



**PL/PDF Toolkit**  
Manual Installation Guide  
v2.0.0



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## 1. System requirements

Oracle 11g RDBMS Release 1 or higher with **Oracle Jserver(JVM)**  
Oracle 11g Express Edition is **not** supported.

## 2. Get the PL/PDF Toolkit program

Please download the program from [www.plpdf.com/downloads](http://www.plpdf.com/downloads). Unzip the plpdf-toolkit.zip into a directory (<unzip\_directory>), example c:\downloads.

## 3. Create the PLPDF\_TK user (if separated install from PLPDF)

Start SQL\*Plus and connect with an administrator user (example system) to the database. Create the PLPDF\_TK user. This example only shows how to create a minimal user (script: l\_create\_user.sql). Check out Oracle 11g SQL Reference on how to set up a user:

[http://docs.oracle.com/cd/B28359\\_01/server.111/b28286/statements\\_8003.htm](http://docs.oracle.com/cd/B28359_01/server.111/b28286/statements_8003.htm)

```
CREATE USER plpdf_tk IDENTIFIED BY plpdf_tk;  
GRANT CONNECT TO plpdf_tk;  
GRANT RESOURCE TO plpdf_tk;
```

Another way you can execute l\_create\_user.sql file as administrator user.

## 4. Prepare Database for Unicode

Use LoadJava utility to load "International Components for Unicode" API libraries.

```
loadjava -user <username>/<password>@<database> -f -v -r -  
jarsasdbobjects icu4j-<version>.jar
```

We used icu4j-3\_8\_1.jar (Installkit contains this file).  
You can download jar from <http://site.icu-project.org/download>.

You have an easier way. Simply use the loadjar\_icu4j.cmd file.

## 5. Prepare Database for AES128 Encryption

Use LoadJava utility to load "Bouncy Castle" Crypto API libraries.

```
loadjava -user <username>/<password>@<database> -f -v -r bcprov-<jdk-  
version>-<num>.jar  
loadjava -user <username>/<password>@<database> -f -v -r bcpmail-<jdk-  
version>-<num>.jar
```

We used bcprov-jdk14-132.jar and bcpmail-jdk14-132.jar (Installkit contains these files).

You can download jars from  
[http://www.bouncycastle.org/latest\\_releases.html](http://www.bouncycastle.org/latest_releases.html).

You have an easier way. Simply use the loadjar\_bcmail.cmd and loadjar\_bcprov.cmd files.



## 6. Prepare Database for PublicKey Encryption

The Bouncy Castle app is dependent on 3 security interfaces from JDK 1.5 rt.jar that are missing from the Oracle 11.2 JVM and attempting to load will receive an error such as: ORA-29552: verification warning: java.lang.NoClassDefFoundError: java/security/interfaces/ECPrivateKey

To fix this error:

Change working directory to the location of the supplied JDK 1.5.

```
$ORACLE_HOME/jdk/jre/lib
```

Extract the 3 missing classes from rt.jar (or security.jar).

```
jar xvf rt.jar java/security/interfaces/ECKey.class
jar xvf rt.jar java/security/interfaces/ECPrivateKey.class
jar xvf rt.jar java/security/interfaces/ECPublicKey.class
```

Use ls utility to confirm the classes were extracted.

```
ls -l java/security/interfaces
-rw-r--r-- 1 oracle oinstall 177 May 4 2011 ECKey.class
-rw-r--r-- 1 oracle oinstall 306 May 4 2011 ECPrivateKey.class
-rw-r--r-- 1 oracle oinstall 309 May 4 2011 ECPublicKey.class
```

Use LoadJava utility to load the classes into the sys schema.

```
loadjava -u sys/sys -s java/security/interfaces/ECKey.class
loadjava -u sys/sys -s java/security/interfaces/ECPrivateKey.class
loadjava -u sys/sys -s java/security/interfaces/ECPublicKey.class
```

Start SQL\*Plus and connect with an administrator user (example system) to the database. Grant the execute privileges to public and resolve the loaded classes.

```
grant execute on "java/security/interfaces/ECKey" to public;
grant execute on "java/security/interfaces/ECPublicKey" to public;
grant execute on "java/security/interfaces/ECPrivateKey" to public;

alter java class "java/security/interfaces/ECKey" resolve;
alter java class "java/security/interfaces/ECPrivateKey" resolve;
alter java class "java/security/interfaces/ECPublicKey" resolve;
```

Change directory to location of the bouncy castle jar file and load it into the database using LoadJava utility. We used bcprov-jdk14-132.jar (Installkit contains this file). You can download jar from [http://www.bouncycastle.org/latest\\_releases.html](http://www.bouncycastle.org/latest_releases.html).

```
loadjava -user <username>/<password>@<database> -r -v -f -s -g
public -genmissing -jarsasdbobjects bcprov-<jdk-version>-<num>.jar
```

## 7. Java grants

Start SQL\*Plus and connect with an administrator user (example system) to the database.

```
dbms_java.grant_permission( '<USERNAME>',
'SYS:java.security.SecurityPermission', 'putProviderProperty.BC', ''
);
```



```
dbms_java.grant_permission( '<USERNAME>',  
'SYS:java.security.SecurityPermission', 'insertProvider.BC', '' );  
  
dbms_java.grant_permission( '<USERNAME>',  
'SYS:java.security.SecurityPermission', 'insertProviderProperty.BC',  
'' );  
  
dbms_java.grant_permission( '<USERNAME>',  
'SYS:java.lang.RuntimePermission', 'getClassLoader', '' );  
  
dbms_java.grant_permission( '<USERNAME>',  
'SYS:java.io.FilePermission', 'com\plpdf\res\-', 'read' );  
end;
```

Another way you can execute `java_grant.sql` file as administrator user.

#### 8. Load plpdf\_toolkit.jar file

Use LoadJava utility to load `plpdf_toolkit_v200.jar` file.

```
loadjava -user <username>/<password>@<database> -f -v -r  
plpdf_toolkit_v200.jar
```

You have an easier way. Simply use the `loadjar.cmd` file.

#### 9. Install MergeX storage table

CONNECT `plpdf_tk/plpdf_tk@<database>` and execute this command (command from SQL\*Plus).

```
@<unzip directory>\plpdf_tk_merge_inputs.sql;
```

#### 10. Install PLPDF\_TOOLKIT packages

CONNECT `plpdf_tk/plpdf_tk@<database>` and execute this command: **set scan off;** ("Set scan off" turns off substitution variables.)

Load the parameter package (command from SQL\*Plus):

```
@<unzip directory>\plpdf_toolkit_par.sql;
```

Load the toolkit package (command from SQL\*Plus):

```
@<unzip directory>\plpdf_toolkit.sql;
```

#### 11. Install PLPDF\_XFDF packages (optional)

CONNECT `plpdf_tk/plpdf_tk@<database>` and execute this command: **set scan off;** ("Set scan off" turns off substitution variables.)

Load the XML package (command from SQL\*Plus):

```
@<unzip directory>\plx_sc.sql;
```

Load the XFDF package (command from SQL\*Plus):

```
@<unzip directory>\plpdf_xfdf.sql;
```