Interstage Application Server

V7.0

Overview

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Fujitsu Limited

First Edition (January 2005)

Interstage Application Server Plus Edition
Interstage Application Server Standard Edition
Interstage Application Server Enterprise Edition

Preface

Purpose of this Document

This manual provides information about the uses and features of Interstage Application Server:

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Application Server Overview

Introduction

The Interstage Application Server forms the foundation of Fujitsu's Interstage Suite. An all-inclusive enterprise framework, the Interstage Application Server is a reliable and high-performance infrastructure product, upon which businesses can implement:

- Quick and reliable web services
- e-business systems
- new applications that connect with existing I.T. assets (including legacy systems and databases)
- B2B systems utilizing broadband Internet.

Supporting industry standard open technologies, the Interstage Application Server's performance and reliability make it an ideal framework on which to build large-scale, business-critical systems operating in single or multi-server configurations. Its modular design means that it can be customized to meet specific business needs

The Interstage Application Server includes environments for developing and deploying applications with a variety of platforms, technologies and languages. This allows you to select the tools and technologies that best meet your business needs.

The Application Server includes components for security and traffic management. These products are independent modules, which can be implemented as required.

Purpose of this Document

This document provides a general overview of Interstage Application Server, including its role in the Interstage Suite, its features, core functionality, and key benefits. The overview also covers the following topics:

Application Server Editions

The Interstage Application Server is offered in three editions—Plus, Standard, and Enterprise—enabling you to choose the one best meets your business needs.

Version 7

This section describes the features and enhancements of Interstage Application Server version 7.

Example Implementation

An example implementation illustrates the ways in which Application Server supports flexible, scalable, and reliable business systems.

Optional Products

Traffic Director and Security Director are configurable traffic and security products provided alongside the Application Server.

Performance Monitoring Products

Fujitsu's Systemwalker products provide performance monitoring for business systems built on the Application Server Framework.

Interstage Suite Architecture

The Fujitsu Interstage Suite comprises three categories: Integration, Development Tools, and Foundation. Since the products at each of these levels are modular, you can customize the system for your business, implementing only the required modules and reducing costs.

Interstage Application Server forms a part of the Foundation layer, providing a full-featured infrastructure upon which to build new applications and link existing systems.

The Foundation layer also includes Security Director and Traffic Director, associated products for managing system security and distributing incoming requests. The modularity of these products means that you can implement any or all of them as required.

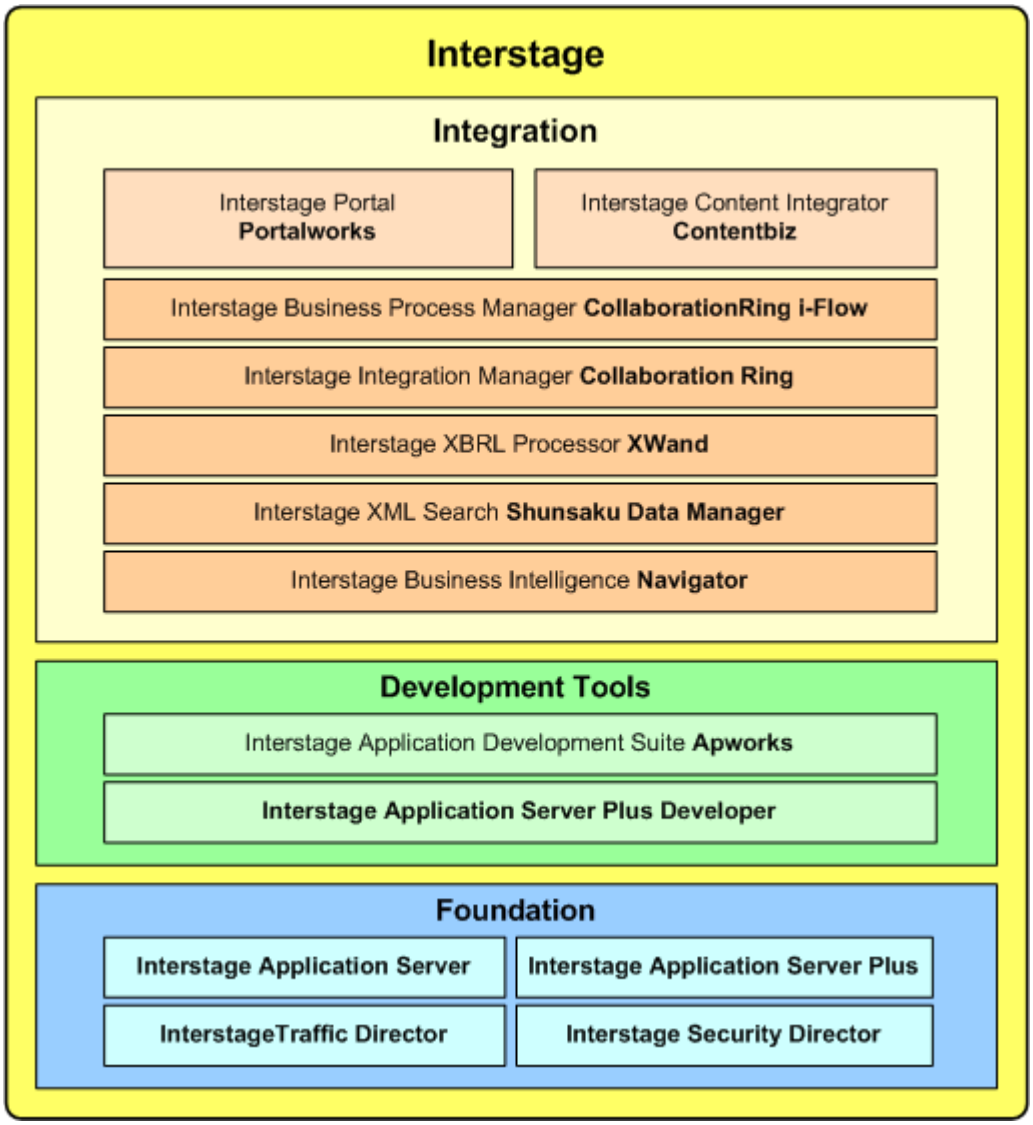

Figure 1 Interstage 3-level Architecture

Application Server Functionality

Interstage Application Server provides the following functionality and services:

- Support for web services, including XML, ebXML, UDDI, SOAP
- J2EE and CORBA support
- Single Sign-on for resources and applications (new to version 7)
- Multi-server management (new to version 7)
- Asynchronous Communication
- Legacy integration
- Database connectivity
- SSL Encryption
- Broadband Internet support (Internet Protocol v6)
- Centralized access to web services and J2EE application information
- Simple installation process
- Dynamic application changing
- Distributed transactions
- Load balancing
- Hot standby
- Fault tolerance
- Streamlined scalability (enhanced in version 7)
- Security
- Traffic management.

Application Server Features and Benefits

Interstage Application Server incorporates a number of major features. These include:

- Support for open technologies, including web services
- Support for the J2EE and CORBA frameworks to build distributed scalable applications
- A flexible framework on which to build enterprise systems that leverage legacy resources and applications
- High system performance, reliability, and delivery of service.

Support for Open Standards

Interstage Application Server's support for open technologies allows you to benefit from the solutions offered by different vendors and platforms. In particular, web services including e-business and B2B solutions are available to you.

J2EE and CORBA Technologies

Application Server supports both the J2EE 1.3 standard developed by Sun Microsystems, and Object Management Group's CORBA standard. These standards offer businesses application development with the benefits of multi-platform support, easily maintained code, distributed objects, and code reusability. J2EE support includes Enterprise JavaBeans 2.0 and JSP 1.2.

Universal Descriptor and Discovery Integration (UDDI)

UDDI defines the set of services that provide details about businesses, organizations, and web service providers. These details include web services and the technical interfaces required to access them. UDDI exposes web services provided publicly as well as those offered internally within an organization.

Extensible Markup Language (XML)

Extensible Markup Language (XML) is currently the standard industry format for structured documents and data on the web. Application Server supports both XML and ebXML (electronic business XML), a set of specifications for conducting XML message-based business over the web.

SOAP

SOAP is a commonly used transport protocol for sending messages across a distributed network using a variety of communication protocols. SOAP messages can exchange documents, call remote procedures, and transmit web services messages. Most Web Services technologies currently use SOAP as the transport protocol.

Supported Technologies

Interstage Application Server supports the implementation and execution of applications created on a number of platforms. The table below lists these platforms, with examples of the types of applications that can be built.

Table 1 Supported Technologies

Platform	Applications/Services
Java component technology (J2EE 1.3)	J2EE 1.3 applications (JSP, servlets, EJB)
Core distributed object technology (CORBA)	C/C++ and JAVA CORBA applications
Security/directory technology (X5.00/LDAP)	Security (firewall, HTTP tunneling, SSL, TLS, PKI)
Database technology (X/OPEN)	Transaction applications
Asynchronous messaging technology	JMS publish-subscribe and queue modes
Internet technology (IETF/W3C)	HTTP Server
Web Services technology (SOAP, WSDL, UDDI)	Web Services .NET applications
Broadband internet (IPv6)	

Systems Integration

Using the Interstage Application Server Framework, businesses can connect existing computer systems, including large mainframes, to new enterprise applications. This means you can leverage your existing IT assets, while seamlessly adding new web applications to your business system. The Application Server's flexibility ensures that your business can grow and build new applications, while still having vital information from legacy systems at hand.

System Performance and Reliability

The Application Server's high reliability and performance makes it ideal for mission-critical systems that must be available 24 hours a day. Application Server offers consistent service delivery and quick response times during high system demand, in addition to continued availability during server failures.

With the use of proven transaction technologies, including Hot Standby, Clustering, and Dynamic Application Changing, your business can achieve a high standard of performance.

Hot Standby

The Application Server achieves reliability and system availability using Hot Standby. A Standby machine, configured with all required applications and settings, operates alongside the primary server and maintains a current copy of the primary server's data. In the event of a system failure, the standby can immediately take over operation without loss of data or functionality.

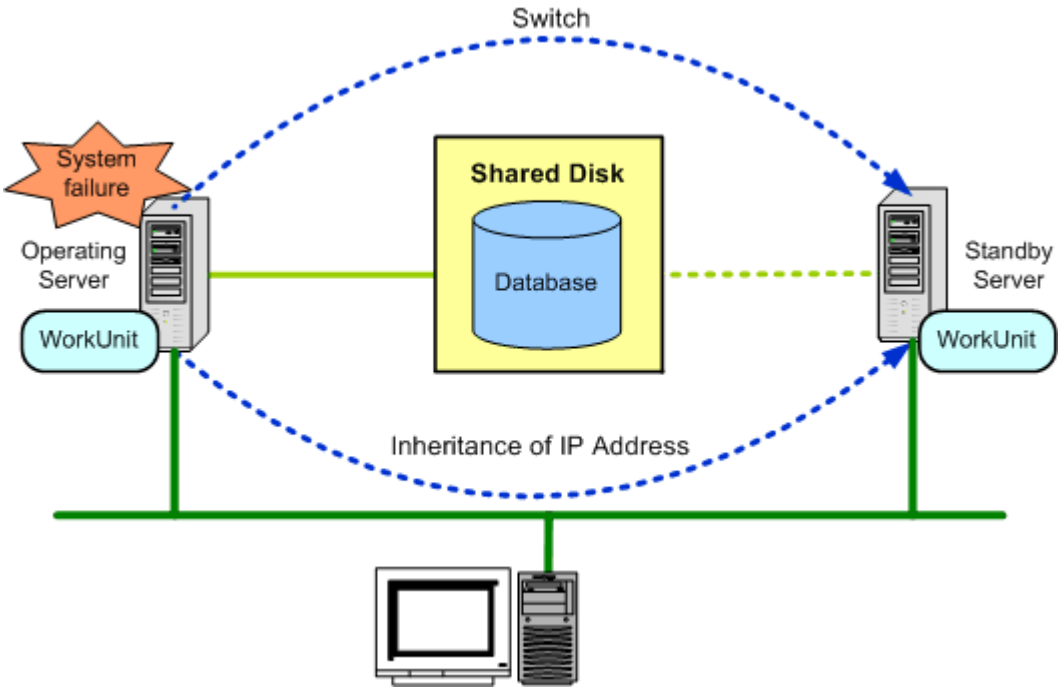

Figure 2 Clustered Servers

Dynamic Application Changing

For systems that need to run 24 hours a day, the Application Server provides Dynamic Application Changing. This feature makes it possible to swap or add business applications and environment variables without stopping the system.

Distributed Transaction Function

To prevent inconsistencies, this functionality guarantees atomicity for transactions spanning multiple databases. If a transaction on any one database fails, the entire transaction is rolled back.

Asynchronous Messaging

Interstage Application Server supports asynchronous communications via Message Queues. The sending applications transmit messages which are stored on the Application Server. A receiving application can then retrieve and use the message. Since Application Server can also connect to a Global Server, it is also possible to link applications via a network.

Application Server Version 7

Version 7 includes several new features that improve system administration, scalability, and security.

Multi-server Management

Multi-server management simplifies administration, resource deployment, and scalability with features including Single sign-on and Operation and Deployment over Multiple Servers Simultaneously. Multi-server Management allows businesses to utilize the processing power of multiple servers, while managing them from one Interstage Management Console window. The benefits of Multi-server Management include high reliability, powerful processing, and built-in resource management.

Single Sign-on

Single Sign-on allows users to access multiple application servers and system resources with a single login from the Interstage Management Console. This offers greater security by reducing the number of passwords that needs to be maintained and accessed, in addition to simplifying and reducing security management. Single Sign-on also offers an improved experience for end users, with only one user name and password required for a user to access multiple web servers and applications in the system.

Operation and Deployment of Multiple Servers Simultaneously

Simultaneous operation of multiple servers streamlines configuration and setup by enabling you to centrally operate resources and logical business units on a group of servers. This reduces total operating costs, while also avoiding the potential for a particular resource to be configured incorrectly.

Additionally, with a single simultaneous deployment operation, you can ensure that multiple applications are deployed in all required areas of the system at once. If an error occurs with any part of the deployment, a message detailing the problem displays in the Interstage Management Console.

The table below lists the resources that support operation and deployment of multiple servers simultaneously.

Table 2 Resources supporting Operation and Deployment of Multiple Servers Simultaneously

Operation Target	Operation Types
Work units (IJServer, CORBA)	New, Delete, Deploy, Undeploy, Modify Definition, Start, Stop, Block, Unblock
Interstage System Services (CORBA, Naming, Interface, Event, Transaction, Servlet)	Environment Settings, Start, Stop
Web server (Apache)	New, Delete, Modify Definition, Start, Stop
Event Channel	Generate, Delete, Environment Settings, Start, Stop
J2EE resources: JDBC, JavaMail, connector, JMS	Create, Delete, Modify

Scalability

Version 7 improves scalability by reducing the number of steps required to scale a site. Multi-Server management allows servers to be added and removed to the site with minimal disruption to system operations. The added servers can immediately handle user requests without the need to manually recreate the configuration and deployment settings.

Reliability

Since servers may be in distinct physical and geographic locations, a system failure (for example a power failure) on one machine will not necessarily prevent users from working.

Parallel Processing

The parallel processing offered by a multi-server system provides the power and resource management required to run CPU-intensive applications.

Resource Balancing

Servers have built-in resource balancing. Requests can be sent to underutilized resources during high activity periods, particularly when extra processing is required unexpectedly.

Smart Repository Security

Smart Repository is an LDAP-compatible Directory Service providing information about applications and resources in the system. Smart Repository now also provides user accounts and logins for implementing authentication. As an alternative to using the operating system security, from version 7, users can log in to the Interstage Management Console with Smart Repository authentication information. This is particularly useful for cross-platform business systems. Using Smart Repository, only one set of passwords is required to access all of the servers, applications, and information distributed across the various operating systems.

Each user defined in Smart Repository has an associated role and permissions. Applications can verify users' access to specific functionality based on the roles registered in Smart Repository.

The table below details the Smart Repository user types, including the operations each role can perform.

Table 3 Smart Repository User Types

User Type	System Access Description
Monitor	Refer to the application/service/system configuration and the current status.
Operator	Operate (Start/Stop/Block and Unblock for a queue) for the application. Operate resources (EventChannel) used by the application.
Configurator	Create New/Modify Configuration/Deploy for the application. Create New/Modify Configuration for resources (JDBC, JavaMail, JMS, Connector, EventChannel) used by the application. Cannot modify the service or system configurations.
Administrator	Execute all operations. Modify Configuration/Operate for a service/system. Add/Delete servers and server groups, and Modify Settings for a user management register (In a multi-server environment).

Application Server Editions

Interstage Application Server is offered in three editions, each supporting a different level of enterprise system and functionality. Each edition can be easily upgraded as your business needs change.

Plus

Interstage Application Server Plus is ideal for constructing Web systems in Java, with support for applets, servlets, JavaBeans, and Java Server Pages (JSP).

Fully compliant with J2EE 1.3, Application Server Plus supports Single sign-on and the latest Web service standard technologies such as SOAP, UDDI, and WSDL. It is also equipped with Web server functions (including Web Server Load Balancing), a framework to facilitate application development, and portal functions for Web page integration and personalization. Furthermore, Application Server Plus offers application management functions to guarantee stable system operation.

Standard

Application Server Standard Edition is the general-purpose edition of Application Server. In addition to support for Web technologies, Standard Edition also enables the creation of online transaction processing (OLTP) applications in Java, C, and C++. These applications can link between languages and platforms, and connect to external corporate systems using SOAP and UDDI.

Standard Edition provides support for Enterprise JavaBeans (EJB) 2.0 and J2EE 1.3. It also features a multi-container function that distributes processes and improves processing reliability.

Enterprise

Application Server Enterprise Edition combines all of the functionality of Standard Edition with high-reliability features for ensuring stable operation. These include:

- Clustering
- Load Balancing
- Hot Standby
- Dynamic Application Changing

This edition of the Application Server also provides asynchronous messaging and distributed transaction functionality.

The tables below provide a comprehensive comparison of the Application Server editions.

Table 4 Interstage Application Server Edition Comparison: Web/Distributed Environment

Category	Function			Windows/ Solaris OE		Linux	Notes
				V7.0/7.0		V6.0 (*1)	
				Plus	EE	EE	
Web/ distributed environment	Web server	Interstage HTTP Server(Apache-based Web server) (*27)		OK	OK	OK	
	CORBA service (compliant with CORBA 2.3 and 2.4) (*2)				OK	OK	
	Database linkage service (ObjectTransactionService)				OK	OK	
	XML processor (*22)			OK	OK	OK	
	Directory service (LDAP compliant)	LDAP SDK linkage function (InfoDirectory SDK)		OK	OK	OK	JNDI is supported however C-API is not.
	Asynchronous communicatio n function	Event service			OK	OK	
		Notification service			OK	OK	
	SOAP	SOAP 1.1		OK	OK	OK	
		SOAP 1.2		OK	OK	OK	
		Standard Java API for Web services	JAXM 1.1	OK	OK	OK	
			JAX-RPC 1.0	OK	OK	OK	
			SAAJ 1.1	OK	OK	OK	
		Supported data types (*3)		OK	OK	OK	
		WSDL1.1 *4		OK	OK	OK	
		CORBA, EJB linkage function			OK	OK	
		Web services featuring high reliability ·Electronic signature and XML encryption to guarantee document authenticity. ·Reliable Messaging to guarantee delivery		OK	OK	OK	
		UDDI client (UDDI4J)		OK	OK	OK	
	ebXML support				OK		

Table 4 (continued) Interstage Application Server Edition Comparison: Web/Distributed Environment

Category	Function		Windows/ Solaris OE		Linux	Notes
			V7.0/7.0		V6.0 (*1)	
			Plus	EE	EE	
	J2EE1.3 (Partially 1.4 (*32))	Servlet 2.3 (*28)	OK	OK	OK	
		JavaServer Pages 1.2 (*28)	OK	OK	OK	
		Enterprise JavaBeans 2.0	OK	OK	OK	
		Java Naming and Directory Interface1.2	OK	OK	OK	
		Java Message Service 1.0	OK	OK	OK	
		RMI-IIOP 1.0	OK	OK	OK	
		Java Transaction API 1.0.1	OK	OK	OK	
		Java Transaction Service 1.0	OK	OK	OK	
		Java Connector Architecture 1.0	OK	OK	OK	
		Java Mail 1.2	OK	OK	OK	
		JAXP1.1	OK	OK	OK	
		JAAS1.0	OK	OK	OK	
	IPv6 support (*25)		OK	OK	OK	OK

Table 5 Interstage Application Server Edition Comparison: Security

Category	Function		Windows/ Solaris OE		Linux	Notes
			V7.0/7.0		V6.0 (*1)	
			Plus	EE	EE	
Security	User authentication function	Authentication function of Web server	OK	OK	OK	
	Authentication/encryption function using SSL (*7) (*8)		OK	OK	OK	OK
	HTTP tunneling			OK	OK	
	Proxy linkage			OK		
	Single sign-on	Job server	OK	OK		new
		Authentication server	OK	OK		new
		Repository server	OK	OK	OK	

Table 6 Interstage Application Server Edition Comparison: Application Execution Environment

Category	Function		Windows/ Solaris OE		Linux	Notes
			V7.0/7.0		V6.0 (*1)	
			Plus	EE	EE	
Application execution environment	CORBA application	C/C++		OK	OK	
		COBOL		OK	OK	
		Java		OK	OK	
	Transaction application	C/C++		OK	OK	
		COBOL		OK		
	EJB application	Java	OK	OK	OK	
	Component execution environment (EJB)	CMP (Container Managed Persistence)	OK	OK	OK	
		BMP (Bean Managed Persistence)	OK	OK	OK	
		Operation control per job	OK	OK	OK	
		Multiple EJB container execution	OK	OK	OK	
	Java server execution environment	JDK 1.3.1 (*10) (Fujitsu VM)	OK	OK	OK	
		JDK 1.4.1 (*30) (Fujitsu VM)			OK	
		JDK 1.4.2 (*31) (Fujitsu VM)	OK	OK		new
	Java execution environment using Portable-ORB		OK	OK	OK	
	Integrated management of requests and responses between client and server by means of session management			OK	OK	
	Process bind function			OK	OK	

Table 7 Interstage Application Server Edition Comparison: Application Control

Category	Function		Windows/ Solaris OE		Linux	Notes
			V7.0/7.0		V6.0 (*1)	
			Plus	EE	EE	
Application control	Interstage Management Console		OK	OK	OK	
	Multiserver management	Admin Server	OK	OK		new
		Managed server	OK	OK		new
	Provisioning *23	Admin Server	OK (*6)	OK(*6)		new
		Managed server	OK(*24)	OK(*24)		new
	Application Management	Start and stop of application units	OK	OK	OK	
		Sharing of processes from multiple clients		OK	OK	
		Non-resident application mode		OK	OK	
		Process concurrency	OK	OK	OK	
		Snapshot/log function at execution	OK	OK	OK	
		Operation and performance management of application units	OK	OK	OK	
	Prioritized execution of business applications			OK	OK	
	Timeout monitoring		OK	OK	OK	
	Automatic centralized monitoring		OK	OK	OK	
	Centralized configuration and deployment		OK	OK	OK	

Table 8 Interstage Application Server Edition Comparison: Usability

Category	Function	Windows/ Solaris OE		Linux	Notes
		V7.0/7.0		V6.0 (*1)	
		Plus	EE	EE	
Usability	Point and click installation	OK	OK	OK	
	Simplified configuration management	OK	OK	OK	

Table 9 Interstage Application Server Edition Comparison: High Reliability and Scalability

Category	Function		Windows/ Solaris OE		Linux	Notes
			V7.0/7.0		V6.0 (*1)	
			Plus	EE	EE	
High reliability and scalability	Load balancing	Interstage Traffic Director integration (*11)	OK	OK	OK	
		Load-balance by Web server. (fault monitoring) (*26)	OK	OK		new
		Load balancing (Linkage with Naming Service)		OK	OK	
	Cluster service function	1: 1 active-standby mode		OK	OK	
		Mutual standby mode (*6)		OK		
	Server machine status monitor			OK	OK	
	Hot deployment of applications (dynamic modification/addition)	Transaction application		OK	OK	
		J2EE (servlet, JSP, EJB) application	OK	OK		new
	Dynamic process concurrency modification			OK	OK	
	Inter-object priority function			OK	OK	
	Object closure/release function			OK	OK	
	Multi-system function (*6)			OK		

Table 10 Interstage Application Server Edition Comparison: Interoperability

Category	Function	Windows/ Solaris OE		Linux	Notes
		V7.0/7.0		V6.0 (*1)	
		Plus	EE	EE	
Interoperability	Interoperability with ORB of other vendors (*15)	OK	OK	OK	
	Interoperability with EJB of other vendors	OK	OK	OK	
	Interoperability with SOAP of other vendors (*5)	OK	OK	OK	
	Interoperability with ebXML of other vendors (*19)		OK		

Table 11 Interstage Application Server Edition Comparison: Development Aids

Category	Function	Windows/ Solaris OE		Linux	Notes
		V7.0/7.0		V6.0 (*1)	
		Plus	EE	EE	
Development aids	Use of Interstage Application Server Plus Developer	OK	OK	OK	
	Use of Interstage Apworks	OK	OK	OK	
	Use of Jbuilder for Interstage	OK	OK	OK	
	Use of other development environments (Sun WorkShop, Forte Developer, Microsoft Visual Studio, etc.)	OK	OK	OK	

Table 12 Interstage Application Server Edition Comparison: Framework and Portal function

Category	Function	Windows/ Solaris OE		Linux	Notes
		V7.0/7.0		V6.0 (*1)	
		Plus	EE	EE	
Framework	Application development support (*20)	OK	OK	OK	
Portal function	Integration and personalization of Web pages (*21)	OK	OK	OK	

Notes

*1. V7.0 for Linux is TBD and this table describes V6.0 for Linux.

*2. For Interstage Application Server Plus, integration is supported only with CORBA server application in different servers. (The CORBA server application cannot be executed in the same server which this product was installed in)

*3. Supports primitive, composite, one-dimensional, and multidimensional array data types

*4. Can be used to create stubs, skeletons, WSDL from IDL, IDL from WSDL, and WSDL from Java objects

*5. Interstage Application Server (Interstage Application Server Plus) can connect with other vendors, and the following connection tests have also been demonstrated in Japan:

- Compaq Computer Corporation (NonStop SOAP for Java)
- Sun Microsystems, Inc. (J2EE SDK1.3.1 + Java Web Services Developer Pack 1.0.1)
- Sun Microsystems, Inc. (Sun ONE Application Server 7)
- NEC Corporation. (ActiveGlobe WebOTX)
- IONA Technologies Japan, Ltd. (Orbix E2A XMLBus Edition)
- IBM Japan (WebSphere Application Server)
- Oracle Corporation Japan. (Oracle9i Application Server)
- Tmax Soft Japan Co., Ltd. (JEUS Enterprise Server)
- BEA Systems, Inc. (BEA WebLogic Server)
- Hitachi, Ltd (Cosminexus)
- Technoface Corporation (OpenSOAP)
- Sarion Systems Research (SOAP4R)
- Microsoft Corporation (Microsoft .NET Framework)
- Apache Axis 1.0

*6. Solaris OE version only

*7. Supports various public key certificates of Verisign and Japanese Authentication Services

*8. X.509 version 3 certificates (Identifier character code: UTF-8 String) supported. (Solaris OE and Windows Web servers only)

*9. N/A

*10. Provides Java VM developed by Fujitsu in addition to existing Java VMs. Fujitsu's Java VM is selected as the default

*11. Some load balance policies only support EE

*12. N/A

*13. N/A

*14. N/A

*15. Interstage Application Servers can connect with one another, and it has also been demonstrated that it can connect to the following in Japan:

- Sun Microsystems, Inc.(The JAVA2、PLATFORM)
- Oracle Corporation Japan. (Oracle Application Server、Oracle 8i)
- TIBCO Software Japan Inc. (TIB/ObjectBus)
- BEA Systems, Inc. (WebLogic)
- Hitachi, Ltd (TPBroker)
- NEC Corporation. (WebOTX)
- Nihon Unisys, Ltd. (Systemv)
- IBM Japan (WebSphere)
- INPRISE Corporation (VisiBroker)
- TIS Toyo Information Systems Co., Ltd (Orbix/OrbixWeb)

*16. N/A

*17. N/A

*18. N/A

*19. Interstage Application Server can connect with one another, and it has also demonstrated that it can connect to the following in Japan

- Hitachi, Ltd
- NEC Corporation
- Infoteria Corporation
- NTT

*20. Framework features are shown in table 5 below

*21. Portal features are shown in table 6 below

*22 XML processor supports Xlink and XML Schema

*23. Supported by the integration with Systemwalker Resource Coordinator

*24. Windows version only

*25. The followings are supported:

IIOP communication by CORBA service. (SSL linkage and Proxy linkage function are not supported)

Supported Windows operating systems

- Windows(R) XP Professional (Service Pack 1 or later)
- Windows(R) XP Home Edition (Service Pack 1or later)
- Windows Server(TM) 2003 Standard Edition
- Windows Server(TM) 2003 Enterprise Edition
- Red Hat Enterprise Linux AS (v. 3)
- Red Hat Enterprise Linux ES (v. 3)
- HTTP communication by InfoProvider Pro.(HTTPS communication is not supported)

Supported Solaris operating systems

Solaris 8 OE

Solaris 9 OE

*26. The following functions are provided as the Web server connector load balancing.

See Traffic Director for further information about its features.

Function category	Function
Load balancing algorithms	Round robin
	Advance definition ratio
Fault monitoring	Fault monitoring (Ping)
	Service port monitoring
Session uniqueness assurance	Cookie
Protocol	HTTP, HTTPS

*27. Apache 1.3.22 compatible environment is provided

*28. Tomcat 4.1 compatible environment is provided

*29. N/A

*30. JavaVM produced by Fujitsu is provided. The version is 1.4.1_03

*31. JavaVM prodiuced by Fujitsu is provided. The version is 1.4.1_05

*32. EJB-QL of J2EE1.4 is supported.

Table 13 Framework Features

Category	Function	Note
Basic functions	Framework control function	
	Command scripting	
	Coding that complies with XML data specification	
	XML linkage function	
	Groupware linkage function	
	EJB/Web service communication libraries.	
Web application framework	Common JSP interface	
	Component tags	
	Session management	
	Database linkage	
	Applet linkage	
	Execution by Struts 1.1 (bundled)	
	FlashMX support.	

	JavaServer Faces 1.1 support	new
EJB application framework	Unification of development method with Web applications	
	Synchronization of session information	
	Filtering of transmitted data.	
	Application Server function executable in framework	
Web service application framework	Unification of development method with Web applications.	
	Transmitting and receiving XML data	

Table 14 Portal Features

Category		**Function**
Brick service	Portlet service	Web server connection (Web home page, full-text searching, TeamWARE Office 200X, etc.)
	Content navigation service	Content navigation (Interstage Contentbiz connection)
	Proxy logon	Performs the logon process for the user.
	Interstage Application Server Single Sign On function	It works together with the Single Sign On function of Interstage Application Server
	Role service	Provides information according to the role of the user.
Presentation service	Portal view	Provides user pages
	Personalization	Customizes information and user pages.
Portal operation management function		Operation management.

Optional Application Server Products

The following optional products are available to manage security and network traffic:

- Traffic Director
- Security Director

Traffic Director

Traffic Director is a high-performance, configurable traffic management tool, with essential features for maintaining efficient system throughput.

Quality of Service (QoS)

This functionality allocates network bandwidth to applications according to configurable QoS policies. Critical applications can be protected from traffic congestion, ensuring them a stable service during times of high network load. QoS policies can be configured and modified as your needs change.

Load Balancing (Enterprise Edition)

In progress

Data Caching

Data caching enables frequent requests to be cached, providing quick responses for subsequent requests. In addition to speeding up processing, this also reduces the load on the Web Server.

Security Director

For all types of business, ensuring the security of applications and data is paramount. Security Director provides comprehensive security for applications, including user authentication.

Firewall

The firewall protects the system from intruders, displaying warnings to allow users to take immediate action.

User Authentication

Security Director authenticates users at the application server front-end to ensure that only authorized users gain access.

SSL Communication

SSL functionality includes SSL server and client authentication, and SSL communication data encryption between the server and a client or between two servers.

Address Conversion

When HTTP and IIOP relay functions are used, Security Director conceals Intranet server information (for example, host name and IP address) from the Internet to protect it from attack.

Access Control

Security Director can grant or deny access to servers by individual URLs or applications. This minimizes the information disclosed to the Internet, improving the security of corporate systems.

Recommended Operations Management

The Systemwalker operations management products focus on system and network administration, performance monitoring, asset management, and job management. By providing current system information and ease of administration, Systemwalker can help you monitor the business value of your enterprise system.

To this end, Systemwalker provides three levels of system management:

- Lifecycle Management
- Service Management
- Policy Management

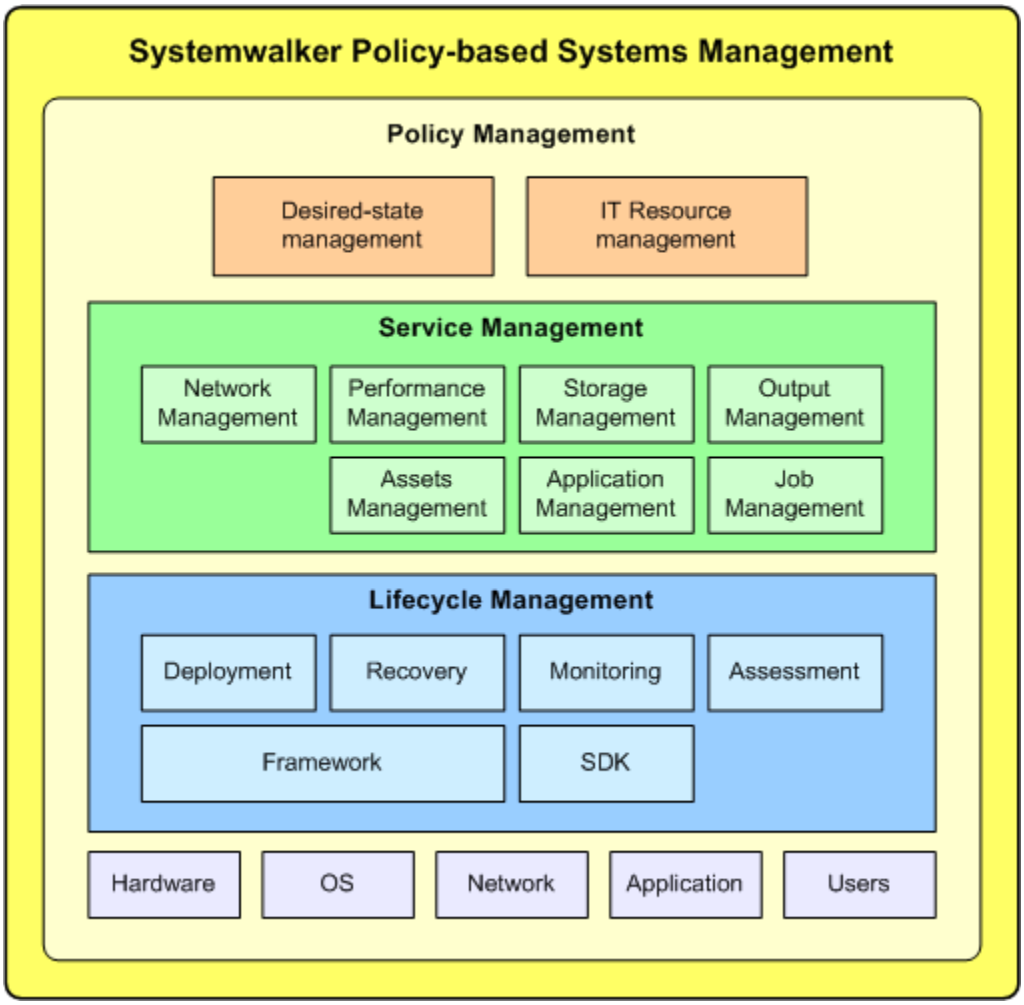

Figure 3 Systemwalker Components

Lifecycle Management

Systemwalker lifecycle management assists the completion of tasks at all levels in the management cycle, from deployment to monitoring, recovery, and assessment. Lifecycle management tools include:

- System deployment and monitoring
- Reporting
- Development of new operations management functions using the Systemwalker SDK.

Service Management

Each of Systemwalker's service management tools manages a specific business category:

- Network management
- Performance monitoring
- Job management
- Application management
- Output management
- Storage management.

Policy Management

A policy-based systems management (PSM) product, Systemwalker allows companies to establish system operations based on business strategies and goals. You can then ensure that your business operation matches your management strategy.

Systemwalker's policy management products perform tasks including:

- Task processing based on the appropriate predefined system operation policy
- Auto-monitoring or control of operations according to defined business policies
- Quick assessment of the impact of an error, and notification of system administrators.
- IT resource management (software and hardware)
- Data on used assets that allow you to effectively deploy resources and forecast future resource needs.