Interstage Business Process Manager Analytics V12.1

Installation Guide

Solaris

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About this Manual

This section explains summary, chapter overview, abbreviations, and provides useful information.

The contents in this section are as follows:

- Purpose
- Intended Audience
- Chapter Overview
- Typographical Conventions
- Reference Materials
- Abbreviations
- Export Regulations
- Trademarks
- Requests
- Copyright

Purpose

This user guide explains how to install the Interstage Business Process Manager Analytics (BPMA).

Intended Audience

This manual is intended for System Administrators. It is assumed that the end user has a working knowledge of the following topics:

- Operating system administration
- Application server administration
- Database administration

Chapter Overview

Chapter	Title	Description
1	System Configuration	Describes the Analytics components for installation
2	System Requirements	Lists the system requirements for installing Analytics
3	Considerations for Installing Analytics	Lists the various considerations for installing Analytics
4	Installing and Setting Up Analytics Server	Explains how to install the Analytics Server and set up the application environment
5	Installing Sensors for Remote Systems	Explains how to install sensors for remote systems
6	Uninstalling Analytics	Explains how to uninstall Analytics
Appendix A	Required Resources	Lists the resources required for Analytics installation
Appendix B	Required Disk Size for Database	Provides details of the disk size required for the Analytics database
Appendix C	Customizing System Table Parameters	Explains how to customize parameters of the Analytics database
Appendix D	Automatically Generated Parameter Values	Covers the default values for tables generated by the Analytics Server

Typographical Conventions

The following conventions are used throughout this manual.

Example	Meaning
Command	User input that must be typed is identified by the Courier font
screen text	- GUI options to be selected by the end user are **bold** - GUI options that are emphasized are **bold**
Reference	Reference material or related documentation is specified in *italics*
Parameter	Command parameters are identified by the Courier font

Reference Materials

The following related documentation is also available.

Release Notes

Contains an overview of the Analytics software and late-breaking information that could not be included in the manuals

Overview

Describes the architecture and features of the Analytics software

Dashboard / Output Guide

Explains how to use the Analytics Dashboard

Administration Guide

Covers administration tools and tips, message references, and troubleshooting

Analytics Studio Guide

Explains how to use the Analytics Studio to configure parameters that enforce Analytics features

Management Console Guide

Explains how to use the Management Console and Management Commands to configure key parameters, such as how to start/stop the Analytics software service or how to display the software status

Process Discovery Guide

Explains how to use Process Discovery that generates process diagrams using historical data

Handbook for the Process Discovery

Explains how to operate the Process Discovery briefly

Abbreviations

The following abbreviations are used throughout this document.

Name	Abbreviation
Oracle Solaris 11	Solaris 11, Solaris
Microsoft(R) Windows Server(TM) 2003, Standard Edition Microsoft(R) Windows Server(TM) 2003, Enterprise Edition Microsoft(R) Windows Server(TM) 2003 R2, Standard Edition Microsoft(R) Windows Server(TM) 2003 R2, Enterprise Edition Microsoft(R) Windows Server(R) 2008, Standard Edition Microsoft(R) Windows Server(R) 2008, Enterprise Edition Microsoft(R) Windows Server(R) 2008 R2 Standard Microsoft(R) Windows Server(R) 2008 R2 Enterprise	Windows Server
Microsoft(R) Windows Server(TM) 2003, Standard x64 Edition Microsoft(R) Windows Server(TM) 2003, Enterprise x64 Edition	Windows Server 2003(x64) or Windows Server 2003

Name	Abbreviation
Microsoft(R) Windows Server(TM) 2003 R2, Standard x64 Edition Microsoft(R) Windows Server(TM) 2003 R2, Enterprise x64 Edition	
Microsoft(R) Windows Server(R) 2012 Microsoft(R) Windows Server(R) 2012 Datacenter Microsoft(R) Windows Server(R) 2012 Standard Microsoft(R) Windows Server(R) 2012 Foundation	Windows Server 2012
Microsoft(R) Windows(R) XP Professional operating system Microsoft(R) Windows(R) XP Home Edition operating system	Windows XP or Windows
Microsoft(R) Windows Vista(R) Business Microsoft(R) Windows Vista(R) Enterprise Microsoft(R) Windows Vista(R) Ultimate	Windows Vista or Windows
Microsoft(R) Windows(R) 7 Home Premium Microsoft(R) Windows(R) 7 Professional Microsoft(R) Windows(R) 7 Ultimate	Windows 7 or Windows
Microsoft(R) Windows(R) 8 Microsoft(R) Windows(R) 8 Pro Microsoft(R) Windows(R) 8 Enterprise	Windows 8 or Windows
Microsoft(R) Internet Explorer 7.0 Microsoft(R) Internet Explorer 8.0 Microsoft(R) Internet Explorer 9.0 Microsoft(R) Internet Explorer 10.0	Internet Explorer
Red Hat Enterprise Linux AS Red Hat Enterprise Linux ES Red Hat Enterprise Linux 5 Red Hat Enterprise Linux 6	Linux
Interstage Application Server Enterprise Edition Interstage Application Server Standard-J Edition	Interstage Application Server
Interstage Business Process Manager	Interstage BPM or IBPM
Oracle Database 10g Enterprise Edition R10.1.0/R10.2.0 Oracle Database 10g Standard Edition R10.1.0/R10.2.0 Oracle Database 10g Standard Edition One R10.1.0/R10.2.0	Oracle10g or Oracle
Oracle Database 11g Enterprise Edition Oracle Database 11g Standard Edition Oracle Database 11g Standard Edition One Oracle Database 11g R2 Enterprise Edition Oracle Database 11g R2 Standard Edition Oracle Database 11g R2 Standard Edition One	Oracle11g or Oracle
Microsoft SQL Server 2005 Standard Edition Microsoft SQL Server 2005 Enterprise Edition	SQL Server 2005 or SQL Server
Microsoft SQL Server 2008 Standard Edition Microsoft SQL Server 2008 Enterprise Edition	SQL Server 2008 or SQL Server

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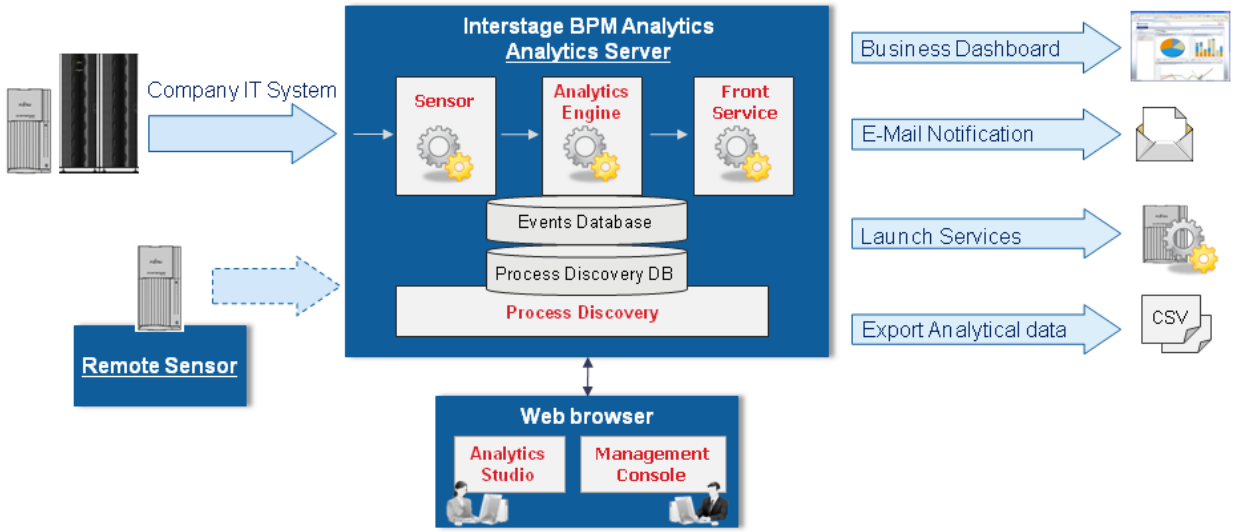
Chapter 1 System Configuration

The Interstage Business Process Manager Analytics (BPMA) consists of a server and remote sensor as shown in the figure below.



Each Analytics component can be installed separately, so install the configuration most suitable for your needs.

- **Analytics Server**

  The Analytics Server is the key component of the Analytics software. It has all the required features, such as the sensors, Analytics Engine, Process Discovery, Front Service, Management Console, and Analytics Studio.

  An Application Server and RDB, necessary to run the Analytics Server, are also bundled with the Analytics software. However, there are certain considerations that restrict the use of this additional software, requiring you to procure it separately. Refer to "Chapter 3 Considerations for Installing Analytics" for details.

- **Remote sensor (optional)**

  This has the same functionality as the sensors included with the Analytics Server but acts independently.

  Use of the remote sensor:

  - When the interval between the Analytics Server and the monitored system cannot be accessed using JDBC
  - When referencing CSVs on a remote computer

Analytics requires the Events database to manage the collected and analyzed data and Process Discovery database (optional). For the RDB types that can be used with Analytics, refer to the "Chapter 3 Considerations for Installing Analytics" or *Release Notes*.

Chapter 2 System Requirements

2.1 Hardware Requirements

System Specification

Operating System	Server Type
Solaris 11	SPARC architecture Solaris servers

Memory

Minimum: 1 GB

Recommended: 2 GB or more

Hard Disk Drive

Recommended: 1 GB or more of free space

Information

Refer to "Appendix A Required Resources" for more detailed information when installing. And, refer to "Appendix B Required Disk Size for Database" for the method to calculate the appropriate free space size during runtime.

2.2 Software Requirements

For software requirements, refer to the *Release Notes*.

Note

On Solaris 11, the gcc runtime package (gcc-45-runtime package) and the GNOME desktop are required. If using text installer, please install the GNOME desktop (slim_install package) in additon.

Chapter 3 Considerations for Installing Analytics

This chapter lists the considerations for installing the Interstage Business Process Manager Analytics (BPMA) components.

Analytics Server

An Application Server and RDB, necessary to run the Analytics Server, are bundled with the Analytics software. However, there are certain considerations that restrict the use of this additional software, requiring you to procure it separately. Refer to the following scenarios for the installation considerations.

- When integrating with the Interstage BPM
  - Application Server

    Built-in Application Server cannot be used

    Use the same type of Application Server as used in the Interstage BPM environment
  - Configuration

    Integration with the Interstage BPM V11.2A or later is supported
- When using Process Discovery
  - Application Server

    If you need to use a functionality of saving as XPDL with Process Analyzer, Analytics Server should be configured on one of following application server lists:

    - Built-in Application server
    - Interstage JavaEE
    - WebLogic Server 12c
    - WebSphere Application Server Network Deployment 8.5

    Otherwise, any supported application servers are available for this feature.
- When using an Interstage Application Server
  - Configuration

    Analytics Server cannot be installed on an Interstage Application Server configured as a Management Server (for managing multiple servers)

Chapter 4 Installing and Setting Up Analytics Server

This chapter explains how to install and setup the Interstage Business Process Manager Analytics (BPMA) Server.

4.1 Installation Parameters

The following table lists the parameters that apply to the installation process.

Parameter	Description
Installation type	Select the **Installation of Server component** option
Installation directory	Specify the Analytics Server installation directory Default is the /opt directory on the system drive.
Workspace directory	Specify the workspace directory for the Analytics Server; specify the directory after ensuring that the drive has sufficient space Default is the /var/opt directory on the system drive.
Application Server type	Select the type of application server to be used; select the type that suits the system configuration
Administrator ID and password	Specify the Administrator ID and password for using the Analytics Management Console. Default Administrator ID is **bpmadmin**. The password is required.
Use a Built-in database	Select this if you want to use a built-in database.
Directory for a Built-in database	Specify the directory that contains the built-in database; if you are not using a built-in database, you need not configure this option. Default is the /var/opt/FJSVibpma/eventdb directory on the system drive.
Port number for a Built-in database	Specify the port number of the built-in database; if you are not using a built-in database, you need not configure this option.
FQDN or IP address of Application Server	FQDN or IP address is automatically set if a built-in application server or the Interstage Application Server is being used If installing on another application server, specify the correct FQDN or IP address parameter for that server
Port number	Is automatically set if a built-in application server or the Interstage Application Server is being used If installing on another application server, specify the correct port number of that server

4.2 Installing Analytics

The installation procedure depends on the operating system. Refer to the following instructions for your operating system to install the Analytics Server.

4.2.1 Installation for Solaris

The following procedure explains how to install the Analytics Server on a Solaris system.

1. Log in to the server as root.
2. Insert the installation CD for Analytics into the CD-ROM drive.

3. Ensure that it is mounted on the following directory and change the directory to:

   # cd /cdrom/analytics

4. Execute installation script:

   # /bin/sh install.sh

5. Follow the onscreen instructions to complete the installation.

4.3 Post-Installation Tasks

There are certain post-installation tasks to be performed for each application server to be used and also for any security measures to be taken.

This section describes the tasks to be performed after installing Analytics.

4.3.1 When Using a Built-in Application Server

Deployment to the Application Server

The Analytics Server is automatically deployed so no further work is required.

Changing firewall setting

Before accessing to Analytics server from client machines, please confirm the firewall setting of operating system. If the port number (default value is 40330) of Analytics server is not allowed when installing, please allow the port number to access by changing firewall setting.

4.3.2 When Using an Interstage Application Server (J2EE)

Deployment to the Application Server

The Analytics Server is automatically deployed so no further work is required.

Changing access permissions to the installation folder for Interstage Application Server

It is recommended the access permission to be changed so that unauthorized users cannot access the Interstage Application Server installation folder. Refer to the *Interstage Application Server Security System Operator's Guide*, "*Common Measures*" for details.

The Interstage Application Server issetfoldersecurity command can be used to change the access permissions. Refer to *Interstage Application Server Reference Manual (Commands)*," *issetfoldersecurity*" for details.

Changing the Interstage J2EE setting

Procedure for changing the Interstage J2EE setting

1. Login to the Interstage J2EE Management Console.

   Click **Interstege Application Server > System > WorkUnit > IBPMMServer > Status** on the Interstage Management Console and **Stop** button onto relevant screen.

2. Click **Settings** tab, and show **Servlet Container Settings**.

   Set "UTF-8" to text field of **Request URI encoding**.

3. Click **Update** button to save the setting.

   Click **Status** tab, and **Start** button to start Analytics Server.

4.3.3 When Using an Interstage Application Server (Java EE)

Procedure for deployment to Interstage Application Server (Java EE)

1. Login to the Interstage Java EE Management Console.

   Click **Application > Web Application** on the Interstage Management Console and **Deploy** button onto relevant screen.

2. Specify the location of the Analytics Server WAR file (ibpmm.war), and click **Next**.

   On Solaris:

   /var/opt/FJSVibpma/war/ibpmm.war

3. Check the displayed context root and application name. These name must be “ibpmm”.

4. Select appropriate “target” that HTTP listener's port number is suitable for the port number that the installation specified.

5. Click **Finish** to complete the installation.

   An installation status page appears along with a pop-up dialog box prompting you to wait while the Analytics Server is being deployed. This could take several minutes.

   When the deployment is complete, the message "Application ibpmm_war installed successfully" appears.

6. Click **Start** button from ibpmm Web application section on the Interstage Management Console.

   Analytics Servlet will be started.

4.3.4 When Using Weblogic

Procedure for deployment to WebLogic 12c

1. Create the following directory and subdirectories on your computer. The exact path and directory names will depend on which operating system you are using.

   On Solaris:

   /var/opt/FJSVibpma/ibpmm

2. Extract the files from ibpmm.war into the ibpmm directory.
   Use the following Java command:

   On Solaris:

   jar -xvf /opt/FJSVibpma/war/ibpmm.war

3. Start the WebLogic Server.

4. Start the server instance on which the Analytics Server will be deployed.

5. Use the following procedure to deploy the ibpmm Web Application to the WebLogic Server Instance.

   1. Login to the WebLogic Server Administration Console.

      http://host1:7001/console/

   2. Click **Deployments** > **Install** on the WebLogic Server Administration console.

   3. Specify the location of the ibpmm directory.

      On Solaris:

      /var/opt/FJSVibpma/ibpmm

      And click **Next**. If multiple target servers are available, select one of the servers and click **Next**.

   4. Select Install this deployment as an application, and click Next.

   5. Check that the name is "ibpmm", and click **Finish**.

6. Analytics Servlet will be started.

Note

Do not change the servlet context name "ibpmm".

Note

To use the Interstage BPM Console with Analytics in the same WebLogic domain after deploying the Analytics Server, check that WebLogic's security configuration in its config.xml file is correct. This check is required because the deployment process may disrupt WebLogic's security configuration.

Refer to *"Special WebLogic Server Configurations to Enable Web Service Operations"* in the *Interstage BPM Server and Console Installation Guide (WebLogic Server)* for details.

4.3.5 When Using WebSphere

Procedure for deployment to WebSphere 8.5

1. Log in to the WebSphere Integrated Solutions Console.
2. Disable IBM JAX-WS engine.

   Select **Application servers > server1 > Process definition > Java Virtual Machine**, and the following parameter to **Generic JVM arguments**:

   -Dcom.ibm.websphere.webservices.DisableIBMJAXWSEngine=true
3. Restart WebSphere Server.
4. Log in to the WebSphere Administrative Console.
5. Select **Applications** > **New Application**.
6. Select **New Enterprise Application**.
7. Click **Browse,** and navigate to the location of the Analytics Server WAR file (ibpmm.war).,and click **Next**.

   For example:

   On Solaris:

   /opt/FJSVibpma/war/ibpmm.war

   How do you want to install the application? page appears.
8. Accept all defaults, and click **Next**.

   Step 1: Select installation options page appears.
9. Accept all defaults, and click **Next**.

   Note: The Application Name must be “ibpmm_war”.

   The **Map modules to servers** page appears.
10. Select **ibpmm.war,** and click **Next**.

    The **Map virtual hosts for Web modules** page appears.
11. Select **ibpmm.war,** and click **Next**.
12. The **Map context roots for Web modules** page appears.
13. Enter the context root (/ibpmm) in the **Context Root** field.

    Note: The context root must be "/ibpmm".

    The **Summary** appears.

14. Click **Finish** to complete the installation.

    An installation status page appears along with a pop-up dialog box prompting you to wait while the Analytics Server is being deployed. This could take several minutes.

    When the deployment is complete, the message "Application ibpmm_war installed successfully" appears.

15. Click the **Save directly to Master Configuration** link to save your changes.

    The Analytics Server will be saved as a new Web application in the WebSphere Application Server. When saving completes, the **Preparing for the application installation** page reappears.

16. Select **Applications** > **Application Types** > **WebShere enterprise applications**.

    A list of Enterprise Applications appears. The ibpmm_war appears on the list with a red icon indicating that it has not been started.

17. Set **Class loader** order to **parent last**.

    Select **Enterprise Applications** > **ibpmm_war** > **Manage Modules** > **ibpmm.war**, and set **Class loader order** to **Classes loaded with local class loader first (parent last)**.

18. Copy mar file to WEB-INF/lib and change its file extention to jar.

    Copy three files in the following directories:

    On Solaris:

    <WebSphere Installation Directory>/AppServer/profiles/<Profile Name>/installedApps/<WebShpere Cell Name>/ibpmm_war.ear/ibpmm.war/WEB-INF/modules

    Mar files to be copied:

    - addressing-1.3.mar
    - BPMECAccessCheckModule.mar
    - BPMWSAccessCheckModule.mar

    Destination directories:

    On Solaris:

    <WebSphere Installation Directory>/AppServer/profiles/<Profile Name>/installedApps/<WebShpere Cell Name>/ibpmm_war.ear/ibpmm.war/WEB-INF/lib

    Change the file extentions of copied files to jar as following:

    - addressing-1.3.jar
    - BPMECAccessCheckModule.jar
    - BPMWSAccessCheckModule.jar

    These three files must be copied and then the file extensions need to be changed. Do not move the files directly.

19. Select ibpmm_war, and click **Start** to start the Analytics Server application.

    A pop-up dialog box prompting you to wait while the Analytics Server is started is displayed. This can take few minutes.

    When the Analytics Server starts, the Enterprise Applications page appears with a message informing that the Analytics Server has started.

4.3.6 Deployment to JBoss

Procedure for deployment to JBoss Enterprise Application Platform 5.1

1. Create a directory on your computer in the JBoss installation directories. This will be your Analytics Server deployment directory.

   For example purposes, the following directory will be used:

On Solaris:

<*JBoss Installation Directory*>/server/default/deploy/ibpmm.war

2. Change the directory to your Analytics Server deployment directory, and extract the files from ibpmm.war into the deployment directory.

   Use the following Java command:

   On Solaris:

   # cd <*JBoss Installation Directory*>/server/default/deploy/ibpmm.war

   # jar -xvf /opt/FJSVibpma/war/ibpmm.war

3. Change directory to deployment directory, and edit server.xml. Add parameter to following file.

   On Solaris:

   <*JBoss Installation Directory*>/server/default/deploy/jbossweb.sar/server.xml

   Add parameter as follows.

```
...
   <Service name="jboss.web">

      <!-- A HTTP/1.1 Connector on port 8080 -->
      <Connector protocol="HTTP/1.1" port="8080" address="${jboss.bind.address}"
               connectionTimeout="20000" redirectPort="8443"
               URIEncoding="UTF-8" />
...
```

4. Start the JBoss Application Server by using run.sh command.

Note

If you start run.sh, set the server IP address to JBoss settings to allow access. Additionally, set the IP addresses where the client software is running.

For example, you can use the argument, -b 0.0.0.0, if you allow all clients to access JBoss.

- Solaris:

  run.sh -b 0.0.0.0

Note

To use the same server configuration for the Analytics Server on the JBoss Application Server, the following Analytics Server deployment directory should be used.

On Solaris:

<*JBoss Installation Directory*>/server/ibpm/deploy/ibpmm.war

And use the runIBPM.sh command to start JBoss.

Additionally, you need to set the IP addresses, using run.bat (as described earlier in this section), to JBoss settings to allow access from the client.

4.3.7 Security Measures

Changing the Management Console Password

The Administrator ID and password are created when the Analytics Server is installed. It is recommended you change this initial password.

Information

Refer to the *Interstage Business Process Manager Analytics Management Console Guide* for information on how to change the password.

Note for Internet Explorer 9 or 10

In case of using Internet Explorer 9/10 with compatibility mode, data may not be displayed correctly on Analytics tools.

To avoid this, please change configuration of compatibility mode as following.

Go to [Tools] - [Compatibility View Settings] and uncheck all the options

Note for the built-in Database

After installing with the built-in Database, **bpmapgs** user is created as an OS user in order to manage the database.

4.4 Setting Up the Analytics Server

This section explains how to set up the application environment after you have installed Analytics.

4.4.1 Create Tablespace and Users for the Analytics Database

Create the tablespace and users on the RDB to be used for the Analytics Server. The following tablespaces need to be created:

- Events database (required)

  This database stores the events gathered from the system being monitored.

- Archive database (optional)

  This database stores data from the Events database to reduce the volume of data kept there.

- Process Discovery database (optional)

  This database is used for Process Discovery.

The procedure for creating the tablespaces and users depends on the type of RDB. Refer to the appropriate instructions below for details.

Note

Configure a dedicated tablespace for each database.

Delete the entire database space when the operation is to be stopped entirely. (Tables used by Analytics cannot be deleted individually.)

4.4.1.1 Built-in database

Creating database and user

A built-in database for Analytics is automatically created in installation so no further work is required.

4.4.1.2 Oracle

Creating a tablespace

Create a dedicated database that will be used as the Analytics database. The tablespace can be given any name. Refer to the Oracle manual for details on creating an Oracle tablespace.

The scripts provided for creating tablespaces (described in *Appendix C, "Customizing System Table Parameters"*) indicate that the required size for tables is 60 MB or more. The actual space required, however, can be calculated by referring to *Appendix B, "Required Disk Size for Database*".

Creating a user

Create a user that will be used by the Analytics Server to access the Analytics database.

Any name can be specified as the user name. Specify the tablespace created above in "Creating a tablespace" as the default tablespace of the user. Specify "UNLIMITED" as the privilege to expand the tablespace area.

The following example shows the SQL statement that would be used to specify the user name "EVENTUSER", the password "BPMM", and the tablespace name "USERS".

Create another user for Process Discovery if necessary.

```
CREATE USER EVENTUSER IDENTIFIED BY BPMM QUOTA UNLIMITED ON USERS DEFAULT TABLESPACE USERS;
```

Grant the user, created above, specific privileges for monitoring.

Privilege	Remark
CREATE SESSION	System privileges
Privileges for expanding the area of the tablespace	"UNLIMITED TABLESPACE" system privilege, or area restriction specification in the "QUOTA" clause of the "CREATE USER", or "ALTER USER" statement (Specify "UNLIMITED" or an area size limitation)
CREATE TABLE	System privileges
CREATE SEQUENCE	System privileges

Refer to the Oracle manual for details on each privilege. A sample script is provided for creating a user and assigning privileges. Edit the following script to suit the environment in which it will be used.

On Solaris:

For Events or Archive database

[*Installation directory*]/dbscripts/oracle/bpm-user-oracle.sql

(/opt/FJSVibpma/dbscripts/)

For Process Discovery database

[*Installation directory*]/bpme/dbscripts/oracle/bpme-user-oracle.sql

(/opt/FJSVibpma/bpme/dbscripts/)

Refer to the *Oracle manual* for details on creating a database user.

4.4.1.3 SQL Server

Creating a database

The following tools are used to create a database.

```
SQL Server Management Studio
```

Specify SQL_Latin1_General_CP1_CS_AS as the collating sequence when creating a database.

Refer to the SQL Server manual for details on creating an SQL Server database, and *Appendix B*, "*Required Disk Size for Database*" for details on estimating database sizes.

Creating a user

Create a database user and set a login ID for the Analytics Server to access the database created in "Creating a database" above. There are no special restrictions on the names that can be specified as a login ID.

Use the following tools. Refer to the SQL Server manual for details on creating a database user.

```
SQL Server Management Studio
```

Select **SQL Server authentication mode** as the database user authentication method (the default setting is the Windows authentication mode) and set a password.

Assign the newly created database user the following privileges.

Required privileges
CONNECT
CREATE TABLE (for database)
CONTROL

Specify the user as the owner of the user's default schema.
Refer to the *SQL Server manual* for details on each privilege.

A schema must be created after a user has been created. When creating the schema, set the user as the schema owner. Also set this schema as the default schema of the user.

4.4.1.4 PostgreSQL

Creating a database

Create a database on the RDB to be used for the Analytics Server by using **createdb** command.

```
createdb (database name)
```

Creating a user

PostgreSQL user names are separate from operating system user accounts. By default, the PostgreSQL user name will be used to the same name as your current operating system account. So, there will always be a PostgreSQL user account that has the same name as the operating system user that started the PostgreSQL server. Usually, use it for the Analytics Server to access the database.

If necessary, create a database user for the Analytics server to access the database as follows:

```
createuser -U (account) -P (user name)
```

4.4.2 Setting System Parameters of the Analytics Server

To use the Analytics Server, ensure the following parameters are configured in the Management Console.

- JDBC Driver Settings

  Set the JDBC used to access the tablespace for the Analytics Server.

- Create tables in the RDB tablespace

  Create tables to be used for the Analytics Server.

- Dashboard authentication settings

  Set the authentication method for the Analytics Dashboard user.

- User registration

  Register users that can make operational settings for Analytics, for example, using the dashboard.

- Mail settings

  Enter the information for the mail server.

Logging into the Management Console

Log in to the Management Console using a Web browser. Use the given Administrator ID and password when installing.

You can access the Management Console using the following URL in the address bar of a Web browser.

```
http://[Host]:[Port]/ibpmm/admintool/BPMAdminTool
```

Host:

Specify the host name or IP address of the computer where the Analytics Server is installed

Port:

Specify the port number used by the Web server. The default port number for built-in application server is 40330. Confirm and specify the port number of the application server for other application servers. If omitted, the default value of 80 is used.

 See

For more detail in this section, refer to the Interstage Business Process Manager Analytics Management Console Guide.

 Information

If you want to change the password for the Management Console, execute the following operation.

```
Analytics System > Change Password
```

In this display, set the new administration password.

4.4.2.1 Set up JDBC driver on the server

JDBC drivers are necessary to set up the Analytics database. (If you have already set up the drivers during installation, you need not do so again.)

Install the JDBC driver into the server environment

Use the Management Console to set JDBC on the Analytics Server.

Refer to the manual for your database or the JDBC manual for information on JDBC driver installation.

If a built-in RDB was installed when the Analytics Server was installed, further JDBC settings are not required. Do the following:

```
Analytics System > System Settings > Database Management > JDBC driver Settings
```

In this display, add the JDBC driver file(s) into the database environment, and then, restart the application server.

Use proper JDBC drivers which the application server can use to communicate with the database.

Database type	JDBC drivers
Oracle	ojdbc14.jar, ojdbc5.jar or ojdbc6.jar
SQL Server	sqljdbc4.jar

Database type	JDBC drivers
	(If using Interstage J2EE, sqljdbc.jar)
PostgreSQL	(Not requreid)

Note

Please refer to *Interstage Business Process Manager Analytics Management Guide* to restart the built-in Application Server.

4.4.2.2 Create tables in RDB tablespace

A separate tab is displayed in the Management Console for each tablespace used to create a table. Open the tablespace and set the parameters required to connect to the database.

An Events database is automatically created when a built-in database is selected during the Analytics Server installation. Therefore, this step is not required.

- Events database (required)

```
Analytics System > System Settings > Database Management > Events DB
```

- Archive database (required only if using the Archive database)

```
Analytics System > System Settings > Database Management > Archive DB
```

- Process Discovery database (required only if using Process Discovery)

```
Analytics System > System Settings > Database Management > Process Discovery DB
```

Set the following connection information for each RDB tablespace.

Parameter	Events database connection
JDBC driver	- Required - Select the item to be used from the drop-down menu
JDBC connection URL	Required
Tablespace name	Set this parameter when using Oracle
User name	- Required - Specified user must have appropriate privileges to access the schemas and database - If not, grant the user these privileges before creating the tables
Password	- Required - Always select the **Set password** check box.

To create tables in the RDB tablespace, execute the following operation.

```
Analytics System > System Settings > Database Management > Table Management
```

In this display, click **Create Table** in each Analytics database.

Ensure the status changes to "**Created**".

(Apply the same operation in the Archive database, if required.)

Refer to *Appendix B, "Required Disk Size for Database"* for more information about the parameter values required for creating a system table. The parameters for the database tables automatically generated from the Management Console are listed in *Appendix D, "Automatically Generated Parameter Values"*.

4.4.2.3 Configure authentication type for the dashboard

Modify the authentication type for the Analytics Dashboard using the following operations, if required.

```
Analytics System > System Settings > User Management > Authentication Type > User Authentication
```

In the display, select the item to be used from the drop-down menu, and click **Modify**.

There are the following authentication types.

Authentication type	Description
Built-in Authentication	Only use the Interstage Business Process Manager Analytics authentication function, without using an authentication server.
Do not authenticate	Operate without performing login authentication. The **User ID** is required only.
LDAP	Authenticate by linking to an LDAP server.
Active Directory Service	- Authenticate by linking to Active Directory Service.
Interstage SSO	- Authenticate by linking to Interstage SSO.

Next, restart the Analytics Server to apply the changes.

Point

This procedure is not required if the user accepts the default authentication type.

In case you select authentication type other than "Built-in Authentication" or "Do not authenticate", user will be authenticated as guest group user when you login to Dashboard. To use Dashboard Group other than guest group, registering user with same user ID as the user for specified authentication type to Analytics is required.

Please refer to "Interstage Business Process Manager Analytics Overview" for detail.

4.4.2.4 Register Analytics Studio users who configure Analytics parameters

At least one Analytics Studio user is required to configure parameters of this software.

Create new Analytics Studio users by the following operations.

```
Analytics System > System Settings > User Management > User > Create User
```

In this display, enter the parameters (User ID, Password, and Description, User Name, Assigned Groups, Email Address) and click **Create**.

Next, confirm the user ID that was just created using the following operations.

The following groups are provided. Choose an appropriate group for the user. Create a new group if one needs to be customized.

Group	Description
Administrator User	Users in this group have permissions to change any settings and may perform any operation in the Analytics Studio, Management Console and Dashboard except starting/stopping Analytics Server.
Dashboard User	Users in this group have permissions to operate the Analytics Dashboard but may not change settings in the Analytics Studio.
Data Analyst	Users in this group have permissions to change settings related to the processing of data (collection and alerts) in the Analytics Studio.
Presentation Designer	Users in this group have permissions to set presentations (charts and layouts) in the Analytics Studio.
Process Analyzer User	Users in this group have permissions to operate Process Discovery.
Process Analyzer Power User	In addition to Process Discovery user permissions, users in this group also have permissions to set KPIs using Process Discovery.
Publisher	Users in this group have permissions to publish definitions created in the Analytics Studio.
Process Generator User	Users in this group have permission to operate the Process Generate feature from Dashboard.
Studio Super User	Users in this group have permissions to perform any operation in the Analytics Studio.

4.4.2.5 Configure e-mail notification

Set the mail parameters for notifications from the Analytics Server, if needed:

```
Analytics System > System Settings > Mail > SMTP Server
Analytics System > System Settings > Mail > SMTP Authentication
Analytics System > System Settings > Mail > POP before SMTP Authentication
```

After configuring, the application server having the Analytics Server must be restarted to work the new parameters.

4.5 Settings for Integration with Related Products

4.5.1 Setup for Integration with Interstage BPM

For the Interstage BPM link, you need to set up the following procedures in addition to the basic setup.

- Setup JDBC driver
- Setup Model API
- Other Settings

4.5.2 Setup JDBC Driver

You need to set up the JDBC drivers corresponding to the database used on the Interstage BPM.

If the databases for the Analytics Server and Interstage BPM are different types, set up a JDBC driver for the Interstage BPM database on the Analytics Server.

Configure the JDBC driver in the following Management Console window:

```
Analytics System > System Settings > Integration Module Management
```

Add the JDBC driver file and restart the application server.

Use proper JDBC drivers which the application server of the Analytics Server can use to communicate with the Interstage BPM database.

Database	JDBC Driver name
Oracle	ojdbc14.jar, ojdbc5.jar,or ojdbc6.jar
SQL Server	sqljdbc4.jar (If using Interstage J2EE, sqljdbc.jar)

4.5.3 Setup Model API

To refer to information of Interstage BPM by using the Model API, the Analytics Server requires Interstage BPM client settings.

(The Model API is an application interface for controlling the Interstage BPM.)

Model API client settings

See the *Interstage BPM Developers Guide*. In particular, following chapters should be checked:

- When the Interstage BPM is configured on a local computer:
  - 4.1.1 Specify Configuration Setting for Interstage Application Server (Local)
  - 4.1.3 Specifying Configuration Settings for WebSphere Application Server for developing Standalone Applications (Local)
  - 4.1.4 Specifying Configuration Settings for WebSphere Application Server for Deploying Client J2EE Application (Local)
  - 4.1.7 Specifying Configuration Settings for WebLogic
  - 4.1.8 Specifying Configuration Settings for JBoss
- When the Interstage BPM is configured on a remote computer:
  - 4.1.2 Specify Configuration Setting for Interstage Application Server (Remote)
  - 4.1.5 Specifying Configuration Settings for WebSphere Application Server for developing Standalone Applications (Remote)
  - 4.1.6 Specifying Configuration Settings for WebSphere Application Server for Deploying Client J2EE Application (Remote)
  - 4.1.7 Specifying Configuration Settings for WebLogic
  - 4.1.8 Specifying Configuration Settings for JBoss

Settings of the Java archive files using the Management Console

The following java archive file should be set:

- iFlow.jar

  On Windows:

  <Interstage BPM Server Installation Directory>/client/lib/iFlow.jar

  On Linux:

  /var/opt/FJSVibpm/client/lib/iFlow.jar

  On Solaris:

  /var/opt/FJSVibpm/client/lib/iFlow.jar

When the Interstage Application Server is used with the Interstage BPM, the following java archive file is also required.

- fujitsu-ibpm-engine-ejb_jar_client.jar

  On Windows:

  <*Interstage Application Server Installation Directory*>/J2EE/var/deployment/ijserver/<*Work Unit Name of the Interstage BPM Server*>/distribute/fujitsu-ibpm-engine.ear/fujitsu-ibpm-engine-ejb_jar_client.jar/fujitsu-ibpm-engine-ejb_jar_client.jar

  On Linux:

  /var/opt/FJSVj2ee/deployment/ijserver/<*Work Unit Name of the Interstage BPM Server*>/distribute/fujitsu-ibpm-engine.ear/fujitsu-ibpm-engine-ejb_jar_client.jar/fujitsu-ibpm-engine-ejb_jar_client.jar

  On Solaris:

  /var/opt/FJSVj2ee/deployment/ijserver/<*Work Unit Name of the Interstage BPM Server*>/distribute/fujitsu-ibpm-engine.ear/fujitsu-ibpm-engine-ejb_jar_client.jar/fujitsu-ibpm-engine-ejb_jar_client.jar

When the JBoss is used with the Interstage BPM, the following java archive file is also required.

- <JBoss Installation Directory>/jboss-as/client/jboss-messaging-client.jar
- <JBoss Installation Directory>/jboss-as/client/jboss-remoting.jar

1. Log on to the Management Console.

   ```
   Programs > Interstage Business Process Manager Analytics > Management Console
   ```

2. Set the jar files

   ```
   Analytics System > System Settings > Integration Module Management
   ```

   In this display, add jar files, and restart the based J2EE container on the application server.

4.5.4 Other Settings

Interstage BPM configuration parameters

When linking to the Interstage BPM, the "SendAnalyticsEvents" configuration parameter of “Interstage BPM” must be set to "true" on every tenant.

Information

To configure this parameter, refer to the following chapter of the *Interstage BPM Administration Guide*:

- 3.6 Configuring Interstage BPM for Interstage Analytics

Note

When you add a new tenant, the initial value of this configuration parameter is "false".

Change this parameter setting to "true" with Interstage BPM Tenant Management Console.

Interstage BPM console integration

To display the Analytics Dashboard for process monitoring, the Interstage BPM console is used.

Information

For configuring this environment, refer to the following chapters of the *Interstage Business Process Manager Server and Console Installation Guide* that correspond to the type of application server that is installed:

- Interstage BPM Server and Console Installation Guide (Interstage Application Server)
  - 7.5.2 Configuring Interstage BPM Console to work with Interstage Analytics
- Interstage BPM Server and Console Installation Guide (JBoss Application Server)
  - 7.5.1 Configuring Interstage BPM Console to work with Interstage Analytics
- Interstage BPM Server and Console Installation Guide (Oracle WebLogic Server)
  - 7.6.1 Configuring Interstage BPM Console to work with Interstage Analytics
- Interstage BPM Server and Console Installation Guide (WebSphere Application Server)
  - 7.5.1 Configuring Interstage BPM Console to work with Interstage Analytics

 Note

When you need to change Host name, Port number and Protocol, like integrating Analytics Server and Interstage BPM Console indifferent machines, Host name (or FQDN) and Port number of Interstage BPM Console need to be added to the parameters of dashboardConfig.properties below.

- [Deployment directory of Analytics Server]/ibpmm.war/conf/dashboardConfig.properties
  - dashboard.process.consoleHostName
  - dashboard.process.consolePort
  - dashboard.process.consoleProtocol

And please change configuration by registering host which Analytics is installed as "Trusted site" or change configuration of IE ESC in server manager.

Application Server settings (for Interstage Application Server only)

JMS settings

Use the Interstage Management Console to ensure that the "JMS Settings" is set to "Yes".

```
Interstage > Interstage Application Server > System > Update System Settings > Detailed Settings >
Event Service Settings ( or JMS Settings)
```

If the setting is "No", change it to "Yes".

Naming service settings for remote host

If the Interstage BPM Server is configured on a remote computer, use the Interstage Management Console to set the remote server hostname.

```
Interstage > Interstage Application Server > System > Update System Settings > Detailed Settings >
Naming Service Settings
```

This completes the set up of the Analytics application environment.

Chapter 5 Uninstalling Analytics

This chapter explains how to uninstall Interstage Business Process Manager Analytics (BPMA).

5.1 Prerequisites for Uninstalling Analytics

This section covers the key tasks that must be performed before you uninstall Analytics.

5.1.1 Deleting Analytics Server

If you use Interstage JavaEE, WebLogic, WebSphere or JBoss as the Application Server, first delete the Analytics Server from Application Server, and then, uninstall the Analytics software. Next, delete the deployment directory, ibpmm.war, if it exists.

5.2 Uninstalling Analytics from Solaris

Use the following procedure for removing Analytics from a Solaris system.

1. Log in, with root privileges, to the computer on which you will be performing the uninstallation.
2. Mount the CD-ROM to the system.
3. Move to the following directory:

   # cd /cdrom/analytics
4. Execute the uninstall script:

   # /bin/sh uninstall.sh
5. Follow the prompts on the screen to remove Analytics.

5.3 Post-Uninstallation Tasks

This section describes the tasks that must be performed after you have removed the Analytics software from the server.

5.3.1 Deleting the Analytics Databases

Delete the following databases after the Analytics software has been removed.

- Events database
- Archive database
- Process Discovery database

Deleting the Events database

Delete each of the following areas that were prepared when the Events Database was created.

Database	Special-purpose areas prepared
Oracle	Tablespace (table area)
SQL Server	Database
PostgreSQL	Database

Perform the deletion procedures described in the respective database manuals.

See

Refer to *"Deleting the built-in database" to remove built-in database from Analytics Server.*

Note

- For Oracle, check whether or not the tablespace is used as the default table area by other users. If a table space was used as a default table area by another user is deleted, an error will occur when the user creates a table.
- If the Events Database was not created in a special-purpose area, the above areas cannot be deleted. In this case, if you want to delete the data, each of the tables generated by the Analytics Server's operations must be deleted individually.

Deleting the Archive database

Delete the areas prepared as special-purpose areas in the same way as for the Events Database.

Note

If the Archive database was not created in a special-purpose area, the above areas cannot be deleted. In this case, if you want to delete the data, each of the tables generated by the Analytics Server's operations must be deleted individually.

Deleting the Process Discovery database

Delete the areas prepared as special-purpose areas in the same way as for the Events Database.

Note

If the Process Discovery database was not created in a special-purpose area, the above areas cannot be deleted. In this case, if you want to delete the data, each of the tables generated by the Analytics Server's operations must be deleted individually.

5.3.2 Deleting the built-in database

In case you have selected built-in database during Analytics Server install, remove resources of built-in database as necessary.

On Solaris

Following resources may exist after uninstall. Please delete all the resources if exists.

- Database space store directory
  /var/opt/FJSVibpma/eventdb
- OS user for the built-in database (bpmapgs)

Appendix A Required Resources

This appendix lists the resources required for installing the Interstage Business Process Manager Analytics (BPMA) and how to estimate these resources.

A.1 Disk Space Required at Installation

The following table shows the free space required at the time of installation.

Functions being installed	Free space required for installation
Server function	600 MB

A.2 Save Area for Monitoring Settings Data

The following table shows the amount of free space required as a save area for the monitoring settings data managed by the Analytics Server.

Save area for monitoring settings data	Required free space
On the Analytics Server	10 MB

A.3 Work Areas

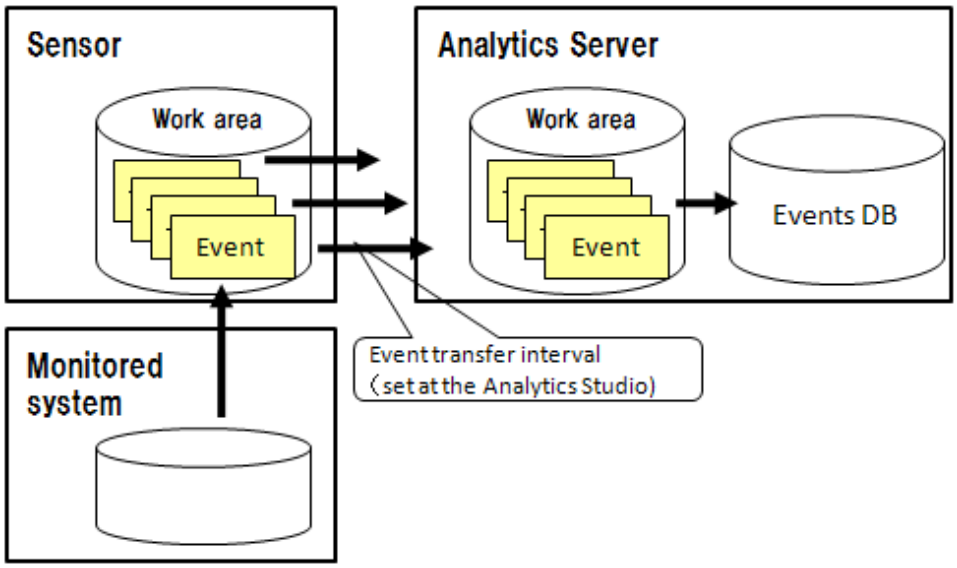
This section describes how to estimate the work areas specified during installation of the Analytics Server and the sensor.

A.3.1 Overview

The work areas are for temporary storage of events collected by the sensor and for holding settings information. They are not stored in databases.

When the sensor transfers events to the Analytics Server, it transfers multiple events together. This reduces processing costs between the sensor and Analytics Server and improves performance. To achieve this, the sensor collects events and transfers them at fixed intervals. This interval is called the "*Event transfer interval*" and is set from the monitor designer.

The server side receives event notifications from the sensor and stores them in the Events database. The Events database storage is asynchronous to the reception of the event notification from the sensor. Therefore, after the notification, events are written to the work area as pooled events till they are stored in the Events database. When the process of storing the events in the Events database is attempted, events are deleted. If the process of storing the pooled events in the Events database fails, events may be output to the work area as error files. They will remain there till they are successfully re-registered manually.



Work area sizes

The section below explains the work area sizes.

- If the Analytics Server and the sensor run on the same computer

  Allocate the work area size to be the total size of the estimates for the "*sensor work area*" and the "*server work area*"

- If the Analytics Server and the sensor run on separate computers

  Allocate the "*sensor work area"* estimated size as the work area on the computer where the sensor is installed

  Allocate the "*server work area"* estimated size as the work area on the computer where the Analytics Server is installed

A.3.2 Estimating the Sensor Work Area

Use the following formula to calculate the size of the work area.

```
Required area size = Total of the work area sizes required for one event transfer interval from each
sensor
```

Work area size required for one event transfer interval

Use the following formula to calculate the work area size required for one event transfer interval.

```
Work area size required for one event transfer interval =
 average number of events * event transfer interval * average event size * 1.5
```

1.5: Safety coefficient (because collection is also performed during transfer, a value with a margin for error must be estimated)

Average number of events

This is the average number of events collected by the sensor in one minute. This value is used as the "*total of the average number of events collected for the task per minute*" and is calculated using the following formula.

```
Average number of events collected for the task per minute = Number of events collected from one
execution / execution interval (minutes)
```

Event transfer interval

This is the interval at which pooled events are transferred from the sensor to the Analytics Server. The event transfer interval is set separately for each sensor from the Management Console. The unit is "seconds".

Average event size

This is the area used by one pooled event.
The data type of attributes must be taken into account when calculating the average event size.

The following table shows the attribute length for each data type.

Data type	Attribute length (bytes) (data length + appended information)
Character string	Length of character string data in UTF-8 encoding + 50
Integer	Depends on the number of digits in the value + 50
Real number	Depends on the value + 50
Boolean	50
Date and time	80
Date	60
Time	60

Example of calculating the required area size

An example of calculating the required area size is shown below.

Average event size

Use the following formula to calculate the average event size.

```
Average event size = Task name (*1) + event name (*1) + total of average attribute length of each
attribute + 270 (bytes)
```

*1: Length in UTF-8 encoding

This example assumes the following attributes.

Attribute	Length
Task name	36 bytes
Event name	36 bytes
Average attribute length of character string type attribute A	150 bytes
Average attribute length of character string type attribute B	200 bytes
Average attribute length of character string type attribute C	250 bytes
Average attribute length of integer type attribute D	60 bytes
Average attribute length of integer type attribute E	60 bytes
Average attribute length of date and time type attribute F	60 bytes
Attribute name length	Uniformly 30 bytes

The formula is as follows.

```
Average event size
= Task name (36) + event name (36) + total of each attribute length (attribute name length (30) * 6
+ 780) + 270
= 1302 bytes = approx 1.31 Kbyte
```

Average number of events

The average number of events that the sensor collects each minute is the "*total of the average number of events collected for the task each minute*". In this example, the following tasks are set for Sensor A.

Task	Execution schedule	Average number of items collected	Average number of events collected per minute
Task A	Collected at 2 minute intervals	Average of 100 items collected each time	50 events
Task B	Collected at 5 minute intervals	Average of 50 items collected each time	10 events
Task C	Collected at 4 minute intervals	Average of 80 items collected each time	30 events

The average number of events that the sensor collects each minute is as follows.

```
Average number of events
= 50 + 10 + 30
= 90 (events)
```

Work area size required for one event transfer interval

The following table shows the requirements for various transfer intervals.

Event transfer interval	Formula	Required work area size
2 minutes	Average number of events (90) * transfer interval (2) * average size (1.31) * safety coefficient (1.5) = 353.7	About 354 (Kbytes)
5 minutes	Average number of events (90) * transfer interval (5) * average size (1.31) * safety coefficient (1.5) = 884.35	About 885 (Kbytes)
60 minutes	Average number of events (90) * transfer interval (60) * average size (1.31) * safety coefficient (1.5) = 10611	About 10.4 (Mbytes)
8 hours	Average number of events (90) * transfer interval (8 * 60) * average size (1.31) * safety coefficient (1.5) = 84888	About 82.9 (Mbytes)
24 hours	Average number of events (90) * transfer interval (24 * 60) * average size (1.31) * safety coefficient (1.5) = 254664	About 248.7 (Mbytes)

Example of calculation assuming operation when communication with the server is not possible

In the above example, it is assumed that server operations are stopped one hour for maintenance, from 02:00 to 03:00. In this case, the area used by Sensor A (event transfer interval: 2 minutes) for pooled events at night is as follows.

```
Size of required work area (354 Kbyte) * server stopped duration (1 * 60)
= 21240 (Kbyte) = approx 2.1 (Mbyte)
```

Note

If the Analytics Server is stopped for a long time, stop the sensor as well. When only the sensor is running, events are pooled in the work area directory and a resource shortage may occur.

A.3.3 Estimating the Server Work Area

Event notifications from the sensor are implemented in accordance with the event transfer interval of each sensor. Therefore, use the following formula to calculate the size for the work area.

```
Required area size = Sum of maximum event capacity * safety coefficient
```

Maximum event capacity

The maximum event capacity indicates the maximum case of "*number of events notified * average event size*". This value can be calculated by adding the value for each sensor.

Safety coefficient

The safety coefficient takes into account the possibility of subsequent events being notified before all the previously notified events are stored. Therefore, a safety coefficient value of 2 or more is recommended.

Example of calculating the required area size

The required work area size can be calculated by multiplying the total amount of space used for events at each of the sensors by the safety coefficient. Refer to Section A.3.2, "A.3.2 Estimating the Sensor Work Area", for the formula to calculate the amount of space used for events at the sensor.

If the maximum event capacity of each sensor is 2.1 Mbyte during the assumed night stopped time, and if there are 4 sensors, the required area size is as follows.

```
Required area size
= Total of maximum event capacity for events notified by each sensor (2.1 Mbyte * 4) * safety
coefficient (2)
= 16.8 (Mbyte) = approx17 (Mbyte)
```

Example of calculating an estimate if an error is assumed

An example of calculating an estimate when the following types of errors are assumed is described below.

- Data value error (for example, the maximum length of a character string in a database column is exceeded)
- Event definition does not exist (for example, event definition was deleted or a different event name was notified)

Normally, these cases do not occur, but if an "*Event definition does not exist*" error does occur, pooled events continue to accumulate till the task is ended to resolve the error. It is recommended that you prepare an amount of free space that takes into account the amount of time till the task is ended to resolve the error.

If the definition was accidentally deleted for an event collected by a sensor and if the error continues for one day, the following area is required.

```
Required area size
= Work area size required for one event transfer interval (354 Kbyte) * duration of error (24 * 60)/
event transfer interval (2)
= 254880 (Kbyte) = approx 249 (Mbyte)
```

A.4 Work Area for Process Discovery functionalities

Process Discovery disposes cache data for prompt access and copy of CSV files in work area. Due to this behavior, Analytics Server is required to prepare enough vacant space in work area.

Comparing with size of CSV files which is specified at Process Generator tool, more than ten times of that is recommended.

Appendix B Required Disk Size for Database

This appendix covers the disk size requirements for the Interstage Business Process Manager Analytics (BPMA) database.

Please refer to B.1 Summary of Disk Size (Common for all Databases) to confirm approximate amount of volume of disk which database requires, refer to B.2 Database Size for each Operation Pattern (Common for all Databases) to confirm actual amount of volume from some of the typical examples.

B.1 Summary of Disk Size (Common for all Databases)

This section provides an estimate of the disk size required for configuring the Analytics database in a sample business environment with the following specification.

Target systems	Database (2 tables) + Workflow (10 flows)
Alert rules	10 rules
Statistic rules	10 rules
Data incidence	100 events a day
Data maintenance period	3 years (600,000 events)

Required disk size: 10-50 GB

B.2 Database Size for each Operation Pattern (Common for all Databases)

This section covers the disk size requirement for each operation pattern.

B.2.1 Pattern 1 : Small-Scale Database Monitoring

Target systems	Database (1 table)
Data incidence	1000 events a day
Data maintenance period	1 year (365,000 events)
Alert rules	10 rules (assumed alert rate: 0.1%, non escalation)
Statistic rules	1 rule
Frequency of execution a statistic rule	one time a day
Number of sections	3
Number of commodities	100
Average number of business data	5
Average number of statistic data	5

[monitoring policy]

- Delete from the Archive database after a year has passed.
- Data maintenance period of statistics event is one year.

Required disk size: 5-6 GB (if the data maintenance period is 3 years: 5-8 GB)

B.2.2 Pattern 2 : Large-Scale Database Monitoring

Target systems	Database (5 tables)
Data incidence	300,000 events a day
Data maintenance period	3 years (100,000,000 events)
Alert rules	20 rules (assumed alert rate: 0.5%, action rate to occurred alerts: 10%)
Statistic rules	5 rules
Frequency of execution a statistic rule	two times a day
Number of sections	10
Number of commodity division *	100 (number of commodities: 10,000)
Average number of business data	20
Average number of statistic data	5

[monitoring policy]

- Delete from the Archive database after half a year has passed.
- Data maintenance period of statistics event is 3 years.

Required disk size: 5-10 GB

Required disk size (when * is 1000): 40-50 GB

Required disk size (when * is 10000): 150─200 GB

B.2.3 Pattern 3 : Small-Scale Workflow System Monitoring

Target systems	workflow (2 flows)
Number of process	100 a day
Data maintenance period	1 year
Alert rules	10 rules (assumed alert rate: 0.5%, non escalation)
Number of activities	10
Average number of attributes	5

[monitoring policy]

- Data maintenance period of statistics event is one year.

Required disk size: 5-6 GB (if the data maintenance period is 3 years: 5-8 GB)

B.2.4 Pattern 4 : Large-Scale Workflow System Monitoring

Target systems	workflow (10 flows)
Number of process	10,000 a day
Data maintenance period	3 year
Alert rules	20 rules
Number of activities	20
Number of applications	2

Average number of attributes	20 (assumed alert rate: 0.5%, action rate to occurred alerts: 10%)

[monitoring policy]

- Data maintenance period of statistics event is 3 year.

Required disk size: 500─700 GB

B.2.5 Pattern5 : Business Analysis using Process Discovery

Number of CSV terms	10
Number of lines in CSV files (Number of Events)	100,000
Number of Event Name Items	1
Number of Timestamp Items	1
Number of Property Items for Analysis	3
Size of CSV file	10MB

Required disk size: 100MB

Appendix C Customizing System Table Parameters

This appendix explains how to customize the parameters of the Interstage Business Process Manager Analytics (BPMA) database.

Table creation scripts are installed in the following folder:

On Solaris:

[*Installation directory*]/dbscripts/oracle/bpm-user-oracle.sql

(/opt/FJSVibpma/dbscripts/)

C.1 Using Oracle

C.1.1 Preparing the Events Database

To create a table in the Events database, execute the sample script, as shown below.

Tables must be created in the default schema of the user who accesses the database. Log on to the database, and execute the sample script. For details about the type of user who can log into the database, refer to "Creating a user (Oracle)" in Chapter 4, "Installing and Setting Up Analytics".

The sample script uses the tablespace name "USERS". Before executing the script, open the script in a text editor and edit the tablespace name, as described in "Creating a tablespace" in Chapter 4, "Installing and Setting Up Analytics".

Sample script (bpm-schema-oracle.sql)

To change the tablespace name or size, modify the underlined portions of the following sample script for each table and index.

```
-- Event DB table creation script for Oracle
--
--Adjust the TABLESPACE specification and the data area size as necessary.
-- COPYRIGHT FUJITSU LIMITED 2011

CREATE TABLE B_Version (
) TABLESPACE USERS(*1);

CREATE TABLE B_IdHolder (
) TABLESPACE USERS(*1);

CREATE TABLE B_Alert (
) TABLESPACE USERS(*1) PCTFREE 10 PCTUSED 20 STORAGE(INITIAL 10M(*2) NEXT 10M(*3));

CREATE TABLE B_EscResult (
) TABLESPACE USERS(*1) PCTFREE 10 PCTUSED 20 STORAGE(INITIAL 10M(*2) NEXT 10M(*3));

CREATE UNIQUE INDEX B_Alert_key1 ON B_Alert (AlertId) TABLESPACE USERS(*1);
CREATE INDEX B_Alert_key2 ON B_Alert (RuleId) TABLESPACE USERS(*1);

CREATE UNIQUE INDEX B_EscResult_Key1 ON B_EscResult (Id) TABLESPACE USERS(*1);
CREATE INDEX B_EscResult_Key2 ON B_EscResult (AlertId) TABLESPACE USERS(*1);

INSERT INTO B_Version(Version, CreationTime, LastUpdateTime)
  VALUES('9.0.0.0', CURRENT_TIMESTAMP, CURRENT_TIMESTAMP);

COMMIT;
```

*1: Tablespace name

*2: Default tablespace size

*3: Extended tablespace size

C.1.2 Preparing the Process Discovery Database

Script for creating Process Discovery Database is stored in the following directory.

On Solaris:

[*Installation directory*]/bpme/dbscripts/oracle/bpme-schema_create.sql

(/opt/FJSVibpma/bpme/dbscripts/)

Refer to C.1.1 Preparing the Events Database for modification of this script.

C.2 Using SQL Server

C.2.1 Preparing the Events Database

For SQL Server 2005/2008

Use the SQL Server Management Studio to create tables within the Events database as described in the following procedure.

Create tables using the same user privileges as described in "Creating a user (SQL Server)" in Chapter 4, "Installing and Setting Up Analytics".

1. Start the SQL Server Management Studio.
2. Click **File** > **Open**, and then, open the "bpm-schema-sqlserver.sql" file.
3. Connect to the database engine by entering the server name and authentication information in the **Connect to Database Engine** dialog box.
4. Select the database from which tables for the Events database will be created.
5. Click **Query** > **Run** to execute the table creation process. Then, the message "**Command terminated normally**" displays.
6. Click **View** > **Object Explorer**, and verify that the table has been created.

C.3 Using PostgreSQL

C.3.1 Preparing the Events Database

To create a table in the Events database, execute the sample script, as shown below. The sample script should be executed by the operating system user that started the PostgreSQL server.

To execute the sample script, use **psql** command as follows:

```
Psql dabasename < bpm-schema-postgresql.sql
```

C.3.2 Preparing the Process Discovery Database

Script for creating Process Discovery Database is stored in the following directory.

On Solaris:

[*Installation directory*]/bpme/dbscripts/postresqlbpme-schema_create.sql

(/opt/FJSVibpma/bpme/dbscripts/)

C.4 Preparing the Archive Database

For the Archive database, imitate the sample script of the Events database.

Note

Do not use the same schema or the same user for the Events and Archive database.

Appendix D Automatically Generated Parameter Values

D.1 Parameter Values for Oracle

Create Location

Parameter	Description
Tablespace name	Tablespace name specified in the Management Console; if omitted, the default tablespace name for the user is used
Schema	User name specified by the database connection information

Parameter Values Automatically Set for Tables

Parameter	Default Value for Oracle	Value Specified in a Script
Data block size	8192 bytes	Not specified
First extent size	5 data blocks	10M
Second extent size	5 data blocks	10M
Increasing rate compared to the immediately preceding extent	50%	Not specified
PCTUSER	This parameter is ignored if the automatic segment space management for the tablespace is enabled. (*1)	20%
PCTFREE	10%	10%

*1: By default, the automatic segment space management for tablespaces is enabled.

Parameter Values Automatically Set for Indexes

Parameter	Default Value for Oracle	Value Specified in a Script
Data block size	8192 bytes	Not specified
First extent size	5 data blocks	10M
Second extent size	5 data blocks	10M
Increasing rate compared to the immediately preceding extent	50%	Not specified
PCTUSER	This parameter is ignored if the automatic segment space management for the tablespace is enabled. (*1)	Not specified
PCTFREE	10%	Not specified

*1: By default, the automatic segment space management for tablespaces is enabled.

D.2 Parameter Values for SQL Server

Creation Location

Parameter	Description
Database space	Parameter is stored in the data file specified in the JDBC URL
Schema	Default schema specified for the JDBC connection user is used; this is "dbo" unless changed

Parameter Values Automatically Set for Tables

Parameter	Default Value for Oracle	Value Specified in a Script
Storage structure	Heap structure	Not specified
Page length for the data part	8K (cannot be changed)	Not specified

Parameter Values Automatically Set for Indexes

Parameter	Default Value for Oracle	Value Specified in a Script
Storage structure	Heap structure	Not specified
Page length for the data part	8K (cannot be changed)	Not specified

D.3 Parameter Values for PostgreSQL

Creation Location

Parameter	Description
Tablespace name	pg_default (If creating a database with a tablespace, the given tablesapce will be used.)
Schema	public

Parameter Values Automatically Set for Tables

Parameter	Default Value for Oracle	Value Specified in a Script
FILLFACTOR	100	Not specified
DEFERRABLE NOT DEFERRABLE	NOT DEFERRABLE	Not specified
INITIALLY IMMEDIATE INITIALLY DEFERRED	INITIALLY IMMEDIATE	Not specified
WITH (OIDS) WITH (OIDS=FALSE)	OIDS=FALSE (relys on **default_with_oids** setting parameter)	Not specified

Parameter Values Automatically Set for Indexes

Parameter	Default Value for Oracle	Value Specified in a Script
Access method	BTREE	Not specified