FileNet

IMAGE SERVICES

Guidelines for Installing and Configuring IBM DB2 Software

**IS 4.0 HP Integrity Edition
and IS 4.0 SP5**

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Guidelines for Installing and Configuring IBM DB2 Universal Database Software

This document provides FileNet's guidelines for installing IBM DB2 V8.1.x or 8.2.x software on AIX, HP-UX (HP 9000 or HP Integrity, Sun Solaris, and Windows servers for use with FileNet Image Services.

Server Types   Perform the procedures in this document on these Image Services servers:

> **Root/Index** - (Multi-server installation)
>
> **Root/Index/Storage Library** - (Combined or Entry server install)
>
> **Application** - (Running WorkFlo Queue Services, SQL Services or VW Services)

The **Database Administrator** is responsible for installing the DB2 software on both Server and Client computers, and for creating the DB2 database.

At this time, Image Services requires the DB2 database and server software to be located on a remote AIX 5L (v5.2 or v5.3) 64-bit server or on a remote Solaris 9 64-bit server.

The DB2 client software can be installed on any UNIX or Windows platform supported by Image Services: AIX, HP-UX (HP 9000 or HP Integrity), Solaris, or Windows Server.

> **Note**   FileNet does not support Image Services and the DB2 database collocated on the same AIX server at this time.

DB2 Software Media Requirements

FileNet Image Services is compatible with IBM DB2 version 8.1.4 or later.

For the DB2 Database Server

AIX

- **IBM DB2 v8.1.0 or v8.2.0** (1 CD-ROM). **DB2 UDB Enterprise Server Edition (ESE) for AIX 5L**. This compact disk contains the IBM DB2 RDBMS software for the DB2 database server.

AIX

- **IBM DB2 Universal Database Version 8 FixPak 4a** or later. (download from IBM's Web site, **www.ibm.com**.)

    - or -

SOL

- **IBM DB2 v8.1.0 or v8.2.0** (1 CD-ROM). **DB2 UDB Enterprise Server Edition (ESE) for Solaris 9**. This compact disk contains the IBM DB2 RDBMS software for the DB2 database server.

SOL

- **IBM DB2 Universal Database Version 8 FixPak 4a** or later. (download from IBM's Web site, **www.ibm.com**.)

For the Image Services Server

AIX

- **IBM DB2 v8.1.0 or v8.2.0** (1 CD-ROM). **DB2 UDB Administration /Runtime Client for AIX 5L**.

HPUX

- **IBM DB2 v8.1.0 or v8.2.0** (1 CD-ROM). **DB2 UDB Administration /Runtime Client for HP-UX 11i**.

SOL

- **IBM DB2 v8.1.0 or v8.2.0** (1 CD-ROM). **DB2 UDB Administration /Runtime Client for Solaris 9**.

WIN

- **IBM DB2 v8.1.0 or v8.2.0** (1 CD-ROM). **DB2 UDB Administration /Runtime Client for Windows Server 2000/2003**.

UNIX
WIN

- **IBM DB2 Universal Database Version 8 FixPak 4a** or later. (download from IBM's Web site, **www.ibm.com**.)

Note **DB2 v8.1.7** is equivalent to **DB2 v8.2**.
DB2 v8.1.8 is equivalent to **DB2 v8.2.1**.

Hardware Requirements

DB2 ESE V8.1.x Server (where the DB2 Database will reside)

Platform	Hardware	Minimum Physical RAM	Free Disk Space for DB2 Software	Temporary Free Disk Space
AIX 5L (v5.2 / v5.3) 64-bit	IBM RISC/6000 eServer pSeries	256 MB	350 to 700 MB	2 GB file system for uncompressing files
Solaris 9 64-bit	Solaris UltraSPARC-based computers	256 MB	350 to 700 MB	2 GB file system for uncompressing files

Navigate to the DB2 Web site at **http://www-3.ibm.com/software/data/db2/udb/sysreqs.html** and click on the **Version 8** tab for the latest hardware and software requirements.

DB2 V8.1.x Client (where the Image Services software will reside)

Platform	Hardware	Minimum Physical RAM	Free Disk Space for DB2 Software	Free Disk Space for Image Services Software
AIX 5L 64-bit	IBM RISC/6000 eServer pSeries	256 MB	130 MB	1.0 GB
HP-UX 11i v1 64-bit	HP 9000 (PA-RISC)	256 MB	130 MB	1.0 GB
HP-UX 11i v2 64-bit	HP Integrity (Itanium® 2)	256 MB	130 MB	1.0 GB
Solaris 9 32-bit or 64-bit	Sun SPARC	256 MB	130 MB	1.0 GB
Windows Server	Pentium CPU or higher	256 MB	110 MB	1.0 GB

Disk Space Requirements

The DB2 ESE **Server** software requires a **minimum** of:

	Disk Space	Temporary Disk Space
AIX	420 to 530 MB	2.0 GB *
Solaris	420 to 530 MB	2.0 GB *

* This temporary disk space can be a mountable file system on another server.

DB2 **Client** software requires:

	Minimum Disk Space
DB2 Run-time Client on UNIX	**50 to 60 MB ***
DB2 Admin Client on UNIX	**125 MB *** **(not including Java Runtime Environment)**
DB2 Run-time Client on Windows	**20 to 30 MB**
DB2 Admin Client on Windows	**80 to 110 MB**

* An additional 20 MB may be needed for the instance creation in the /home directory.

Operating System Requirements

Check IBM's DB2 Web site at **http://www-3.ibm.com/software/data/db2/udb/sysreqs.html** and click on the **Version 8** tab for the latest OS requirements.

DB2 V8.1.x ESE Server

OS	OS Patches	Other Software
AIX 5.2 64-bit	Maintenance Level 02 or higher	JRE 13_64.rte *
AIX 5.3 64-bit	Technology Level 04	JRE 14_64.rte *
Solaris 9 64-bit		JRE version 1.4*

* Java Runtime Environment (JRE) is required to run DB2 graphical tools.

DB2 V8.1.x Client

OS	OS Patches	Other Software	Kernel Parameters
AIX 5.2 64-bit	Maintenance Level 02 APAR IY50083	JRE 1.3.1 *	
AIX 5.3 64-bit	Technology Level 04		
HP-UX 11i **	December 2003 GOLDBASE 11i and December 2003 GOLDAPPS 11i bundles, PHSS_30049 PHCO_29955 PHCO_25569 PHKL_28489	JRE 1.3.1 *	msgmax=65535 msgmnb=65535
Solaris 9	Solaris 9 08/03 release	JRE 1.3.1 * for 32-bit Solaris; JRE 1.4.0 * for 64-Bit Solaris	msgmax=65535 msgmnb=65535
Windows 2000	SP4	JRE 1.3.1 *	
Windows 2003		JRE 1.3.1 *	

* Java Runtime Environment (JRE) is required to run DB2 graphical tools.   The DB2 Java GUI tools are not provided with the DB2 Version 8.1 Run-time Client, so you don't need to install JRE if you install DB2 Run-time Client.

** As a result of installing the OS patches on HP-UX, the behavior of **catopen** has changed. After the patches have been installed, modify the /etc/default/nlspath file. Use your preferred text editor to add the following line as the last line of the file:
    NLSPATH=*

Be sure to check IBM's DB2 Web site at **http://www-3.ibm.com/software/data/db2/udb/sysreqs.html** and click on the **Version 8** tab for the latest OS requirements.

Installing DB2 ESE Software on an AIX Server

To install and configure the DB2 software on the server that will host the DB2 database, see **Chapter 2, "Guidelines for Installing DB2 ESE V8.1.x Server Software," on page 12**.

Installing DB2 Client Software

To install the DB2 client software on the server that will host Image Services and link to the DB2 database, see **Chapter 3, "Guidelines for Installing DB2 V8.1.x Client Software," on page 22**.

2
Guidelines for Installing DB2 ESE V8.1.x Server Software

This chapter describes how to configure a DB2 database on a dedicated, remote AIX 5.2, AIX 5.3, or Solaris 9 64-bit server.

Before You Begin

Be sure the server has the appropriate version of the operating system:

- AIX 5L V5.2 (64-bit) with Maintenance Level 02 or higher
- AIX 5L V5.3 (64-bit) with Technology Level 04
- Solaris 9 (64-bit)

You can check the operating system version by entering:

oslevel -r   (AIX servers)

- or -

uname -r   (Solaris servers)

Create DB2 Users and Groups

Three users and three groups are required to use DB2. You may specify your own user and group names as long as they adhere system naming rules and DB2 naming rules. (Check the IBM documentation to be sure.) If you choose to let DB2 create them for you

during the installation process, they'll have the default names shown in the following table:

	Default User Name	**Default Group Name**
Instance Owner	db2inst1	db2iadm1
Fenced User	db2fenc1	db2fadm1
DB2 Administration Server User	db2as	db2asgrp

- The **instance owner** home directory is where the DB2 instance will be created.
- The **fenced user** runs user-defined functions (UDFs) and stored procedures outside the address space used by the DB2 database.
- The **DB2 Administration Server (DAS) user** runs the DB2 administration server on your system.

To prevent environmental conflicts between two or more instances, you should ensure that each instance has its own home file system. Errors will be returned when the home file system is shared.

Each instance owner must have a unique home directory. All of the files necessary to run the instance are created in the home directory of the instance owner's user ID/username.

The instance owner and the group that is the System Administration (SYSADM) group are associated with every instance. The instance owner and the SYSADM group are assigned during the process of creating the instance.

Note The **root** user cannot act as a DBA. You must logon as the instance owner to act as the DBA. For example:

> **su - <instance owner>**

The primary group of the instance owner automatically becomes the system administration group for the instance and gains SYSADM authority over the instance. Other user IDs or user names that are members of the primary group of the instance owner also gain this level of authority.

Create Image Service Users for DB2 Server Authentication

DB2 provides a variety of authentication types to authenticate users to access databases. FileNet Image Services supports authentication types of SERVER, SERVER_ENCRYPT, and CLIENT.

- **SERVER** authentication specifies that authentication occurs on the server using local operation system security.
- **SERVER_ENCRYPT** authentication specifies that the server accepts encrypted SERVER authentication scheme.
- **CLIENT** authentication specifies that authentication occurs on the database partition where the application is invoked using operating system security.

Note   FileNet recommends that you use SERVER or SERVER-ENCRYPT authentication for Image Services.

SERVER or SERVER_ENCRYPT Authentication

When the database authentication type is set to SERVER or SERVER_ENCRYPT, the following users must be created on the DB2 server where the DB2 database resides.

FileNet Image Services requires four users that have SYSADM authority to access the DB2 database:

- f_sw
- f_sqi
- f_maint
- f_open

These users are regular OS level users, and unlike the instance owner users, they don't need to have a separate file system for their home directories. **The only requirement is that they belong to the primary group of the instance owner, so they will have SYSADM authority over that instance.**

An AIX Example

If the instance owner group is fn_grp1, enter the following commands as **root** user:

    mkuser pgrp=fn_grp1 f_sw
    mkuser pgrp=fn_grp1 f_sqi
    mkuser pgrp=fn_grp1 f_maint
    mkuser pgrp=fn_grp1 f_open

Set their passwords by entering:

    passwd f_sw
    passwd f_sqi
    passwd f_maint
    passwd f_open

Logoff as **root** user, and logon as each of the four new users, one at a time, to change the password to avoid connection problems the first time they're used.

A Solaris Example

If the instance owner group is fn_grp1, enter the following commands as **root** user:

useradd -d /export/home/f_sw
useradd -d /export/home/f_sqi
useradd -d /export/home/f_maint
useradd -d /export/home/f_open

useradd -g fn_grp1 -G Staff

useradd -s /bin/ksh -m f_sw
useradd -s /bin/ksh -m f_sqi
useradd -s /bin/ksh -m f_maint
useradd -s /bin/ksh -m f_open

Logoff as **root** user, and logon as each of the four new users, one at a time, to change the password to avoid connection problems the first time they're used.

CLIENT Authentication

When the authentication type is CLIENT, these users must be created on the DB2 client computer (IS Root/Index server) with special requirements. See **Chapter 3, "Guidelines for Installing DB2 V8.1.x Client Software," on page 22** for details.

Install DB2 ESE

1 As **root** user, create a temporary file system with 2.0 GB of free space to contain the tar.Z and the uncompressed installation file.

2 Mount the CD-ROM.

3 Copy the compressed image and uncompress it.

4 Launch the DB2 Installer and make the following selections:

- Install Product
- DB2 UDB Enterprise Edition
- Typical Installation
- Create a 64-bit instance
- Single partition instance

5 When the installation is finished, view the status report or go to /tmp to view all DB2 install logs to ensure there are no errors.

After a successful installation, DB2 the instance should be up and running. Continue with the next section.

Install 64-bit JDK or JRE on AIX

Because you've created a 64-bit instance of DB2 ESE, you need to install the Java Developer's Kit (JDK) or Java Runtime Environment (JRE) before you can use any DB2 functionality that depends on Java.

1 Unmount and remove the DB2 CD-ROM, and load the AIX 5L Bonus Pack CD-ROM.

2 Follow the instructions on the CD to install the Java 1.4.1.0 JDK (Java developer's kit) or JRE (Java runtime environment).

3 Unmount and remove the AIX 5L Bonus Pack CD.

Create the DB2 Database

You need to have SYSADM authority to create the database. The database name must be unique and can be from 1 to 8 characters long. For example, **indexdb**.

Determine Page Size and User Defined Index Fields

When you create your DB2 index database for Image Services, you have a choice of several page sizes for your tablespace: 4 KB, 8 KB, 16 KB, and 32 KB. The page size you choose affects the number and size of the user-defined index fields, and it also affects the maximum row length of the tables within that tablespace.

Note Image Services does not support the 4 KB page size.

DB2 UDB V8.2.2 (or V8.1.9) includes the ability to create a database with an initial page sixze other than 4 KB through the CREATE Database CLP command.

A smaller page size makes data retrieval faster; however, a larger page size makes a larger number of user-defined index fields possible.

The Image Services index database contains four tables for user-defined indexes: doctaba, user_index, document_class, and doc_class_index. Doctaba is the largest of the four, and the way you design it affects the page size you choose.

Image Services allows you to define up to 224 individual index fields (or columns) in doctaba. An additional 30 index fields (about 1 KB) are reserved for FileNet use. (All this is explained in much more detail in the "Database Maintenance" chapter of the *Image Services System Administrator's Handbook*.)

Each user index field can be defined as one of these data types:

- Numeric - with mask, 17 bytes (compressed) maximum,
                without mask, 8 bytes (compressed) maximum

- Character String - always 239 bytes (characters)

- Date - 4 bytes compressed

- Menu - always 14 bytes

As you plan the index fields you're going to define after you create the Image Services DB2 database, keep track of the total size.

The important thing to remember is that **the total row length of all the index fields (including system indexes and user-defined indexes) cannot be larger than the page size**. The DB2 page size you select when you create your index database must be large enough to hold at least one complete index record. DB2 cannot retrieve a partial index record or spread a single index record onto two pages.

DB2 can, however, retrieve multiple index records in one page if the page size is large enough.

Important! Each row in Docataba contains the index information for one document, so bear in mind that the page size you choose impacts the total number of index records (and documents) that can be stored.

And be sure to allow room for future expansion. You'll undoubtedly want to add more index fields in the months and years ahead.

Create the DB2 Tablespace

FileNet Recommended Tablespace	Tablespace Name Actually Assigned	Minimum Size (MB)	Tablespace Size Actually Created
userspace1		200	

Report to Sys Admin and FileNet TSP

Please return the following information to the System Administrator and the FileNet Technical Consultant or ValueNet Partner.

	Default User Name	User Name You Chose	Default Group Name	Group Name You Chose
Instance Owner	db2inst1		db2iadm1	
Fenced User	db2fenc1		db2fadm1	
DB2 Administration Server User	db2as		db2asgrp	

FileNet Recommended Tablespace	Tablespace Name Actually Assigned	Minimum Size (MB)	Tablespace Size Actually Created
userspace1		200	

f_sw password: _____

f_sqi password: _____

f_maint password: _____

f_open password: _____

DB2 Database Alias Name: _____

(e.g., indexdb)

User Tablespace Location: _____

(e.g., userspace1)

Continue the DB2 Client Installation

After the DB2 server software has been successfully installed, you can continue with the next chapter, **Chapter 3, "Guidelines for Installing DB2 V8.1.x Client Software," on page 22**.

3
Guidelines for Installing DB2 V8.1.x Client Software

This chapter describes how to configure a DB2 V8.1.x client software on the Image Services server and link it to the DB2 index database.

The Image Services server can be either a Root/Index server or an Application server.

Before You Begin

The FileNet Image Services server must be running one of these operating systems:

- AIX 5L V5.2 with Maintenance Level 02 or higher or
  AIX 5L V5.3 with Technology Level 04
  (64-bit)

- HP-UX 11i v1 for servers with PA-RISC processors
  HP-UX 11i v2 for servers with Intel® Itanium® 2 processors
  (64-bit)

- Solaris 9 (32-bit or 64-bit)

- Windows Server 2000 with SP4 or
  Windows Server 2003
  (32-bit)

Refer to **"Operating System Requirements" on page 9** in Chapter 1.

Create Image Service Users for DB2 Client Authentication

For CLIENT authentication, FileNet Image Services requires four users that need to be created on the DB2 client computer (the IS Root/Index server). Their privileges need to be set up differently from SERVER or SERVER_ENCRYPT authentication type since SYSADM authority cannot be granted on the DB2 client system.

In this case, the **f_sw**, **f_sqi**, and **f_open** users need to have connect, createtab, and bindadd privileges, while the **f_maint** user needs to have dbadm privilege for the database.

1 After the database has been created, you can grant these privileges by entering the following SQL commands as the instance owner on the DB2 server:

> **Connect to <dbname> ;**
> **Grant createtab, bindadd, connect on database to user f_sw;**
> **Grant createtab, bindadd, connect on database to user f_sqi;**
> **Grant createtab, bindadd, connect on database to user f_open;**
> **Grant dbadm on databse to f_maint;l**

2 Enable DB2_SNAPSHOT_NOAUTH at the instalnce level on the DB2 database server:

> **db2set DB2_SNAPSHOT_NOAUTH=on**

Note According to DB2, turning on the DB2_SNAPSHOT_NOAUTH registry variable to enable all users to access system monitor data introduces some security risks. Therefore FileNet recommends the SERVER and SERVER_ENCRYPT authentication types.

The following table summarizes the privilege for each authentication type for the four FileNet database users

OS and RDBMS User	Privilege for CLIENT Authenication Type
f_sw	Connect, createtab, bindadd db2set DB2_SNAPSHOT_NOAUTH=on
f_maint	Dbadm db2set DB2_SNAPSHOT_NOAUTH=on
f_sqi	Connect, createtab, bindadd db2set DB2_SNAPSHOT_NOAUTH=on
f_open	Connect, createtab, bindadd db2set DB2_SNAPSHOT_NOAUTH=on

An AIX Example

If the instance owner group is fn_grp1, enter the following commands as **root** user:

```
mkuser pgrp=fn_grp1 f_sw
mkuser pgrp=fn_grp1 f_sqi
mkuser pgrp=fn_grp1 f_maint
mkuser pgrp=fn_grp1 f_open
```

Set their passwords by entering:

```
passwd f_sw
passwd f_sqi
passwd f_maint
```

passwd f_open
passwd fnsw

Logoff as **root** user, and logon as each of the new users, one at a time, to change the password to avoid connection problems the first time they're used.

A Solaris Example

If the instance owner group is fn_grp1, enter the following commands as **root** user:

useradd -d /export/home/f_sw
useradd -d /export/home/f_sqi
useradd -d /export/home/f_maint
useradd -d /export/home/f_open

useradd -g fn_grp1 -G Staff

useradd -s /bin/ksh -m f_sw
useradd -s /bin/ksh -m f_sqi
useradd -s /bin/ksh -m f_maint
useradd -s /bin/ksh -m f_open

Logoff as **root** user, and logon as each of the four new users, one at a time, to change the password to avoid connection problems the first time they're used.

Install DB2 Client

To install DB2 Client, you must be logged on as **root** user (UNIX servers) or as **Administrator** (Windows servers).

1 Mount the CD-ROM.

2 As **root** user on AIX and Solaris servers, create a temporary 2 GB file system. Then copy and uncompress the DB2 installation files in thie file system.

Tip This temporary file system can be a mountable file system on another server.

3 Launch the DB2 Installer and make the following selections:

- Install Products

- DB2 Administration Client or DB2 Run-Time Client

- Typical Installation

- Create a 32-bit instance - (Since Image Services is a 32-bit application, you need to create a 32-bit instance of DB2 on UNIX platforms.)

- Set existing user: fnsw

- (Select installation directory/folder) - (Windows servers only.)

- UN-check "Configure NetBIOS... ." (It's not needed.)

- Install

4 When the installation is finished, view the status report or go to /tmp (UNIX) or \My Documents\DB2log (Windows) to view all DB2 install logs to ensure there are no errors.

Link to the DB2 Database

Since the DB2 database is located on a remote AIX or Solaris server, make sure that TCP/IP communications have been configured successfully on both server and client computers.

1 Use the DB2 Configuration Assistant (enter **db2ca** at a command prompt) to connect the DB Client to the DB2 database on the remote AIX server.

2 After successfully connecting to the remote DB2 database, you can check the connection using the Command Line Processor (CLP). Launch the Command Line Processor and enter:

DB2> **connect to <db_alias_name> user f_sw using <f_sw password>**

Report to Sys Admin and FileNet TSP

The new DB2 server has been successfully installed and configured, the server on which you plan to install FileNet Image Services software has been configured as an DB2 client, and the DB2 Client has been linked to the remote DB2 database.

Continue the Image Services Installation

After the DB2 software has been successfully installed, the FileNet Technical Consultant or ValueNet Partner can continue with the Image Services installation in *Chapter 3, "Installing the FileNet Image Services Software."* of the *Image Services Installation and Configuration Procedures* for your platform.