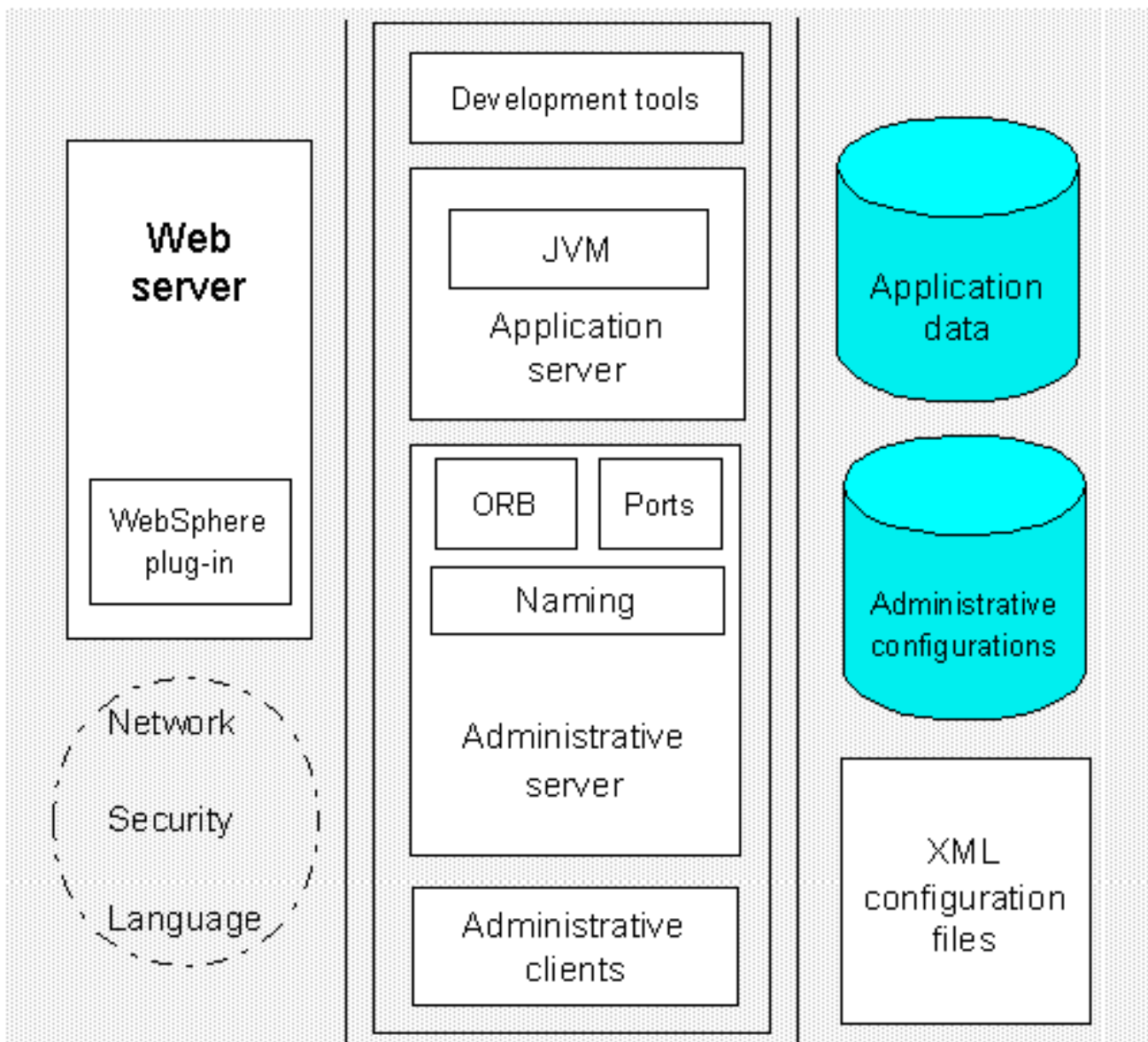
Web servers | Application servers | Data

The communication among components is not shown because it can differ according to the topology configuration that you choose to implement. Thecomponents are shown to reside in three main sectors -- Web server, applicationserver, and data areas. Whether these areas reside on the same machine, or onseparate machines, can also differ by configuration, and is constrained bythe product edition that you have chosen.

Related information...

- [1.1: Goals and expectations](#)
- [1.2: Components](#)
- [1.3: Finding product prerequisite information](#)
- [7: Multiple machine environments (including configuration instructions)](#)

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1.2.13: Components -- network configurations

This article discusses topics related to network configurations ina WebSphere environment. Network configurations can affect yourWebSphere configuration.

Multiple networks

WebSphere Application Server tolerates the presence of more than one network on a single platform as long as the environment used to run WebSphere Application Server is configured such that the following conditions are met:

- The primary hostname refers to the default - primary - network interface.
- The Domain Name Server's response to a query of the platform's hostname returns the address of the primary network interface.
- The IP for the platform resolves to the hostname and vice versa for both formats of hostname: fully qualified and not fully qualified.

Here is a good example of a multi-network interface card Windows NT platform that conforms to the above specifications.The hostnames, IP addresses, and adapter IDs have been genericized to *my.server.net*, patterns such as aaa.bbb.ccc.ddd, andvariables of the form *adapter_ID_n*, respectively:

```
d:\work>ipconfigWindows NT IP ConfigurationEthernet adapter adapter_ID_1:IP Address.
. . . . . . . . : aaa.bbb.ccc.ddd (Primary IP)Subnet Mask . . . . . . . . :
255.255.255.0Default Gateway . . . . . . : 208.180.235.1Ethernet adapter
adapter_ID_2:IP Address. . . . . . . . : eee.fff.ggg.hhhSubnet Mask . . . . . . . .
: 255.255.254.0Default Gateway . . . . . . : 129.17.32.1d:\work>nslookup
aaa.bbb.ccc.dddServer: my.server.netAddress: mmm.nnn.ooo.ppp Name:
cdm-235-122-pflu.cox-internet.com (Resolves to hostname)Address:
aaa.bbb.ccc.dddd:\work>hostnamecdm-235-122-pflu (hostname is set
correctly)d:\work>nslookup cdm-235-122-pflu (and resolves to the same)Server:
my.server.netAddress: mmm.nnn.ooo.pppName: cdm-235-122-pflu.cox-internet.comAddress:
aaa.bbb.ccc.ddd (IP when NOT fully qualified)d:\work>nslookup
cdm-235-122-pflu.cox-internet.com (also resolves to the same)Server:
my.server.netAddress: mmm.nnn.ooo.pppName: cdm-235-122-pflu.cox-internet.comAddress:
aaa.bbb.ccc.ddd (IP when fully qualified)
```

Related information...
- 1.2: Components

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1.2: Components in a WebSphere environment

The table describes several elements that can participate in a WebSphere ApplicationServer environment. See article 1 for a visual overview.

Element	Overview
Web servers and plug-ins	For information about supported Web servers, see Finding product prerequisite information. IBM WebSphere Application Server provides plug-ins forseveral popular Web server brands. A plug-in for eachWeb server is available when you install Application Server.The plug-in detects and forwards requests for the services of an application server.
application servers	These are the part of IBM WebSphere Application Serveron which applications are deployed. For an extended definition,see article 0.3. You can run multiple application servers, which might or might notbe clones of one another. You can use servlet redirectors to physically separate the Web servers from the application servers.
JVMs and JDKs	Each application server is associated with a JVMinstance. Additionally, application programmers might have JDKs present in a development environment forcompiling Java-based application building blocks, such as servlets.
application clients	Clients can be browser-based (Web clients), or can be Java applications. This documentation primarily focuses on Web clientsaccessing HTTP servlets and JSP files.

administrative servers	The product provides an administrative server andclients for configuring, deploying, and managing applicationson application servers. The administrative server keepsits data in an administrative database (repository). There can be multiple administrative servers on various machines, all pointing to same central database. See article 0.14 for additional overview of centralized administration.
nannies	A "nanny" process tracks the health of an administrative server. It tries to start the administrative server again if the server goes down, or cannot be started in a previous attempt. See the information about nanny configuration.
administrative clients	A variety of graphical and command line administrative clients are provided for manipulating configuration data tracked by the WebSphereadministrative server.
database servers and clients	The WebSphere administrative server stores itsconfiguration data in a database managed by a database serverproduct such as DB2. Additionally, applications that access data might use the same database, or another. For database access from a remote machine, it can necessary to configure a database client on the remotemachine. Consult the documentation for your databaseproduct to see whether and how to perform this task.
security elements	Security includes WebSphere product security facilities, LDAP server or operating system authentication, and firewalls.

application development tools	WebSphere Application Server supports the development tools ofyour choice, provided the application components comply with the supported specification levels. Some IBM development and publishing tools, such as IBM VisualAge for Java andIBM WebSphere Studio, have special features for use in a WebSphere environment. IBM WebSphere Application Server provides complimentary toolsfor debugging and tracing your applications. You might have additional tools of preference.
site management products	The WebSphere family includes a site analysis product. IBM WebSphere Application Server Site Analyzer provides analysis features and customizable reporting options that help you improve your Web site content and performance (content analysis), as well as better understand how a site is used by its visitors (usage analysis). Using Site Analyzer, you can quickly and easily report on everything from aggregate page sizes and broken links to site visit information and errors. You can customize how your data is viewed by tapping into a set of predefined report elements or build custom reports that collect information specific to a site. Site Analyzer stores information in a built-in database, providing scalability and letting you create trend reports that show Web site content and usage growth, and change over time.
Enterprise and external systems	WebSphere Application Server might need to communicate,or at least coexist, with other servers in the environment,including prior versions or other editions of IBM WebSphereApplication Server. See article 1.2.10 for expectations,limitations, and workarounds.
name and location support	Basic Domain Name Service (DNS) naming support is present ina WebSphere environment. See article 1.2.11 to learn about additional support.

Related information...

- [1.2a: Toplogy model](#)
- [1.2.1: Planning and skills for application servers](#)
- [1.2.2: Planning and skills for administrative servers and clients](#)
- [1.2.3: Planning and skills for databases](#)
- [1.2.4: Planning and skills for Web servers](#)
- [1.2.5: Planning and skills for security elements](#)
- [1.2.7: Planning and skills for development tools](#)
- [1.2.8: Planning and skills for ports](#)
- [1.2.9: Planning and skills for ORBs](#)
- [1.2.10: Planning and skills for enterprise and external systems](#)
- [1.2.11: Planning and skills for name and location support](#)
- [1.2.12: Planning and skills for JVMs and JDKs](#)
- [1.2.13: Planning and skills for network configurations](#)
- [1.2.14: Planning and skills for National Language Support](#)
- [1: Topology planning and skills overview](#)

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1.3: Finding product prerequisite information

To view the latest prerequisite information, visit the IBM WebSphereApplication Server prerequisites site:

NEED TO ADD URL

Use the information to help determine the specific software versions to run in your WebSphere environment.

Related information...
- 1: Solution planning overview

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1.2.3: Components -- databases

This article provides miscellaneous tips for using supported databasesto hold administrative or application data. The tips are organized bydatabase type. See also the related links.

All supported databases

- Do not drop the administrative database while the administrative server is running.
- DB2 performance on a local machine can be improved by setting up a local database as a remote instance. This uses TCP/IP instead of shared memory.

  Oracle and Sybase also support client/server connections. Consult the product documentation for specifics.

Sybase

- When using Sybase 11.x, you might encounter the following error when HttpSession persistence is enabled:

  ```
  DBPortability W Could not create database table: "sessions"
  com.sybase.jdbc2.jdbc.SybSQLException: The 'CREATE TABLE' command is notallowed
  within a multi-statement transaction in the 'database_name' database
  ```
  where 'database_name' is the name of the database for holding sessions.

  If you encounter the error, issue the following commands at the Sybase command line:

  ```
  use database_namegosp_dboption db,"ddl in tran ",truego
  ```

Related information...
- [0.14: What is data access? (brief description)](#)
- [0.14: What is data access?](#)
- [6.6.14: Administering database access](#)
- [1.2.3.4: What to do after an administrative database crash](#)
- [1.2.3.7: Instant DB considerations](#)
- [1.2: Components](#)

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1.2.3.4: What to do after an administrative database crash

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1.2.10: Components -- coexisting versions and editions

Coexistence of Standard and Advanced Editions of Application Server

Running Standard Edition and Advanced Editions on the same machineis not supported. Simultaneous use of a Web server by both editions (tryingto install the Standard Edition and Advanced Edition WebSphere plug-inson the same Web server instance) is not supported.

Related information...
- 1.2: Topology elements

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1.2.11: Components -- name and location support

IBM WebSphere Application Server works in DNS environments, aswell as providing some support for the use of Java RMI. It can run applications that rely on Java Naming and Directory Interface (JNDI).

The remainder of this article contains miscellaneous notesabout using name and location support. See the related linksfor additional topics.

Domain Name Service (DNS) support

Basic Domain Name Service (DNS) naming support is present ina WebSphere environment.For applications using enterprise beans, a name service is also provided.

WebSphere Application Server clients and DNS resolution

By default, a WebSphere administrative server or application server uses the IP address of the local host on which it is running in itsobject references. Thus, clients of these servers do not usually need tohave DNS enabled in order to access these object references, nor dothey need to be on the same network as the server.

However, in cases where DNS is disabled on the client machine,additional steps must be performed for certain clientsas follows:

- If the product edition you are using provides a Java-based administrative console (WebSphere Administrative Console), it must be run with the -primaryNode option:

  `-primaryNode <name of administrative server to which to connect>`

- If the product edition you are using supports clients that rely on the workload management features of WebSphere Application Server, the clients must be run with the system property com.ibm.ejs.wlm.BootstrapNode:

  `-Dcom.ibm.ejs.wlm.BootstrapNode=<name of administrative server to which to connect>`

By default, the administrative server name is the short name of the host on which it is running. As shown above, use an argument to specify the administrativeserver host name, which is required because the clients do name service lookups for names that are qualified by the administrative server name. Usually, if DNS is enabled, they can derive the administrative server name by doing a DNS reverse translation; however, if DNS is disabled, then they have to be explicitly provided with the administrative server name.

In some situations, it might be necessary to override the default value for the host information in the object references generated by WebSphere administrativeor application servers. To do this, set the system property com.ibm.CORBA.LocalHost asfollows:

`-Dcom.ibm.CORBA.LocalHost=<value>`

where <value> can be a host name (long or short) or an IP address.Set this property on a per server basis.

Some possible reasons for overriding this value are as follows:

- The host machine has multiple IP addresses.

  Given the defaultbehavior, either address could be selected, possibly arbitrarily. TheLocalHost property should be set to specify a single IP address to beused in all object references.

- You want to place the host name, rather than the IP address, in the object references.

  This might be necessary for situations in which external clients exist outside a firewall, and these clients cannot accessthe internal network directly. In this case, the host name can betranslated to a gateway machine, which can then translate and forwardto the internal network using the real IP address.

Java Remote Method Invocation (RMI) support

Applications can invoke RMI servers, but should not be RMI servers

WebSphere Application Server supports servlets that invoke Remote Method Invocation (RMI) servers, but the servlets are not permitted to be RMI servers themselves. They can be RMI clients. The same applies to enterprise beans. If this guideline is violated, a java.rmi.RMISecurityException will result.

Do not set security managers in RMI clients

Correct use of the Java RMI services requires that a security manager(for example, class java.rmi.RMISecurityManager) be set within theRMI server. Typically, a security manager will **not** be set in the RMIclient program.

As such, a servlet acting as an RMI client should not set a security manager. The same applies to enterprise beans acting as RMI clients. Setting a security manager within a servlet (that is acting as an RMI client) is not only incorrect usage of RMI, but will cause problems for the server. The security manager will be global to the server and will affect server operations.

If one of your applications currently sets a security manager when it should not be doing so, stop the application server containing the application, remove the statements that set the securitymanager, and start the application server again.

Related information...
- 0.29: What are Location Service Daemons? (brief description)
- 0.29: What are Location Service Daemons?
- 0.32: What are name services? (brief description)
- 0.32: What are name services?
- 6.6.29: Administering Location Service Daemons
- 6.6.32: Administering name services
- 4.3.2: Programming -- NEED TO CHECK!
- 1.2: Components

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1.2.8: Components -- ports

The product uses the following ports. See below for port assignment guidelines, particularly notes about the effects of port changes on other WebSphere components. For example, changing the bootstrap port from the product default requires a new parameter when you start the Java administrative console.

Bootstrap port

- One for each application server
- Default value is 900
- To change it, modify the ORB configuration

Location Service Daemon (LSD) port

- One for each application server
- Default value is 9000
- To change it, modify the ORB configuration

ORB listener port for RMI/IIOP

- One for each application serverand one for each administrative server
- Value is assigned randomly
- To make the value static, add **-Dcom.ibm.CORBA.ListenerPort=xxxx** where*xxxx* is a valid TCP port (see guidelines below).
  - ❍ For application servers, add the argument to the Command Line Arguments setting of the application server properties.
  - ❍ For administrative servers, add the argument to the com.ibm.ejs.sm.util.process.Nanny.adminServerJvmArgs parameter in the administrative server configuration file.

Guidelines for assigning ports

Though WebSphere Application Server provides default values, the above port numbers can be modified by the system or network administrator. Here are some guidelines:

- Ports can range from 1024 to 64000. Choose a port that does notconflict with existing ports in use. To check ports in use:

- ❍ Use the netstat command on UNIX-based systems
- ❍ View the /etc/services file on UNIX
- ❍ View the *drive*\winnt\system32\drivers\etc\services file on Windows NT
- Ports must be unique in the scope of each physical host. That is,two servers on the same machine cannot have the same port values.
- The same port numbers *can* be used for servers running on different physical hosts. That is, the administrative server on Machine Acan have bootstrap port 900, while administrative servers on othermachines have this same number.
- For administrative servers, pick port numbers above 1024 if not using the default port and [running as non-root](#).
- Changing the bootstrap portfrom its default affects the administrative clients. When starting theJava administrative console, you must specify the new port number:

  On UNIX-based operating systems:

  ```
  adminclient.sh hostname port
  ```

  On Windows-based operating systems:

  ```
  adminclient hostname port
  ```

- Remember to configure firewalls to allow traffic to pass for each assignedport. For security, try to minimize ports.

Related information...
- [6.6.3.0: Application server properties](#)
- [6.6.30: Administering Object Request Brokers](#)
- [6.6.29: Administering Location Service Daemons](#)
- [6.6.46: Administering administrative servers](#)
- [1.2: Topology elements](#)

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1.2.9: Components -- ORBs

WebSphere Application Server supports Java ORBs as described in the prerequisitesWeb page. This article provides several tips for using ORBs. See also the relatedlinks.

Do not use multiple ORB instances

IBM WebSphere Application Server security does not support the programming model of using multiple ORB instances.

To obtain its ORB instance, every application should always make calls to:

```
com.ibm.ejs.oa.EJSORB.getORBinstance()
```

After the ORB instance has been established with a process, the process should not change ORB-related properties because property changes will trigger a new ORB instance to be created. A multiple ORB scenario will occur, which is not supported.

Finding information about the Request Interceptor interface

For information about the Request Interceptor Interface of the IBM Java ORB, see the IBM Web site:

http://www.ibm.com/software/webservers/appserv/request_interceptors.html

Related information...
- 0.30: What are ORBs? (brief description)
- 0.30: What are ORBs?
- 6.6.30: Administering ORBs
- 1.3: Prerequisites Web site
- 1.2: Components

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1.2.14: Components -- National Language Support

IBM WebSphere Application Server supports several Asian and Europeanlanguage locales, as described in the table below.

This article provides information aboutthe supported locales, as well as workarounds for locale-specific defects.

Supported locales

WebSphere Application Server supports the locales listed in the table below.The support is dependent on the availability of the TrueType fonts listed for therespective languages.

Language	Windows NT/2000	Solaris	AIX	HP-UX
Brazilian Portuguese	IBM-850	pt_BR	pt_BR.ISO8859-1	No Brazilian Portuguese locale
French	IBM-850 IBM-858	fr fr.ISO8859-15	fr_FR.ISO8859-1 fr_FR.ISO8859-1@euro	fr_FR.ISO8859-1 fr_FR.ISO8859-15@euro
German	IBM-850 IBM-858	de de.ISO8859-15	de_DE.ISO8859-1 de_DE.ISO8859-1@euro	de_DE.ISO8859-1 de_DE.ISO8859-15@euro
Italian	IBM-850 IBM-858	it it @ISO8859-15	it_IT.ISO8859-1 it_IT.ISO8859-1@euro	it_IT.ISO8859-1 it_IT.ISO8859-15@euro
Japanese	IBM-943	ja ja_PC.PCK	ja_JP.IBM.eucJP Ja_JP.IBM-942	ja_JP.SJIS *
Korean	IBM-1363	ko	ko_KR.IBM.eucKR	ko_KR.eucKR *
Simplified Chinese	IBM-1386	zh	zh_CN.IBM.eucCN	zh_CN.hp15CN *
Spanish	IBM-850 IBM-858	es es @ISO8859-15	es_ES.ISO8859-1 es_ES.ISO8859-1@euro	es_ES.ISO8859-1 es_ES.ISO8859-15@euro
Traditional Chinese	IBM-950	zh_TW zh_TW.big5	zh_TW.big5	zh_TW.big5 *

Issues and limitations

Problem	Op System	Workaround
All Languages		
Installing WebSphere Application Server in more than one causes the different language versions to overwrite each other. Also, with native install (using SMIT), when more than one language is installed, an error displays.	AIX	The installation should allow you to install more than one language and switch between languages. Currently, because all of the languages are named the same in the same installation path, they overwrite each other. Install only one language of WebSphere Application Server on AIX. If you need to install a different language, uninstall the previous language before installing the one desired.
The **Cancel** button in uninstallshield does not work. When you click **Cancel** in uninstallshield, the executable loops and the uninstallshield automatically reloads.	AIX	To cancel the uninstall, press **Ctrl**+**C** at the command prompt in the shell from which the uninstall program was initiated.
Brazilian Portuguese		
The time displayed with events on the administrative console is one hour earlier than the actual system time.	Windows NT/2000, AIX, Solaris	
Japanese		

Japanese characters are distorted on the following installation panels: • Choose Application Server Components panel, all of the characters in Component Description. • On some panels after the Database Options panel, kana-kan status characters at the bottom left corner. • Selected Install Options panel, all of the selected option strings.	AIX	1. Install X11.fnt.ucs.ttf - AIXWindows unicode TrueType fonts. 2. Logout and login again. This must be done to reflect installation of the proper fonts. 3. Run `xlsfonts | grep 0208` to confirm monotype fonts are installed. 4. Install WebSphere Application Server Version 3.5. You will see DBCS characters in TxTArea.
When you install WebSphere Application Server on the Japanese Solaris operating system, the dialog on which you select the database home directory (DB_HOME) does not display the directory entry. startupServer.sh and admin.config are not updated.	Solaris	1. Set the following value for the locale on the shell: `LANG=C` 2. Start install.sh.

Java administrative consolepages do not display properly for Japanese AIX customers using the eucJP locale.	AIX	You will need to change some text files:
		
		If you see pages in the AdminConsole containing lots of ??????????????, install Japanese WebSphere on AIX.
		
		If ja_JP locale is used, the following .txt files in the /web/help directory need to be converted with the command (on one line):
		`iconv -f IBM-932 -t IBM-eucJP`
		`Originalfile.txt >`
		`Originalfile_ja.txt`
		
		Then, rename the files:
		`mv Originalfile_ja.txt`
		`Originalfile.txt`
		
		The list of files:
		`AddJSPEnabFrontPage.txt`
		`AddServletFrontPage.txt`
		`AddWebResFrontPage.txt`
		`AppSecFrontPage.txt`
		`CfgAppSvrFrontPage.txt`
		`CfgEntAppFrontPage.txt`
		`CfgServEngFrontPage.txt`
		`CfgVirtHostFrontPage.txt`
		`CfgWebAppFrontPage.txt`
		`EditEntAppFrontPage.txt`
		`GlobSetFrontPage.txt`
		`MethGroupFrontPage.txt`
		`PermFrontPage.txt`
		`ResAnalyzFrontPage.txt`
		`ResSecFrontPage.txt`

Spanish		
When using the Types tab, then selecting Model and create, and then choosing Application server, the properties window is initially too small. The right side of the window is cut off by about five characters.	AIX	Manually resize the window.

Chinese Simplified		

On AIX V4.3.3:
 	
  • Fix Pack U466148 must be applied before installing WebSphere Application Server.
 	
  • WebSphere Application Server only supports one Simplified Chinese Charset, BGK.
	AIX	Fix Pack U466148 is available on the 4.3.5 installation media. It is not necessary to upgrade the operating system to 4.3.3 to install this Fix Pack.

Chinese Traditional		
Problems with character sets other than BIG5 on AIX V4.3.3.	AIX	WebSphere Application Server only supports the BIG5 Traditional Chinese Character Set for AIX V4.3.3.
While using the product, corrupt panels and code page conversion errors appear.	Solaris	To install and use the WebSphere Application Server with a minimal amount of corrupted panels, follow the procedure below: 1. From a command line, type: export LC_ALL=tchineseexport LANG=tchinese 2. Install WebSphere Application Server. 3. From a command line, type: export LC_ALL=zh_TW.BIG5export LANG=zh_TW.BIG5 4. Create the WebSphere Application Server database as instructed in the documentation. 5. Repeat step 1. 6. Start the administrative server. 7. Repeat step 3. 8. Start the administrative console. To uninstall WebSphere Application Server with a minimal amount of corrupted panels:

		1. From a command line, type: export LC_ALL=tchineseexport LANG=tchinese 2. Uninstall WebSphere Application Server as instructed in the documentation.
All Double-Byte Languages		
In the WebSphere Administrative Console, Asian characters show up as empty boxes.	HP-UX	The Java swing libraries require TrueType fonts. HP-UX does not providethese fonts for Asian languages. The SDK release notes state that HP-UX is working to provide these fontsin the future. In the meantime, Japanese, Korean, Chinese Traditional, and Chinese Simplified customers must purchase their own TrueType fonts from a third party vendor. They can also force the WebSphere Administrative Console to run in English by running the following command from the command prompt before starting the WebSphere Administrative Console: `export LANG=en_US.iso88591` Also, for more information on this limitation, refer to the ([HP-UX SDK Release Notes](#)).
Double-byte server name is corrupt in console messages. If you name a server with Asian-Pacific characters and start it, the name in the status message (starting, stopping) on the Administrative Console is garbage (question marks and square blocks).	All	Use only English characters and numbers for your server name.

An application server will not start if named with more than three Chinese characters. With more than three Chinese characters, the name in the status message (starting, stopping and others) is made up of meaningless characters (for examples, question marks and square blocks).	All	Any combination of less than three Chinese characters orany number of English characters works fine. Use English or fewer than three double-byte characters.

Related information...
● 1.2: Components

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1.1: Goals and expectations for the WebSphere environment

Here are some factors to consider when planning to integrate IBM Websphere Application Server into your environment. For each factor, the productsupport and limitations are discussed.

Scalability

Description	The ability of a system to incrementally increase the capacity, capability, throughput, workload,or other valuable characteristics: ● Vertical scaling focuses on loading up one machine (usuallya powerful one) to fully take advantage of its resources and provide process isolation ● Horizontal scaling adds machines to add benefits -- oftenwith the objective of using several small, cheap machines to do the work of a larger, expensive machine. It also provides processisolation and failover. Ideally, the system should be able to service any load simply by adding more application servers or machines.
Product support	Due to the multithreaded nature of the Java programming languagein which it is written, the WebSphereApplication Server contains inherent vertical scaling support. Advanced Edition: ● Supports horizontal scaling in conjunction with an HTTP load distribution product, such as Network Dispatcher ● Provides additional horizontal scaling capabilities ● Provides vertical scaling through cloning of application servers

Product limitations and considerations	None

Resource utilization

Description	Ability to leverage existing resources
Product support	Advanced Edition supports vertical scaling. You canclone application servers to take full advantage ofthe resources on a powerful machine.
Product limitations and considerations	Standard Edition supports less complextopologies. It does not support multiple applicationserver instances on a machine.

Load balancing

Description	Distributing requests among application servers to avoid one or more servers being idle or underutilized while othersare taxed or overutilized
Product support	- Built-in support for workload managed application servers - Compatible with HTTP load balancing products such as Network Dispatcher
Product limitations and considerations	None

Capacity and throughput

Description	Capacity is typically the number of clients that can be supported (usuallyconcurrently), while throughput is usually the number of transactions completed per unit time
Product support	- Product supports a variety of scalable configurations - Product can be tuned to fit your environment and needs

Product limitations and considerations	As with any server product, results can be gated by your hardware capabilities

Failover

Description	Ability for the overall system to continue with little orno interruption in the event that a server or service fails
Product support	The product contains: • Failover capabilities for its administrative servers ("nannying") • Failover capabilities for its application servers (cloning)
Product limitations and considerations	Consider setting up failover capabilities for Web servers (for example,use multiple Web servers and an HTTP load balancing product) to supplement the WebSphere Application Server failover capabilities.

Connectivity and integration

Description	Being able to connect to databases and systemsor servers external to WebSphere Application Server
Product support	Supports heterogeneous environments: • Available for a variety of operating systems • Works with themost popular relational databases
Product limitations and considerations	Advanced Edition has some support for connection toenterprise resources (legacy CICs, IMS, MQSeries, and so on), but Enterprise Edition is really designed for such an environment.

Maintenance and dynamic configuration

Description	When configuration changes, product can adapt dynamically, without interrupting the operation of the system or disruptingservice to clients
Product support	• Many configuration changes take effect dynamically • Most changes do not require stopping Web servers and starting them again
Product limitations and considerations	Some topologies (described in article 1.4.2) requireperiodic shutdowns and starts of the application server.Before selecting a topology, read the instructions so thatyou know what is involved in maintaining it

Security

Description	Protecting businesslogic, resources, and data from unauthorized access
Product support	• Use WebSphere security plug-in to establish and enforce security policy • The product security collaborates with directory services and user registries • Several product configurations (topologies) support firewall environments
Product limitations and considerations	Authentication requires LDAP directory service or operating system registry

Related information...

• 1: Topology planning and skills overview

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1.4: Formulating an implementation plan

This section presents step 4 of the planning process:

[1. Determine goals for WebSphere environment](#)

[2. Map WebSphere components to the goals](#)

[3. Review the product prerequisites](#)

▶4. Study a sample topology, then plan your machines

By the time you finish, you will likely have chosen one or more sample topologiesafter which to model your own topology of one or more machines. You will have browsedthe instructions for installing and configuring the topology. You will be able to formulate a detailed plan regarding which components to install on each machine, and map these components to the options offered by the installation program. You will be confident in proceeding to Section 2, installation instructions.

Article 1.4.2 introduces and compares several possible topology choices, providing diagrams, analysis, instructions, and known limitations.

Article 1.4.1 provides a reference for mapping various WebSphere components to the options offered by the product installation program. For simplicity, the installation program offers only a handful of options, each of which bundles various product components. There is limited space in the installation program to describe all of the options. Furthermore,the installation program applies to one machine at a time. With numerous machines inyour topology, it can be important to plan how you are going to navigate theinstallation options on each machine.

Related information...

● [1.4.1: Installable components](#)

● [1.4.2: Sample topologies](#)

● [1: Topology planning overview](#)

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1.4.1: Installable components

The table summarizes whether to perform the Quick, Full, or Custom installation to install a particular product component. Consider referring to the installation instructions in section2 for a preview of the installation steps and options. Combined, theseresources should make your product installations proceed as smoothlyas possible.

A checkmark in a column indicates that the option is automaticallyincluded in that installation option. Because the Custom installation offers several choices, some of which are not installed by default, the column contains instructions for obtaining the component. Perform the Custom installation carefully, making sure you have selected exactly what you want to install.

Component	Quick?	Full?	Custom option	Notes
Web server plug-ins	✔	✔	Select one or more from list of plug-ins	The Custom installation includes all available plug-ins. The Quick and Full installations provide the IBM HTTP Server plug-in only.
IBM HTTP server	✔	✔	Select the IBM HTTP Server option	The Web server and its plug-in are separate items. You need to install both of them.
InstantDB database	✔			Instant DB is a good database for product evaluation and light use.

DB2 database		✔	Select the IBM Universal Database option.	DB2 is a heavy duty databaseoption. DB2 availability can depend on the installation program that you obtain. Installing from the compact disc providesthe DB2 option. For quicker downloading, the Web site might offer an installation program lacking the DB2 option, in addition to the larger, slower download containing DB2
Required JDK	✔	✔	Select the IBM JDK option.	The Windows-based installation now includes theexact JDK needed by Version 3.5. It does not interfere with other JDKs onthe system.
production application server	✔	✔	Select the production application serverruntime option (application and administrativeserver).	Installs what a machine needs tohost applications and maintain administrativedata (application and server configurations).
thick servlet redirector	✔	✔	Production application server (administrativeserver and application server runtime)	See article 1.4.2.5for details.

[thin servlet redirector](#)	✔	✔	Production application server (administrativeserver and application server runtime)	[article 1.4.2.7](#)for details.
[remote OSE capabilities (such asthe configuration script)](#)	✔	✔	WebSphere plug-in for Web server,Production application server	See [article 1.4.2.4](#)for details.
[Samples](#)	✔	✔	Select the Samples option.	
full Java application client			Depending on which fix packs you have applied,the "Developer's Client Files" option might or might notbe present in the product installation interface. - If it is present, select it. - Otherwise, select the administrative console option instead.	These are files needed by EJB clients at runtime. You also need to make sure that the ioser/ioserx executable files are accessible on your client machine (these files are normally part of the Java 1.2.x installation). See the [Writing Enterprise Beans book](#) for more information about developing EJB clients.
nanny process	✔	✔	Select the production application serverruntime option (application and administrativeserver).	
[full administrative server](#)	✔	✔	Select the production application serverruntime option (application and administrativeserver).	
[administrative server agent](#)	✔	✔	Select the production application serverruntime option (application and administrativeserver).	

Java administrative console	✔	✔	Select the Administrator's Console option.	The console must be able to locate a supported JDK;the JDK is **not** installed as part of the Console component.
Web administrative console	✔	✔	Select the option to configure the default server andWeb application.	It is undesirable to install the default configurationon more than one machine in a cluster.
XMLConfig administrative client	✔	✔	Select the production application serverruntime option (application and administrativeserver).	
WSCP administrative client	✔	✔	Select the production application serverruntime option (application and administrativeserver).	
default administrative resources	✔	✔	Select the option to configure the default server andWeb application.	It is undesirable to install the default configurationon more than one machine in a cluster.

Related information...
- 1.4: Formulating an implementation plan

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1.4.2: Sample topologies

IBM WebSphere Application Server offers a variety of ways to configure applicationservers in your environment. See section 7.1 for a discussion ofhow to use the Advanced Application Server in a multimachine environment. Section 7.1.3 describes a number of topologies for setting upmultimachine systems. Many of these system topologies can be combined to reap thebenefits and minimize the disadvantages of each configuration.

Persisting sessions

Most of the topologies support the use of cloned application servers for workloadmanagement (see article 7.2 for details). In such configurations,plan to persist HTTP sessions in a database. See article 4.4.1for an overview and instructions.

Related information...
● 1.4.2.1: Single machine sample topology
● 1.4.2.2: Network Dispatcher sample topology
● 7.1: Using WebSphere Application Server in a multimachine environment
● 7.1.3: Multimachine topologies
● 7.2: Managing workloads
● 4.4.1: Tracking sessions
● 1.4: Formulating an implementation plan

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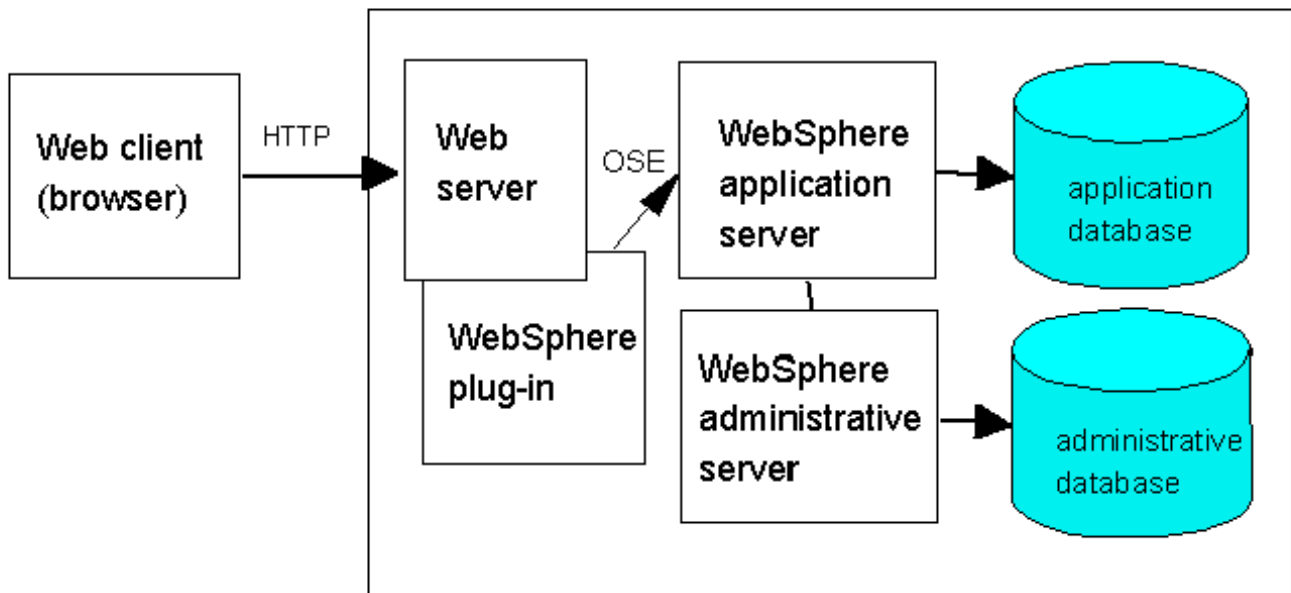**WAS** *AE*

1.4.2.1: Single machine sample topology

- Visual overview
- Discussion
- Typical use
- Instructions

Visual overview

The diagram shows a simple, single machine configuration.

Discussion

In this simplest of topologies, all components are installed on the machine containing the Web server. The Web server routes requests, as appropriate, to the WebSphere application server for processing.

A WebSphere administrative server stores application configuration data in its administrative database.The administrative database or another database might also hold application data for applications that require a place to store data (such as user session information). The machine contains one or moreadministrative clients (not shown) for manipulating configuration data.

Typical use

For Advanced Edition users, this configuration is most suitable for development, testing, and intranet environments where performance and security are not critical goals. IBM WebSphere Application Server offersgreat flexibility in configurations, from including the main components on a single machine (as shown above) to splitting the various componentsonto different machines according to your business needs. Subsequent articles under article 1.4.2 present various options.

Instructions

To set up the above configuration, perform the Quick or Full installation. See section 2 (installation) for detailed instructions pertaining to particular operatingsystem, Web server, and database choices.

Related information...
- 1.4.2: Recipes for sample topologies

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