FUJITSU Software
Interstage Application Server

Product Notes

Windows/Solaris/Linux

Preface

Purpose of this Document

This manual provides additional information on the use of Interstage Application Server.

For details on the Java EE runtime environment, refer to the "Java EE Operator's Guide", chapter "Release Information".

Note

Throughout this manual Interstage Application Server is referred to as Interstage.

Intended Readers

This document is intended for users installing and operating Interstage Application Server.

It is assumed that readers of this manual have a basic knowledge of:

- The Internet

- Apache

- Basic knowledge of the OS used

Structure of This Document

The structure of this manual is as follows:

Chapter 1 Supported Software

This chapter describes the supported software for application development and application execution. It also describes the client-side software products required to use client applications.

Chapter 2 Restrictions

This chapter describes the restrictions on some Interstage functions.
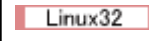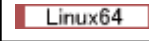
Chapter 3 Notes on Interstage Operation

This chapter provides notes about the operation of Interstage.

Conventions

Representation of Platform-specific Information

In the manuals of this product, there are parts containing content that relates to all products that run on the supported platform. In this case, an icon indicating the product platform has been added to these parts if the content varies according to the product. For this reason, refer only to the information that applies to your situation.

Windows32	Indicates that this product (32-bit) is running on Windows.
Windows64	Indicates that this product (64-bit) is running on Windows.
Windows32/64	Indicates that this product (32/64-bit) is running on Windows.
Solaris32	Indicates that this product (32-bit) is running on Solaris.
Solaris64	Indicates that this product (64-bit) is running on Solaris.
Solaris32/64	Indicates that this product (32/64-bit) is running on Solaris.
Linux32	Indicates that this product (32-bit) is running on Linux.
Linux64	Indicates that this product (64-bit) is running on Linux.
Linux32/64	Indicates that this product (32/64-bit) is running on Linux.

Abbreviations

Read occurrences of the following Components as their corresponding Service.

Service	Component
CORBA Service	ObjectDirector
Component Transaction Service	TransactionDirector

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Contents

Chapter 1 Supported Software

This chapter describes the supported software.

1.1 Software Products Required for Application Development

This section describes the software products required for application development.

For details on software required for application execution, refer to "1.2 Software Products Required for Application Execution" or "1.3 Client-side Software Products Required to Use Client Applications".

1.1.1 Java Development Environments

1.1.1.1 Server Applications

Table 1.1 Software Required for Application Development

Function name	Product name	Version
For application development of J2EE application (*1)	Interstage Studio	V9.0.0 or later (*2)
For Java application development of Interstage Single Sign-on (*1)	Interstage Studio	V9.0.0 or later (*2)
CORBA Service (Only Enterprise Edition) - For Java application development (*3) Event Service (Only Enterprise Edition) - For Java application development (*3) `Windows32/64` `Solaris32` `Linux32/64` Database Linkage Service (Only Enterprise Edition) - For Java application development (*3)	Interstage Studio	V9.0.0 or later

*1 The described product is recommended. Note that if the application is not developed using Interstage Studio, the debug/execution results on the development environment may differ from the execution results on Interstage Application Server.

*2 It is recommended that the development environment (Interstage Studio) and the operating environment (Interstage Application Server) versions match. In particular, when using IJServer view/Servers view, the remote debugging function of JSP or the Framework, use the same version as Interstage Application Server.

*3 When using another product for development, use the features described in the Distributed Application Development Guide (CORBA Service Edition) and the Java source generated with the IDL compiler provided with this product. Applications using features that do not comply with OMG CORBA and CORBA-Java applications using Java source that was not compiled with the IDL complier of this product cannot be operated.

1.1.1.2 Client Applications

Function name	Product name	Version
CORBA Service - For Java application development (*1) Event Service - For Java application development (*1)	Interstage Studio	V9.0.0 or later

*1 When using another product for development, use the features described in the Distributed Application Development Guide (CORBA Service Edition) and the Java source generated with the IDL compiler provided with this product. Applications using features

that do not comply with OMG CORBA and CORBA-Java applications using Java source not compiled with the IDL complier of this product cannot be operated.

1.1.2 C/C++ Related Development Environments (Only Enterprise Edition)

1.1.2.1 Server Applications

Windows®

Function name	Product name	Windows32	Windows64
CORBA Service - For C/C++ application development	Microsoft® Visual C++® .NET Standard 2003	OK	-
	Microsoft® Visual Studio® 2005 Standard Edition Microsoft® Visual Studio® 2005 Professional Edition Microsoft® Visual Studio® 2005 Team Edition	OK	OK
	Microsoft® Visual Studio® 2008 Standard Edition Microsoft® Visual Studio® 2008 Professional Edition Microsoft® Visual Studio® 2008 Team System	OK	OK (*1)
	Microsoft® Visual Studio® 2010 Ultimate Microsoft® Visual Studio® 2010 Premium Microsoft® Visual Studio® 2010 Professional	OK (*1)	OK (*1)
Component Transaction Service - For C/C++ application development - *tdlinkapm* command execution	Microsoft® Visual C++® .NET Standard 2003	OK	-
	Microsoft® Visual Studio® 2005 Standard Edition Microsoft® Visual Studio® 2005 Professional Edition Microsoft® Visual Studio® 2005 Team Edition	OK	-
Event Service - For C/C++ application development	Microsoft® Visual Studio® 2005 Standard Edition Microsoft® Visual Studio® 2005 Professional Edition Microsoft® Visual Studio® 2005 Team Edition	OK	OK
	Microsoft® Visual Studio® 2008 Standard Edition Microsoft® Visual Studio® 2008 Professional Edition Microsoft® Visual Studio® 2008 Team System	OK	OK (*2)
	Microsoft® Visual Studio® 2010 Ultimate Microsoft® Visual Studio® 2010 Premium Microsoft® Visual Studio® 2010 Professional	OK (*2)	OK (*2)
Database Linkage Service - For C application development - Resource management program creation - XA Linkage program Windows32 - For C++ application development	Microsoft® Visual C++® .NET Standard 2003	OK	-
	Microsoft® Visual Studio® 2005 Standard Edition Microsoft® Visual Studio® 2005 Professional Edition Microsoft® Visual Studio® 2005 Team Edition	OK	OK
	Microsoft® Visual Studio® 2008 Standard Edition Microsoft® Visual Studio® 2008 Professional Edition Microsoft® Visual Studio® 2008 Team System	OK	OK
	Microsoft® Visual Studio® 2010 Ultimate Microsoft® Visual Studio® 2010 Premium	OK	OK

Function name	Product name	Windows32	Windows64
	Microsoft® Visual Studio® 2010 Professional		
Developing applications that use LDAP SDK	Microsoft® Visual C++® .NET Standard 2003	OK	-
	Microsoft® Visual Studio® 2005 Standard Edition Microsoft® Visual Studio® 2005 Professional Edition Microsoft® Visual Studio® 2005 Team Edition	OK	OK
	Microsoft® Visual Studio® 2008 Standard Edition Microsoft® Visual Studio® 2008 Professional Edition Microsoft® Visual Studio® 2008 Team System	OK	OK
	Microsoft® Visual Studio® 2010 Ultimate Microsoft® Visual Studio® 2010 Premium Microsoft® Visual Studio® 2010 Professional	OK	OK
CORBA Service - For OLE applications development	Microsoft® Visual Basic 6.0	OK	OK

*1 The "any" type cannot be used to develop C++ server applications.

*2 This product cannot be used to develop C++ server applications.

Solaris

Function name	Product name	Solaris32	Solaris64
For C/C++ application development	Oracle Solaris Studio 12.3	OK	OK
	Oracle Solaris Studio 12.2	OK	OK
	Sun Studio 12 Update 1	OK	OK
	Sun Studio 12	OK	OK
	Sun Studio 11	OK	OK
	Sun Studio 10	OK	-
	Sun Studio 9	OK	-
	Sun ONE Studio 8 series The following components can be used: - Sun ONE Studio 8 Compiler C - Sun ONE Studio 8 Compiler C++	OK	-
	Sun ONE Studio 7 series The following components can be used: - Forte Developer 7 Compiler C - Forte Developer 7 Compiler C++	OK	-
	Forte Developer 6 series The following components can be used: - WS Compilers C 6 - WS Compilers C++ 6	OK	-

Linux

Function name	Product name	Remarks
For C/C++ application development - IDLc command execution	Use the package contained in the OS. Use the default compiler version. - binutils - cpp - gcc - gcc-c++ - libstdc++-devel - glibc-devel - glibc-headers - glibc-kernheaders - make	(*1)

*1 `Linux64`

Use the *rpm* command to check if the standard installation of the OS installed this package. If it was not installed, install it from the CD of the OS.

1.1.2.2 Client Applications

Function name	Product name	Remarks
CORBA Service - For C/C++ application development	Microsoft® Visual C++® .NET Standard 2003	
	Microsoft® Visual Studio® 2005 Standard Edition Microsoft® Visual Studio® 2005 Professional Edition Microsoft® Visual Studio® 2005 Team Edition	
	Microsoft® Visual Studio® 2008 Standard Edition Microsoft® Visual Studio® 2008 Professional Edition Microsoft® Visual Studio® Team System 2008	
	Microsoft® Visual Studio® 2010 Ultimate Microsoft® Visual Studio® 2010 Premium Microsoft® Visual Studio® 2010 Professional	(*1)
Event Service - For C/C++ application development	Microsoft® Visual C++® .NET Standard 2003	
	Microsoft® Visual Studio® 2005 Standard Edition Microsoft® Visual Studio® 2005 Professional Edition Microsoft® Visual Studio® 2005 Team Edition	
	Microsoft® Visual Studio® 2008 Standard Edition Microsoft® Visual Studio® 2008 Professional Edition Microsoft® Visual Studio® Team System 2008	
	Microsoft® Visual Studio® 2010 Ultimate Microsoft® Visual Studio® 2010 Premium Microsoft® Visual Studio® 2010 Professional	(*2)

*1 The "any" type cannot be used to develop C++ client applications.

*2 This product cannot be used to develop C++ client applications.

1.1.3 COBOL-Related Development Environments (Only Enterprise Edition)

1.1.3.1 Server Applications

Function name	Product name

Windows32
 	
CORBA Service
  - For COBOL application development
  - For OOCOBOL application development
Event Service
  - For COBOL application development
Database Linkage Service
  - For COBOL application development
Component Transaction Service
  - For COBOL application development
	NetCOBOL

Windows64
 	
CORBA Service
  - For COBOL application development
Event Service
  - For COBOL application development
	NetCOBOL (*1)

Solaris32
 	
CORBA Service
  - For COBOL application development
  - For OOCOBOL application development
Event Service
  - For COBOL application development
Database Linkage Service
  - For COBOL application development
Component Transaction Service
  - For COBOL application development
	NetCOBOL

Linux32
 	
CORBA Service
  - For COBOL application development
  - For OOCOBOL application development
Event Service
  - For COBOL application development
	NetCOBOL

Linux64	NetCOBOL(*1)

Function name	Product name

CORBA Service
 	
  - For COBOL application development
 	
Event Service
 	
  - For COBOL application development	

*1 Use the product that supports the same CPU architecture as this product.

1.1.3.2 Client Applications

Function name	Product name

CORBA Service
 	
  - For COBOL application development
 	
  - For OOCOBOL application development
 	
Event Service
 	
  - For COBOL application development
	NetCOBOL

1.1.4 Framework

Table 1.2 Framework Products Required for Application Development

Function name	Product name
Using Framework Flash linkage features	Flash(R) 8 - 11

For details on framework-related software required for development of applications not shown above, refer to "Software Products Required for Application Execution", "".

1.2 Software Products Required for Application Execution

This section describes the software products required for application execution.

1.2.1 C/C++ Windows32/64

Function Name	Product Name
Running applications created in Visual Studio	Visual C++ Runtime files for redistribution included with Visual Studio (*1)

*1 For details about the Visual C++ Runtime files for redistribution, refer to the Visual Studio manual.

"Microsoft Visual C++ 2005 Redistributable Package" may be installed when Interstage is installed. In this case, the Visual C++ Runtime files for redistribution may also need to be installed.

1.2.2 COBOL

Function name	Product name

Windows32
 	
CORBA Service
 	
  - For COBOL server application operation
 	
  - For OOCOBOL server application operation
	NetCOBOL (*1)

Function name	Product name

Event Service
 	
  - For COBOL server application operation
 	
Database Linkage Service
 	
  - For COBOL server application operation
 	
Component Transaction Service
 	
  - For COBOL server application operation	

Windows64
 	
CORBA Service
 	
  - For COBOL server application operation
 	
Event Service
 	
  - For COBOL server application operation
	NetCOBOL (*2)

Solaris32
 	
CORBA Service
 	
  - For COBOL server application operation
 	
  - For OOCOBOL server application operation
 	
Event Service
 	
  - For COBOL server application operation
 	
Database Linkage Service
 	
  - For COBOL server application operation
 	
Component Transaction Service
 	
  - For COBOL server application operation
	NetCOBOL

Linux32
 	
CORBA Service
 	
  - For COBOL server application operation
 	
  - For OOCOBOL server application operation
 	
Event Service
 	
  - For COBOL server application operation
	NetCOBOL

Linux64
 	
CORBA Service
 	
  - For COBOL server application operation
 	
Event Service
 	
  - For COBOL server application operation
	NetCOBOL (*2)

*1 The NetCOBOL Series has the development-type product and the operation-type product (operation package), both of which can be used to execute COBOL applications.

*2 Use the product that supports the same CPU architecture as this product.

1.2.3 Database (Database Linkage Service) `Windows32/64` `Solaris32` `Linux32/64`

The database products supported in the Database Linkage Service are shown below.

Using Symfoware/RDB (when the Application is Developed/executed)

Table 1.3 Using Symfoware/RDB (when the Application is Developed/executed)

Platform used to Deploy the Database	Product name	Version
Windows(R)	Symfoware Server Enterprise Edition Symfoware Server Standard Edition	V10.1.0
Solaris	Symfoware Server Enterprise Edition Symfoware Server Standard Edition	Not determined
RHEL5(x86) RHEL5(Intel64)	Symfoware Server Enterprise Edition Symfoware Server Standard Edition	V10.1.0
RHEL6(x86) RHEL6(Intel64)	Symfoware Server Enterprise Edition Symfoware Server Standard Edition	V10.1.0

Notes on when the application is developed

*1 A library that has been provided by Symfoware/RDB is required. Install the Symfoware/RDB server or client feature.

Notes on when the application is executed

*1 When the Symfoware/RDB version is V10 or later, Database Linkage Service and Symfoware Server can run on separate machines. If the Database Linkage Service and Symfoware Server are installed on separate machines, the Symfoware Server client function must be installed on the same machine as the Database Linkage Service.

*2 `Windows64` `Linux64`

When Symfoware/RDB is installed on a machine that is used to run Database Linkage Service, its architecture must be matched with that of Interstage. Use a Symfoware/RDB type that supports the same CPU architecture as Interstage.

Using an Oracle Database (when the Application is Developed/executed)

Table 1.4 Using an Oracle Database (when the Application is Developed/executed)

Platform used to Deploy the Database	Product name	Version
Windows(R)	Oracle Database Enterprise Edition Oracle Database Standard Edition	10.1.0, 10.2.0, 11.1 or 11.2
Solaris	Oracle Database Enterprise Edition Oracle Database Standard Edition	10.1.0, 10.2.0, 11.1 or 11.2
RHEL5(x86)/(Intel64)	Oracle Database Enterprise Edition Oracle Database Standard Edition	11.1 or 11.2

Notes on when the application is developed

*1 A library that has been provided by Oracle Database is required. Install the Oracle Database server or client feature.

*2 `Solaris32`

To use a Solaris version Oracle Database 11.2, install Oracle Database Client (32-bit).

*3 When using JTS, check which JDBC drivers are supported by J2EE, and use an Oracle database compatible with this JDBC driver (for details on which JDBC drivers are supported by J2EE, refer to "Database (J2EE)").

Notes on when the application is executed

*1 If the Database Linkage Service and Oracle Database are installed on separate machines, the Oracle Database Client must be installed on the same machine as the Database Linkage Service.

*2 `Solaris32`

To use a Solaris version Oracle Database 11.2, install Oracle Database Client (32-bit).

*3 `Windows64` `Linux64`

When Oracle Database Client is installed on a machine that is used to run Database Linkage Service, its architecture must be matched with that of Interstage. Use an Oracle Database Client type that supports the same CPU architecture as Interstage.

*4 When using JTS, check which JDBC drivers are supported by J2EE, and use an Oracle database compatible with this JDBC driver (for details on which JDBC drivers are supported by J2EE, refer to "Database (J2EE)").

Running Applications that Use SQL Server

Table 1.5 Running Applications Using SQL Server

Platform used to Deploy the Database	Product name	Version
Windows(R)	SQL Server Enterprise Edition SQL Server Standard Edition SQL Server Personal Edition SQL Server Developer Edition SQL Server Enterprise Evaluation Edition SQL Server Workgroup Edition SQL Server Desktop Engine Edition	2000

*1 When running Database Linkage Service applications using SQL Server, only applications that were created in Interstage Application Server V7.0L11 or earlier (a product that supports Microsoft(R) Visual C++ 6.0 as the development environment) are supported.

*2 Use SQL Server 2000 Service Pack 3 or later.

*3 When SQL Server is used in Windows Server(R) 2003 x64 Editions, use Service Pack 4 or later.

1.2.4 Database (Interstage Directory Service)

The database products supported in the directory service are shown below.

Symfoware/RDB is Used as the Repository Database

Table 1.6 Symfoware/RDB is Used as the Repository Database

Platform used to Deploy the Database	Product name	Version
Windows(R)	Symfoware Server Enterprise Edition Symfoware Server Standard Edition	10.1.0
Solaris	Symfoware Server Enterprise Extended Edition Symfoware Server Enterprise Edition Symfoware Server Standard Edition	Not determined (*1)
RHEL5(x86)/(Intel64)	Symfoware Server Enterprise Edition Symfoware Server Standard Edition	10.1.0
RHEL6(x86)/(Intel64)	Symfoware Server Enterprise Edition Symfoware Server Standard Edition	10.1.0

*1 Supports product versions that support JDK 6.

Note

If the Interstage directory service and Symfoware Server are installed on separate machines, the Symfoware Server client function must be installed on the same machine as the Interstage directory service. Use the same versions for the Symfoware Server client and server functions.

Note ▏Windows64▕ ▏Solaris64▕ ▏Linux64▕

For the Oracle database that is to be installed on the machine that runs the Interstage Directory Service, use a product that supports the same CPU architecture as Interstage.

Oracle Database is Used as the Repository Database

Table 1.7 Oracle Database is Used as the Repository Database

Platform used to Deploy the Database	Product Name	Version
Windows(R)	Oracle Database Enterprise Edition Oracle Database Standard Edition Oracle Database Standard Edition One	10.2.0, 11.1 or 11.2
Solaris	Oracle Database Enterprise Edition Oracle Database Standard Edition Oracle Database Standard Edition One	10.2.0, 11.1 or 11.2
Red Hat Enterprise Linux AS (v.4 for x86) Red Hat Enterprise Linux AS (v.4 for EM64T)	Oracle Database Enterprise Edition Oracle Database Standard Edition Oracle Database Standard Edition One	10.2.0, 11.1 or 11.2
Red Hat Enterprise Linux 5(for x86) Red Hat Enterprise Linux 5(for Intel64)	Oracle Database Standard Edition Oracle Database Enterprise Edition Oracle Database Standard Edition One	11.1 or 11.2

Note

If the Interstage directory service and the Oracle database are installed on separate machines, the Oracle client software must be installed on the same machine as the Interstage directory service. Use Oracle client software with the same version of Oracle Net software as the Oracle database server function. "Instant Client" of the Oracle client software cannot be used in the Interstage directory service.

Note ▏Windows64▕ ▏Solaris64▕ ▏Linux64▕

For the Oracle database that is to be installed on the machine that runs the Interstage Directory Service, use a product that supports the same CPU architecture as Interstage.

1.2.5 Database (J2EE)

For details on support target databases, refer to each JDBC driver manual.

Running Applications that Use Symfoware

Table 1.8 Running Applications Using Symfoware

No.	Platform	Supported JDBC driver	Version
1	Windows(R)	Symfoware Server client function	10.1.0 or later
2	Solaris	Symfoware Server client function	Not determined (*1)
3	RHEL5(x86)/(Intel64)	Symfoware Server client function	10.1.0 or later
4	RHEL6(x86)/(Intel64)	Symfoware Server client function	10.1.0 or later

*1 Supports JDBC driver versions that support JDK 6.

Note

- Apply the latest update program.

- Use a product that supports the same CPU architecture as Interstage.

Running Applications that Use Oracle

Table 1.9 Running Applications Using Oracle

No.	Platform	Supported JDBC driver	Version
1	Windows(R)	Oracle JDBC Driver	11.1 or 11.2
2	Solaris	Oracle JDBC Driver	11.1 or 11.2
3	RHEL5(x86)	Oracle JDBC Driver	11.1 or 11.2
4	RHEL5(Intel64)	Oracle JDBC Driver	11.2

Note

- The ConnectionEventListener is Oracle JDBC Driver version 11.1.0.6 or earlier, due to problems with Interstage connection pool (oracle.jdbc.pool.OracleConnectionPoolDataSource) and distributed transactions (oracle.jdbc.xa.OracleXADataSource). To use these functionalities, obtain the patch that implements the ConnectionEventListener from the Fujitsu support center.

- Use a product that supports the same CPU architecture as Interstage.

Running Applications that Use SQL Server

Table 1.10 Running Applications Using SQL Server

No.	Platform	Supported JDBC driver	Version
1	Windows(R)	Microsoft SQL Server JDBC Driver	3.0
2	Solaris	Microsoft SQL Server JDBC Driver	3.0
3	RHEL5(x86)/(Intel64)	Microsoft SQL Server JDBC Driver	3.0
4	RHEL6(x86)/(Intel64)	Microsoft SQL Server JDBC Driver	3.0

Note

If the distributed transaction function is used, this cannot be used.

1.2.6 Web Servers

Apart from the web server provided with this product (for example, Interstage HTTP Server), the following can also be used:

Function name	Product name	
Windows32/64 CORBA Service HTTP Tunneling (Only Enterprise Edition)	Windows32/64 Microsoft(R) Internet Information Services	6.0, 7.0
Windows32/64 Solaris32 Interstage Single Sign-on (the business server function)	Windows32/64 Microsoft(R) Internet Information Services	6.0, 7.0, 7.5, 8.0(*1)
	Solaris32 Sun Java System Web Server (*2)	6.1
Windows32/64 Solaris32 Servlet Service	Windows32/64 Microsoft(R) Internet Information Services	6.0, 7.0, 7.5, 8.0
	Solaris32	6.1

Function name	Product name	
	Sun Java System Web Server (*2)	

*1 In Microsoft(R) Internet Information Services 7.0 or later, Authorization Error Messages for Interstage Single Sign-on cannot be customized. For details about customizing messages, refer to "Customizing Messages Displayed on a Web Browser" in the "Single Sign-on Customization" chapter of the Single Sign-on Operator's Guide.

*2 Not supported in Solaris 11.

1.2.7 Management Console

Function name	Product name	
Interstage Java EE Admin Console	32-bit edition	7, 8, 9, 10
Interstage Management Console	Windows(R) Internet Explorer(R)	

1.2.8 Operation / Management

Table 1.11 Operation/Management Products Required for Application Execution

Function name	Product name	Version
Windows32/64 Required for operation management and performance information real-time monitoring in linkage with Systemwalker. (*1) Solaris32/64 Required for operation management and performance information real-time monitoring with Systemwalker. Linux32/64 Required for operation management with Systemwalker.	Systemwalker Centric Manager	Windows32 V11.0 or later Windows64 V13.4 or later Solaris32/64 V11.0 or later Linux32/64 V13.2.0 or later
Required for automatic operating with Systemwalker.	Windows32 Systemwalker Operation Manager Solaris32 Systemwalker Operation Manager Linux32/64 Systemwalker Operation Manager	Windows32 V11.0 or later Solaris32 11.0 or later Linux32/64 V13.2.0 or later
This is a real-time monitoring function (monitoring by the MIB) of performance information using the network management manager.	SNMP Service (*2)	-
Windows32 When distributing and managing the generations of applications linked to Systemwalker	Windows32 Systemwalker Centric Manager	V12.0 or later
The Systemwalker Centric Manager Audit Trail Management Function is used to collect the audit logs of the Security Audit Trail Function	Systemwalker Centric Manager	V13.1.0 or later

Function name	Product name	Version
When autodeploy of the virtual system that links with Systemwalker Software Configuration Manager is executed	Systemwalker Software Configuration Manager	Windows32/64 14.1.0 or later Linux32/64 15.1.0 or later

*1 Windows64

When Interstage and Systemwalker are to be installed on the same system, this is only possible when products for the same operating system are used.

*2 The SNMP Service is a function provided by the OS.

1.2.9 High Availability

Table 1.12 High Availability Products Required for Application Execution

Function name	Product name	Version
Required for construction of a load distributed system in linkage with IPCOM.	IPCOM (*1)	-
Linux32/64 Solaris32/64 Construction of highly reliable system using PRIMECLUSTER (*3)	PRIMECLUSTER	4.2 or later
Windows32/64 Construction of highly reliable system using Microsoft Cluster Service(MSCS)	Windows32/64 Microsoft Cluster Service(MSCS) Microsoft(R) Windows Server(R) failover clustering feature	-

*1 To perform IIOP load balancing using IPCOM linkage, the IPCOM model must support IIOP load balancing (for details, refer to one of the IPCOM manuals).

*2 Refer to the PRIMECLUSTER manuals for details on using Interstage Application Server in PRIMECLUSTER.

1.2.10 Framework

The following table lists the framework products required for application execution.

Table 1.13 Framework Products Required for Application Execution

Function name	Product name	Version
Using database linkage components of the framework function (using a local/remote connection to a Windows/Linux database)	Oracle Database Enterprise Edition Oracle Database Standard Edition	10.2.0, 11.1 or 11.2
	Symfoware Server Enterprise Edition Symfoware Server Standard Edition	10.x

Using XML linkage function of the framework function	Fujitsu XML Processor (*1)
	
	  - Fujitsu XML Library for Java
	
	  - Fujitsu XSLT Library for Java
		V5.2

	XML Processor offered in JDK/JRE 6 or 7 (*2)	-
Using Struts linkage function of the framework function	Struts	1.1 or 1.2.9

*1 `Windows32/64` `Solaris32` `Linux32/64` These software products are bundled with this product.

*2 These software products are bundled with this product.

1.2.11 Other Functions

Table 1.14 Other Functions

Function name	Product name	Version
Interstage Single Sign-on (only when Integrated Windows Authentication is performed)	Active Directory	Microsoft(R) Windows Server(R) 2012 (*1) Microsoft(R) Windows Server(R) 2008 (*1) (*2) Microsoft(R) Windows Server(R) 2003 (Except R2) (*1) (*3) Microsoft(R) Windows Server(R) 2003 R2 (*1)
Interstage Directory Service client (when linking with Active Directory)	Active Directory	`Windows32/64` Microsoft(R) Windows Server(R) 2012 (*4) Microsoft(R) Windows Server(R) 2008 (*4) Microsoft(R) Windows Server(R) 2003 (*4)

*1 This refers to Windows(R) with Active Directory, not machine that the Interstage Single Sign-on is setup.

*2 An Active Directory update program required for linkage must be applied to the Microsoft(R) Windows Server(R) 2008 to be linked. As shown below, the Active Directory update program varies according to the Microsoft(R) Windows Server(R) 2008 to be linked.

Software Name	Update program
Windows Server(R) 2008 x86 Editions	KB951191
Windows Server(R) 2008 x64 Editions	KB951191, KB960830
Microsoft(R) Windows Server(R) 2008 for Itanium-based Systems	KB960830

The update does not need to be applied if you are using Microsoft(R) 2008 R2 or Service Pack2 or higher has been applied.

*3 If "RC4-HMAC" is used as the encryption cipher used in Integrated Windows Authentication, Microsoft(R) Windows Server(R) 2003 Service Pack 1 or later, Support Tools must be installed. For details on which encryption ciphers are used with Integrated Windows Authentication, refer to "Integrated Windows Authentication" in the "Overview" chapter of the Single Sign-on Operator's Guide.

*4 This is the Windows(R) version that includes Active Directory (and not the Windows(R) version on the machine that is to build the Interstage Directory Service). Also, with Active Directory linking, the Interstage Directory Service client can be used with all C API functions supported by the Interstage Directory Service SDK and all LDAP commands (*ldapdelete*, *ldapmodify* and *ldapsearch*) provided by the Interstage Directory Service SDK.

1.3 Client-side Software Products Required to Use Client Applications

This section describes the client-side software products required to use client applications.

1.3.1 CORBA Service / Event Service

The following table lists the CORBA Service / Event Service client-side software products required to use client applications.

Table 1.15 CORBA Service/Event Service Client-side Software Required to Use Client Applications

Function name	Product name	Version
Running applications created in Visual Studio	Visual C++ Runtime files for redistribution that is included with Visual Studio (*1)	-

Function name	Product name	Version
CORBA Service - Java application operation (including Java applets) (*2) (*3) Event Service - Java application operation (including Java applets) (*2) (*3) Database Linkage Service - Java application operation (including Java applets) (*3)	Interstage Studio Client Runtime	V9.0 or later
CORBA Service - Java applet operation in web browser (*4) (*5) Event Service - Java applet operation in web browser (*4) (*5)	Windows(R) Internet Explorer(R)	7, 8, 9,10
CORBA Service - COBOL client application operation(*7) - OOCOBOL client application operation(*6) Event Service - COBOL client application operation(*7) Database Linkage Service - COBOL client application operation(*7)	NetCOBOL	
Execution of CORBA Service OLE client application	Microsoft Visual Basic	6.0
CORBA Service - Execution of C/C++ client applications(*6) Event Service - Execution of C/C++ client applications(*6) Database Linkage Service - Execution of C/C++ client applications(*6)	-	-

*1 For details on the Visual C++ Runtime files for redistribution, refer to the Visual Studio manual.

"Microsoft Visual C++ 2005 Redistributable Package" may be installed when Interstage is installed. In this case, the Visual C++ Runtime files for redistribution may also need to be installed.

*2 To run Java applications, either Portable-ORB or CORBA Service client must be installed on the client.

*3 The JRE JBK Plug-in 6 (or 7) must be installed. The JRE JBK Plug-in is provided in the Interstage Application Server client package.

*4 For Java applet operation, Portable-ORB must be downloaded from the web server, or Portable-ORB or CORBA Service client must be installed on the client.

*5 JDK JBK Plug-in is required.

*6 The CORBA Service client must be installed.

*7 The NetCOBOL Series has the development-type product and the operation-type product (operation package), both of which can be used to execute COBOL applications.

1.3.2 Framework

The following table lists the framework client-side software products required to use client applications.

Table 1.16 Framework Client-side Software Required to Use Client Applications

No.	Function Name	Product Name	Version
1		Windows(R) Internet Explorer(R)	7, 8, 9,10
2	Using Applet linkage function of the Framework function	Any of the following JBK plug-ins that are offered: Interstage Application Server V11.x Interstage Studio V11.x (*1) Interstage Studio client application package V11.x	-
		Java Plug-in	1.6.0, 1.7.0
3	Using Framework Flash linkage features	Follow the specifications for the Flash(R) version being used to determine the web browser and software necessary for the client during operation.	-

*1 This can only be used when the debugging is executed.

1.3.3 Other Functions

The following table lists the client-side software products required to use client applications (other functions).

Table 1.17 Client-side Software Required to Use Client Applications (Other Functions)

No.	Function name	Product name	Version
1	Using Interstage Single Sign-on	Windows(R) Internet Explorer(R)	7, 8, 9, 10
		Mozilla(R) Firefox (*1)	3.0-3.6, 4.0, 5.0, 6.0, 7.0, 8.0, 9.0, 10.0, 11.0, 12.0, 13.0, 14.0, 15.0, 16.0, 17.0, 18.0, 19.0, 20.0, 21.0, 22.0, 23.0, 24.0
2	EJB Service Java applet (*2) (*3)	Windows(R) Internet Explorer(R)	7, 8, 9, 10

*1 Windows(R) is the only supported operating system.

*2 To run Java applets, at least one of the following is required:

- The Portable-ORB jar file (fjcontainer72_plugin.jar) and the EJB Service client must be downloaded from the web server and installed - the JBK plug-in provided by "J Business Kit" (a component of Interstage Studio) and the Interstage Studio download installer must already be installed.

- The CORBA Service client and EJB Service client must be installed in the client (if installation is performed without selecting JBK in custom installation mode, the JBK plug-in must be pre-installed).

*3 A JBK plug in is required, and "Internet Explorer" is required for the web browser.

Chapter 2 Restrictions

Some functions described in this manual have restrictions. The following tables detail these restrictions.

2.1 Functions not Available on Particular Platforms

This sections list functionality that is not available for Interstage Application Server on particular platforms. Unless listed here, the functionality is available for the product on other platforms.

Functions not Available in Application Server on Linux

The functions below are not available in Application Server on Linux. To use these functions, use the Windows version or Solaris(TM) Operating Environment version.

- Multi System (available only in the Solaris(TM) Operating Environment version)

- Cluster System

- MessageQueueDirector

- MQ Communication Service

- COBOL Web Subroutine

- COBOL/OOCOBOL development and execution environment (available on the Windows client)

- Firewall linkage function (proxy linkage and HTTP tunneling) and SSL linkage function of CORBA applications

- SMEE2 library (The SMEE3 library is available.)

- Online access management function

- Performance monitoring tool (real-time monitoring function of performance information)

- User authentication and access control of the Component Transaction Service

- AIM linkage function

Functions not Available in Application Server on Solaris 10 or Later

The functions listed in the table below are not supported in Solaris 10 or later. The service to which the function belongs is also given. Alternatives to achieve the same functionality are given where available. These functions are available in the Linux, Windows or other Solaris(TM) Operating Environment version.

Table 2.1 Functions not Available in Application Server on Solaris 10 or Later

Service to which function belongs	Function	Comment
SSL	SMEE2	The SMEE2 SSL library cannot be used In the certificate/security key admin environment. Use the SMEE3 SSL library instead.
		The *mkslt* and *mktkn* commands cannot be used to set up the certificate/security key admin environment. Use the *makeslot* and *maketoken* commands instead.
		If there is a certificate/security key admin environment that has been created using the *mkslt* and *mktkn* commands, that environment can be used in SMEE3. In this case, the settings might need to be changed depending on the service.

2.2 General Interstage Restrictions

Table 2.2 General Restrictions

No.	Restriction	Remarks	Date of Removal
1	Windows32/64 This product cannot run on ReFS format file systems. ReFS format folders should not be specified in the installation destination.	None	Not determined

2.3 Restrictions on the Interstage HTTP Server

Table 2.3 Restrictions on Interstage HTTP Server

No.	Restriction	Remarks	Date of Removal
1	When a certificate in UTF-8 format, (such as a CA certificate, site certificate, or client certificate) is used for SSL communication, the following restrictions apply: - When SSL protocol Version 3 (client certificate) is used, the CA certificate and the client certificate in UTF-8 must be registered on both the Interstage HTTP Server and the web browser. - When SSL protocol Version 2 (server authentication) is used, the CA certificate and the client certificate in UTF-8 must be registered on both the Interstage HTTP Server and the web browser.	None	Not determined
2	Windows32/64 In Interstage Single Sign-on, if the repository server is operated when a large number of role and site definitions have been registered in the SSO repository, the start timeout time set using the *ihsconfig* command might be invalid.	None	Not determined

2.4 Restrictions on the Interstage Management Console

Table 2.4 Restrictions on the Interstage Management Console

No.	Restriction	Remarks	Date of Removal
1	Solaris32/64 Under the following conditions, the message "Error on page" is output to the status bar of the web browser when Interstage Management Console is used and no operations can be carried out in the tree in the left of the GUI. 1. In the Interstage Management Console, the [Interstage]-[System]-[Security]- [Single Sign-on]-[Authentication Infrastructure] [Business system setup file] tabs are clicked, which displays the [Authentication Infrastructure: Business system setup file] window, and 2. The [Download] button is clicked, and 3. During download processing, [Business System] or [Authentication Infrastructure] is clicked, and	Close the web browser that is currently being used, and then log in again.	Not determined

No.	Restriction	Remarks	Date of Removal
	4. Steps 1-3 above are repeated. This problem does not only occur in one specific window. It occurs in any window when the tree is clicked again while the tree node is being redrawn.		
2	Under the following sequence of events, when the Interstage Java EE Management Console/Interstage Management Console is used, error message is40018 will be output. However, it is not possible to link to the Messages manual, even if the Messages manual has been installed. 1. The [Switch to Console] button is clicked on the Interstage Java EE Management Console. This will display the Interstage Management Console. 2. The [Switch to Console] button is clicked on the Interstage Management Console. This will display the Interstage Java EE Management Console. 3. The following services are restarted: Windows32/64 Interstage JServlet (OperationManagement) Solaris32/64 Linux32/64 Servlet service for the Interstage Management Console 4. The [Switch to Console] button is clicked on the Interstage Java EE Management Console again.	Refer to "is40018" in the "Messages Beginning with 'is'" chapter of the Messages manual.	Not determined

2.5 Restrictions on the J2EE Service

Table 2.5 Restrictions on the J2EE Service

No.	Restriction	Remarks	Date of Removal
1	The JDK/JRE 6 new functionality cannot be used.	If running a J2EE application that uses the new functions of JDK 6/ JRE 6, consider using Java EE.	Not determined
2	It is not possible to access the database directly from a J2EE application client and a web application while using the global transaction with the JTA interface.	When the global transaction is used with the JTA interface, be sure to access the database from an EJB application.	Not determined
3	Interstage connection pooling cannot be used in Symfoware 8.0.	Apply the PG55024 patch.	Not determined
4	If "Separate between EARs" or "Separate All" has been set for class loader separation, when the jar and class file directories have both been specified and each contains the same class, the class file is valid, not the order in which the paths are described This pertains to the search order of the class paths shown below. - Application-specific library paths	If a problem occurs, take either of the following actions: - Delete the duplicate class. - Change the class file to jar and specify that jar file (in the	Not determined

No.	Restriction	Remarks	Date of Removal
	EJB application (ejb-jar) and web application (WAR) manifest class paths in J2EE applications (EAR)	location of the intended search order).	
5	Windows32/64 SQL Server integrated authentication (Windows authentication) cannot be used for the connection because the IJServer and DB Connection Test Function is running using Anonymous Logon authority.	Use SQL Server authentication.	Not determined
6	Windows32/64 Symfoware Web Server connection information/the IJServer name cannot be output in the audit log in the Security Audit Trail function.	None	Not determined
7	If the javax.naming.InitialContext, provided by J2EE Service and the following javax.naming.Context APIs are executed, OperationNotSupportedException occurs. - addToEnvironment(String , Object) - bind(Name , Object) - bind(String , Object) - composeName(Name , Name) - composeName(String , String) - createSubcontext(Name name) - createSubcontext(String name) - destroySubcontext(Name name) - destroySubcontext(String name) - getEnvironment() - getNameInNamespace() - getNameParser(Name name) - getNameParser(String name) - list(Name name) - list(String name) - listBindings(Name name) - listBindings(String name) - lookup(Name name) - lookupLink(Name name) - lookupLink(String name) - rebind(Name , Object) - rebind(String , Object) - removeFromEnvironment(String) - rename(Name , Name) - rename(String , String) - unbind(Name name)	None	Not determined

No.	Restriction	Remarks	Date of Removal
	- unbind(String name)		
8	If the Interstage Management Console is used to start or stop multiple IJServers in batch, the DEP1756, EJB5028, or EJB3022 message is output and the following operations may fail for any of the IJServers that were started or stopped in batch. - An IJServer definition is updated using the Interstage Management Console or the *isj2eeadmin* command. - An IJServer is deleted using the Interstage Management Console or the *isj2eeadmin* command. - An application is deployed using the Interstage Management Console or the *ijsdeployment* command. - An application is undeployed using the Interstage Management Console or the *ijsdeployment* command. - An IJServer is started using the Interstage Management Console. - An IJServer is stopped using the Interstage Management Console. - An EJB application definition is updated using the Interstage Management Console or the *ejbdefimport* command. - A web application definition is updated using the Interstage Management Console.	Start each IJServer separately. Do not start or stop them in batch from the list of IJServers window. Alternatively, use the *isstartwu* command to start the IJServer and the *isstopwu* command to stop the IJServer. After this problem has occurred, restart the Interstage JMX Service.	Not determined
9	Windows64 JTS cannot be used when Interstage is used in Windows Server(R) 2012.	None	Not determined

2.6 Restrictions on the Web Server Connector

Table 2.6 Restrictions on the Web Server Connector

No.	Restriction	Remarks	Date of Removal
1	A request (Note 1) received after the operation will not be processed until requests received before the operation have been completed or a timeout occurs in the following operations: - The *ijsdispatchcont* command is executed. - Create New IJServer/Environment Settings/delete (Note 2) - Web application deployment/undeployment (Note 2) - Web Server Connector Log Settings - Monitoring Web Server Connector Faults Settings (Note 3) - Create New Web Server Connector/Environment Settings (Note 3)	There is no user action required. After a request that is being processed has completed or a timeout occurs, new requests received are processed normally.	Not determined
2	If Microsoft(R) Internet Information Services is used as the web server, chunk format encoding cannot apply to the web application.	Either modify the HTTP client application so that the Content-length header is specified, or use Interstage HTTP Server as the web server.	Not determined

Notes

1. This indicates that the request is for a web application deployed in the IJServer. It also indicates that the request is for data stored on the Interstage HTTP Server (such as HTML documents and image data).

2. This restriction does not apply if the IJServer used to deploy the web application is not federated with the web server.

3. This operation is only possible if "Do not apply the Web server and WorkUnit in the same machine" has been set.

2.7 Restrictions on the EJB Service

Table 2.7 Restrictions on the EJB Service

No.	Restriction	Remarks	Date of Removal
1	The long type data type cannot be used as an argument or return value for the client/server communication.	None	Not determined
2	Using "remove" as a business method name may lead to unexpected results.	None	Not determined

3	When the distributed transaction functionality is used, IllegalStateException occurs when the following javax.ejb.EJBContext API is executed in a particular method.
	
	  - getCallerIdentity()
	
	  - getCallerPrincipal()
	
	  - isCallerInRole(Identity role)
	
	  - isCallerInRole(String roleName)
	
	The methods in which the exception occurs are as follows:
	
	  - [STATEFUL Session Bean]
	
	    - beforeCompletion
	
	    - afterCompletion
	
	  - [Entity Bean]
	
	    - ejbStore
		None	Not determined

4	In the following cases, invoking a method that has method permission setting from an EJB application method, a RemoteException is thrown.
	
	  - When the distributed transaction function is used
	
	    [STATEFUL Session Bean]
	
	      - beforeCompletion
	
	    [Entity Bean]
	
	      - ejbStore
		None	Not determined

5	If "Application" is specified in the resource connector of the deployment descriptor file, and a JDBC resource is being accessed from an EJB application method, an SQLException is thrown in the following cases.
	
	  - When the distributed transaction function is used
	
	    [STATEFUL Session Bean]
	
	      - beforeCompletion
	
	    [Entity Bean]
	
	      - ejbStore
		None	Not determined

No.	Restriction	Remarks	Date of Removal
6	The distributed transaction cannot be used by the EJB application which uses the optimization processing of Entity Bean.	None	Not determined
7	If distributed transactions are used and the Snap output level is set to "2", an ORA-01002 error in Oracle may be thrown.	None	Not determined
8	Distributed Transaction in CMP2.0 cannot be used. It causes IJServer21239) error at the startup when it is used.	None	Not determined

9	When the following API of javax.ejb.SessionContext is executed in a specific method of EJB application that implements the Local interface, it returns Null.
	
	  - [getEJBLocalObject]
	
	When this method is executed, the following method returns Null.
	
	  - [In case of STATEFUL Session Bean or STATELESS Session Bean]
	
	    - ejbCreate
		None	Not determined

10	In a specific method of the EJB application that implements both Local and Remote interfaces, the following API of javax.ejb.SessionContext or javax.ejb.EntityContext is executed, it returns Null.
	
	  - [getEJBLocalObject]
	
	When this method is executed, the following methods return Null.
	
	  - [In case of STATEFUL Session Bean]
	
	    - ejbCreate
	
	    - afterBegin
	
	    - beforeCompletion
	
	    - afterCompletion
	
	    - business method
	
	    - ejbRemove
	
	  - [In case of STATELESS Session Bean]
	
	    - ejbCreate
	
	    - business method
	
	    - ejbRemove
	
	  - [In case of CMP2.0 Entity Bean]
	
	    - ejbRemove
		None	Not determined

11	In a specific method of the EJB application that implements both Local and Remote interfaces, when the getEJBHome method is issued to the EJB object got by getEJBObject of SessionContext, it returns RemoteException. When the above method is executed, the following methods cause an exception.
	
	  - [In case of STATELESS Session Bean]
	
	    - ejbCreate
	
	    - ejbRemove
		None	Not determined

12	When the lookup via Remote interface is done in the EJB application that implements both Local and Remote interfaces from the same EJB application, java.lang.ClassCastException occurs.	See Note below	Not determined

No.	Restriction	Remarks	Date of Removal
13	If the javax.naming.InitialContext, provided by EJB Service and the following javax.naming.Context APIs are executed, OperationNotSupportedException occurs. - addToEnvironment(String , Object) - bind(Name , Object) - bind(String , Object) - composeName(Name , Name) - composeName(String , String) - createSubcontext(Name name) - createSubcontext(String name) - destroySubcontext(Name name) - destroySubcontext(String name) - getEnvironment() - getNameInNamespace() - getNameParser(Name name) - getNameParser(String name) - list(Name name) - list(String name) - listBindings(Name name) - listBindings(String name) - lookup(Name name) - lookupLink(Name name) - lookupLink(String name) - rebind(Name , Object) - rebind(String , Object) - removeFromEnvironment(String) - rename(Name , Name) - rename(String , String) - unbind(Name name) - unbind(String name)	None	Not determined
14	If the EJB timer service is used in Entity Bean, callback processing (the ejbTimeout method) is not executed using the timer.	None	Not determined
15	If the IJServer startup fails, the following resources that are obtained during start processing may not be released. - Event channel connection information used in Message-driven Bean - JDBC connections obtained on startup using the pre-connect functionality - Resources obtained by the resource adapter - Enterprise Bean instances created during start processing	The event channel connection information can be released using the *esmonitorchnl* command. For details, refer to the Reference Manual (Command Edition).	Not determined

No.	Restriction	Remarks	Date of Removal
		Release JDBC connections using the connection destination database functionality. Release resources obtained by the resource adapter using the EIS functionality.	

Note

When the lookup via LocalHome and Home interface is done in the EJB application that implements both Local and Remote interfaces from the same EJB application, the following works are necessary for the EJB application development and its runtime operation.

[EJB application development]

1. Deployment Edit descriptor

   Edit not to duplicate EnterpriseBean reference name for "ejb-ref-name" in the "reference EJB tag" or "reference LocalEJB tag".

2. Development of EJB applicationDescribe not to duplicate the EJB application name specified for the argument at lookup via LocalHome interface and via Home interface. Describe EJB application name corresponding to the reference EnterpriseBean name defined in reference EJB or reference LocalEJB set by 1.

[Runtime of EJB application]

   Associate it with the EJB application name specified by the argument at lookup in the reference LastName of EnterpriseBean changed by 1 and the EJB application by using the Naming Conversion file.

2.8 Restrictions on the CORBA Service

This section provides information on the restrictions on the CORBA Service.

2.8.1 Restrictions on IDL Definitions

The IDL definitions can be used with the following products:

- Interstage Application Server Enterprise Edition

- Interstage Application Server Standard-J Edition

Table 2.8 Restrictions on IDL Definitions

No	Restriction	Alternative method	Date of Removal
1	Type wchar, wstring cannot be used in the const declaration of the IDL definition	None	Not determined
2	The following values cannot exceed 65535 in the data type declaration. - Size of the string type (sting/wstring) with the specified size - Size of the sequence type (sequence) - Number of elements of the enumeration type (enum), structure (struct), union (union), and exception structure (exception) (See Note below) - Size of an array	None	Not determined

No	Restriction	Alternative method	Date of Removal

3	Preprocessing declarations cannot be used under the following conditions:
	
	1. In an exception declaration
	
	2. In a struct/union/enum declaration, and in a member declaration (ending before a semicolon)
	
	Example:
	
	struct STR1{
	
	long
	
	#pragma version STR1 2.3
	
	a;
	
	string b;
	
	char c;
	
	};
		None	Not determined

4	The following recursive declarations cannot be used in the IDL definition:
	
	1. Recursive declaration of a structure (struct)
	
	struct STR1 {
	
	sequence<STR1> para1;
	
	};
	
	2. Recursive declaration of a union (union)
	
	union UNI1 switch(long){
	
	case1: sequence<UNI1> para1;
	
	};
		None	Not determined

5	In the Java mapping of the IDL definition, the same name as the module name cannot be specified in the following declarations. When the same name is specified, a package name will become a module name + 'Package', and a Java compile error will occur.
	
	1. interface declaration
	
	2. struct declaration
	
	3. union declaration
	
	4. exception declaration
	
	Example:
	
	module AAA {
	
	interface AAA {
	
	short op();
	
	};
	
	};
		None	Not determined

6	When registering an updated IDL definition containing inheritance of two or more interface declarations in an	When creating IDL definition files to be registered in an interface repository, do not create	Not determined

No	Restriction	Alternative method	Date of Removal
	interface repository, the inheritance cannot be registered in the repository under the following conditions: 1. Another IDL definition file is included in the IDL definition, and 2. The interface declaration in the included IDL definition file is inherited in two or more IDL definition files, and 3. The two or more IDL definition files in condition 2 above are updated and registered in the interface repository. **Example:** [INTF_A.idl file] interface A {...} [INTF_B.idl file] #include "INTF_A.idl" interface B:A {...} [INTF_C.idl file] #include "INTF_A.idl" interface C:A {...}	the same interface declaration in different IDL definition files if two or more interface declarations are to be inherited. **Example:** [INTF_A.idl file] interface A {...} [INTF_BC.idl file] #include "INTF_A.idl" interface B:A {...} interface C:A {...}	
7	':' cannot be specified in the constant expression in the case statement of a union.	None	Not determined
8	In COBOL mapping, as a general rule, COBOL reserved words cannot be used in IDL definitions. Some words, however, can be used by putting "IDL-" in front of the string on the IDL compiler side. For details, refer to "Notes on the Use of COBOL Mapping" in the "COBOL Programming Guide" chapter of the Distributed Application Development Guide (CORBA Service Edition).	None	Not determined
9	When defining IDL files in COBOL mapping, if the module name, interface name, and operation name together make up 55 characters or more, the function name for each file generated may exceed 60 characters. Define the IDL files so that the total length of the above names is 55 characters or less. Note that a compile error occurs in the COBOL compiler if the total length exceeds 60 characters.	Define the IDL files so that the combined length of the module name, interface name, and operation name is 55 characters or less.	Not determined

Note

The maximum numbers of elements vary in the Java mapping.

- Enumeration (enum):

1,024

- Structure (struct), union (union), and exception structure (exception):

254 ("long long" and "double" are each counted as 2.)

2.8.2 Restrictions on IDL Compilation

The IDL compilation can be used with the following products:

- Interstage Application Server Enterprise Edition

- Interstage Application Server Standard-J Edition

Table 2.9 Restrictions on IDL Compilation

No	Restriction	Alternative Method	Date of Removal
1	"-noinclude" cannot be specified for the IDL compiler.	None	Not determined
2	A prototype module definition file with no PROGRAM-ID named IDL-file-name_skel.def may be created in the COBOL mapping of IDL files.	None	Not determined
3	long long overflows are not checked when IDL is compiled	None	Not determined

2.8.3 Restrictions on C and C++ Programming

C and C++ Programming can be used with the following products (*1):

- Interstage Application Server Enterprise Edition

    *1 Only C is valid for Linux (64 bit).

Table 2.10 Restrictions on C and C++ Programming

No.	Restriction	Alternative Method	Date of Removal
1	`Solaris32/64` When a child process is generated by a server application, and the child process is terminated by exit(), the parent process is also terminated.	Use _exit() when you finish a child process only.	Not determined
2	`Solaris32/64` If WS Compilers C++ 6 used, no context object can be used.	None	Not determined
3	`Linux32/64` A context cannot be used on the C++ application.	None	Not determined

4	`Windows64`
	
	The "any" type cannot be used if the any of the environments below are used to develop C++ applications:.
	
	  - Microsoft(R) Visual Studio(R) 2008 Standard Edition
	
	  - Microsoft(R) Visual Studio(R) 2008 Professional Edition
	
	  - Microsoft(R) Visual Studio(R) Team System 2008
		None	Not determined

5	`Windows32/64`
	
	The "any" type cannot be used if the any of the environments below are used to develop C++ applications:
	
	  - Microsoft(R) Visual Studio(R) 2010 Ultimate
	
	  - Microsoft(R) Visual Studio(R) 2010 Premium
	
	  - Microsoft(R) Visual Studio(R) 2010 Professional
	
	  - Microsoft(R) Visual Studio(R) Team Foundation Server 2010
		None	Not determined

2.8.4 Restrictions on Java Programming

Java programming can be used with the following products:

- Interstage Application Server Enterprise Edition

- Interstage Application Server Standard-J Edition

Table 2.11 Restrictions on Java Programming

No.	Restriction	Alternative Method	Date of Removal
1	In Java, when the equal method is executed with TypeCode of a structural type that contains the Object type, TypeCode remotely generated and the same TypeCode generated locally do not match.	None	Not determined
2	Solaris32/64 Linux32/64 The green thread of HotSpot VM and Classic VM cannot be used as Java application execution environment.	None	Not determined

2.8.5 Restrictions on the Naming Service

Table 2.12 Restrictions on the Naming Service

No.	Restriction	Alternative Method	Date of Removal
1	Solaris32/64 No IP address in the IPv6 format may be specified in inithost(nshost) of a corbaloc URL schema.	None	Next version

2.8.6 Restrictions on the CORBA Service

Table 2.13 Restrictions on the CORBA Service

No.	Restriction	Alternative Method	Date of Removal
1	Windows32/64 The system may not release the CORBA Service port number (e.g., 8002) when the *isstop* command is run. When the OD_start service was started (including execution of the *isstart* command) in this status, it is possible that a communication error occurs in the application.	Use the *netstat -a* command to check that the CORBA Service port number has been released then start the service.	Not determined
2	Windows32/64 If the OD_start service is terminated before a CORBA application is terminated, the system may stop responding or "hang" while the CORBA application is terminated.	Terminate all CORBA applications before terminating the OD_start service.	Not determined
3	When the server per method is used for starting a CORBA application, starting the CORBA application may fail.	None	Not determined
4	Windows32/64 In Windows NT® Server with Service Pack 5, when simultaneous requests are issued by a client that has generated multiple threads and a communication error (COMM_FAILURE exception) occurs, the system resources used by the CORBA Service may not be released. This will show up as repeated communication errors, followed by all requests from client applications causing communication errors.	It is necessary to stop and restart the CORBA Service.	Not determined
5	When the dynamic skeleton interface of C++ language is used with the server application, memory leak occurs. (Approximately 150 bytes for a request)	None	Not determined
6	The *odlistproc* process may output the message od10727 while quitting the CORBA service (ObjectDirector).	None	Not determined

No.	Restriction	Alternative Method	Date of Removal
		No operation problems other than output messages	
7	Solaris64 COBOL applications cannot be used.	None	Not determined

2.8.7 Restrictions on HTTP Tunneling

HTTP tunneling is available for the following products:

- Interstage Application Server Enterprise Edition

Table 2.14 Restrictions on HTTP Tunneling

No.	Restriction	Alternative Method	Date of Removal
1	SSL communication between the HTTP gateway and a server application is not possible.	None	Not determined

2.9 Restrictions on the Event Service

The Notification Service can be used with the following products:

- Interstage Application Server Enterprise Edition

Table 2.15 Restrictions on the Event Service

No.	Restriction	Remarks	Date of Removal
1	The following functions cannot be used in the dynamically generated event channels. - Persistence of connection information and event data - Transaction linkage - Point-To-Point Messaging Model	None	Not determined
2	If a supplier sends a StructuredEvent type message, a consumer cannot obtain the message in any type.	The consumer must obtain the message in StructuredEvent type.	Not determined
3	If Event Factory is started again before it has stopped completely, a contradiction may occur in the internal information and the attempt to start/stop Event Factory will fail.	Restart Interstage.	Not determined
4	Solaris64 COBOL applications cannot be used.	None	Not determined

2.10 Restrictions on the Component Transaction Service

This is not valid for Linux (64 bit).

The Component Transaction Service is used with the following products:

- Interstage Application Server Enterprise Edition

- Interstage Application Server Standard-J Edition

Table 2.16 Restrictions on the Component Transaction Service

No.	Restriction	Remarks	Date of Removal
1	Windows32/64 Solaris32/64 If Interstage is initialized in succession using the *isinit* command, the initialization of Interstage may fail.	None	Not determined
2	Windows32/64 Solaris32/64 When the Component Transaction Service is used, the start of Interstage and the start of the WorkUnit may become unusual if the installation path of Interstage exceeds 230 bytes.	Set the installation path of Interstage to no more than 230 bytes	Not determined
3	Solaris32/64 If the *tdc* command is executed before OD has been started, the following message is displayed ("/tmp/aaa" and "1.0" is variable): "/tmp/aaa", line 1: CORBA_ORB_init Error tdc: Stop. IDLparser status = 4 IDLdestroy_rep (I/R) :CORBA_ORB_init :IDL:CORBA/StExcep/UNKNOWN:1.0	Start OD, then re-execute the *tdc* command.	Not determined

2.11 Restrictions on the Database Linkage Service Windows32/64 Solaris32 Linux32/64

Table 2.17 Restrictions on the Locale of Languages

No.	Restriction	Remarks	Date of Removal
1	The client is not returned correctly when UNICODE is specified in locale when Java server applications are registered in the implementation repository and the following exceptions are caused: org.omg.CORBA.TRANSACTION_ROLLEDBACK org.omg.CORBA.TRANSACTION_REQUIRED org.omg.CORBA.TRANSACTION_INVALID_ TRANSACTION	Specify NONE in locale when registering in the implementation repository	Not determined
2	The SSL linkage feature cannot be used in Database Linkage Service applications.	None	Not determined
3	Database Linkage Service cannot be used in Oracle Real Application Clusters environments.	None	Not determined
4	Windows64 Database Linkage Service cannot be used when Interstage is used in Windows Server(R) 2012.	None	Not determined
5	Windows32 Unicode cannot be used in Database Linkage Service COBOL applications.	None	Not determined
6	Windows64 Solaris64 Linux32/64	None	Not determined

No.	Restriction	Remarks	Date of Removal
	Database Linkage Service COBOL applications cannot be used.		
7	Librarypath and Environ cannot be used as RMP properties. For this reason, oci cannot be used as the driver type in JDBC definitions that use global transactions.	Windows32/64 Configure the additional environment variables that are required as system environment variables. Solaris32 Linux32/64 None	Not determined

2.12 Restrictions on the Portable-ORB

Table 2.18 Restrictions on the Portable-ORB

No.	Restriction	Remarks	Date of Removal
1	If [Read block time for sockets] is set using the *porbeditenv* command when SSL is used, the settings are invalid.	None	Not determined

2.13 Restrictions on Interstage Directory Service

This is not valid for Standard-J Edition on Windows (64 bit).

This is not valid for Standard-J Edition on Linux (64 bit).

This section explains the following restrictions for Interstage Directory Service:

2.13.1 Restrictions on System Scale

This is not valid for Linux (64 bit).

This is not valid for Windows (64 bit).

Restrictions when the Standard Database is Used as the Repository Database

For the Enterprise Edition of Interstage Application Server, the restrictions below apply when the standard database is used. For the Standard-J Edition of Interstage Application Server, only the standard database can be used.

Table 2.19 Restrictions on System Scale

No	Restriction	Alternative Method	Date of Removal
1	Interstage Directory Service supports a system scale of about 10,000 registered entries per repository and 20 simultaneous accesses per repository.	For systems larger than this, consult with the salesman in charge or with the system engineer.	Not determined

2.13.2 Restrictions on Capacity

Restrictions when the Standard Database is Used as the Repository Database

This is not valid for Linux (64 bit) or Windows (64 bit).

Table 2.20 Restrictions on Capacity

No	Restriction	Alternative Method	Date of Removal
1	The maximum length of an attribute value is 1998 bytes.	None	Not determined
2	The maximum size of a binary attribute value that can be registered is 200 KB.	None	Not determined
3	The maximum length of a DN is 1998 bytes.	None	Not determined
4	The maximum repository data size per repository is 1.7 GB.	None	Not determined
5	For a search attribute value, the maximum search filter length is 1998 bytes.	None	Not determined
6	If a specified search filter character string contains "*" or "?", the maximum search filter length shortens (decreases by 3 bytes per "*" or "?").	None	Not determined

Restrictions when the RDB Used to Create the Repository Data Storage Table (Using the irepgendb Command) is Used as the Repository Database

Table 2.21 Restrictions when the RDB Used to Create the Repository Data Storage Table (Using the irepgendb Command) is Used as the Repository Database

No	Restriction	Alternative Method	Date of Removal
1	The maximum length of an attribute value is limited to 942 bytes.	Use the *irepgendb* command to increase these limits. If the maximum size is increased, the database index function cannot be used, and the search speed will drop. When extending the length of binary data, ensure that the size of the extended data is less than or equal to 16MB. When extending the length of binary data, ensure that the size of the extended data is 10,000 bytes or less (for Symfoware/RDB), or 4,000 bytes or less (for Oracle database). If the maximum size is increased, the database index function cannot be used, and the search speed will drop.	Not determined
2	The maximum size of binary attribute values that can be registered is 32 kilobytes.		
3	The maximum length of DNs is 942 bytes.		

Restrictions when the RDB Used to Create the Repository Data Storage Table (Using the irepcrttbl Command) is Used as the Repository Database

Table 2.22 Restrictions when the RDB Used to Create the Repository Data Storage Table (Using the irepcrttbl Command) is Used as the Repository Database

No	Restriction	Alternative Method	Date of Removal
1	The maximum length of an attribute value is 998 bytes.	Use the *irepmodtbl* command to increase these limits. If the	Not determined

No	Restriction	Alternative Method	Date of Removal
2	The maximum size of binary attribute values that can be registered is 32 kilobytes.	maximum size is increased, the database index function cannot be used, and the search speed will drop. When extending the length of binary data, ensure that the size of the extended data is less than or equal to 16MB. When extending the length of any other data type, ensure that the size of the extended data is less than or equal to 10,000 bytes. If the maximum size is increased, the database index function cannot be used, and the search speed will drop.	
3	The maximum length of DNs is 998 bytes.		

2.13.3 Restrictions on Commands and APIs

Restrictions Common to Repository Databases

Table 2.23 Restrictions on Commands and APIs

No	Restriction	Alternative Method	Date of Removal
1	When modify the DN of an entry, if the newSuperior specification (newparent specification) is used, an error may occur. If using the *ldapmodify* command, the following errors occur: DSA is unwilling to perform Unknown error If using the JNDI, the following errors occur: LDAP error code:53(0x35) LDAP error code:80(0x50)	None	Not determined

Restrictions when the Standard Database is Used as the Repository Database

This is not valid for Linux (64 bit) or Windows (64 bit).

No	Restriction	Alternative Method	Date of Removal
1	Interstage Directory Service does not check the schema when an entry is modified. This means that if an incorrect modification is performed ((for example, deletion of required attributes in an entry, adding of an unsupported attribute for an object class, and so on), the repository information will be contradicted.	None	Not determined
2	No error occurs if an object class with another abstract type or structure type is added to an entry included in an abstract type or structure type object class already.	None	Not determined

No	Restriction	Alternative Method	Date of Removal
	Similarly, no error occurs if an abstract type or structure type object class is modified or changed to another abstract type or structure type object class.		
3	No error occurs if a required object class attribute is deleted.	None	Not determined
4	Do not duplicate the following operations for one repository. If multiple operations are executed at the same time, abnormal operation may occur in the repository or Interstage data store. - Creating repository on Interstage Management Console - Deleting repository on Interstage Management Console - Starting repository on Interstage Management Console - Stopping repository on Interstage Management Console - Backing up or exporting Interstage Directory Service resources using the *irepbacksys* command - Restoring or importing Interstage Directory Service resources using the *ireprestsys* command - Solaris32/64 Linux32/64 Starting Interstage data store using the *enablerstart* command - Starting repository using the *irepstart* command - Stopping repository using the *irepstop* command	None	Not determined

2.13.4 Restrictions on Entry Administration Tool

Restrictions Common to Repository Databases

Table 2.24 Restrictions on Entry Administration Tool Common to Repository Databases

No	Restriction	Alternative Method	Date of Removal
1	The following limitations apply to adding an entry: - "=" cannot be specified for the DN. If it is specified, an error will occur. IREP: ERROR: irep77511 invalid DN. - If an attribute value is omitted during entry registration, the attribute name is not registered. - If there are blank characters before or after an attribute value, the blank characters are removed in the registration. (The "userPassword" attribute is an exception.)	None	Not determined
2	The following limitations apply to specifying the search condition: If there are many search results, it takes time to display the results.	None	Not determined

No	Restriction	Alternative Method	Date of Removal
3	The following limitations apply to tree development: - If there are many subordinate entries, it takes time to display the developed tree in the [tree view].	None	Not determined
4	The following limitations apply to modifying names: - "\", "=", """, "#", "+", "<", ">", ";", and "," cannot be specified for the DN or an error will occur: IREP: ERROR: irep77518 Specified DN does not exist or there is an error in the specification. IREP: ERROR: irep77511 invalid DN. - The name of a multi-AVA cannot be modified. IREP: ERROR: irep77511 invalid DN.	None	Not determined
5	The following limitations apply to the exporting function: - If there are many entries to be exported, it takes time to perform export processing.	None	Not determined
6	The following limitations apply to the importing function: - If there are many entries to be imported, it takes time to perform import processing.	None	Not determined
7	The character string of an error message may not be completely displayed. If the window is too small to display all of the character strings of the entry name, attribute name, attribute value, connection location, connection name, and search range, the last part of the strings will be displayed as "...".	None	Not determined

Restrictions when the Standard Database is Used as the Repository Database

This is not valid for Linux (64 bit) or Windows (64 bit).

Table 2.25 Restrictions on Entry Administration Tool when the Standard Database is Used

No	Restriction	Alternative Method	Date of Removal
1	The following limitations apply to adding an entry: - No error occurs if an object class with another abstract type or structure type is added to an entry already included in an abstract type or structure type object class.	None	Not determined
2	The following limitations apply to modifying an entry: - Interstage Directory Service does not check the schema when an entry is modified. This means that if an incorrect modification is made (for example, deletion of required attributes in an entry, adding of an unsupported attribute for an object class, and so on), the repository information will be in conflict. Confirm the operation thoroughly when modifying an entry. - No error occurs if modifying an abstract type or structure type object class to another abstract type or structure type object class.	None	Not determined

No	Restriction	Alternative Method	Date of Removal
	- No error occurs if the required attributes of an object class are deleted. - If an attribute value is omitted during entry registration, the attribute name is not registered. - If there are blank characters before or after an attribute value, these blank characters are removed during registration. (The "userPassword" attribute is an exception.)		

2.13.5 Restrictions on the Search Filter

Restrictions Common to Repository Databases

Table 2.26 Restrictions Common to Repository Databases

No	Restriction	Alternative Method	Date of Removal
1	The following binary attributes cannot be searched for even if they are specified in the search filter: - audio - authorityRevocationList - caCertificate - certificateRevocationList - crossCertificatePair - deltaRevocationList - jpegPhoto - supportedAlgorithms - userCertificate - userPKCS12 - userSMIMECertificate	None	Not determined

Restrictions when the Standard Database is Used as the Repository Database

This is not valid for Linux (64 bit) or Windows (64 bit).

Table 2.27 Restrictions when the Standard Database is used as the Repository Database

No	Restriction	Alternative Method	Date of Removal
1	If one of the following attributes contains a blank or a Minus sign ("-"), the search operation cannot be performed with these attributes specified in the search filter: - homePhone - mobile - pager - telephoneNumber The *irepmodifyent* command is not executed correctly if any of the above attributes is specified in the <unique> tag of the rule file.	None	Not determined

No	Restriction	Alternative Method	Date of Removal
	If using the *ldapsearch* command, the search result is zero when searching the above attributes. If using the JNDI or the Entry Administration Tool, the search result is zero when searching the above attributes. If using the Entry Administration Tool, when Select All ("*") is used for the attribute value, the search result can be obtained.		
2	If "!" (logical negation) or "~=" (approximation) is specified in the search filter, an error occurs. - If using the *ldapmodify* command, the following error occurs: Invalid syntax - If using the JNDI, the following error occurs: LDAP error code:21(0x15)	None	Not determined
3	If two or more "character string*" (substrings) are specified, the search operation cannot be performed. **Example:** "(uid=*user001*)"	None	Not determined
4	When specifying "|" (OR) in the search filter, if three or more parallel search conditions are specified, an error occurs. **Example:** "(|(uid=user001)(uid=user002)(uid=user003))" - If using the *ldapmodify* command, the following error occurs: Invalid syntax - If using the JNDI, the following error occurs: LDAP error code:21(0x15)	None	Not determined
5	When the "|" (OR) and "&" (AND) specifications are combined, an error occurs if the specification is more complicated than the following: - "(&(search condition 1)(search condition 2))" - "(|(search condition 1)(search condition 2))" - "(&(&(search condition 1)(search condition 2)) (search condition 3))" - "(|(&(search condition 1)(search condition 2))(search condition 3))" - "(&(|(search condition 1)(search condition 2))(search condition 3))" - "(&(search condition 1)(search condition 2)(search condition 3) .... (search condition n))" **Example:** "(&(|(search condition 1)(search condition 2))(|(search condition 3)(search condition 4)))"	None	Not determined

No	Restriction	Alternative Method	Date of Removal
	- If using the *ldapmodify* command, the following error occurs: Invalid syntax - If using the JNDI, the following error occurs: LDAP error code:21(0x15)		

Restrictions when an RDB is used as the Repository Database

Table 2.28 Restrictions when an RDB is used as the Repository Database

No	Restriction	Alternative Method	Date of Removal
1	If "~=" (approximation) is specified in the search filter, an error occurs. - If using the *ldapmodify* command, the following error occurs: Invalid syntax - If using the JNDI, the following error occurs: LDAP error code:21(0x15)	None	Not determined
2	If any of the following combinations are specified, an error occurs: - existence (=*) and negation(!) e.g. (!(mail=*)) - AND(&) and negation(!) e.g. (&(!(cn=User001))(sn=Fujitsu)) - OR(|) and negation(!) e.g. (|(!(cn=User001))(!(sn=Fujitsu)))	None	Not determined
3	If "|" (OR) and "&" (AND) are specified together in the search filter with at least four search conditions, an error occurs when complicated combinations, such as those shown below, are specified. - "(|(&(search condition 1)(search condition 2))(&(search condition 3)(search condition 4)))" - "(&(|(search condition 1)(search condition 2))(|(search condition 3)(search condition 4)))"	None	Not determined

2.14 Restrictions on JDK/JRE

This section describes the restrictions on JDK/JRE.

Table 2.29 Restrictions on JDK/JRE

No	Restriction	Remarks	Date of Removal
1	Java application cannot be run if ";", "#", "%", "^", or "!" is used for the path name of the folder in which the jar file is stored.	Don't use ";", "#", "%", "^", or "!" for the path name of a folder.	Not determined
2	Windows32/64	In the environment settings of Windows XP, change the menu color to the same color	Not determined

No	Restriction	Remarks	Date of Removal
	When executing a Java application or applet in Windows XP, the background color of the menu group may be different from the color in the case where there is no menu group.	as the menu bar, or use the classic style.	
3	StackOverflowError cannot be caught. The Java VM may crash generating core and hs_err_pid***.log or fjvm_pid***.log (*** is the process ID).	None	Not determined

4	JDK/JRE bundled with this product does not support the following functions:
	
	  - Mozilla Rhino
	
	  - Java DB
	
	  - Java Web Start (JWS)
	
	  - Java FX
		None	Not determined

5	The "-baseline" option of the *jhat* command cannot be used.	None	Not determined
6	When the IP address is specified for "hostname" and the port is specified, in the *jps* command line option, specify "protocol" or "//".	None	Not determined
7	When the method trace feature is used, if the return value specified as the trace target is an object and a ternary operator is used as the return value, the exit information may not be output.	None	Not determined
8	When the method trace feature is used, if the method argument or return value specified as the trace target is an object, and thread standby is performed in the processing of the toString method of that object, the Java program may hang.	None	Not determined
9	If the heap dump is parsed by the *jhat* command, a WARNING message may be output.	None	Not determined
10	When hprof is used to obtain the heap dump by pressing the [Ctrl]+[Break] keys or using the QUIT signal, the command may end abnormally.	None	Not determined
11	Windows32/64 The *jconsole/jps/jstat/jinfo/jmap/jstack* command may not always run correctly for Java processes of different sessions.	Run the target Java process in the same session as the tool.	Not determined

12	Solaris32/64
	
	If MToolkit on JDK/JRE 6 for Solaris 11 is used, the following symptoms may occur and the GUI screen may not always be displayed or work correctly.
	
	  - A Warning is output when java starts up
	
	  - Warning: Cannot convert string "<type_name>" to type FontStruct
		Use XToolkit.
		
		In JDK/JRE 6, XToolkit is the default.
		
		MToolkit is not supported in JDK/JRE 7.
			Not determined

13	If *java.awt.Robot#keyPress()* was used in JDK/JRE 7, the same keyEvent may be notified multiple times.	None	Not determined

2.15 Restrictions on Interstage Single Sign-on

Table 2.30 Restrictions on Interstage Single Sign-on

No.	Restriction	Workaround	Schedule for Cancellation
1	The Interstage Management Console cannot be used to create a path configuration containing two or more consecutive spaces.	None	Not determined
2	Certificate authentication using IC cards cannot be performed on single sign-on systems that perform session management.	None	Not determined
3	IPv6 format IP addresses cannot be specified in the host name or FQDN in URLs.	None	Not determined

2.16 Restrictions on Interstage Setup Commands

Table 2.31 Restrictions on Interstage Setup Commands

No.	Restriction	Workaround	Schedule for Cancellation
1	Windows32/64 The isinitservice command cannot be used when Interstage is used in Windows Server(R) 2012.	Reinstall Interstage Application Server.	Not determined

2.17 Restrictions on Multiserver Management Windows32/64 Solaris32

Linux32/64

Table 2.32 Restrictions on Multiserver Management

No.	Restriction	Workaround	Schedule for Cancellation
1	If an application is undeployed in a multiserver environment following the sequence of events below, a different application status is reported to the status of an application undeployed from a Standalone Server: - A Managed Server (an Independent Managed Server, or a Managed Server that belongs to a Server Group) is used, and - Two or more applications are already deployed in the IJServer, and - HotDeploy is used, and - 'Start' is selected, and then - All deployed applications are selected and undeployed. The application status in the IJServer after the applications have been undeployed are as follows: - Standalone Server: Stopped - Managed Server: Running	If it is necessary to stop the IJServer, stop it.	Not determined
2	Windows32 Solaris32 Linux32 In the Interstage Management Console of the Admin Server, click [Site Management] > [Interstage Management Console] > [Interstage Application Server] > [Server Group] > [Server] > [System] > [WorkUnit] > [Status]. If a CORBA WorkUnit is selected from the list of WorkUnits displayed, the following message is output to the event log or system log:	There is no need to take any action.	Not determined

No.	Restriction	Workaround	Schedule for Cancellation
	'IS: ERROR: is20746: The target resource does not exist. It was removed by another user, or Interstage JMX Service may have been restarted.'		

2.18 Restrictions on Other Functions

Table 2.33 Restrictions on Other Functions

No	Restriction	Remarks	Date of Removal
1	When "Systemwalker/CentricMGR" is installed in the same system, the "Systemwalker console job monitoring" function cannot be used.	None	Not determined
2	Solaris32/64 In products from Systemwalker/CentricMGR 5.0 through 5.2, the information on the following EJP application type is not displayed. - Bean-managed persistence Entity - Container-managed persistence Entity	None	Not determined
3	Solaris32/64 Do not uninstall the following services specified in Interstage initialization in other than Interstage uninstallation: - Service supported in operating mode - Service specified in the Interstage operating environment definition If these services are uninstalled, Interstage activation and reinitialization may become impossible	If a service listed in the column at left is to be uninstalled, reinitialize Interstage so that the service is not a target of initialization, and then uninstall the package.	Not determined
4	Systemwalker Operation Manager cannot be used for Linux 64.	None	Not determined
5	PRIMECLUSTER cannot be used for Linux 64.	None	Not determined

Chapter 3 Notes on Interstage Operation

This chapter provides additional information on the use of Interstage Application Server.

3.1 Common Notes for Interstage

This section explains the following topics:

3.1.1 About Windows Server(R) 2003

Interstage Management Console

If the local Host entry is configured in the 'hosts' file when you log in to the Interstage Management Console in Windows Server(R) 2003, the message 'is40001: Could not acquire system information' is sometimes output and the operation cannot continue.

If this problem occurs, apply Windows Server(R) 2003 Service Pack 1 or later.

Windows Server(R) 2003 Service Pack 1 or Later

Note the following points about using this product in environments in which Windows Server(R) 2003 Service Pack 1 or later (Windows Server 2003(R) SP1 or later) is applied.

Make Files on the Server Used to Run the Interstage Management Console the Target of IJServer Deployment Processing

If IJServer is deployed using the Interstage Management Console, the deployment processing of files on the server used to run the Interstage Management Console does not always execute correctly. Use a browser which can be used by Interstage (except for Windows Server(R) 2003 Service Pack 1 or later Internet Explorer) to perform IJServer deployment processing.

Interstage Directory Service

This is not valid for Standard-J Edition on Windows (64 bit).

This is not valid for Standard-J Edition on Linux (64 bit).

The connection to the repository cannot always be made using the Interstage Directory Service client and Entry Management Tool. Replication environment setup can also fail. Perform either of the following procedures beforehand:

- Exclusive settings depending on the Group policy

- Windows firewall exception settings

Exclusive Settings Depending on the Group Policy

To allow access to Interstage Directory Service in the firewall Group policy, perform the following procedure:

1. On the desktop, click [Start], [Run], type [mmc], and then click [OK].

2. In the [File] menu, click [Add/Remove Snap-ins].

3. Click [Stand-alone], and then click [Add].

4. In the [Usable Stand-alone Snap-ins] list, click [Group policy Object Editor], and then click [Add].

5. In the [Select Group policy object] dialog box, click [Browse].

6. In [View Group policy object], click the Group policy object you want to update for the new Windows firewall settings.

7. Click [OK].

8. Click [Complete] to close the Group policy wizard.

9. In the [Add Stand-alone Snap-in] dialog box, click [Close].

10. In the [Add/Remove Snap-ins] dialog box, click [OK].

11. In the console tree, open [PC Configuration], [Management Template], [Network], and [Network Connections] in that order to open [Windows Firewall].

12. Click [Standard Profiles], and set the following items in [Windows Firewall: ...]:

Item	Value
Protect all network connections	Enabled
Do not allow exceptions	Disabled
Configure program exceptions	Enabled
Add the following	c:\interstage\irep\sbin\irepslapd.exe:*:enabled:irepslapd

To add the server machine to a domain, click [Domain Profile].

13. In the [File] menu, click [Save as], and save the file as 'console1.msc'.

For details about Group policy details information, refer to the Microsoft website.

SSL Encryption

If SSL encryption is used, it might cause 'crypt32' to be output.

This problem occurs if you were not able to connect to the Windows(R) Update in the Internet when the update component of the root certificate is enabled.

Take the following action to avoid this problem:

- Connect to the Internet, and then update the root certificate.

- Disable the root certificate update component.

3.1.2 Notes on Windows Vista(R) or Later

Check the following when using Interstage Application Server client package or another product (e.g., Interstage Studio) in which this product is bundled.

- "Notes on Using Commands in Windows Vista(R) or later" in the Reference Manual (Command Edition)

3.1.3 Notes on Windows Server(R) 2008 or Later

The operation of this product in the Server Core installation is not supported.

Check the following when using this product in Windows Server(R) 2008 or later.

- "Notes on Using Commands in Windows Server(R) 2008 or later" in the Reference Manual (Command Edition)

3.1.4 Notes when Internet Explorer 7 is Used

This section details issues to be aware of when using Internet Explorer 7.

Interstage Management Console Notes

Display of Messages in Status Bar

Sometimes messages (for example, "Starting XXX. Please wait") might not be displayed in the status bar.

If this problem occurs, it is possible that the web browser has not been configured correctly for Interstage Management Console to work. This problem only means that messages indicating the state of the processing are not shown, and there is no effect on actual operation. To show the messages, change the web browser settings for the zone where the Interstage Management Console is operating:

1. With the Interstage Management Console being displayed, select [Internet Options] in the web browser [Tools] menu, and then click the [Security] tab.

   Do not change the zone.

2. Click [Custom Level].

3. In the [Scripting] section, change the [Allow scripts to update status bar] setting to "Enable".

Note

If an unreliable website is listed in the zone for which the security settings are being updated, the settings should not be updated.

Display when Zoom Function is Used

The screen may display incorrectly when the zoom function is used. If so, use the standard magnification.

Tabbed Browsing

The Interstage Management Console cannot be started from multiple tabs using the tabbed browsing function in a web browser, otherwise the Interstage Management Console window transition and operation may become abnormal.

Do not use multiple tabs when the Interstage Management Console is used.

To start multiple Interstage Management Console instances, start multiple web browsers and then operate the Interstage Management Console.

Re-use Windows for Launching Shortcuts

If the tabbed browsing function is not used and the setting for reusing windows for launching shortcuts is disabled, then Interstage Management Console window transition and operation may become abnormal.

To solve that, follow the procedure below:

1. In the Internet Explorer [Tools] menu, select [Internet Options], and then click the [Advanced] tab.

2. In the [Browsing] section, select the [Reuse windows for launching shortcuts (when tabbed browsing is off)] check box.

Applet Notes

Problems Arising when Multiple Windows or Tabs are Used

If a web application that uses two or more applets closes the window or tab from which an applet was initially started, the applet ceases to run.

Do not close the window or tab from which an applet is initially started. If this problem occurs, temporarily close all browsers.

destroyRequested

In the following cases, applets are shut down even if they are configured so that they cannot be ended:

1. Even if a destroyRequested end enquiry is sent from an applet to a JBK plug-in applet in an attempt to close a browser, the browser is set to not close.

2. Opening multiple tabs ends tabs opened by 1.

These problems are caused by Internet Explorer 7 tabbed browsing. Investigate how to configure tabs so that those displaying applets are not closed.

Zoom Function

The zoom function cannot be used for applets.

Interstage Single Sign-on Notes

Tab Browsing Function

If the tab browsing function is used to perform authentication in another tab while the Authentication window is still open, "Waiting" may display in the web browser. If the tab is then closed while the Authentication window is still open, operations in the tab displaying "Waiting" can no longer be continued.

If this problem occurs, the problem can be resolved by closing and restarting the web browser.

Protection Mode Function

If the protection settings for the business server and the authentication server of Interstage single sign-on are different, the authentication may not be performed properly. The protection settings for the business server and the authentication server of Interstage single sign-on must match for correct operation.

Framework Notes

borderType Specification

Under Windows(R) XP or Windows Vista(R), if the screen theme is set to [Windows XP] or [Windows Vista], the borderType specification has no effect on the following tags:

- uji:fieldString

- uji:fieldLong

- uji:fieldDouble

- uji:fieldBigInteger

- uji:fieldBigDecimal

- uji:fieldDate

- uji:fieldTextArea

- uji:pushButton

This is a result of Internet Explorer specifications and so cannot be avoided. Be aware of this operation when using these tags.

Sub-window Display

If Internet Explorer pop-ups are blocked and an application that uses the validity verification function of the request displays a sub-window, if [Retry] is attempted after the pop-up is blocked, an error (UJI055: Request from unexpected page) occurs.

This problem can be avoided by configuring the pop-up block settings to allow the site.

File Download Processing

If the file download function is used to download a file after the initial startup of the browser, the "Retrieving file information" dialog box may remain displayed and the download processing may fail to complete. If the "Retrieving file information" dialog box is displayed, click the [Cancel] button to stop processing, and then execute the download again.

This is due to an Internet Explorer 7 problem, and so cannot be avoided.

3.1.5 Notes when Internet Explorer 8 is Used

This section details issues to be aware of when using Internet Explorer 8.

Interstage Management Console Notes

Document Modes

The Interstage Management Console runs using the "Quirks mode" document mode.

How to Specify the File

The path of file specified for application deployment cannot be directly entered in the input field. Instead, click the [Browse] button and use the File Browse dialog box.

Operations when Files or Logs are downloaded

The download of a file or log may be denied.

To solve that, follow the procedure below:

1. With the Interstage Management Console being displayed, select [Internet Options] in the web browser [Tools] menu, and then click the [Security] tab.

   Do not change the zone.

2. Click [Custom Level].

3. In the [Downloads] section, change [File download] and [Automatic prompting for file downloads] to "Enable".

Note

The settings will not be updated if an unreliable website is listed in the zone for which the security settings are being updated.

Display of Messages in Status Bar

Sometimes messages (for example, "Starting XXX. Please wait") might not be displayed in the status bar.

If this problem occurs, it is possible that the web browser has not been configured correctly for Interstage Management Console to work. This problem only means that messages indicating the state of the processing are not shown, and there is no effect on actual operation. To show the messages, change the web browser settings for the zone where the Interstage Management Console is operating:

1. With the Interstage Management Console being displayed, select [Internet Options] in the web browser [Tools] menu, and then click the [Security] tab.

   Do not change the zone.

2. Click [Custom Level].

3. In the [Scripting] section, change the [Allow scripts to update status bar] setting to "Enable".

Note

The settings will not be updated if an unreliable website is listed in the zone for which the security settings are being updated.

Operating Multiple Interstage Management Consoles

The Interstage Management Console cannot be operated from multiple web browsers, otherwise the Interstage Management Console window transition and operation may become abnormal.

To operate multiple Interstage Management Consoles from one terminal, follow the procedure below:

- Launch the new web browser session:

  In the Internet Explorer [File] menu, select [New Session].

- Run the Interstage Management Console using the Internet Explorer 7.

Tabbed Browsing

The Interstage Management Console cannot be started from multiple tabs using the tabbed browsing function in a web browser, otherwise the Interstage Management Console window transition and operation may become abnormal.

Do not use multiple tabs when the Interstage Management Console is used.

To start multiple Interstage Management Console instances, start multiple web browsers with different session and then operate the Interstage Management Console.

Re-use Windows for Launching Shortcuts

If the tabbed browsing function is not used and the setting for reusing windows for launching shortcuts is disabled, then Interstage Management Console window transition and operation may become abnormal.

To solve that, follow the procedure below:

1. In the Internet Explorer [Tools] menu, select [Internet Options], and then click the [Advanced] tab.

2. In the [Browsing] section, select the [Reuse windows for launching shortcuts (when tabbed browsing is off)] check box.

Display when Zoom Function is Used

The screen may display incorrectly when the zoom function is used. If so, use the standard magnification.

Interstage Single sign-on notes

Operations when Running Multiple Internet Explorer Windows

It is not possible to launch multiple Internet Explorer windows and perform authentication using a different user ID in each window. If authentication is performed successfully in one window, then the others will also be authenticated.

Note

Authentication using a different user ID can be performed in the window started by clicking [File] > [New Session] in Internet Explorer. In this case, even if authentication succeeded in another window, that status will still be unauthenticated.

When the SSL Window is Displayed Multiple Times

If authentication is performed on the POST request during the first access in the kind of environment described below, then the SSL window may be displayed later again (if that happens, then proceed as during authentication):

- Environment in which the SSL window (such as the certificate selection window) is displayed when the authentication infrastructure URL is accessed.

Tab Browsing Function

If the tab browsing function is used to perform authentication in another tab while the Authentication window is still open, "Waiting" may display in the web browser. If the tab is then closed while the Authentication window is still open, operations in the tab displaying "Waiting" can no longer be continued.

If this problem occurs, the problem can be resolved by closing and restarting the web browser.

Protection Mode Function

If the protection settings for the business server and the authentication server of Interstage single sign-on are different, the authentication may not be performed properly. The protection settings for the business server and the authentication server of Interstage single sign-on must match for correct operation.

Problems Arising when Running Multiple Internet Explorer Windows

The "The page cannot be found" message may be displayed if an operation (such as accessing the protection resource) performed in a different browser window prompts authentication after any of the operations listed below has been performed in any window, and multiple Internet Explorer windows have been launched to perform authentication.

- Sign-off is performed

- An operation that prompts authentication (such as accessing the protection resource) is performed and the Authentication window is displayed after the idle surveillance time has lapsed or after the re-authentication interval has lapsed.

If this problem occurs, the sso02012 message is output to the system log of the machine on which the authentication server was built.

This problem can be avoided by not using multiple browsers. It can be solved by closing all browser windows where the problem has occurred, and opening a new one.

Problems Arising when the Tab Browsing Function is Used

The "The page cannot be found" message may be displayed if an operation (such as accessing the protection resource) performed in a different tab prompts authentication after any of the operations listed below has been performed in any tab, and the tab browsing function has been used to perform authentication.

- Sign-off is performed.

- An operation that prompts authentication (such accessing the protection resource) is performed and the Authentication window is displayed after the idle surveillance time has lapsed or after the re-authentication interval has lapsed.

If this problem occurs, the sso02012 message is output to the system log of the machine on which the authentication server was built.

This problem can be avoided by not using the tab browsing function. It can be solved by closing and restarting the web browser.

Problems Arising when Authentication on the POST Request is Performed Multiple Times

The "The page cannot be found" message may be displayed if the operations listed below have been performed.

1. Authentication is performed on the POST request.

2. Sign-off is performed.

3. The browser that performed the sign-off is used and a POST request is sent again to the business server.

4. The link that displays the Authentication window in the unauthenticated window is clicked.

If this problem occurs, the sso02012 message is output to the system log of the machine on which the authentication server was built.

This problem can be solved by closing the browser window in which the problem occurred and the unauthenticated one, and then restarting the web browser.

3.1.6 Notes when Internet Explorer 9 is Used

This section details issues to be aware of when using Internet Explorer 9.

Interstage Management Console Notes

Document Modes

The Interstage Management Console runs using the "Quirks mode" document mode.

How to Specify the File

The path of file specified for application deployment cannot be directly entered in the input field. Instead, click the [Browse] button and use the File Browse dialog box.

Operations when Files or Logs are Downloaded

When downloading files or logs, a dialog box indicating an error may be displayed. If an error is displayed, follow the steps below, according to the message or behavior experienced:

"Your current security settings do not allow this file to be downloaded." dialog box is displayed.

If this problem occurs and downloading is denied, follow the steps below:

1. With the Interstage Management Console being displayed, select [Internet Options] in the web browser [Tools] menu, and then click the [Security] tab.

   Do not change the zone.

2. Click [Custom Level].

3. In the [Downloads] section, change [File download] and [Automatic prompting for file downloads] to "Enable".

   Note

   The settings will not be updated if an unreliable website is listed in the zone for which the security settings are being updated.

"XXX might have been moved or deleted." dialog box is displayed.
"Windows cannot find XXX. Make sure you typed the name correctly, and then try again." dialog box is displayed.
Nothing happens

If this problem occurs when the [Open] button is clicked in the dialog box when downloading, follow the steps below:

1. Click [Save] in the dialog box that appears when downloading files.

2. Refer to the saved file.

File Name when Files or Logs are Downloaded

When using SSL encryption communication to download files or logs, the downloaded files may have different names to that in the download destination folder.

If this problem occurs, reconfigure Internet Explorer:

1. In the Internet Explorer [Tools] menu, select [Internet Options], and then click the [Advanced] tab.

2. In the [Security] section, clear the [Do not save encrypted pages to disk] check box.

Display of Messages in Status Bar

Sometimes messages (for example, "Starting XXX. Please wait") might not be displayed in the status bar.

If this problem occurs, it is possible that the web browser has not been configured correctly for Interstage Management Console to work. This problem only means that messages indicating the state of the processing are not shown, and there is no effect on actual operation. To show the messages, change the web browser settings for the zone where the Interstage Management Console is operating:

1. With the Interstage Management Console being displayed, select [Internet Options] in the web browser [Tools] menu, and then click the [Security] tab.

   Do not change the zone.

2. Click [Custom Level].

3. In the [Scripting] section, change the [Allow scripts to update status bar] setting to "Enable".

Note

The settings will not be updated if an unreliable website is listed in the zone for which the security settings are being updated.

Remark

To display the status bar, follow the steps below:

1. Right-click any blank part on the right-hand side of the tab.

2. In the context menu, select [Status bar].

Operating Multiple Interstage Management Consoles

The Interstage Management Console cannot be operated from multiple web browser, otherwise the Interstage Management Console window transition and operation may become abnormal.

To operate multiple Interstage Management Consoles from one terminal, follow the procedure below:

- Launch the new web browser session:

  In the Internet Explorer [File] menu, select [New Session].

- Run the Interstage Management Console using the Internet Explorer 7.

Tabbed Browsing

The Interstage Management Console cannot be started from multiple tabs using the tabbed browsing function in a web browser, otherwise the Interstage Management Console window transition and operation may become abnormal.

Do not use multiple tabs when the Interstage Management Console is used.

To start multiple Interstage Management Console instances, start multiple web browsers with different session and then operate the Interstage Management Console.

Re-use Windows for Launching Shortcuts

If the tabbed browsing function is not used and the setting for reusing windows for launching shortcuts is disabled, then Interstage Management Console window transition and operation may become abnormal.

To solve that, follow the procedure below:

1. In the Internet Explorer [Tools] menu, select [Internet Options], and then click the [Advanced] tab.

2. In the [Browsing] section, select the [Reuse windows for launching shortcuts (when tabbed browsing is off)] check box.

Display when Zoom Function is Used

The screen may display incorrectly when the zoom function is used. If so, use the standard magnification.

Interstage Single Sign-on Notes

Operations when Running Multiple Internet Explorer Windows

It is not possible to launch multiple Internet Explorer windows and perform authentication using a different user ID in each window. If authentication is performed successfully in one window, then the others will also be authenticated.

Note

Authentication using a different user ID can be performed in the window started by clicking [File] > [New Session] in Internet Explorer. In this case, even if authentication succeeded in another window, that status will still be unauthenticated.

Tab Browsing Function

If the tab browsing function is used to perform authentication in another tab while the Authentication window is still open, "Waiting" may display in the web browser. If the tab is then closed while the Authentication window is still open, operations in the tab displaying "Waiting" can no longer be continued.

If this problem occurs, the problem can be resolved by closing and restarting the web browser.

Protection Mode Function

If the protection settings for the business server and the authentication server of Interstage single sign-on are different, the authentication may not be performed properly. The protection settings for the business server and the authentication server of Interstage single sign-on must match for correct operation.

3.1.7 Notes when Internet Explorer 10 is Used

This section details issues to be aware of when using Internet Explorer 10.

Interstage Management Console/Interstage Java EE Admin Console Notes

Supported Internet Explorer 10 versions

The Interstage Management Console and Interstage Java EE Admin Console cannot be used in the Internet Explorer 10 version that supports the new Windows UI - you must use these in the desktop version of Internet Explorer 10 instead.

Use the following procedure to change to the desktop version of Internet Explorer 10:

1. On the apps bar, click the [Page Tools] button, and then select [View on the desktop].

Document Modes

The Interstage Management Console runs using the "IE5 Quirks mode" document mode.

How to Specify the File

The path of file specified for application deployment cannot be directly entered in the input field. Instead, click the [Browse] button and use the File Browse dialog box.

Operations when Files or Logs are Downloaded

When downloading files or logs, a dialog box indicating an error may be displayed. If an error is displayed, follow the steps below, according to the message or behavior experienced:

"Your current security settings do not allow this file to be downloaded." dialog box is displayed.

If this problem occurs and downloading is denied, follow the steps below:

1. With the Interstage Management Console being displayed, select [Internet Options] in the web browser [Tools] menu, and then click the [Security] tab.

   Do not change the zone.

2. Click [Custom Level].

3. In the [Downloads] section, change [File download] and [Automatic prompting for file downloads] to "Enable".

Display of Messages in Status Bar

Sometimes messages (for example, "Starting XXX. Please wait") might not be displayed in the status bar.

If this problem occurs, it is possible that the web browser has not been configured correctly for Interstage Management Console to work. This problem only means that messages indicating the state of the processing are not shown, and there is no effect on actual operation. To show the messages, change the web browser settings for the zone where the Interstage Management Console is operating:

1. With the Interstage Management Console being displayed, select [Internet Options] in the web browser [Tools] menu, and then click the [Security] tab.

   Do not change the zone.

2. Click [Custom Level].

3. In the [Scripting] section, change the [Allow scripts to update status bar] setting to "Enable".

Note

The settings will not be updated if an unreliable website is listed in the zone for which the security settings are being updated.

Remark

To display the status bar, follow the steps below:

1. Right-click any blank part on the right-hand side of the tab.

2. In the context menu, select [Status bar].

Operating Multiple Interstage Management Consoles

The Interstage Management Console cannot be operated from multiple web browser, otherwise the Interstage Management Console window transition and operation may become abnormal.

To operate multiple Interstage Management Consoles from one terminal, follow the procedure below:

- Launch the new web browser session:

  In the Internet Explorer [File] menu, select [New Session].

- Run the Interstage Management Console using the Internet Explorer 7.

Tabbed Browsing

The Interstage Management Console cannot be started from multiple tabs using the tabbed browsing function in a web browser, otherwise the Interstage Management Console window transition and operation may become abnormal.

Do not use multiple tabs when the Interstage Management Console is used.

To start multiple Interstage Management Console instances, start multiple web browsers with different session and then operate the Interstage Management Console.

Re-use Windows for Launching Shortcuts

If the tabbed browsing function is not used and the setting for reusing windows for launching shortcuts is disabled, then Interstage Management Console window transition and operation may become abnormal.

To solve that, follow the procedure below:

1. In the Internet Explorer [Tools] menu, select [Internet Options], and then click the [Advanced] tab.

2. In the [Browsing] section, select the [Reuse windows for launching shortcuts (when tabbed browsing is off)] check box.

Display when Zoom Function is Used

The screen may display incorrectly when the zoom function is used. If so, use the standard magnification.

Interstage Single Sign-on Notes

Operations when Running Multiple Internet Explorer Windows

It is not possible to launch multiple Internet Explorer windows and perform authentication using a different user ID in each window. If authentication is performed successfully in one window, then the others will also be authenticated.

Note

Authentication using a different user ID can be performed in the window started by clicking [File] > [New Session] in Internet Explorer. In this case, even if authentication succeeded in another window, that status will still be unauthenticated.

Tab Browsing Function

If the tab browsing function is used to perform authentication in another tab while the Authentication window is still open, "Waiting" may display in the web browser. If the tab is then closed while the Authentication window is still open, operations in the tab displaying "Waiting" can no longer be continued.

If this problem occurs, the problem can be resolved by closing and restarting the web browser.

Protection Mode Function

If the protection settings for the business server and the authentication server of Interstage single sign-on are different, the authentication may not be performed properly. The protection settings for the business server and the authentication server of Interstage single sign-on must match for correct operation.

Notes on Using JBK Plugins

JBK Plugins do not work on the Windows UI version of Internet Explorer in Windows 8.

If you try to open an HTML page in which a JBK plugin has been embedded in the Windows UI version of Internet Explorer, nothing will be displayed for the relevant parts.

You must change to the desktop version of Internet Explorer 10 by performing the following action:

1. On the apps bar, click the [Page Tools] button, and then select [View on the desktop].

3.1.8 About the Cross-Site Scripting Problem

What is the Cross-Site Scripting Problem?

The Cross-Site Scripting problem is a security problem that occurs when the client web browser sends input data based on a dynamically generated webpage back to the server. Static HTML pages and dynamically generated webpages not using the data input are not affected by this problem.

This is explained in the following example:

1. The following script is an example of a script that is executed when cross-scripting occurs. This script is placed at the end of the input data form script, just before 'Submit'.

```
"<SCRIPT Language=JavaScript>alert("Hello");</SCRIPT>"
```

2. After the input data was sent, the dialog box with 'Hello' will be displayed.

   The data input was processed but so was the script. However, if the user sends the input data directly to the reliable site there is no problem even if there are errors on the page. But when the user sends input data through an unreliable site, and the unreliable site sends this as input data to the reliable site then the script that is executed causes the Cross-Site Scripting problem.

Analysis of the Problem

When developing applications like CGI and Servlet that generate dynamic pages to be displayed by the web browser and that generate webpages without investigating the input data, this problem needs to be fixed.

Examples:

- Retrieved result pages

- Those checking there is no errors in the input

- Those that register the input data in databases and display the input data through key words.

Investigation Method

Review the application programs one by one from the point of retrieving input data to that of generating the webpages. This can be done manually, by visual inspection of the source code, or, when reviewing the source program is not practical, by running tests such as the one described above.

Countermeasures

When any problem is detected, take one of the following actions.

- Stop embedding input data into webpages

- Convert special characters (< > &) to (< > &).

Security Information

Security information regarding Fujitsu products is announced in the following url.

http://software.fujitsu.com/en/security/main.html

3.1.9 Encryption Software

Windows32/64

If encryption software is used in the same environment as Interstage, do not use encryption on the Interstage installation folder and the folders and files under it.

If the Interstage installation folder and the folders and files under it are encrypted, it may cause an error when Interstage starts up or when an application is executed.

3.1.10 Using the JSSE Function

When Interstage Application Server is installed, a library for the Java Secure Socket Extension (JSSE) function is stored at the following location:

Windows32/64

```
<Interstage installation folder>\J2EE\lib
```

Solaris32/64 Linux32/64

```
/opt/FJSVj2ee/lib
```

The stored JSSE function library is classified into two types: one for JSSE1.0.2 and one for JSSE1.0.3. The names of the files that are actually stored are as follows:

- For JSSE1.0.2

    - isj2ee.jar (The class for JSSE1.0.2 is stored in this jar file.)

- For JSSE1.0.3

    - jcert.jar

    - jnet.jar

    - jsse.jar

To use the JSSE function, these files must be set with the environment variable CLASSPATH.

When JSSE1.0.2 is to be used, ensure that isj2ee.jar is set with CLASSPATH.

When JSSE1.0.3 is to be used, set jcert.jar, jnet.jar, and jsse.jar with CLASSPATH so that these files come before isj2ee.jar.

3.1.11 Monitor Screen Colors

`Windows32/64` `Solaris32/64`

For the machine on which Interstage Application Server is installed, use a display monitor and driver for which 256 colors or more can be specified as monitor screen colors.

If a value of less than 256 colors is set, the GUI program using Java cannot start. This type of display monitor cannot be used.

Applicable Functions

- Interstage Directory Service

    - Entry Administration Tool

- Other

    - User-developed program

3.1.12 Setting Port Numbers Used for Individual Services

When port numbers are set or changed for Interstage Application Server services, unique port numbers must be set for all individual services including applications in the system. If services are operated with the same port number set for different services, normal operation cannot be performed (for example, a client may fail to access a service).

The following table lists the services and functions for which port numbers are set under Interstage Application Server. The table also lists the locations where the port numbers are set.

Table 3.1 Services/Functions for Which Port Numbers are Set

Service Name/ Function Name	Port Number Setting Location
Interstage Management Console	'Port number for Interstage management console' C:\Interstage\gui\etc\httpd.conf 　- Listen directive

Interstage HTTP server	'Port number for the entire Interstage HTTP server'
	
	Interstage Management Console
	
	　- [Services] > [Web Server] > [Web Server name] > [Web Server Settings] tab > [Port Number]
	
	Or
	
	`Windows32/64`
	
	The environment definition file (C:\Interstage\F3FMihs\servers\(Web Server name)\conf\httpd.conf)
	
	　- Listen directive
	
	`Solaris32/64` `Linux32/64`
	
	The environment definition file (/var/opt/FJSVihs/servers/(Web Server name)conf/httpd.conf)
	
	　- Listen directive

	'Port number for the virtual hosts' Interstage Management Console 　- [Services] > [Web Server] > [Web Server name] > [Virtual Hosts] > [Create a new Virtual Host] > [IP Address] and [Port Number] Or Interstage Management Console

Service Name/ Function Name	Port Number Setting Location

	- [Services] > [Web Server] > [Web Server name] > [Virtual Hosts] > [Virtual Host Name] > [Configuration] > [IP Address] and [Port Number]
	
	`Windows32/64`
	
	The environment definition file (C:\Interstage\F3FMihs\servers\(Web Server name)\conf\httpd.conf)
	
	  - Listen directive
	
	  - NameVirtualHost directive
	
	  - \<VirtualHost> section
	
	`Solaris32/64` `Linux32/64`
	
	The environment definition file (/var/opt/FJSVihs/servers/(Web Server name)/)conf/httpd.conf)
	
	  - Listen directive
	
	  - NameVirtualHost directive
	
	  - \<VirtualHost> section
	
	Note:
	
	Setting the Listen directive in the environment definition file invalidates the Port directive in the environment definition file.

Interstage HTTP server 2.2	'Port number for the entire Interstage HTTP server'
	
	`Windows32/64`
	
	The environment definition file (C:\Interstage\F3FMahs\conf\httpd.conf)
	
	  - Listen directive
	
	`Solaris32/64` `Linux32/64`
	
	The environment definition file (/etc/opt/FJSVahs/conf/httpd.conf)
	
	  - Listen directive

	'Port number for the virtual hosts'
	
	`Windows32/64`
	
	The environment definition file (C:\Interstage\F3FMahs\conf\httpd.conf)
	
	  - Listen directive
	
	  - NameVirtualHost directive
	
	  - \<VirtualHost> section
	
	`Solaris32/64` `Linux32/64`
	
	The environment definition file (/etc/opt/FJSVahs/conf/httpd.conf)
	
	  - Listen directive
	
	  - NameVirtualHost directive
	
	  - \<VirtualHost> section

CORBA Service	'Port number for CORBA service' Interstage Management Console - [System] > [Update System Settings] > [CORBA Service Settings [Show]] > [Port number]

Service Name/ Function Name	Port Number Setting Location
	Or
	The environment definition file (config)
	- IIOP_port
	'Port number for CORBA service SSL'
	Interstage Management Console
	- [System] > [Update System Settings] > [CORBA Service Settings [Show]] > [SSL Encryption] > [SSL listen port]
	Or
	The environment definition file (config)
	- UNO_IIOP_ssl_port
Servlet Service	'Port number for Servlet service'
	Interstage Management Console
	- [WorkUnits] > [Create a new WorkUnit] > [Detailed Settings[Show]] > [Servlet Container Settings[Show]] > [Port number]
	Or
	Interstage Management Console
	- [WorkUnits] > Select 'IJServer name' > [Settings] > [Servlet Container Settings[Show]] > [Port number]
	Interstage Management Console
	- [Services] > [Web Server] > "Web Server name" > [Web Server Connector] > [Create New] > [Servlet Container IP Address: Port Number]
	Or
	- [Services] > [Web Server] > "Web Server name" > "WorkUnit name" > [Servlet Container IP Address: Port Number]
	Note:
	Port numbers must be set when the web server connector and Servlet container are provided on separate systems (when 'Yes' is selected from 'Run Web server and WorkUnit on the same machine?' on the [System] > [Update System Settings] > [Detailed Settings [Show] > [Servlet Container Settings[Show]]). A port number does not need to be set when these components are provided on the same machine.
Servlet Service for Interstage Management Console	'Port number of Servlet Service for Interstage Management Console'
	JServlet environment definition file
	- [containername].port definition
	Servlet gateway environment definition file
	- ApJServDefaultPort
	Servlet container environment definition file
	- Parameter tag
Interstage JMX Service	'Port number used for the Interstage JMX service to receive a request from the Interstage Management Console'
	Customize by specifying a value for the rmi attribute on the 'port' tag in the isjmx.xml file.
	'Port number required for operation of the Interstage JMX service'

Service Name/ Function Name	Port Number Setting Location
	Customize by specifying a value for the internal attribute on the 'port' tag in the isjmx.xml file.
Interstage Directory Service (*1)(*2)	'Port number of Interstage Directory Service' Interstage Management Console - [Port number] and [SSL Port number] of [System] > [Service] > [Repository] > [Create a New Repository] tab > [General Settings]
Interstage Single Sign-on (Repository server function) (*1)(*2)	Port number of Session Management Server Interstage Management Console - [Port number] of [System] > [Security] > [Single Sign-on] > [Authentication infrastructure] > [Repository server] > [Settings] tab > [Session management detailed settings [Show]] > [Communication Settings]

*1 This is not valid for Standard-J Edition on Windows (64 bit).

*2 This is not valid for Standard-J Edition on Linux (64 bit).

Note

- The protocol used by the above services is TCP.

- If the firewall settings allow communication from the Interstage JMX service port, set HTTPS as the Interstage JMX service protocol.

3.1.13 Entering Information in the Hosts File

Local host names set to '127.0.0.1' should not be set in an IP address that can be referenced remotely. Alternatively, do not set a local host name to '127.0.0.1'.

The following example shows how to set the host 'remote01' with the IP address '10.10.10.10'.

```
10.10.10.10     remote01
127.0.0.1       localhost.localdomain    localhost
```

3.1.14 Notes on Applet Operation

Under Microsoft(R) Internet Explorer 7.0 or later, when the Java applet is loaded, the message 'Click to activate and use this control.' is displayed, and it is necessary to click on the screen of Internet Explorer to allow processing to continue.

This is corrected by creating an external script file and inserting it in the HTML code, in order to read the APPLET, EMBED, and the OBJECT tags dynamically in the script file when you load the Java applet. This prevents the necessity of performing the click operation on the screen of Internet Explorer.

The HTML file to correct is the one converted by using the Java Plug-in HTML Converter when you use the Java Plug-in.

The correction example when the JBK plug-in is used is shown below.

- Before correcting the HTML file:

    - HTML file

```
<HTML>
  <HEAD><!--demo.html-->
    <TITLE>Java sample Applet </TITLE>
  </HEAD>
  <BODY>
    <OBJECT CLASSID="CLSID:BEA62964-C40B-11D1-AACA-00A0C9216A67"
    WIDTH=300 HEIGHT=250>
      <PARAM NAME="TYPE" VALUE="application/x-JBK-Plugin">
      <PARAM NAME="CODE" VALUE="Sample.class">
        <COMMENT>
```

```
            <EMBED TYPE="application/x-JBK-Plugin"
             NAME="Sample" CODE="Sample.class" WIDTH=300 HEIGHT=250>
            </EMBED>
          </COMMENT>
        </OBJECT>
      </BODY>
</HTML>
```

- After correcting the HTML file:

  - HTML file

```
<HTML>
  <HEAD><!--demo.html-->
    <TITLE>Java sample Applet </TITLE>
  </HEAD>
  <BODY>
    <!-- Call of external script file -->
    <SCRIPT src="sample.js"></SCRIPT>
  </BODY>
</HTML>
```

- External Script file

```
document.write(' \
  <OBJECT CLASSID="CLSID:BEA62964-C40B-11D1-AACA-00A0C9216A67" \
   WIDTH=300 HEIGHT=250> \
    <PARAM NAME="TYPE" VALUE="application/x-JBK-Plugin"> \
    <PARAM NAME="CODE" VALUE="Sample.class"> \
    <COMMENT> \
      <EMBED TYPE="application/x-JBK-Plugin" \
       NAME="Sample" CODE="Sample.class" WIDTH=300 HEIGHT=250> \
      </EMBED> \
    </COMMENT> \
  </OBJECT> \
')
```

3.1.15 Note on Firewall Settings

Problems may occur if a Firewall is enabled. Take the steps detailed below to change the system settings, removing Windows firewall blocks, and so on.

If using Interstage Directory Service or Interstage HTTP Server Windows32/64 Linux32/64

If using the Interstage Directory Service, the following problems may occur.

- It may not always be possible to connect to the repository using the Interstage Directory Service Client or the Entry Management Tool.

- The Replication Environment Setup may also fail.

If using the Interstage HTTP Server, the following problems may occur.

- Access to the web server may fail.

Take the steps detailed below to remove firewall blocks in advance.

Windows32/64

1. Open [Windows Firewall] from the [Control Panel].

2. Click [General], and set [Enable (recommended)] to [On]. Check that the [Do not allow exceptions] checkbox is not selected.

3. Click [Exception], and then click [Add Programs].

4. Click [Browse], select the following file, and then click [Open].

  - For the Interstage Directory Service: 'C:\interstage\IREP\sbin\irepslapd.exe'

  - For the Interstage HTTP Server: 'C:\Interstage\F3FMihs\bin\Apache.exe',

5. Click [OK] in the [Add Programs] window.

6. In the [Programs and Services] list, select the checkbox for the program added in step 4, and then click [OK].

In RHEL5 `Linux32/64`

1. In the [System] menu, select [Manage] and open [Security Level and Firewall Settings].

2. If [Firewall] in the [Firewall Option] tab is disabled, no action is required. If it is enabled, take the steps detailed below.

3. In the [Firewall Options] tab, open [Other Port].

4. Click [Add], and enter the port number in the [Port Addition] window. Leave Protocol as the default, "tcp", and then click [OK].

5. In the Security Level Settings screen, click [OK].

In RHEL6 `Linux32/64`

1. In the [System] menu, select [Administration], and then click [Firewall].

2. Click [Other Ports] in the [Firewall Configuration] window.

3. Click [Add] - the [Port and Protocol] window will be displayed.

    a. Select "User Defined".

    b. Enter "Port / Port Range".

    c. Enter "tcp" (the default value) as the protocol.

    d. Click [OK].

4. Click [Apply].

5. In the [File] menu, select [Quit].

If Using Web Server Connector Fault Monitoring `Windows32/64`

When the Windows(R) firewall is enabled, during web server connector fault monitoring, the IJServer machine sometimes has a status of 'Fault' and the distribution of requests from the client is prevented. Remove the Windows(R) firewall block in the IJServer machine used to distribute the web server connector according to the following procedure:

1. Open [Windows Firewall] from the [Control Panel].

2. Click [Details], and then click [Settings] in the ICMP Group box.

3. Select the [Allow echo requests] checkbox, and then click [OK].

3.1.16 Windows(R) 8.3 Format (Short Name) Definitions

`Windows32/64`

It is not recommended that 8.3 format (short name) be specified for the various Interstage definitions.

When an environment in which an 8.3 format (short name) was specified is backed up and then restored/imported to another Interstage environment, the restore/import destination 8.3 format (short name) environment must match the backup environment. Otherwise, the following types of problems may occur:

- The restore/import fails

- Interstage fails to start

- An error occurs when the application is executed

When restoring/importing the backup resources of an environment in which an 8.3 format (short name) was specified, include the restore/import environment 8.3 format (short name) together with the backup environment.

3.1.17 Notes on Using Security Manager

Security Manager can be used in the following functions:

Function	Can Security Manager be used?	Can the policy file be edited?	Notes
CORBA WorkUnit	Yes	Yes	
Portable-ORB	Yes	Yes	
Utility WorkUnit	Yes	Yes	
IJServer WorkUnit	No	-	
Java EE 5 IJServer cluster	Yes	Yes	A default policy file is provided for use in the IJServer cluster. For details, refer to the following: "Method of Operation Using the Security Functionality" in the "Java EE Function Security" chapter of the Java EE Operator's Guide
Java EE 5 client container	No	-	

Yes: Supported

No: Not supported

-: Not applicable, because Security Manager is not supported

3.2 Notes on the Interstage Setup Commands

This section provides additional information on the Interstage Setup commands.

3.2.1 Dealing with Abnormal Command Termination

If the *isstart*, *isstop* or *isinit* command terminates abnormally, terminate the system by using the -f option in the *isstop* command or Interstage Management Console.

To start Interstage again, use the *isstart* command.

3.2.2 Note on Stopping Interstage

To stop Interstage, first stop all WorkUnits, and then use the *isstop* command or Interstage Management Console to stop Interstage.

3.2.3 Starting and Stopping Services

Windows32/64

Do not start or stop the following services when using the *isgendef*, *isregistdef*, *isinit*, *isstart* or *isstop* commands:

- OD_start

- NamingService

- InterfaceRep_Cache Service

- InterfaceRep_Cache_e Service

- EventService

- TransactionDirector

- ObjectTransactionService

- Interstage API

- NS LoadBalancing Option

- Interstage Java EE Node Agent

3.3 Notes on the Interstage Management Console

This section describes how to use the Interstage Management Console.

Web Browser AutoComplete Function During Login

The web browser AutoComplete function is disabled during login as a security measure against identity theft.

Warning when SSL Encrypted Communication is Used

For certificates not issued by a reliable CA, a dialog box informing you that there is a problem with the certificate or a warning page may be displayed when the Interstage Management Console is accessed. This may occur for the following types of certificates:

- Certificates generated for SSL encrypted communication when this product is installed

- Certificates created using the *cmcrtsslenv* command when this product is installed

If you continue to use this type of certificate, check its validity before using the Interstage Management Console by performing the steps shown below. For details about the confirmation procedure, refer to the Operator's Guide.

1. Check the certificate fingerprint

2. Check the certificate contents

Since this type of certificate is of low reliability, do not register it in the web browser. Obtain a certificate from a reliable CA before the application starts and then switch to the application that used the certificate for SSL encrypted communication.

Discarding Input Values in Windows

When windows are switched (by clicking the [Switch to Console] button for example), any input values that have not been saved will be discarded.

3.4 Notes on Interstage Single Sign-on

This section explains the following topics:

3.4.1 Notes on Clients

With Interstage Single Sign-on, users gain access to the system from a client through a web browser or similar. Keep the following points in mind regarding clients.

Scope of Web Browser Support

The following web browsers are supported:

Web browser	Version/Level
Windows(R) Internet Explorer(R)	7.0, 8.0, 9.0, 10.0
Mozilla(R) Firefox(*1)	3.0 to 3.6, 4.0, 5.0, 6.0, 7.0, 8.0, 9.0, 10.0, 11.0, 12.0, 13.0, 14.0, 15.0, 16.0, 17.0, 18.0, 19.0, 20.0, 21.0, 22.0, 23.0, 24.0

*1 Windows(R) is the only supported operating system.

Web Browser Configuration

Configure your web browser to:

- Accept cookies

- Enable Java scripts

- Gain access to an authentication server and business server via a proxy server if either is used

- Use SSL 3.0 and TLS 1.0.

- To use Integrated Windows Authentication, configure the settings so that Integrated Windows Authentication is used.(*1)

    *1 Windows(R) Internet Explorer(R) will be the only target.

Installing a Certification Authority Certificate on the Web Browser

To use SSL to communicate with the Authentication infrastructure, install a CA certificate from the certificate authority that issued the site certificate on the web browser. For more information on Installing a Certification Authority Certificate on the web browser, refer to "Configuring Certificate Settings" in the "Setting and Use of the Interstage Certificate Environment" chapter of the Security System Guide.

Installing Security Patches

Defects in your web browser could make your system vulnerable to attacks, such as the theft of cookies. As such defects are discovered, security patches to correct them are released by the developer of the web browser. Make sure that your web browser has the latest releases of security patches installed.

Proxies

When a load balancer is used to balance server loads, clients may pass through different proxies depending on how the load balancer is configured. The address of each proxy is identified to the authentication and business servers. This means that the client address will differ between the instance accessing the authentication server and that accessing the business server, impeding the correct functionality of Single Sign-on. Configure the load balancer so that access requests originating from the same client use the same proxy.

IPCOM, for example, may be configured for 'Balancing by node' to connect requests originating from the same client to the same server.

Using Interstage Single Sign-on in more than one Window

If Interstage Single Sign-on is used in more than one window, depending on the web browser used or the way in which the window is opened, the window being opened may inherit authentication information.

If authentication information is inherited, the web browser can use the new window without having to sign on again. However, if authentication information is not inherited, the web browser must sign on again in order to use the new window that has been opened.

Using Basic Authentication in Windows(R) Internet Explorer(R)

If the Basic Authentication dialog for password authentication is canceled, and repeated operations result in the dialog being displayed continuously, authentication may fail. This is true even if the user ID/password that is entered is correct.

In this case, re-enter the correct user ID/password in the Basic Authentication dialog, and reexecute authentication.

3.4.2 Notes when Firefox is Used

Operations when Running Multiple Firefox Browsers Windows

It is not possible to launch multiple Firefox windows and perform authentication using a different user ID in each window. If authentication is performed successfully in one window, then the others will also be authenticated.

Tab Browsing Function

If the tab browsing function is used to perform authentication in another tab while the Authentication window is still open, "Waiting" may display in the web browser. If the tab is then closed while the Authentication window is still open, operations in the tab displaying "Waiting" can no longer be continued.

If this problem occurs, the problem can be resolved by closing and restarting the web browser.

3.4.3 Notes on Uninstalling

Back up required resources before uninstalling Interstage Single Sign-on. For information on required resources, refer to the "Maintenance (Resource Backup)" chapter of the Operator's Guide.

3.4.4 Notes on the System Times of the Repository Server/Authentication Server/Business Server

Set the correct system time for the repository server, authentication server, and business server. (*1) If their system times are not synchronized, correct user authentication might not be possible.

*1 When setting the system time for each server, pay attention to the time zone setting.

3.4.5 Notes on a System Configuration with a Cluster of Business Servers Deployed for Load Balancing

In this system configuration, keep the following points in mind:

1. Build a cluster of business servers whose loads are to be balanced from machines running on the same platform and of the same version and edition, and with Interstage installed in the same install directory.

2. Set a load balancer so that multiple business servers are logically represented with the same host name.

3. Set a load balancer so that the requests from the same client are transferred to the same business server.

4. To use IPCOM as the load balancer, make sure the following settings are used:

   Operating mode: Bridge

   Load balancing method and connection uniqueness: Node-level load balancing

3.4.6 Notes on a System Configuration with a Cluster of Authentication Servers Deployed for Load Balancing

In this system configuration, keep the following points in mind:

1. Build a cluster of business servers whose loads are to be balanced from machines running on the same platform and of the same version and edition, and with Interstage installed in the same install directory.

2. Using a load balancer configure a cluster of authentication servers to share a logically single host name.

3. Set the FQDN (Fully Qualified Domain Name) of the logical host name as the certificate owner's name in the certificate used for SSL communication.

4. Configure a load balancer to connect requests originating from the same client to the same server.

   IPCOM, for example, may be configured for 'Balancing by node' to connect requests originating from the same client to the same server.

5. Set up the environments for all of the authentication servers the same way, except for the following items:

   Access log

   Repository server (reference system) communication setting

   To set up an environment for an authentication server from the Interstage Management Console, select [Security] > [Single Sign-on] > [Authentication infrastructure] > [Authentication server] and open the [Authentication server: Settings] window.

6. The settings of the load balancer are different for each function being used. For details of this, refer to the "Load Balancer Settings" appendix of the Single Sign-on Operator's Guide.

3.4.7 Notes on a System Configuration with a Cluster of Repository Servers Deployed for Enhanced Availability

This is not valid for Standard-J Edition on Windows (64 bit).

This is not valid for Standard-J Edition on Linux (64 bit).

In this system configuration, keep the following points in mind:

1. Use repository servers (update system) and repository servers (reference system) of the same edition and version.

2. Set up all of the environments for the repository server (update system) and repository server (reference system) the same way, except for the following item:

   - Access log

   To set up an environment for the repository server (update system) from the Interstage Management Console, select [Security] > [Single Sign-on] > [Authentication infrastructure] > [Repository server] and open the [Repository server: Settings] window.

   To set up an environment for the repository server (reference system) from the Interstage Management Console, select [Security] > [Single Sign-on] > [Authentication infrastructure] > [Repository server (reference system)] and open the [Repository server (reference system): Settings] window.

3. When it is necessary to modify the SSO repository, make the modifications to the SSO repository of the repository server (update system).

4. Before editing the SSO repository of the repository server (update system), make sure that the SSO repository of the repository server (reference system) has not shut down for any reason. If the SSO repository has shut down, launch it promptly.

5. If the SSO repository has been shut down or has closed down for a long period, its data integrity could be lost. If irep15071 has been reported in the system log of the repository server (update system), check the message and repair the SSO repository data. For more information on messages that are output to the system log, refer to the "Messages Beginning with 'irep'" chapter of the Messages manual.

   If irep15071 has not been reported, the data in the SSO repository of the data repository server (update system) will be reflected in the SSO repository of the repository server (reference system) when the repository server (reference system) is repaired. The work is completed when the last batch of update information generated in the access log of the SSO repository of the repository server (update system) is generated in the access log of the SSO repository.

6. To extend the repository server (update system) so that it can be used to perform load balancing in a system in which session management is used, configure the load balancer settings as shown below.

Function for Guaranteeing Session Uniqueness (Session Maintenance Function)

Item	Value
Guarantee Method	Identifies the session using cookies or URL-embedded parameters (Other)
Guarantee Time	A value that is greater than the idle monitoring time (*1)
Keyword	fj-is-sso-disperse=

Fault Monitoring Function

Use one of the following methods to set the fault monitoring function:

- Use a monitoring tool such as Systemwalker to monitor and detect load balancer faults, and configure a repository server to restart if a fault is detected on that repository server.

- For the load balancer fault monitoring interval, set a value that is longer than the idle monitoring time (*1).

*1 To check the idle monitoring time, in the Interstage Management Console of the repository server click [System] > [Security] > [Single Sign-on] > [Authentication infrastructure] > [Repository server] > [Settings] > [Session management detailed settings [Show]] > [Idle surveillance] > [Idle surveillance time].

3.4.8 Notes on using Web Applications that run on a Repository Server or Authentication Server Machine

The SSO administrator should note the following points when running web applications and a repository server or authentication server on the same machine:

1. Any web application that handles requests issued to any one of the following URLs cannot be operated on the machine in which a repository server is constructed:

   - http(s)://(repository-server-FQDN):(repository-server-port-number)/ssoatcsv (*1)

   - http(s)://(repository-server-FQDN):(repository-server-port-number)/resinfo (*1)

   - http(s)://(repository-server-FQDN):(repository-server-port-number)/roleref (*1)

2. Any web application that handles requests issued to the following URL cannot be operated on the machine in which an authentication server is constructed:

   - http(s)://(authentication-server-FQDN):(authentication-server-port-number)/ssoatcag (*1)

3. Any web application that handles cookies with names beginning with 'fj-is-sso-' or query strings cannot be operated on the machine in which an authentication server is constructed.

*1 This also includes URLs in which any character string is added after the path (example: '/ssoatcsv/'). Moreover, if static contents are arranged in the URL, they cannot be operated (i.e. sent to a client's browser).

3.4.9 Notes on Designing a Business System

When adding a business system to Interstage Single Sign-on, business server administrators should keep the following points in mind:

1. Design business system public URL to keep it modification-free during execution of Single Sign-on from the viewpoint of user influences. Interstage Single Sign-on does not permit modifying the business system public URL in service. The business system must be reconfigured to make modifications to its public URL.

2. If a business system is not communicating in SSL mode, it is necessary to check with the SSO administrator to find out if connectivity in non-SSL communication is enabled or not.

3. The business system cannot use any cookie whose name begins with 'fj-is-sso-', query string or POST request data.

3.4.10 Notes on Interstage Portalworks Linkage Function

Set up all business systems that link with Interstage Portalworks in the same domain. When creating a business system setup file used to set up a business system, set [Linkage with Interstage Portalworks] to [Yes], and set the same domain name on each business system to enable authentication. To create a business system setup file from the Interstage Management Console, click [Security] > [Single Sign-on] > [Authentication infrastructure] and open the [Authentication infrastructure: Business system setup file] window.

When setting up a business server to link with Interstage Portalworks, click [Security] > [Single Sign-on] > [Business system] > [Business system Name] > [Detailed Settings [Show]]. Set [Enable Client IP Address Check?] in [Authentication Information Settings] to 'No', and set [Notify User Information?] in [Linkage with Web applications] to 'Yes' and then click the [Update] button.

3.4.11 Notes on Reverse Proxy Linkage

The message file for the unauthenticated window displayed when the POST request is authenticated must be modified to perform authentication in an environment where:

- There is reverse proxy linkage.

- The linked reverse proxy cannot convert the URL described in the <script> tags.

The content of the modified "200postauth_en.template" message file is displayed below. (*1)

- The modified parts that are displayed in bold.

- The numbers on the left have been added to show the lines for which caution should be exercised at the time of the edit - they do not appear in the actual message file.

```
 1:<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 3.2 Final//EN">
 2:<html>
 3:<head>
 4:<meta http-equiv="Content-Type" content="text/html; charset=Shift_JIS">
 5:<title> POST authentication </title>
 6:<script language=JavaScript>
 7:<!--
 8:var winObj;
 9:var target = "<!--SSO_POST_REQUEST_AUTH_TARGET-->";
10:var winName = "_blank";
11:var options = "width=480,height=360,menubar=no,toolbar=no,status=yes,location=yes";
12:function popup_open(){
13:    var target2 = document.links[0].href;
14:    if( (!winObj) || (true==winObj.closed) ){
15:        winObj = window.open(target2, winName, options);
16:    }
17:}
18:function popup_close(){
19:    if( (winObj) && (false==winObj.closed) ){
20:        winObj.close();
21:    }
22:}
23:function popup_check(){
24:    if( (winObj) && (false==winObj.closed) ){
25:        winObj.focus();
26:    }
27:}
28:// -->
29:</script>
30:</head>
31:
32:<body onunload="popup_close()" onfocus="popup_check()" >
33:<!--SSO_POST_REQUEST_AUTH_NEED-->
34:<a href="<!--SSO_POST_REQUEST_AUTH_TARGET-->"></a>
35:<table border="0" cellpadding="10" width="100%">
36:<tr><td>
37:<b><font size="+2"> POST authentication </font></b>
```

```
38:</td></tr>
39:</table>
40:<hr size="2" noshade>
41:Click the following link to display the authentication window, check that the authentication server
is correct, and then perform the authentication.<br><br>
42:<div id="fj_is_sso" style="position: absolute"><a href="javascript:void(0)"
onClick="popup_open()">The authentication window is displayed</a></div>
43:<br>
44:</body>
45:</html>
```

If the message file is modified as displayed above, then no links containing the <a> tag should be created above line 34.

For more details on editing message files, refer to "Unauthenticated Window Tag Specifications" in the "Single Sign-on Customization" chapter of the Single Sign-on Operator's Guide.

*1 The modified message file is stored at the following directory:

Windows32/64

```
C:\Interstage\F3FMsso\ssoatzag\pub\template\
```

Solaris32/64 Linux32/64

```
/etc/opt/FJSVssoaz/pub/template/
```

3.4.12 Notes on Using the Form Authentication Function

Note the following points when using the form authentication function:

1. If a user who is not authenticated accesses 'an unprotected webpage containing protected images', the webpage is displayed. However, the protected images in the webpage are not displayed. To display all images, set the protection resource so that the HTML files and images constituting the webpage are protected together.

2. If a webpage and the images contained in it are protected, the images in the webpage may not be correctly displayed when the validity period of authentication information has expired. For example, suppose that the validity period of authentication is in effect when a client accesses a webpage but had expired when the web browser reads images from the webpage. In this case, the webpage is displayed but the images in it are not displayed.

   If this happens, the user can display the images of the webpage using the reloading function of the web browser.

3. If the user's web browser is Windows(R) Internet Explorer(R) and the user selects 'No' on the 'Security Warning' dialog box displayed on the web browser after a successful user authentication, the 'User was already authenticated.' message is displayed and the user cannot access the protection resource.

   If this happens, the user can display the webpage by accessing the protection resource again.

4. If Windows(R) Internet Explorer(R) is used as the web browser, the web browser cache function may cause the results of previously displayed protected resources to display. When users leave their computers unattended, they should take precautions to ensure that unauthorized users cannot access the system illegally.

3.4.13 Notes on Authenticating POST Requests

Note the following points when authenticating POST requests.

1. Use only one Japanese encoding for web content throughout the website.

2. Use 'application/x-www-form-urlencoded' as the content-type for the data that is sent with POST requests.

3. Note the following points when using a URL format that starts with a schema to specify the transmission destination for POST requests (the 'action' attribute of the <FORM> tag) in the web content:

   - Make sure that the host name and the port number match the host name and port number for the business system public URL.

   - If the schema is 'http' and the port number is '80', or if the schema is 'https' and the port number is '443', omit the port number.

4. If the unauthenticated window that is displayed when authenticating POST requests includes Japanese language, make sure that the Japanese character encoding matches the encoding specified for the 'charset' attribute of the <meta> tag in the following files for the unauthenticated window: (*1)

   - 200postauth_en.template or 403postauth_en.template

5. When a POST request is sent, the unauthenticated window may remain open the first time the Business system is accessed even if authentication is complete. In this case, it is possible to continue use of the Business system by clicking the link for the Authentication window displayed in the unauthenticated window.

*1 For more information about files for the unauthenticated window, refer to "Customizing Messages Displayed on a Web Browser" in the "Single Sign-on Customization" chapter of the Single Sign-on Operator's Guide.

3.4.14 Notes about the Authentication Infrastructure Setup File

This is not valid for Standard-J Edition on Windows (64 bit).

This is not valid for Standard-J Edition on Linux (64 bit).

When the authentication infrastructure setup file is downloaded from the authentication infrastructure for which "localhost", the localhost IP, or the host name is set for [Repository Server (update system) URL] and the authentication server is created on another machine, communication from the authentication server to the repository server (update system) may fail.

Set a repository server (update system) URL that can be used for communication from the Authentication server.

To set the repository server (update system) URL, in the Interstage Management Console click [System] > [Security] > [Single Sign-on] > [Authentication infrastructure] > [Repository server] > [Settings] > [Repository server detailed settings[Show]] > [Authentication Infrastructure Information Settings] > [Repository server (update system) URL].

3.4.15 Notes on Integrated Windows Authentication

If the authentication server has been registered in the domain of the ActiveDirectory to be linked to, then one of the following network settings must be configured: (*1)

[Setting 1]

The authentication server can be accessed using a different domain to the one for the ActiveDirectory to be linked to.

[Setting 2]

The authentication server can be accessed using a different host name to the one for the authentication server.

The method to configure the settings is explained in the environment examples below.

  - Authentication server host name: authserver

  - ActiveDirectory domain: ad.local

    Authentication server FQDN: authserver.ad.local

[Setting 1]

In the following example, "fujitsu.com" has been prepared as the domain that is different to the one for the ActiveDirectory.

In this case, the authentication server is accessed using the "authserver.fujitsu.com" FQDN.

First, configure the DNS server settings so that authentication server name resolution can be performed with "authserver.fujitsu.com".

Then, configure the authentication infrastructure and set up the Integrated Windows Authentication using "authserver.fujitsu.com" as the authentication server FQDN.

[Setting 2]

In the following example, "ssoauth" has been prepared as the host name that is different to the one for the authentication server.

In this case, the authentication server is accessed using the "ssoauth.ad.local" FQDN.

First, configure the DNS server settings so that authentication server name resolution can be performed with "ssoauth.ad.local".

Then, configure the authentication infrastructure and set up the Integrated Windows Authentication using "ssoauth.ad.local" as the authentication server FQDN.

*1 This setting is unnecessary if a load balancer is aligned before configuration of the authentication server so that the authentication infrastructure FQDN is different to the authentication server FQDN.

3.4.16 Notes on Operating the Interstage Management Console

If the number of entries, such as user information, role definitions, and protection resources, registered in the SSO repository is large, then the display of site or path definitions may become extremely slow.

To refer to site or path definition information in the above type of state, use the Interstage Directory Service Entry Management Tool or the *ldapsearch* command. Site or path definitions are registered under "Protection Resource Registration Entry". (*1)

*1 To access this field, click [System] > [Security] > [Single Sign-on] > [Authentication infrastructure] > [Repository server] > [Settings] > [Repository server detailed settings [Show]]

3.4.17 Notes about Setting up Single Sign-on Systems Containing Mixed Versions and Editions

Interstage single sign-on systems consist of a repository server, an authentication server, and business servers. For these servers, different editions and versions can be combined freely.

However, you should note the following points.

- When configuring the repository server, the authentication server or the business server in combination with each other, configure them with the machine in which Interstage with the same platform and the same version edition installation directory is installed.

- The version and edition of each server are different by the system configuration. When configuring the system, check the version and edition that can be used. For details about the version and the edition that each server can use, refer to "Versions and Editions that can be Used".

Versions and Editions that can be Used

This explains the version and the edition in the cases of "When session management is performed" and "When session management is not performed". The table indicates an abbreviation for the edition as follows:

EE: Interstage Application Server Enterprise Edition

SJE: Interstage Application Server Standard-J Edition

PL: Interstage Application Server Plus

-: Not usable

Note

When there are one more systems to configure, use a new version.

When Session Management is Performed

System to operate the session management

For session management, refer to "Session Management" in the "Overview" chapter of the Single Sign-on Operator's Guide.

Server	EE	SJE	PL
Business server	V8.0 or later	V8.0 or later	-
Authentication server	V8.0 or later	V8.0 or later	-
Repository server	V8.0 or later	V8.0 or later	-

- System to Perform the Operation in the IPv6 Environment

- System to Set Up a Multiple Repository Server (Update System) Using the Relational Database (RDB) in the SSO Repository

- System to Use Active Directory in the User Information Registration Destination Directory Service

- System to Perform the Integrated Windows Authentication

- System to Perform the Form Authentication

- System to Perform the Authentication for POST Request

- System to Perform the Certificate Authentication

- System to Notify the Extended User Information to the Web Application

System to Perform the Operation in the IPv6 Environment

Systems that comprise of a repository server, an authentication server or a business server with version V9.0 or earlier, will not operate in an IPv6 environment. If this is the case, change the settings of the operating system or the web server integrated into each server so that Interstage Single Sign-on uses only IPv4 addresses.

Server	EE	SJE	PL
Business server	V9.1 or later	V9.1 or later	-
Authentication server	V9.1 or later	V9.1 or later	-
Repository server	V9.1 or later	V9.1 or later	-

System to Set Up a Multiple Repository Server (Update System) Using the Relational Database (RDB) in the SSO Repository

For details on this system, refer to "High-Performance and High-Reliability System" in the "Overview" chapter of the Single Sign-on Operator's Guide."

Server	EE	SJE	PL
Business server	V9.0 or later	V9.0 or later	-
Authentication server	V9.0 or later	V9.0 or later	-
Repository server	V9.0 or later	-	-

System to Use Active Directory in the User Information Registration Destination Directory Service

For details on this system, refer to "Linking to Active Directory" in the "Overview" chapter of the Single Sign-on Operator's Guide.

Server	EE	SJE	PL
Business server	V8.0 or later	V8.0 or later	-
Authentication server	V9.1 or later	V9.1 or later	-
Repository server	V9.1 or later	V9.1 or later	-

System to Perform the Integrated Windows Authentication

For details on Integrated Windows Authentication, refer to "Integrated Windows Authentication" in the "Overview" chapter of the Single Sign-on Operator's Guide.

Server	EE	SJE	PL
Business server	V8.0 or later	V8.0 or later	-
Authentication server	V9.0 or later	V9.0 or later	-
Repository server	V9.0 or later	V9.0 or later	-

System to Perform the Form Authentication

For details on the form authentication, refer to "Password and Certificate Authentication" in the "Overview" chapter of the Single Sign-on Operator's Guide.

Server	EE	SJE	PL
Business server	V8.0 or later	V8.0 or later	-
Authentication server	V8.0 or later	V8.0 or later	-

Server	EE	SJE	PL
Repository server	V8.0 or later	V8.0 or later	-

System to Perform the Authentication for POST Request

For details on the authentication for the POST request, refer to "Password and Certificate Authentication" in the "Overview" chapter of the Single Sign-on Operator's Guide.

Server	EE	SJE	PL
Business server	V8.0 or later	V8.0 or later	-
Authentication server	V8.0 or later	V8.0 or later	-
Repository server	V8.0 or later	V8.0 or later	-

System to Perform the Certificate Authentication

For details on the certificate authentication, refer to "Password and Certificate Authentication" in the "Overview" chapter of the Single Sign-on Operator's Guide.

Server	EE	SJE	PL
Business server	V8.0 or later	V8.0 or later	-
Authentication server	V9.1 or later	V9.1 or later	-
Repository server	V9.1 or later	V9.1 or later	-

System to Notify the Extended User Information to the Web Application

For details on the extended user information, refer to "Linkage with Web applications" in the "Overview" chapter of the Single Sign-on Operator's Guide.

Server	EE	SJE	PL
Business server	V9.1 or later	V9.1 or later	-
Authentication server	V9.1 or later	V9.1 or later	-
Repository server	V9.1 or later	V9.1 or later	-

When Session Management is not Performed

System to Perform the Operation in the IPv6 Environment

Systems that comprise of a repository server, an authentication server or a business server with version V9.0 or earlier, will not operate in an IPv6 environment. If this is the case, change the settings of the operating system or the web server integrated into each server so that Interstage Single Sign-on uses only IPv4 addresses.

Server	EE	SJE	PL
Business server	V9.1 or later	V9.1 or later	-

Server	EE	SJE	PL
Authentication server	V9.1 or later	V9.1 or later	-
Repository server	V9.1 or later	V9.1 or later	-

System to Set up Multiple Repository Server (Update System) Using the Relational Database (RDB) in the SSO Repository

For details of this system, refer to "High-Performance and High-Reliability System", "Load Balancing" in the "Overview" chapter of the Single Sign-on Operator's Guide.

Server	EE	SJE	PL
Business server	V7.0 or later	V8.0 or later	V7.0 or later
Authentication server	V7.0 or later	V8.0 or later	V7.0 or later
Repository server	V9.0 or later	-	-

System to Use the Active Directory in the User Information Registration Destination Directory Service

For details on this system, refer to "Linking to Active Directory" in the "Overview" chapter of the Single Sign-on Operator's Guide.

Server	EE	SJE	PL
Business server	V7.0 or later	V8.0 or later	V7.0 or later
Authentication server	V9.1 or later	V9.1 or later	-
Repository server	V9.1 or later	V9.1 or later	-

System to Perform the Integrated Windows Authentication

For details on Integrated Windows Authentication, refer to "Integrated Windows Authentication" in the "Overview" chapter of the Single Sign-on Operator's Guide.

Server	EE	SJE	PL
Business server	V7.0 or later	V8.0 or later	V7.0 or later
Authentication server	V9.0 or later	V9.0 or later	-
Repository server	V9.0 or later	V9.0 or later	-

System to Perform the Form Authentication

For details on the form authentication, refer to "Password and Certificate Authentication" in the "Overview" chapter of the Single Sign-on Operator's Guide.

Server	EE	SJE	PL
Business server	V7.0 or later	V8.0 or later	V7.0 or later
Authentication server	V7.0 or later	V8.0 or later	V7.0 or later
Repository server	V7.0 or later	V8.0 or later	V7.0 or later

System to Perform the Authentication for POST Request

For details on the authentication for the POST request, refer to "Password and Certificate Authentication" in the "Overview" chapter of the Single Sign-on Operator's Guide.

Server	EE	SJE	PL
Business server	V8.0 or later	V8.0 or later	V8.0 or later
Authentication server	V7.0 or later	V8.0 or later	V7.0 or later
Repository server	V7.0 or later	V8.0 or later	V7.0 or later

System to Perform the Certificate Authentication

For details on the certificate authentication, refer to "Password and Certificate Authentication" in the "Overview" chapter of the Single Sign-on Operator's Guide.

Server	EE	SJE	PL
Business server	V7.0 or later	V8.0 or later	V7.0 or later
Authentication server	V7.0 or later	V8.0 or later	V7.0 or later
Repository server	V7.0 or later	V8.0 or later	V7.0 or later

System to Notify the Extended User Information to the Web Application

This function cannot be used.

3.5 Notes on the Interstage HTTP Server

This section provides notes on the Interstage HTTP Server.

Interstage HTTP Server is a web server based on Apache 2.0.59.

In addition to the basic functions provided through Apache 2.0.59, the following functions are supported to meet various functional requirements on web servers.

- Interstage Management Console

- Online Collation Function (LDAP)

- SSL

- Log file rotation function

Refer to the Apache HTTP Server Version 2.0 Documentation for details of the Apache functions available when using Interstage HTTP Server. This documentation is contained in "httpd-docs-2.0.58.en.maff.zip". Extract this file, open folder "httpd-docs-2.0.58.en", and then open index.html.

3.5.1 Starting and Stopping Interstage HTTP Server

To start or stop Interstage HTTP Server, the following methods are available:

Refer to the Reference Manual (Command Edition) for details of these commands.

- If the Interstage Management Console is to be used, start the Interstage Management Console to log in to the system, and perform the start or stop operation in the following window:

  - To start or stop Interstage HTTP Server

    [System] > [Services] > [Web Server] > [Web Server name] > [Web Server: Web Server Status] screen

  - To start or stop Interstage HTTP Server in conjunction with Interstage

    [System] > [System: View System Status] screen

 - If the Interstage setup command is used, use the commands below to perform the start or stop operations.

  - To start Interstage HTTP Server

    isstop -f

    ismodifyservice -a FJapache (when the Interstage HTTP Server service has not been added to the Interstage operating environment)

    isstart

  - To stop Interstage HTTP Server

    isstop

- If the Interstage HTTP Server Operation command is used, use the commands below to perform the start or stop operations.

  - To start Interstage HTTP Server

    ihsstart

  - To stop Interstage HTTP Server

    ihsstop

Windows32/64

- To use the service, log in with Administrator permission, open [Control Panel] > [Administrative Tools] > [Services], select 'FJapache' or 'Interstage HTTP Server (Web Server name)', and click start or stop.

Note

- The *apache* command provided cannot be used in a Windows(R) system.

Windows32/64

- The following operations can be used only by Administrators or by users who belong to the Administrators group:

  - Interstage HTTP Server install

  - Interstage HTTP Server uninstall

  - Web server start

  - Web server stop

  - Web server create

  - Web server delete

3.5.2 Operating Interstage HTTP Server Solaris32/64 Linux32/64

Do not delete the following process management files while operating Interstage HTTP Server.

```
/var/opt/FJSVihs/var/.pid/(Web Server name).pid
```

If the file is deleted, the operation of Interstage HTTP Server cannot be guaranteed. Restart the system again to operate normally.

3.5.3 Operating Interstage Management Console

Interstage HTTP Server allows a user to set up the web server environment definition using the Interstage Management Console.

3.5.4 Online Collation Function (LDAP) and SSL Settings

For the setting methods of the Online Collation function (LDAP) and SSL, refer to the Security System Guide.

3.5.5 Access Log and Error Log Settings

For the setting methods of the access log and error log, refer to "ihsrlog" in the Reference Manual (Command Edition).

3.5.6 Environment Definition File (httpd.conf) Settings

Do not change the definition of the *PidFile* directive and the ServerRoot directive in the environment definition file (*httpd.conf*). If the definition is changed, the Interstage HTTP Server may not work correctly.

3.5.7 Third Party plug-in Module Support

Third party plug-in modules, including mod_perl and mod_php, are not supported - only plug-in modules provided in the Fujitsu product can be used.

If a non-unsupported plug-in module is installed in Interstage HTTP Server, then none of the Interstage HTTP Server operations will be supported.

3.5.8 Certificates Issued using OpenSSL

Certificates issued using OpenSSL cannot be used. For details on certificates, refer to the Security System Guide.

3.5.9 HTTP Methods for Static Content

The HTTP methods below can be used for static content (POST method cannot be used):

- GET

- HEAD

- OPTIONS

- TRACE

3.6 Notes on Interstage JMS

Notes on Executing JMS Operation Commands

Do not perform the following operations while the JMS operation command is running. If the following operations are performed, it may cause the Interstage JMS resources to have illegal status.

- The JMS operation command is stopped because of an urgent situation.

- A JMS operation command process is forced to shut down.

- The terminal used to execute the JMS operation command is stopped.

3.7 Notes on J2EE

1) J2EE Application Operation

To use the following XML files while the web application or the J2EE application client is operating, add the Java VM heap area, which is calculated from the formula shown below, to the specified value for the maximum Java VM heap area size.

- Target XML files during operating web application

    - Web application environment definition file (web.xml)

    - Name conversion file (FJebeProperties.xml).

- Target XML files during operating J2EE application client

    - Deployment descriptor file

    - Name conversion file.

Java VM heap area size calculation

Use the following formula to calculate the Java VM heap area size of each XML file. Add them to find the total required area:

```
(((a * 460) + b) / 1024) + 500) * c (unit: kilobytes)
```

a: Number of lines in an XML file

b: XML file size (unit: bytes)

c: Number of clients accessed at the same time (when operating the web application), or the number of threads that issue lookups (when operating the J2EE application client)

The specification method of Java VM heap area size

When operating the Web application

Specify the size for the Java VM option at [WorkUnits] > 'IJServer name' > [Settings] tab.> [WorkUnit setting [Show]] > [Java VM Options] on the Interstage Management Console

Example of specifying 512 megabytes for the maximum Java VM heap area size:

```
-Xmx512m
```

When operating the J2EE application client

Use the -Xmx option of the *java* command, and specify the size as shown below:

Example of specifying 128 megabytes for the maximum Java VM heap area size:

```
java -Xmx128m ClientAPL
```

Event resulting when the Java VM heap memory becomes insufficient

When an application is operated, if the Java VM heap area size to be used is not added to the maximum size, the following event may occur:

- javax.naming.NamingException:com.fujitsu.interstage.j2ee.def.FJDefException: unknown error: java.lang.OutOfMemoryError

2) Notes About Referencing JDBC Datasources

If web applications and EJB applications are run on the same VM and use the same datasource, get the JDBC datasource using the InitialContext lookup method for each.

Issue the getConnection method from the web application for the datasource obtained in the EJB application.

Issue the getConnection method from the EJB application for the datasource obtained in the web application.

3) Notes About Using SQLServer2005

If the connection status for a java.sql.Connection obtained using a datasource defined from the Interstage Management Console or using the *isj2eeadmin* command in the J2EE application client is checked using the isClosed() method after the close() method was issued, the value expected by the isClosed() method may not be returned. This can occur when thread concurrency is used.

An example showing the how this might occur is shown below.

```
javax.sql.DataSource dataSource = null;
java.sql.Connection connection = null;
try {
    javax.naming.Context nctx = new javax.naming.InitialContext();
    dataSource = (javax.sql.DataSource)nctx.lookup("java:comp/env/jdbc/DB1");
} catch (javax.naming.NamingException ex) { }
try {
    connection = dataSource.getConnection();
    /* Database access processing */
    connection.close();
} catch ( java.sql.SQLException sqlEx ) {
} finally {
    try {
        if ( !connection.isClosed() ) {
            connection.close();
        }
    } catch (java.sql.SQLException sqlEx2) { }
}
```

4) Notes on the JDK/JRE Versions

From the development to the execution stage, it is recommended that the same JDK/JRD version is used.

3.8 Notes on the Servlet Service

1) Servlet Service Execution Environment

The Servlet Service execution environment is based on Tomcat 5.5.23. Tomcat 5.5.x differs from Tomcat5.5.23 in specification. Therefore, even if the Servlet and JSP application can operate with Tomcat 5.5.x, they may not operate with the Servlet service of this product.

2) Session Management Cookie of Servlet Service

When the web server runs in an SSL environment, the Secure attribute is automatically added to the session management cookie.

If the web server runs in non-SSL (HTTP) mode while the SSL accelerator is used, the Secure attribute is not automatically added. Use the following method to add the Secure attribute:

Refer to "Environment Setup for Servlet Service" in the "How to Use SSL with J2EE" chapter of the Security System Guide.

Session management using cookies is performed automatically by the Servlet container. Do not perform operations such as adding cookies for session management in the application, as this may cause problems with session continuation or session security.

3) Reflecting JSP Update on Servlet Service

When replacing the JSPs of the web application that has already been deployed or the files that are included statically by a JSP, the replacement will be reflected through the IJServer reactivation, the module reactivation, and the JSP reload function. However, if the file dates are earlier than the time/date of the previous JSP compilation, it will not be reflected.

It can be reflected through one of the following steps:

- Update the file dates to the current time of the machine.

- Execute the JSP pre-compilation by specifying the '-1' option.

  Refer to "ijscompilejsp" in the Reference Manual (Command Edition) for the details of the command.

4) Context Share Function

Take note of the following when the application uses the context share function to dispatch to another web application and then uses the session:

- When a session is generated at the dispatch destination, a session will be generated automatically at the dispatch source if no session existed at the dispatch source.

- When a session is abandoned at the dispatch source, the session cannot be referenced even if there is a session already generated at the dispatch destination.

  It will generate a new session at getSession() or getSession(true) and a null at getSession(false).

  Even if a session is abandoned at the dispatch source, the session in the dispatch destination will not be abandoned automatically.

  Make sure that a session at the dispatch destination is abandoned before the session at the dispatch source is abandoned.

5) JSP Reload Function

When [At request] is set using the JSP reload function, exceptions generated at the JSPs (IO Exception or Runtime Exception, etc.) may sometimes be wrapped at the sub-class of the Servlet Exception and notified to the call source (filter, Servlet at the dispatch source, or JSP).

6) Servlet Service Chunk Format Encoding `Windows32/64`

Chunk format encoding cannot be applied for web applications if Microsoft(R) Internet Information Services is used as the web server.

To send request messages from client applications such as the web browser, specify the Content-length header or use Interstage HTTP Server.

7) Load Balancing using a Load Balancer

If the Load Balancer provides a configuration item to disable keyword duplication check, then make sure that it is set to 'disable keyword duplication check.

3.9 Notes on Using the EJB Service

This section provides information on using the EJB Service.

3.9.1 Note on Class Names

When installing multiple EJB applications on the same machine, if there is a class (such as HOME interface, Remote interface, Enterprise Bean class, and primary key class) that has the same name but different implementation, the incorrect operation occurs. Therefore, when developing EJB applications, determine a package name so that the class name does not get duplicated.

3.9.2 Notes for EJB Application Processing

Do not control signals using the Java Native Interface (JNI) from EJB applications. If signal control is performed, operation may not be correct.

3.10 Notes on the CORBA Service

This section provides additional information on the CORBA Service.

3.10.1 Notes on Installation and Environment Settings `Windows32/64` `Solaris32/64`

When the CORBA Service is installed and linked to the Systemwalker/CentricMGR operation management tool, particular care is needed when stopping the CORBA Service and when setting up the environment uninstalling.

Stopping

The Systemwalker/CentricMGR operation management tool cannot be used when the CORBA Service (ObjectDirector) has been stopped.

Setting up the Environment

Setting up the CORBA Service environment may affect the Systemwalker/CentricMGR operation management tool if it is using ObjectDirector. Pay attention to the environments for this product when setting up the CORBA Service environment.

Uninstalling

The Systemwalker/CentricMGR operation management tool cannot be used when CORBA Service (ObjectDirector) has been uninstalled.

3.10.2 Notes about Setting Applications

`Solaris32/64`

- To operate COBOL applications in a Shift JIS environment, specify CBR_CODE_CHECK=no.

- If the *odadmin* command, *isinit* command or CORBA Service is executed during operation of a CORBA application, the following message is output to the console.

  Stop the CORBA application.

  ```
  'UXOM 1.0:SEV=E,acf=init :demon start fails'
  ```

`Windows32/64`

- When specifying environment variables in env when registering the implementation repository, do not specify multiple character strings delimited by semicolons (;). The system recognizes semicolons as delimiters between different environment variables.

  Examples of acceptable settings:

  ```
  env = Path=C:\WINDOWS
  env = Path=C:\WINDOWS;LIB=C:\USER
  ```

  Example of unacceptable setting:

```
env = Path=C:\WINDOWS;C:\WINDOWS\SYSTEM
```

If it is necessary to specify values delimited by semicolons in the PATH environment variable, do not register the variable in the implementation repository, but use one of the following methods:

- Set the necessary path in the PATH system environment variable

- Set the environment variable by the application itself (putenv function)

Also note that system and user environment variables other than those specified in env are invalid.

3.10.3 Notes on the IDL Compiler

- If the IDL compiler is used in a client, install CORBA Service Client and CORBA Service Development Tool.

- The IDL file suffix, 'idl' must be in lower-case letters. If the suffix is in upper-case letters (such as when the file is moved with ftp), change the suffix to the lower-case letters, and then execute the IDL compile.

- When the IDL compiler is used, it is necessary to set the environment variable OD_HOME.

3.10.4 Notes on the Java Environment

- The appletviewer cannot be used.

- Solaris64

  To use Security Manager, set one of the following:

  - Set the following system property:

```
jdk.corba.allowOutputStreamSubclass=true
```

  - Set the SerializablePermission enableSubclassImplementation permission in the following Java libraries:

    - /opt/FSUNod/etc/class/ODjava4.jar

    - User application classes and libraries

3.10.5 Notes on SSL Communication

- In SSL linkage, requests from the clients cannot be received in the following cases:

  - Certificates become invalid or expired after starting the CORBA Service (ObjectDirector).

  - Nicknames of certificates were omitted in setting the SSL environment or in executing the *odsetSSL* command.

- When deleting or canceling (CRL: Registering in the list of invalid certificates) the certificates that have been set in the CORBA Service, first terminate the CORBA Service.

- When the server host names or IP addresses from the clients cannot be solved in the SSL communication, set the server host information in the 'hosts' file or DNS.

Windows32/64 Solaris32/64

- SSL linkage cannot be used from the clients of a version of Interstage earlier than V2.0L10. In addition, the Object Reference for the SSL linkage cannot be registered to the Naming Service of Interstage earlier than V2.0L10.

3.10.6 Notes on HTTP Tunneling

HTTP tunneling is available for the following products:

- Interstage Application Server Enterprise Edition

When HTTP tunneling is used for a client application that operates by multithread and there is a competing request at the time of initial communication, it may not operate correctly. Do not make a simultaneous request by multithread until the initial request has completed.

3.11 Notes on the Event Service

The following notes relate to operation of the Event Service.

3.11.1 Note on Reinitializing Interstage

When Interstage is to be reinitialized after the event channel has been generated with the *esmkchnl* command, use the *esrmchnl* command to delete the event channel before reinitializing Interstage. If Interstage is to be initialized without deleting the event channel, after initialization, delete the event channel that existed before initialization.

3.11.2 Notes on the Event Service Application

Notes on creating applications

1. Create Event Service applications as CORBA Service applications.

2. When the event service application is used, do not issue the disconnect method in the event data wait state by issuing the pull and pull_wait methods. Before issuing the disconnect method, cancel the wait state for the event data by issuing the pull_cancel method. Then issue the disconnect method.

Notes on running applications

1. When the exception and minor codes are reported from the Event Service application, check the action, referring to 'Exception Information Minor Codes to be Reported from the CORBA Service' and 'Exception Information Minor Codes to be Reported from the Event Service' in Messages.

   The pull or the pull_wait method cannot be reissued when the exception 'COMM_FAILURE' and the minor code '0x464a01c1 or 0x464a09c1' are reported from pull or the pull_wait method, and do not reissue pull or the pull_wait method when other exceptions and the minor codes are reported.

2. Do not share the Proxy object between threads when you operate the application of the Event Service in the thread mode. (The Proxy object is an object reference in the interface to communicate with the Event Channel.) Maintain a unique Proxy object an individual thread.

3. When dynamic generation EventChannels are used, if automatic collection of connection information is enabled (see **Note**) and any local transactions are still incomplete when the connection information is collected, then the local transactions are rolled back.

   Note:

   If one of the following is set, then automatic collection of remaining connection information in the EventChannel is enabled if the Supplier/Consumer are terminated without issuing the 'disconnect' method for a dynamic generation EventChannel when the application ends abnormally. For example.

   - The Event Service was set up by specifying the -autodiscon option in the *essetup* command.

   - Interstage was initialized using the *essetup* command by specifying "yes"(Event Auto Disconnect=yes) for "Event Auto Disconnect" (Interstage operation environment definition).

   - The Interstage environment settings were configured by setting [Automatic connection recovery] to "Enable" in the Interstage Management Console.

3.11.3 Notes on SSL Communication

To perform SSL communication in the event service, the SSL environment of the CORBA service must have been set in advance.

3.11.4 Note on Unit Generation

`Windows32/64`

To generate a unit during persistent channel operation, the storage folder of each control file must specify a drive whose file system is NTFS.

`Solaris32/64` `Linux32/64`

If a raw device is specified for storing transaction files when a Unit (storage destination) is created during persistent channel operation, this raw device must already have been created, with a maximum partition size of two gigabytes.

When the unit is created, do not update the resources under the directories (trandir, sysdir, userdir) that were specified in the unit configuration file.

If these resources are updated, then the following may happen:

- The EventChannel fails to start up.

- The EventChannel starts up normally, but the "NO_IMPLEMENT" system exception is notified when the EventChannel is accessed.

If the above occurs, create the EventChannel again.

For details on unit generation, refer to "esmkunit" in the Reference Manual (Command Edition).

3.11.5 Note on Persistent Channel Applications

If the connection is forcibly disconnected due to a system failure, applications of the persistent channel must be restarted. If processing continues without restarting persistent channel applications, a system exception COMM_FAILURE with the minor code 0x464a0109 (invalid data received) may be returned.

3.11.6 Notes on Multi-IP Address Operation

Host Name

When the host name is set to either of the following, the Multi-IP address function cannot be used:

- 'Corba Host Name' in the Interstage operating environment definition file

- 'IIOP_hostname' in the CORBA Service config file

Port Number

Set either of the following for the port number:

When SSL communication is invalid:

- 'Corba Port Number' in the Interstage operating environment definition file

- 'IIOP_port' in the CORBA Service config file

When SSL communication is effective:

- 'SSL Port Number' in the Interstage operating environment definition file

- 'UNO_IIOP_ssl_port' in the CORBA Service config file

Refer to the Reference Manual (Command Edition) for the method of specifying the host name and the port number of the Event Service.

3.11.7 Notes on the COBOL Application

The mixed model consumer objects cannot be registered at the notification service.

3.12 Notes on the Component Transaction Service

The Component Transaction Service can be used with the following products:

- Interstage Application Server Enterprise Edition

- Interstage Application Server Standard-J Edition

This section provides additional information on the Component Transaction Service.

3.12.1 About CORBA Service Termination using the isstop Command

Solaris32/64

When the *isstart* command is executed, CORBA Service cannot be stopped using the *isstop* command. If this occurs, immediately execute the *isstop* command with -f specified.

3.12.2 Monitoring during Interstage Operation Solaris32/64

If Interstage is started using the *isstart* command and one of the Interstage services terminates abnormally during operation, execute the following recovery processing:

- If CORBA Service, Naming Service, Interface Repository, Load Balance, Component Transaction Service, Database Linkage Service, Web Server or Servlet Service terminates abnormally, stop the Component Transaction Service, Database Linkage Service, resource control program, Web Server and Servlet Service.

- If the Event Service terminates abnormally, then Interstage continues operation. Even if the service is stopped using an individual command (*tdstop* for Component Transaction Service), execute recovery processing in the same manner as when the service terminates abnormally.

3.13 Notes on the Database Linkage Service Windows32/64 Solaris32 Linux32/64

This section explains the following topics:

- Notes on Creating Applications

Notes on Creating Applications

Create Database Linkage Service applications as CORBA Service applications.

3.14 Notes on Interstage Directory Service

This is not valid for Standard-J Edition on Windows (64 bit).

This is not valid for Standard-J Edition on Linux (64 bit).

This section explains the following topics:

- 3.14.1 Notes on Disk Space Required for Operation (*1) (*2)

- 3.14.2 Notes on Entry Operation

- 3.14.3 Notes on the Entry Administration Tool (*1) (*2)

*1 This is not valid for Linux (64 bit).

*2 This is not valid for Windows (64 bit).

3.14.1 Notes on Disk Space Required for Operation

This is not valid for Linux (64 bit).

This is not valid for Windows (64 bit).

For the database storage directory, a disk area determined by the following calculation is required. Specify a disk with sufficient space as determined by this calculation.

```
0.1 * n * s / 500 + 200 MB
```

'N' represents the number of entries and 'S' represents the size (in bytes) of one entry when it is described in LDIF.

For a replication environment, the following calculation applies only to the master repository:

```
0.2 * n * s / 500 + 200 MB
```

The calculation provides a rough indication. Be sure to retain sufficient disk space capacity.

If the disk space specified for the database storage directory is insufficient, the message irep30023 is displayed and the repository is stopped forcibly. For details of the required user action in response to irep30023, refer to "Messages Beginning with 'irep'" in the Messages manual.

3.14.2 Notes on Entry Operation

Notes Common to Repository Databases

1. An entry containing an attribute consisting of only a blank value cannot be registered. An attribute consisting of only a blank value cannot be added to an entry.

2. If searching an entry which RDN contains '+', '\', or ',', these special characters are displayed as follows:

Special character	Search result in Interstage Directory Service
'+'	'\2B'
'\'	'\5C'
','	'\2C'

In addition, if the special characters above are specified for RDN, they must be escaped using '#'.

3. If modifying the DN of an entry that has many subordinate entries, a timeout may occur. To modify the DN of such an entry, export the entry with its subordinate entries to an LDIF file, perform replacement editing with the LDIF file, and then import the LDIF file to the repository again. After the import has completed successfully, delete entries with the old name.

Notes on Using the Standard Database as the Repository Database

This is not valid for Linux (64 bit).

This is not valid for Windows (64 bit).

1. For an attribute value, two or more consecutive blank characters cannot be specified.

2. For an attribute value of an attribute that is specified for RDN, a blank character cannot be specified in the first or last character.

3. For an attribute value of an attribute that is specified for RDN, a colon (':') cannot be specified in the first character.

4. Object class names (attribute values of object classes) contained in search results are displayed in lower-case as follows:

```
dn: cn=user001,ou=interstage,o=fujitsu,dc=com
objectClass: top    <--  Displayed in lower case letters.
objectClass: person    <--  Displayed in lower case letters.
objectClass: organizational person    <--  Displayed in lower case letters.
objectClass: inetorgperson    <--  Displayed in lower case letters.
cn: user001
sn: Fujitsu
telephoneNumber: 1234
```

5. If modifying the attribute value of an attribute specified for RDN, upper-case can be changed to lower-case or vice versa only when the new RDN has the same name as the old one.

6. When an entry is registered, modified, or deleted, or the DN is changed, the specified value of the DN and the attribute are case-sensitive. Therefore, it is necessary to specify identical character strings for the DN value and RDN attribute value.

The following entry cannot be registered.

```
dn: cn=USER001,ou=interstage,o=fujitsu,dc=com    <--  The attribute value of cn does not match.
objectClass: top
objectClass: person
objectClass: organizational person
objectClass: inetorgperson
cn: user001    <--  The attribute value of cn does not match.
```

```
sn: Fujitsu
telephoneNumber: 1234
```

Notes on Using the RDB as the Repository Database

1. The attribute values specified for RDN are not case sensitive. It is not possible to change RDN attribute values so that they swap between upper- and lower-case (for example, uid001 cannot be changed to UID001).

2. Object class names (attribute values of object classes) contained in search results are case sensitive.

3.14.3 Notes on the Entry Administration Tool

This is not valid for Linux (64 bit).

This is not valid for Windows (64 bit).

1. If the development operation of one entry is performed in the tree view continuously, subordinate entries may be displayed one or more times.

   In this case, click the [Refresh] button to display the tree view again. The information of subordinate entries developed in the tree view can then be displayed correctly.

2. If the character string of an entry being modified is longer than the old one, the last part of the entry name is omitted and displayed.

   Double-click the entry that has been modified in the tree view. The modified entry name is displayed.

3. If developed subordinate entries are not displayed, the [tree view] display is distorted, or the display looks obviously incorrect, click the [Refresh] button to display the latest information. If the latest information is still not displayed, restart the Entry Administration Tool to reexecute the processing.

4. The registration of binary attribute values of 8 or more megabytes is not supported. For these, use the *ldapmodify* command or C APIs.

3.15 Notes on Multi Server Management Windows32/64 Solaris32 Linux32/64

This section explains Multi Server Management.

1) Previous Versions of Interstage

The table below lists the versions and editions of Interstage that can be added to a site when Multi Server Management is used (servers running Interstage versions or editions that cannot be used by Multi Server Management should be migrated to versions that can be used before adding the servers to the site):

Function	Version	Support Edition	Server Type
Admin Server	Interstage V10.0 or later	Interstage Application Server Enterprise Edition	Admin Server
Managed Server	Interstage V9.0 or later	Interstage Application Server Enterprise Edition	Application Server (See Notes)

Notes

- Web Package cannot be used as a Managed Server.

- A server in which Interstage Java EE is installed cannot be used as a Managed Server.

- If the server is to be used as a Managed Server or Combined Server, install the J2EE compatibility feature.

2) Single Sign-on

To use Single Sign-on in a Managed Server, use the Interstage Management Console of the Managed Server to set up the environment.

To set up the environment so the repository server, authentication server, or business server run on the Interstage HTTP Server, follow this procedure:

1. Log in to the Interstage Management Console of the Admin Server.

2. In the Interstage Management Console, click [Application Management] > [Interstage] > [Interstage Application Server] > [Services] > [Web Server] > [FJapache (Server Group Name or Server Name)]. Click the [Get Definition] tab, and select the repository server, authentication server, or the Managed Server on which the environment setup of the business server has been executed on Interstage HTTP Server. Click the [Select] button, and then click [Update].

3. In the Interstage Management Console, click [Application Management] > [Interstage] > [Interstage Application Server] > [Services] > [Web Server]. Select the Server Group or Managed Server to be operated, and then click [Start].

   Alternatively, click [Application Management] > [Interstage] > [Interstage Application Server] > [Services] > [Web Server] > [FJapache (Server Group Name or Server Name)], and then click [Start].

If Managed Servers are included in the Server Group, first set up the environment for all the Managed Servers, and then execute the above procedure.

3.16 Notes on JDK/JRE

This section explains the following topics:

3.16.1 JDK/JRE-related Manuals

For details about JDK/JRE, refer to the "JDK/JRE Tuning" chapter of the Tuning Guide. Basic information about JDK/JRE, tuning methods, and troubleshooting topics is provided in this document.

3.16.2 JDK/JRE Installation Directory `Solaris32/64` `Linux32/64`

`Solaris32/64`

The JDK/JRE is installed in the '/${DIR}/FJSVawjbk' directory. Be careful not to incorrectly specify the directory as '/${DIR}/FJSVawjdk', etc. ('${DIR}' represents the directory name specified when the package was installed; the default is "opt".)

The JDK/JRE is installed to the following directories:

- JDK6: /${DIR}/FJSVawjbk/jdk6

- JRE6: /${DIR}/FJSVawjbk/jre6

- JDK7: /${DIR}/FJSVawjbk/jdk7

- JRE7: /${DIR}/FJSVawjbk/jre7

`Linux32/64`

The JDK/JRE is installed in the '/opt/FJSVawjbk' directory. Be careful not to incorrectly specify the directory as '/opt/FJSVawjdk', etc.

The JDK/JRE is installed to the following directories:

- JDK6: /opt/FJSVawjbk/jdk6

- JRE6: /opt/FJSVawjbk/jre6

- JDK7: /opt/FJSVawjbk/jdk7

- JRE7: /opt/FJSVawjbk/jre7

Note on JDK/JRE package names

`Solaris32`

Package names differ according to the version of JDK/JRE:

- JDK/JRE 6: FJSVjdk6

- JDK/JRE 7: FJSVjdk7

Note that the name of the package changed in V8.0.

`Solaris64`

Package names differ according to the version of JDK/JRE:

- JDK/JRE 6: FJSVjdk6x

- JDK/JRE 7: FJSVjdk7x

Linux32/64

The name of the JDK/JRE package is 'FJSVawjdk'.

3.16.3 Notes on IPv6 Protocol Windows32/64

If the IPv6 protocol is installed but not enabled on the Windows operating system that supports the IPv6 protocol, applications that use MulticastSocket may be found to be incompatible. In such a case, the following must be set in the system property. For details on setting the system property, refer to the JDK documentation.

- java.net.preferIPv6Addresses=true

3.16.4 Default Values for the Memory Allocation Pool Area and the Permanent Generation Area

Each version of JDK/JRE has a different default initial value, the maximum value for the Memory Allocation Pool area and Permanent generation area. For details on each default, refer to "Tuning the Java Heap" in the "JDK/JRE Tuning" chapter of the Tuning Guide.

3.16.5 Notes on Migrating to JDK/JRE 6 or 7

- Notes on migrating from JDK/JRE 1.4 to JDK/JRE 6 or 7

Under JDK/JRE 6 and 7 FJVM, parallel GC is used as the default GC processing. Refer to "Garbage Collection (GC)", "Garbage Collection Processing Supported in the FJVM" in the "JDK/JRE Tuning" chapter of the Tuning Guide for points to note resulting from the change to parallel GC.

- Notes on migrating from JDK/JRE 1.4 or 5.0 to JDK/JRE 6 or 7 Windows32/64 Linux32/64

For Windows and Linux JDK/JRE executed in 32-bit mode, the size of the default stack for the following threads is the same for JDK/JRE 1.4 and 5.0, but different for JDK/JRE 6/7:

- Threads generated in Java API

- Threads for automatic compilation in the Client VM

For details of the default values, refer to "Tuning the Stack" in the "JDK/JRE Tuning" chapter of the Tuning Guide.

3.16.6 JVMPI

In JDK/JRE 6, Java Virtual Machine Profiling Interface (JVMPI) is not supported.

3.16.7 Notes on java.lang.Object.finalize()

The following problems can occur when an object overrides finalize():

- When an object overrides finalize(), it will not be released immediately by garbage collection (GC), even if it is no longer referenced by the Java program. This is because it is still referenced by the Java VM for execution of finalize() following the GC operation.

- There is no guarantee that finalize() will be executed after a GC.

- The order in which finalize() is executed is uncertain.

Articles stating that finalize() will be executed and the object will be released by the following process are common, but this is not certain to occur.

```
java.lang.System.gc();
java.lang.System.runFinalization();
java.lang.System.gc();
```

As a rule, therefore, developers should avoid overriding java.lang.Object.finalize() in Java programs.

Example

A programmer overrides finalize() and defines a termination process presuming that finalize() will be invoked when the GC runs. In some cases, however, finalize() does not run as expected, causing the termination process to fail, and resulting in a memory leak.

3.16.8 Notes on java.lang.Object.wait(long timeout)

For reasons due to JDK/JRE implementation, java.lang.Object.wait (long timeout) may be released (spurious wakeups) with neither notification nor time-out.

Reference: The Java(TM) Programming Language Third Edition, by Ken Arnold, James Gosling and David Holmes. Addison-Wesley, 2000,ISBN 0-201-70433-1

3.16.9 Notes on Using java.lang.Runtime.exec( )

This section provides important information relating to running a separate program with java.lang.Runtime.exec().

An exception occurs due to insufficient virtual memory `Solaris32/64` `Linux32/64`

The virtual memory size is the total of the real memory size plus the swap size. For this reason, if large files are stored in tmpfs (Example: /tmp) that uses virtual memory, then virtual memory will be reduced, even when memory is not being used.

In Java, the memory used by Java is reserved using the *java* command "-Xmx" option.

For this reason, reserved memory cannot be used for other purposes, even if it is not actually being used at the time.

Accordingly, even if it appears that there is available memory, the attempt to obtain the memory required for the child process startup might fail, which means the child process startup will also fail, and java.io.IOException might occur.

If large files are stored in tmpfs (Example: /tmp) that uses virtual memory or a large memory space is specified using the "-Xmx" option, and a child process is executed using the Runtime class exec method when there is insufficient virtual memory, then java.io.IOException might occur. If this happens, take action according to one of the following methods:

  - Increase virtual memory

  - Reduce the maximum size of the Java heap using the "-Xmx" option of the *java* command (by reducing the Java heap, the memory that can be used by the child process increases)

  - Do not store files in tmpfs (Example: /tmp) that uses virtual memory

  - When tmpfs that uses virtual memory is mounted, limit the virtual memory that can be used by tmpfs using the "-o size" option

An Exception Occurs Because of Insufficient File Descriptors

If the child process is executed using the Runtime class exec method when there is a large number of opened files, there may be insufficient file descriptors (fd) and an exception such as java.io.IOException may occur.

In this case, correct the program so that the child process closes input/output streams correctly even in the event of an error.

Refer to the following example.

Example

```
Process p = Runtime.getRuntime().exec(...);
    :
p.waitFor();               // Waits for the child process to finish
p.getInputStream().close();  // Closes standard output stream
p.getErrorStream().close();  // Closes the standard error output stream
p.getOutputStream().close(); // Closes the standard input stream
```

Child Process Stream I/O

For this reason, if the child process is waiting for input from standard input or cannot output to the standard output or the standard error output, the processing of the child process itself will not proceed and the child process will become blocked or deadlocked.

To prevent this problem, it is necessary to ensure that child processes write to the standard input and read from the standard output and standard error output correctly and promptly.

Write the program code as shown in the following example.

```java
import java.io.*;

public class ProcessSample {
    public static void main(String[] args) {
        new ProcessSample();
    }

    public ProcessSample() throws Exception {
        // Executes "sort data.txt" as a child process
        // sort is a command to sort text
        // data.txt is a text file in the current directory of the Java process
        Process p = Runtime.getRuntime().exec("sort data.txt");
        // Starts a thread to input the standard output and standard error
        // output of the child process
        new StreamThread(p.getInputStream(), "stdout.txt").start();
        new StreamThread(p.getErrorStream(), "stderr.txt").start();
        p.waitFor();  // Waits for the child process to finish
        p.destroy();  // Explicitly terminates the child process and
                      // enables resources to be released
    }

    /**
     *A thread that inputs from the output stream of the child process and outputs to a file
     */
    class StreamThread extends Thread {
        private static final int BUF_SIZE = 4096;
        private InputStream in;
        private BufferedOutputStream out;

        public StreamThread(InputStream in, String outputFilename) throws IOException {
            this.in  = in;
            this.out = new BufferedOutputStream(new FileOutputStream(outputFilename));
        }

        public void run(){
            byte[] buf = new byte[BUF_SIZE];
            int size = -1;
            try{
                while((size = in.read(buf, 0, BUF_SIZE)) != -1){
                    out.write(buf, 0, size);
                }
            }catch(IOException ex){
                ex.printStackTrace();
            }finally{
                try{in.close();} catch(IOException ex){}
                try{out.close();}catch(IOException ex){}
            }
        }
    }
}
```

3.16.10 Notes on the Return Value of java.beans.PropertyDescriptor.getWriteMethod()

JDK/JRE 1.3.1_08 and 1.4.0_01 solved the problem 'bean methods may not be obtained,' which was caused by a problem in java.beans.Introspector.getBeanInfo(). The operation of the java.beans.Introspector that may have produced different results on different Java VMs (because the order in which methods should return has not been defined in the JavaBeans specifications) has been corrected. Accordingly, for an application in which the parameter data type of the set***() method that sets bean properties does not match the data

type of the return value of the get***() method that obtains bean properties, null will be returned as a return value from PropertyDescriptor.getWriteMethod(). For this reason, make a program so that these data types match.

3.16.11 Notes on the Problem of Garbled Characters in Java

Characters often become garbled during the communication between different platforms or between different software or during database processing. For instance, when a double-byte tilde ('~') is sent from Solaris machine to Windows machine via network, '?' is displayed on Windows machine.

In Java, in particular, Unicode is processed internally so that it takes time to convert to Unicode during the character code conversion processing. As a result, characters often become garbled. The developer needs to take preventative measures to avoid garbled characters.

Characteristics of Unicode

Unicode is the character code system formulated by the Unicode consortium. It was formulated for the purpose of storing almost all major languages of the world and to enable multiple languages to process in one character code system. Unicode manages to store almost all language characters, but special characteristics as described below emerged during the process.

1. Many similar characters are stored

   In Unicode, similar characters are stored as different characters if their role and the usage are different. For instance, in the case of double-byte tilde symbol ('~'), JIS X 0208 01-33, WAVE DASH), six different characters are stored in Unicode, as shown in "Table 3.2 Unicode Characters Similar to 1 JIS X 0208 01-33".

2. Double-byte and single-byte characters are treated as different characters

   In Unicode, double-byte characters and single-byte characters are stored as different characters to ensure the compatibility with the existing code system.

   For instance, double-byte A and single-byte A are stored as different characters. Furthermore, double-byte symbols that are only available in the Japanese code system such as '£' or '¢' are also stored separately as a double-byte character and single-byte character in the Unicode system.

Table 3.2 Unicode Characters Similar to 1 JIS X 0208 01-33

Code point	Registered name
U+301c	WAVE DASH
U+223c	TILDE OPERATOR
U+223d	REVERSED TILDE
U+223e	INVERTED LAZY S
U+223f	SIGN WAVE
U+ff5e	FULLWIDTH TILDE

Causes of garbled characters

Now that many similar characters are stored in Unicode, the conversion rule to determine which Japanese character should correspond to which Unicode character differs by the character converter used. "Table 3.3 Differences in Characters in JDK/JRE" shows the differences in characters in JDK/JRE .

Table 3.3 Differences in Characters in JDK/JRE

x-eucJP-Open		Unicode (Java)		Windows-31J
0xa1c1 [double-byte tilde ('~')]	-->	U+301c	-->	0x3f
0x8fa2b7	<--	U+ff5e	<--	0x8160 [double-byte tilde ('~')]

Double-byte tilde ('~') character code is 0xa1c1 in x-eucJP-Open and 0x8160 in Windows-31J.

However, "Table 3.3 Differences in Characters in JDK/JRE" shows that 0xa1c1 in x-eucJP-Open and 0x8160 in Windows-31J are not mutually convertible.

Multiple character converters are often used for the character string conversion in the communication between different platforms and different software or in database processing. This creates an environment where many characters become garbled. For that reason, the developer should take preventatives measure to avoid as much as possible characters becoming garbled.

Handling of data that cannot be converted to Japanese

The Java behavior when code that cannot be converted is specified in the input data is unknown. For this reason, all or part of it might be converted to '?', depending on the JDK/JRE version. Do not set data that cannot be converted to Japanese in the input data.

3.16.12 Changing the Char Encoding from JDK/JRE1.4.1

Although the char encoding for Shift_JIS and Windows-31J is similar, the way that the encoding is handled for Shift_JIS has changed from JDK/JRE1.4.1.

- Before JDK/JRE1.4.0: If the following encoding name is specified, the MS932 converter is used

- JDK/JRE1.4.1 and later: If the following encoding name is specified, the SJIS converter is used

    - shift_jis

    - ms_kanji

    - x-sjis

    - csshiftjis

This reason for this change is that the number of web applications that can interpret the MIME tag for contents required for Java correctly according to the specified IANA alias has increased.

For this reason, if the above alias is specified in the encoding name in an application before JDK/JRE1.4.0, it might appear as garbled characters in JDK/JRE1.4.1 or later. To display the alias as it was displayed before JDK/JRE1.4.0, specify Windows-31J.

Default file encoding in Windows is the same as in Windows-31J, so this problem does not occur.

3.16.13 Solaris Default Character Encoding Solaris32/64

In Solaris Japanese EUC environments, the default character encoding is different for each JDK/JRE version.

JDK/JRE version

JDK/JRE version	Character converter used in the default	Corresponding character set (canonical name)
1.3.0	EUC_JP	EUC_JP
1.3.1		
1.3.1_01a		
1.3.1_03		
1.3.1_04		
1.3.1_06		
1.4.0		
1.4.0_01		
1.4.1_01		
1.4.1_03		
1.3.1_08	EUC_JP_Solaris	EUC_JP_Solaris
1.3.1_12		
1.4.2_05		
1.4.2_08	EUC_JP_Open	x-eucJP-Open

JDK/JRE version	Character converter used in the default	Corresponding character set (canonical name)
1.4.2_12		
1.4.2_14		
5.0		
6		
7		

If upgrading between different JDK/JRE versions for which the character encoding methods are different, you may need to correct the part used for string and I/O operations in the Java program, so that the character set in "Corresponding character set (canonical name)" in Table above is expressed.

An example is shown below:

- Change 'new String(byte[])' to 'new String(byte[], String)'

- Change 'new FileReader(File)' to 'new InputStreamReader(FileInputStream, String)'

For example, to switch from JDK/JRE 1.3.0 to JDK/JRE 6, specify the JDK/JRE 1.3.0 character set (canonical name) "EUC_JP".

Note that the only way to change the default character encoding is by correcting the Java program.

3.16.14 How to Use External Characters

Consider the following points about the handling of external characters in a Java program:

- Character encoding

  If external characters are handled only if an independent character encoding is executed, an independent character set converter must be created. If this converter is not created, an inconsistency between the Unicode and character mapping will occur, and the characters cannot be handled correctly.

- Font

  To display external characters in the GUI component, specify the font name in 'java.awt.Font', and then set the font in the 'setFont' method of 'java.awt.Component'.

  If the logical font name is specified in 'java.awt.Font', 'fontconfig.properties' must be edited.

For information about character encoding and font details, refer to "Internationalization" in the JDK documentation.

Displaying External Characters on the Web Browser

  To display the Java processing result as external characters in an HTML document in a web browser, cascading style sheets (CSS) must be used, or the web browser or OS must be customized.

  For details of how to customize the web browser or the OS, refer to the web browser or the OS documentation.

3.16.15 Characters that can be Used in the Host Name

From JDK/JRE 1.4.0, the host name is checked for compliancy with RFC2396. If characters outside of those listed below are included in the host name, an exception is thrown during RMI processing:

- Uppercase (A to Z)

- Lowercase (a to z)

- Numbers (0 to 9) (*1)

- Hyphens ("-") (*2)

- Periods (".") (*2)

*1 Numbers cannot be used after the last periods of the host name.

*2 Hyphens and periods cannot be used as the first character of the host name.

Characters used in the host name must not violate RFC2396.

In the javax.management.remote.JMXServiceURL class that was added from JDK/JRE 5.0, the host names that can be specified follow RFC2609. RFC2609 has the constraint that periods (".") cannot be specified after the host name for RFC2396.

Example of an error

In the following method, the 'java.rmi.ConnectException' error is generated when a host name that is not compliant with RFC2396 is specified.

```
Naming.rebind("rmi://hostname:12200/AdminServer", RemoteObject);
```

3.16.16 Problems Arising from Incorrect Use of the 'Collections' Class

Some of the classes (henceforth referred to as "Collections' class) used to implement the 'Collection' interface and the 'Map' interface in the 'java.util' package (such as the 'ArrayList' and 'HashMap' classes), do not implement synchronized mechanisms. If the same 'Collections' class is accessed from several threads and an operation such as data addition or deletion is executed, an inconsistency in the internal data results. This may cause a system abnormality.

To operate the 'Collections' class from several threads, do one of the following:

- Encapsulate the 'Collections' class object and configure a class that has a synchronized processing function

- Extend the 'Collections' class and write a method to execute synchronized processing

- Use the 'synchronizedXXX' method of the 'Collections' class to wrap the 'Collections' class

- Replace the class with one that has Vector and Hashtable synchronized mechanisms

For details, refer to "java.util package" in the JDK documentation.

3.16.17 Notes on Simple Infinity Loop Processing

When a Java application that processes simple infinite looping is running, the system may hang if the Java VM cannot be stopped using System.exit( ) or something similar. Do not describe a simple infinite loop as shown below in a Java application.

```
for (int i = 0; i < 10; i++) { i--; }
```

3.16.18 Notes Specific to Linux [Linux32/64]

Using Servlet Service or Servlet Container

If the Servlet Service or Servlet container are used in Linux, and the Servlet Service or Servlet container is continuously started/stopped quickly, the Java VM may crash, and the core and Java VM log files (hs_err_pid***.log or fjvm_pid***.log (*** is the process ID)) may be generated. For this reason, do not continuously start/stop the container.

Application development using JNI (Java Native Interface)

If one of the following packages is in the installed development environment and the application that is being developed uses JNI (Java Native Interface), the compile may fail or other unexpected behavior may occur. Uninstall the package before developing an application that uses JNI.

- libgcj-devel

- gcc-java

Using the java.awt.Frame class

In an environment that uses the GNOME window manager metacity, when JDK/JRE6 is used, Frame.MAXIMIZED_HORIZ and Frame.MAXIMIZED_VERT behave the same way as Frame.MAXIMIZED_BOTH if the java.awt.Frame class is used. This is a feature of metacity, and can be avoided by changing the window manager.

Keyboard input using AwtRobot API

In a desktop environment that uses GNOME, if AwtRobot API is used for input from the keyboard, more than one key event may occur. This problem also occurs in non-Java applications, and can be avoided by changing the desktop environment.

The signaltstack function

Do not use the signaltstack function in a JNI processing module (a native module with a JNI interface). If this function is used in a JNI processing module that uses a Linux version JDK/JRE, it may cause a memory leak in the processing module.

When an error occurs in memory processing

In the Linux JDK/JRE, if an abnormality such as the destruction of memory occurs during the processing of the OS 'malloc'/'free' functions, it might cause the Java process to hang.

XToolkit (Xlib-based Toolkit)

In the Linux edition JDK/JRE, a new toolkit (XToolkit(Xlib-based Toolkit)) is used as the default.

For details, refer to "Guide to Features", "Abstract Window Toolkit (AWT)", "XAWT" in the JDK Documentation.

Note:

To use MToolkit, X Print Client Library (libXp) must be installed, however libXp is not supported in the standard version in RHEL5. To use MToolkit in RHEL5, X Print Client Library (libXp) must be installed.

tmpwatch in RHEL5.4 or earlier

The Java VM generates the following memory mapped files while the Java process is running:

```
/tmp/hsperfdata_XXX/YYY ('XXX' is the user name, 'YYY' is the process ID)
```

If the tmpwatch shell script is registered in cron, memory mapped files are deleted by the tmpwatch shell script. This may cause problems during product operation (for example, the predictive monitoring function may encounter problems). When jheap (a tool that outputs the usage status of the Java program heap) is used, the following message might be output and the product might not run normally.

```
fatal error.
cannot open perf file
```

To avoid this, modify the /etc/cron.daily/tmpwatch shell script so that memory mapped files are not targets for deletion by tmpwatch.

Example of modified /etc/cron.daily/tmpwatch shell script

Precede the '/usr/sbin/tmpwatch hhh /tmp' line with the lines in the example below ('hhh' is in hours):

```
for f in `echo /tmp/hsperfdata_*/*` ; do
  /bin/touch $f > /dev/null 2>&1
done
```

Once Java VM heap information and Java VM Permanent generation area information updates are complete, from the Interstage Management Console's IJServer monitoring page, check that the memory mapped files have not been deleted.

Input character in the character input fields

In RHEL5, characters may not display in the character input fields (such as the TextField), under the following conditions:

- RHEL5 is used, and

- The input method settings are SCIM (Smart Common Input Method), and

- enableInputMethods(false) has been set for subclasses of a java.awt.Component, such as TextField, to make it impossible to use the input method.

If this happens, briefly move the focus to another input field, and then return it to the previous field.

OS virtual memory management in RHEL6 (x86)/RHEL6 (Intel64)

Requests to allocate virtual memory via malloc() in a thread of a process cause RHEL6(x86)/RHEL6(Intel64) virtual memory management to reserve a block of memory as "malloc() reserved area" for each thread, using the following unit sizes:

- For a 32-bit mode process: 1M byte

- For a 64-bit mode process: 64M bytes

For this reason, if a process in RHEL6(x86)/RHEL6(Intel64) runs threads that invoke malloc() too many times (including cases in which malloc() is invoked indirectly because of the extension of other functions), then "malloc() reserved area" will be reserved according to the number of threads in the OS virtual memory management. Even if this process runs an identical program, the size of the virtual memory reserved for it might be greater on this OS version than when executed on another version.

In particular, this trend might become more pronounced when a 64-bit mode process is executed.

Processes that execute Java applications use multithreading, and therefore the above trend will be even more pronounced.

Note

- Of the reserved "malloc() reserved area", the virtual memory actually used (the system resource amount) will be the sum of the amount specified in malloc() for each thread and the size of the control area for OS virtual memory management.

- The virtual memory amount (the VSZ value) can be checked by using the *ps* command.

Notes for when SELinux is enabled

When the SELinux Boolean value allow_execstack setting in an RHEL6(x86)/RHEL6(Intel64) SELinux environment is off, the following type of error message will be output using standard error output and it will not be possible to execute the command.

```
dl failure on line 719Error: failed /opt/FJSVawjbk/jdk6/jre/lib/i386/fjvm/libjvm.so, because
/opt/FJSVawjbk/jdk6/jre/lib/i386/fjvm/libjvm.so: cannot enable executable stack as shared object
requires: Permission denied
```

Note

The message in the above example is output in RHEL6(x86) JDK 6.

The actual content of the "/opt/FJSVawjbk/jdk6/jre/lib/i386/fjvm/libjvm.so" part will depend on the OS architecture and JDK/JRE version used.

For operations where the SELinux Boolean value allow_execstack setting is off, execute each command according to the following procedure and change to the required file type.

When relabel is executed after the file type has been changed, reexecute the following:

JDK6:

```
# chcon -R -t java_exec_t /opt/FJSVawjbk/jdk6/bin
# chcon -R -t java_exec_t /opt/FJSVawjbk/jdk6/jre/bin
# chcon -t bin_t /opt/FJSVawjbk/jdk6/bin/jvisualvm
# chcon -t bin_t /opt/FJSVawjbk/jdk6/bin/unpack200
# chcon -t bin_t /opt/FJSVawjbk/jdk6/jre/bin/unpack200
```

JRE6:

```
# chcon -R -t java_exec_t /opt/FJSVawjbk/jre6/bin
# chcon -t bin_t /opt/FJSVawjbk/jre6/bin/unpack200
```

JDK7:

```
# chcon -R -t java_exec_t /opt/FJSVawjbk/jdk7/bin
# chcon -R -t java_exec_t /opt/FJSVawjbk/jdk7/jre/bin
# chcon -t bin_t /opt/FJSVawjbk/jdk7/bin/jvisualvm
# chcon -t bin_t /opt/FJSVawjbk/jdk7/bin/unpack200
# chcon -t bin_t /opt/FJSVawjbk/jdk7/jre/bin/unpack200
```

JRE7:

```
# chcon -R -t java_exec_t /opt/FJSVawjbk/jre7/bin
# chcon -t bin_t /opt/FJSVawjbk/jre7/bin/unpack200
```

Additionally, for startup routines defined using C/C++ and Java programs that use Java Native Interface (JNI), the file type for the application file must also be changed to java_exec_t using the *chcon* command, in the same way as above.

3.16.19 Effects on the Internet Explorer 6 Active X Update Program Applet

"MS06-013: Internet Explorer cumulative security update program (KB912812)" is applied in the OS shown below. The ActiveX control operation is changed in Internet Explorer 6.

- Windows(R) XP SP2

- Windows Server(R) 2003 SP1

When the <applet> and <object> tags are entered in the HTML file, the focus does not switch to the applet even if the applet is clicked after it starts. To switch the focus, this applet must be clicked again.

To save a new ActiveX update program operation, change the settings so that the <applet> and <object> tags are output automatically from an external script file. In this case, the <applet> and <object> tags are not entered in the HTML file.

For details about the ActiveX update program, refer to the Microsoft website.

3.16.20 Notes on Porting from a 32-bit OS to a 64-bit OS

The usage for the Java heap and stack increases when you port a 32-bit OS to a 64-bit OS.

Read the following sections carefully before tuning the system.

Java Heap

To run a Java program on the 64-bit OS, the Java heap must be 1.5 to 2 times greater than the size set for the 32-bit OS. This is because the size of the required memory area for one object is greater than that required in the 32-bit edition.

For this reason, when an application that runs on another system is ported, OutOfMemoryError occurs under the same settings or the performance of the garbage collection (GC/Full GC) is affected.

Java Heap when the Object Reference Compression Feature is Enabled

From Interstage Application Server V10.0, the "object reference compression feature" is implemented in the JDK/JRE 6 or later FJVM running in 64-bit mode. This feature is enabled in the default state. For this reason, to execute Java applications with JDK/JRE 6 running in 64-bit mode, it will be possible to execute the Java application using a Java heap amount that is less than the JDK/JRE 6 or later running in 64-bit mode that is not provided in this feature, but only if the Java heap size (the memory allocation pool and Permanent generation area total) is less than 32GB.

For details, refer to "Object Reference Compression Function" in the "JDK/JRE Tuning" chapter of the Tuning Guide.

Stack

The stack size for the thread generated in the Java API and the compiler thread that performs the dynamic compile is different for 64-bit mode JDK/JRE and 32-bit mode JDK/JRE. The value for 64-bit mode JDK/JRE is greater.

For details, refer to "Tuning the Stack" in the "JDK/JRE Tuning" chapter of the Tuning Guide.

3.16.21 Changes in the Stack Amount for Compiler Thread `Windows32/64`

The stack size, which is allocated for the compiler threads that are dedicated for the compilation of Java methods executed in FJVM, was previously 256KB. From Interstage Application Server 8.0, a larger stack size is provided. For details, refer to "Tuning the Stack" in the "JDK/JRE Tuning" chapter of the Tuning Guide.

3.16.22 GC with the New Generation Area Size Automatic Resizing Function

The GC control "GC with the New Generation Area Size Automatic Resizing Function (FJGC)", which is equipped with "the automatic resizing function of new generation area", is not provided in the following Java VMs:

- Java HotSpot Client VM

- FJVM running in 64 bit mode

- JDK/JRE 6 or later FJVM

3.16.23 Notes on Options

The options of the JDK/JRE *java* commands or the Java VM options that should be noted are explained below.

"-Xdebug -Xrunjdwp""-Xrunhprof: Suboption ... "

This is the option for debugging and measuring the performance, but will create a load on the system. This option may not be a problem in the standalone test, but may cause unexpected results such as Java VM going down during the system integration test. In this case, check the operation without using this option.

"-Xdebug -Xrunjdwp"

This option is not provided.

Use the "-agentlib:jdwp" option.

"-Xrs"

In the case of a Java process in which this option is specified, holding down the [Ctrl]+[Break] keys together or the QUIT signal which is sent to the applicable process will be the operating system default.

Therefore, when holding down the [Ctrl]+[Break] keys together or the QUIT signal is sent to the Java process that this option is specified, the applicable Java process will be forcibly terminated .

Do not specify this option for a Java process that may output a thread dump.

In Windows(R), however, a Java process that is registered as a service will be forcibly terminated at logoff time if the "-Xrs" option is not specified. If this is not possible, specify this option.

"-Xnoclassgc"

By specifying this option, a garbage collection in the Permanent area (storage area for class and method) within the Java heap will be restricted and thus unnecessary classes and methods will not be collected.

As a result, java.lang.OutOfMemoryError will occur more often. Therefore, do not specify this option.

"-Xloggc:GC process results log file"

If this option is specified for a Java application executed in Interstage Application Server, the problems below will occur:

(For details of the problem content, refer to "Outputting a Garbage Collection Log" in the "JDK/JRE Tuning" chapter of the Tuning Guide.)

For this reason, do not specify this option for Java applications that will be executed in Interstage Application Server.

3.16.24 Environment Settings `Solaris32/64`

The following environment settings template shell script is stored for the installer:

- JDK/JRE 6 template storage directory

  /${DIR}/FJSVawjbk/config6

- JDK/JRE 7 template storage directory

  /${DIR}/FJSVawjbk/config7

'${DIR}' represents the directory name specified when the package was installed; the default is "opt".

Do not execute until the template shell script file in the storage directory has been edited to meet the requirements of the environment being used. Environment variables that are required by JDK are specified.

3.16.25 Differences between JDK/JRE Installed by this Product and JDK/JRE Provided by Oracle

JDK/JRE installed by this product does not provide the following functions compared with JDK/JRE provided by Oracle.

- Mozilla Rhino

- Java DB

- Java Web Start (JWS)

- Java FX

3.16.26 Case in which "<<no stack trace available>>" is Output when an Exception Occurred

If an Exception occurred while executing a Java application, "<<no stack trace available>>" may be output instead of the stack trace. This occurs because the Java heap that stores "stack trace output information" is not present when creating the Exception within Java VM.

Since the current Java VM does not issue java.lang.OutOfMemoryError, take a measure such as expanding the size of the Java heap to secure sufficient space for the Java heap and then check the stack trace.

3.16.27 Notes on Using JNI

Do not use native programs (that use C and C++) via JNI in order to ensure preventing issues such as application errors. At the design stage, investigate thoroughly whether functions that are about to be realized can be described using Java. If use of JNI (Java Native Interface) is unavoidable, keep it to the absolute minimum, and perform due checks and debugging.

The following prerequisite skills are mandatory for the use of JNI:

- Experience in multithreading programming using C/C++

- Ability to debug

For details of this, refer to "Java Native Interface (JNI)" in the "JDK/JRE Tuning" chapter of the Tuning Guide.

3.16.28 Time Zones (Daylight Saving Time)

The Java daylight saving time information (begin and end date/time) might be invalid, or different because of the version. The reason for this is that the latest information for the time zone data used in JDK was built-in when the JDK was released. Accordingly, if the time zone data was changed after that version was released, the time zone data in that version might not correspond correctly.

For example, in Brazil, DST is announced for that particular year, each year. Therefore, a JDK version released before the announcement will not contain data from that year onwards, and so might not correspond correctly.

For details on the action to take, refer to the following:

- http://www.oracle.com/technetwork/java/javase/tzupdater-readme-136440.html

As described in "System Requirements" of this URL, the following parameter must be specified when tzupdater starts up.

```
-Djava.vendor="Sun Microsystems Inc."
```

3.16.29 Using the JDBC-ODBC Driver

As described in the JDK document, the JDBC-ODBC driver bundled with JDK/JRE is provided for testing. Java applications that use the driver might terminate abnormally due to access violation, therefore the driver should only be used for testing, and not in actual operations.

3.16.30 Installing both this Product's and Oracle's JDK/JRE Windows32/64

To install both the JDK/JRE shipped with this product ("Fujitsu's JDK/JRE") and JDK/JRE from the Oracle website or attached to a journal ("Oracle's JDK/JRE"), the following points must be noted:

- Fujitsu's JDK/JRE and Oracle's JDK/JRE can be installed and used at the same time ("coexist"). java.exe/javaw.exe must be specified using the full path and then executed, however.

- If java.exe/javaw.exe is not specified using the full path and then executed, there will be dependency on the order in which they are installed and on the setting of the PATH environment variables.

PATH environment variable description		Result of the execution of java.exe/ javaw.exe
Before	After	
{Windows system folder}	{Fujitsu's JDK/JRE folder}	The command for Oracle's JDK/JRE is executed
{Fujitsu's JDK/JRE folder}	{Windows system folder}	The command for Fujitsu's JDK/JRE is executed

3.16.31 Using Parallel GC with CMS

Note the following when using Parallel GC with CMS as the Garbage Collection control.

Editions that can be used in Parallel GC with CMS

This feature is only provided in JDK/JRE 5.0 or later of Interstage Application Server Enterprise Edition.

Possible deterioration in application performance

If the Java application runs in parallel with CMS-GC (Concurrent Mark Sweep GC) (which runs when Parallel GC with CMS is used), then CPU for CMS-GC will not be handed over to the Java application. For this reason, compared with Parallel GC, the throughput performance/response performance in the Java application might deteriorate - this issue varies drastically depending on the Java application process content/runtime environment.

It might be possible to mitigate or solve this issue by tuning the Java heap size.

Possible need of Java heap increase

Using CMS-GC (which runs when Parallel GC with CMS is used), unused space in Old generation space or Permanent generation space will become fragmented. For this reason, it might be necessary to increase the Java heap size compared to when Parallel GC or Serial GC/ FJGC is used - a 10%-20% increase might be necessary.

Possible differences in GC performance for the New generation space

The GC processing time for New generation space might be different, depending on whether Parallel GC with CMS or Parallel GC is used. If the required performance can only be achieved by using Parallel GC, then use it instead of Parallel GC with CMS.

Possible need of New generation space size tuning

In Parallel GC with CMS, the New generation space and Old generation space size are not automatically tuned according to the execution status of the Java application. For this reason, in addition to the Java heap size (the size of the pool that is allocated memory and the Permanent generation space size), tuning will also be required for the New generation space size. Additionally, tuning might also be required when multiple Java processes are running (due to fluctuations caused by system load).

Possible no match for the getCollectionTime() method and -verbose:gc output results

If there was insufficient Java heap when CMS-GC was running, or a Full GC request occurred because java.lang.System.gc() was executed, then Full GC processing will wait for the completion of CMS-GC before starting. In order to retain consistency of the data processed by CMS-GC, CMS-GC will not be forcefully terminated. Instead, processing in CMS-GC that can be terminated is made to complete and is then finished. For this reason, there might be a lag between the Full GC processing request and its start.

The java.lang.management.GarbageCollectorMXBean class getCollectionTime() method return (the accumulated elapsed time for Garbage Collection processing) for a Java VM that uses Parallel GC with CMS also includes the differences in time between the Full GC processing request and its start. For this reason, when the "-verbose:gc" option, that simply outputs the GC processing execution time as Full-GC processing, is specified, these values might not match when the Garbage Collection processing results log information (GC processing execution time to Full-GC) is accumulated.

JVMTI for JDK/JRE 5.0

When JDK/JRE 5.0 is used and Parallel GC with CMS is selected for GC processing, features requiring the privileges below cannot be used in Java Virtual Machine Tool Interface (JVMTI):

- can_tag_objects

- can_generate_object_free_events

Increasing the CMS-GC execution time when the CMS-GC target has expanded as far as the Permanent generation area

If the range of unnecessary objects to be collected by CMS-GC is expanded to include those in the Permanent generation space as well as those in the Old generation space, this increases the spaces targeted for CMS-GC processing and therefore tends to lengthen the execution time until CMS-GC is completed. As a result, depending on the application being run and the execution environment, there may not be time for collection processing by CMS-GC and this may lead to the occurrence of FullGC.

For this reason, if you expand the scope of collection to include both Old and Permanent generation spaces in an environment where collection is normally limited to the Old generation space, tuning work must be carried out again.

Increasing the work memory area used in Parallel GC with CMS processing

| Windows64 | Solaris64 | Linux64 |

From Interstage Application Server V10.0, in JDK/JRE which is executed in 64-bit mode, the work memory area used in Parallel GC with CMS processing is larger than the existing area. The memory required in the Java process has increased accordingly.

- In JDK/JRE 5.0 and JDK/JRE 6 or later when the Object Reference Compression Function is disabled, there may be a minimum increase of 32 MB and a maximum increase of 128 MB.

- In JDK/JRE 6 or later when the Object Reference Compression Function is enabled, there may be a minimum increase of 32 MB and a maximum increase of 256 MB.

3.16.32 Notes on Using XML Processing (JAXP)

In JDK/JRE which is bundled with versions V10 and later, a JAXP implementation based on Apache Xalan 2.7.1 and Apache Xerces 2.9.1 (from now on, this is referred to as the "new JAXP implementation") is provided.

In JDK/JRE 5.0 and JDK/JRE 6 which are bundled with versions before V10, a JAXP implementation based on Apache Xalan 2.6.0 and Apache Xerces 2.6.2 (from now on, this is referred to as the "existing JAXP implementation") is provided. The following points should be noted in connection with the change to the JAXP implementation version.

Errors during XSLT processing

If an error has occurred during XSLT processing, an exception is not thrown.

According to the javax.xml.transform.ErrorListener spec, an exception is not thrown if an error has occurred during XSLT processing.

For details, refer to the Javadoc of javax.xml.transform.ErrorListener.

However, in the existing JAXP implementation, an exception was thrown. In the new JAXP implementation, there has been a change according to the JAXP spec so that the exception is not thrown.

For this reason, the behavior when an error has occurred during XSLT processing has changed.

For details on the error handling when an error has occurred during XSLT processing, refer to JavaDoc of javax.xml.transform.ErrorListener.

Notes on using the javax.xml.parsers.SAXParser#setProperty() method

Feature cannot be set using the javax.xml.parsers.SAXParser#setProperty() method.

In the existing JAXP implementation, Feature can be set using the setProperty() method. However, in the new JAXP implementation, this has changed so that Property and Feature are explicitly different, therefore Feature cannot be set using the setProperty() method.

If an attempt is made to set Feature using the setProperty() method, the following exception may occur:

org.xml.sax.SAXNotRecognizedException: Property '*XXXX*' is not recognized.

XXXX is the Feature name which you tried to set

In this case, change the setting so that Feature is set using the SAXParserFactory setFeature() method that will obtain SAXParser.

Interpreting XML document encoding definitions

The interpretation of the XML document encoding definition is strict.

In the new JAXP implementation, when the value specified for the encoding attribute specified in the xml declaration of the XML document is interpreted, a check is executed according to the XML spec.

For this reason, if an encoding name not regulated by IANA (Internet Assigned Numbers Authority) is specified for the encoding attribute, the following exception may occur:

org.xml.sax.SAXParseException: Invalid encoding name "*XXXX*".

XXXX is the encoding name specified for the encoding attribute

For example, if the encoding name "Shift-JIS", which is not regulated by IANA, is specified for the encoding attribute in the XML document, an exception occurs in the new JAXP implementation. (The name "Shift_JIS" is regulated by IANA.)

In this case, change the value for the encoding attribute in the xml declaration of the XML document to a valid encoding name which is regulated by IANA.

About the XML parser and XSLT processor implementation package names and class names

The XML parser and XSLT processor implementation package, names and class names have changed.

This point of note does not affect applications that only use the standard JAXP API.

In the existing JAXP implementation, these are provided as the package name *com.sun.org.apache.xxx*.

The package names/class names used in the new JAXP implementation are the same as the module distributed in Apache. (The package name is *org.apache.xxx*.)

In applications that use an internal API from the existing JAXP implementation classes, there are locations where these classes use import statements and fully qualified names.

In order to use the new JAXP implementation, locations specified using import statements and fully qualified names must be changed.

About the XML parser and XSLT processor that run by default

The XML parser and XSLT processor that run by default have changed.

To instantiate the XML parser and XSLT processor using the standard JAXP API, use the Factory when java is executed. In the existing JAXP implementation, if the user has not explicitly specified the XML parser and XSLT processor to be used, the classes under the *com.sun.org.apache.xxx* package are used.

In the new JAXP implementation, this has changed so that the *org.apache.xxx* package classes are used.

This has also changed so that, even if there is a definition to use the existing JAXP implementation classes, the new JAXP implementation *org.apache.xxx* package classes are used.

About the Xalan and Xerces optional versions

Even if a Xalan or Xerces optional version is specified in the -classpath and -cp options, or CLASSPATH environment variable, which are specified when java is executed, the optional version cannot be activated.

The new JAXP implementation has a higher priority position in the classpath search order than the -classpath and -cp options, and the CLASSPATH environment variable, specified when java is executed.

Additionally, since the new JAXP implementation has the same name as the module, class, and package names distributed in Apache, the item found first in the classpath search order (the item with the highest priority) is used.

For this reason, when a Xalan or Xerces optional version distributed in Apache is used with the -classpath and -cp options, or CLASSPATH environment variable, specified when java is executed, use the endorsed mechanism.

For details on the method used to specify this, refer to the following documentation:

- "Java Endorsed Standards Override Mechanism" (JDK/JRE 6)

  http://download.oracle.com/javase/6/docs/technotes/guides/standards/

  http://docs.oracle.com/javase/6/docs/technotes/guides/standards/

- "Java Endorsed Standards Override Mechanism" (JDK/JRE 7)

  http://docs.oracle.com/javase/7/docs/technotes/guides/standards/

Performance deterioration when a new JAXP implementation is used

Use of a new JAXP implementation may cause performance to deteriorate.

In the new JAXP implementation, the interpreter mode transformer that runs by default in the Apache Xalan project is used instead of the XSLTC that is used in XSLT processing for the existing JAXP implementation.

For this reason, performance may deteriorate because of the application implementation.

If the performance deteriorates significantly, add the following to the option when java is executed so that XSLTC is enabled:

"-Djavax.xml.transform.TransformerFactory=org.apache.xalan.xsltc.trax.TransformerFactoryImpl"

If it is absolutely necessary to use the existing JAXP implementation *com.sun.org.apache.xxx* package XML parser and XSLT processor for reasons of compatibility, for example, the existing JAXP implementation can be used by specifying the following in the option when java is executed:

"-Dcom.fujitsu.jdkext.jaxp.impl.compat"

However, new JAXP implementations are not used if this option has been specified.

3.16.33 Using Parallel GC

From Interstage Application Server V10.0, the number of default GC processing threads created in the Java process when GC with the new generation area control processing parallelization function (Parallel GC) is used, has changed from the number of CPUs installed in the hardware running the GC process, to a maximum of eight.

When a value of 1 or greater is specified explicitly in the -XX:ParallelGCThreads option, there is no change to the number of GC processing threads created in the Java process.

For details of this, refer to "GC with the New Generation Area Control Processing Parallelization Function (Parallel GC)" in the "JDK/JRE Tuning" chapter of the Tuning Guide.

3.16.34 java.net.InetAddress Class Cache

In the java.net.InetAddress class and its subclasses, host name resolutions that were successful are retained in the cache until the Java application process ends. For this reason, even if the IP address has been changed (for example in the hosts file), the Java application cannot recognize the new IP address while the process is running.

Restart the process so that the Java application can recognize the new IP address.

3.16.35 Notes on java.math.BigDecimal.toString()

From JDK/JRE 5.0, the java.math.BigDecimal.toString() specification has been changed.

The java.math.BgiDecimal.toPlainString() API, which behaves like the toString() method of JDK/JRE 1.4 and earlier, has been provided. If you require the same behavior as JDK/JRE 1.4 and earlier, use the toPlainString() method.

3.16.36 Output of Class Unload Information in the Garbage Collection Log

As of Interstage Application Server V11.0, the "[Unloading class <unloading class name>]" class unload information is no longer output in the Garbage Collection log by default.

For details on the method used to output the class unload information, refer to "JDK/JRE Tuning" - "Garbage Collection (GC)" - "Outputting a Garbage Collection Log" in the Tuning Guide.

3.17 Notes on Framework

This section explains the following topics:

- 3.17.1 Security on the Internet

- 3.17.2 Redistributable Files

3.17.1 Security on the Internet

When using applications that use framework on the Internet, design them considering the security of application development. Security may also be necessary depending on the firewall or other infrastructure products.

3.17.2 Redistributable Files

The following files can be redistributed. These files can be distributed to the client environment and used.

C:\Interstage\APC\redist\applet\ujiapplet.jar

C:\Interstage\APC\redist\ejb\ujiejbcl.jar

3.18 Client Package Notes

This section provides notes on client packages.

3.18.1 JRE

JRE Bundled with Client Packages

JRE is installed when the client package is installed, and client applications written using Java can be executed. JRE 6 and JRE 7 are bundled with the client package, and JRE 6 is installed during standard installation. JRE 7 can be installed as an installation option.

Installation Destination of the JRE Bundled with the Client Package

JRE is installed in the following locations:

- For JRE 6: <client package install directory>\ JBKDI\jre6

- For JRE 7: <client package install directory>\ JBKDI\jre7

Environment Variable JAVA_HOME Setting

When setting the JAVA_HOME environment variable on the machine where the client package is installed, specify the JRE install directory as follows:

- For JRE 6: JAVA_HOME=<client package install directory>\ JBKDI\jre6

- For JRE 7: JAVA_HOME=<client package install directory>\ JBKDI\jre7

3.18.2 JBK Plug-ins

If the client package has been installed in an environment in which the following products have been installed, the JBK plug-in provided with the client package will be used instead of the JBK plug-in that is already installed.

- Interstage Studio Standard-J Edition

- Interstage Studio Client Runtime

- JBK plug-ins that were installed using the Interstage Studio Standard-J Edition download installer

Note:

If the GUI library was installed using the download installer and the client package is installed, the JBK plug-in will also be used instead of the GUI library. To use the GUI library, use the procedure below to edit the file.

Edited files:

(1) Installation destination directory of the download installer\classes\jbkplugin.properties

(2) Installation destination directory of the client package\JBKDI\classes\jbkplugin.properties

1. Overwrite the file in (2) with the file in (1).

2. Delete the comment (#) on the "jbk.plugin.javahome" line, so that this line changes to become as follows:

```
jbk.plugin.javahome=Installation destination directory of the download installer\jre6
```

Note: In JRE 7, this line will become "jbk.plugin.javahome=Installation destination directory of the download installer\jre7".

3. Save the file.

3.19 Notes on the Web Package

This section explains the following topics:

3.19.1 Servlet Service

Note the following points regarding the use of the Web Package.

- The initial settings are set to run IJServer and the web server on separate servers.

  For details on running IJServers and the web server on separate servers, refer to "Procedure for Operation by Separating IJServer and Web Server" in the "Operating J2EE Applications" chapter of the J2EE User's Guide.

- Web server connector fault monitoring can only be used in versions of Web Package bundled with Interstage Application Server Enterprise Edition.

3.19.2 Resource Backup and Restore

Backup and restore of Web Package resources can only be implemented between Web Packages. However, resources backed up using the Interstage Application Server Enterprise Edition Web Package cannot be restored to the Interstage Application Server Standard-J Edition Web Package.