

**precisely**

# EngageOne Enrichment

## Installation Guide

Version 7.4



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# 1 - Installing Enrichment on Mainframe

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# System requirements for mainframe

The following requirements must be met before installing Enrichment on a Mainframe.

- IBM z/OS 2.1 and higher
- Approximately 40 cylinders of 3390 DASD or equivalent is needed for installation and verification.

After you verify the installation, you can eliminate all data sets installed from the Enrichment install except for the LOAD and EXEC libraries. This reduces the amount of required DASD to between approximately 60 and 160 tracks.

- IBM LE/370

## Dataset names

The following table lists the Enrichment datasets.

**Note:** Secondary allocation size for all Enrichment data sets from the installation is 1.

File	PDR.STREAMW.dsn where dsn is:	3390 tracks allocated	Directory blocks	Description
01	CONTROL	2	4	Control and rule files for all verifications.
02	EXEC	1	1	REXX programs, such as PDRLNADD.
03	FUNCTION	2	2	User-written function examples in COBOL, C, and Assembler.
04	GOODOUT1	7	2	Shipped output for verifications with one or more outputs.
05	GOODOUT2	1	1	Shipped output for verifications with two or more outputs.
06	INPUT	8	4	Input files and inserts for verifications.

File	PDR.STREAMW.dsn where dsn is:	3390 tracks allocated	Directory blocks	Description
07	JCL	12	7	JCL to run verifications and compare shipped to new output and sample JCL for Enrichment utilities.
08	LOAD	90	2	Enrichment load module or modules.
09	X64.LOAD	90	2	Enrichment 64-bit load module or modules.
10	NEWOUT1	1	2	Generated output for verifications with one or more outputs.
11	NEWOUT2	1	1	Generated output for verifications with two or more outputs.
12	REPORT	1	2	Report files for verifications.
13	VARIABLE	2	1	Variable files for verifications.
14	HANDSON.CONTROL	3	5	Control files for <i>Sample Applications Guide</i> applications.
15	HANDSON.GOODOUT1	5	3	Output for <i>Sample Applications Guide</i> applications with one or more outputs.
16	HANDSON.GOODOUT2	2	2	Output for <i>Sample Applications Guide</i> applications with two or more outputs.
17	HANDSON.GOODOUT3	1	2	Output for <i>Sample Applications Guide</i> applications with three or more outputs.
18	HANDSON.GOODOUT4	1	2	Output for <i>Sample Applications Guide</i> applications with four outputs.
19	HANDSON.INPUT	7	6	Input print streams for <i>Sample Applications Guide</i> applications.
20	HANDSON.JCL	2	6	JCL for <i>Sample Applications Guide</i> applications.
21	README	1	Sequential	Readme files

# Installing Enrichment

To download and install Enrichment, follow these steps:

1. Download Enrichment. For instructions, please refer to your company's ship to contact or send an email to [pbs\\_fulfillment@pb.com](mailto:pbs_fulfillment@pb.com).
2. Unzip the downloaded file.
3. Open `SWINSTALL.INI` in a text editor.
4. In the `[Enrichment]` section, specify the settings appropriate for your environment. See the comments at the beginning of the file for a description of each setting.
5. Save and close `SWINSTALL.INI`.
6. Run `Setup.exe`.

The setup program generates the necessary JCL for your system.

7. Do one of the following:
  - a) If you specified **SUBMIT=YES** in `SWINSTALL.INI`, the setup program will FTP the JCL to the mainframe system you specified in `SWINSTALL.INI` and will submit the installation job `IDSINSTL`. The job should complete with zero return codes. If the security settings on your mainframe system prevent job submission via internal reader, you must perform the manual process described next.
  - b) If you specified **SUBMIT=NO** in `SWINSTALL.INI`, manually FTP the files to your mainframe by running the following command at the command prompt:

```
ftp -s:idsinstl.ftp
```

When the FTP transfer completes, log on to the mainframe and submit the install job `IDSINSTL`. The job should complete with zero return codes.

8. Install the license key. For instructions, see [Installing the Key](#) on page 7.
9. Run the installation verification procedure to verify success. For instructions, see [Verifying installation](#) on page 12.

# Installing the Key

The Enrichment key unlocks the Enrichment modules licensed by your site and provides a simplified enhancement path. If you require additional modules, contact Precisely. to arrange for an updated key that will unlock those additional modules.

When you purchase Enrichment, you receive a permanent key that enables you to start using Enrichment immediately. If you received a temporary key as a part of a time-restricted trial use of Enrichment, you will receive a permanent key when you place your order.

It is recommended that you build your key into a separate load library from the STREAMW.LOAD library. This allows you to upgrade to future releases of Enrichment without the need to rebuild the key each time. When you run Enrichment in production, concatenate the key library with the load library.

To install the software key, follow these steps:

1. Edit the JCL in `streamwhlq.STREAMW.JCL(PDRKEY)` or `(PDRMKEY)` as follows.

If you will be installing one key, use the PDRKEY library member. If you have multiple keys, use PDRMKEY sample JCL.

- a) Modify the job card for your site.
- b) Change all occurrences of `streamwhlq` to the HLQ of your installation.
- c) Change `SYS1.MACLIB` to the correct specification of the Assembler library for your site.
- d) Change `ABCDEFGHIJKLMN0PQRST1234567890` to the characters in YOUR key.
- e) Change "Your Company Name, Inc." to the name of your company, up to 50 characters in length.

You can use alphanumeric characters, spaces, and commas. If your company name is less than 50 characters, pad with spaces to fill out the full field length.

- f) If you have multiple CPU keys, change "GHIJ...Z" to your secondary key in PDRMKEY.

2. Save your changes and submit the PDRKEY or PDRMKEY JCL for batch processing.

**Note:** To use the 64-bit load modules, use PDRKEY64, rather than PDRKEY, or PDRMKY64 rather than PDRMKEY.

3. Check the batch job output for successful completion.
4. Make sure the key load module, PDRKEY00, was created in the load library you specified or in Enrichment load library `streamwhlq.STREAMW.LOAD`.

**Note:** You may have to change the names of the assembler and linkage editor. For example, IEV90 could be ASMA90 or IEWL could be HEWL.

5. Your key is now installed. To obtain a permanent key you need the CPU ID of your system. To obtain the CPU ID, issue the following command at the console:

```
D M=CPU
From SDSF, enter:
/D M=CPU
```

The serial number is the first six characters shown under "SERIAL". For example, in the following output the serial number is 011B42:

```
IEE174I 09.37.16 DISPLAY M 745
PROCESSOR STATUS
ID CPU SERIAL
0 + 011B427060
```

**Note:** LPARs are considered a single CPU.

## Installing and verifying support for JES input

Enrichment has an optional feature that allows it to read input from a JES queue. This is an optional feature that requires an additional license.

There are two interfaces available: a JES interface that utilizes IBM's SYSOUT Application Programming Interface (SAPI) and a non-SAPI interface. The SAPI interface provides the following benefits over the non-SAPI interface:

- JES version independence. Since it uses an API to retrieve data, it is less susceptible to changes to the OS and/or JES.
- One interface for all versions of the OS.
- Distributed in executable load module format. No need to assemble and link the interface during install.
- Unlimited SPOOL volume support. Since the new interface does not read the spool data directly, the number of spool volumes in use is irrelevant.
- Support for large SYSPLEX environments which utilize a coupling facility in lieu of a checkpoint dataset.

For additional information on SAPI, see *IBM document SG24-2067-00, "OS/390 Release 3 Implementation"*, dated December 1997.

Complete one of the following procedures based on which version of the interface you want to install:

- [Installing the SAPI JES interface](#) on page 9.
- [Installing the non-SAPI interface](#) on page 11.



## Installing the SAPI JES interface

This procedure describes how to install the SAPI JES interface. The SAPI interface allows you to read from the JES queue and is release and version independent. The JES interface is required only if you will read from the JES queue as input to Enrichment. Most installations do not require the JES interface.

If you choose to install the SAPI version of the JES interface, you must install Enrichment and the JES interface module into a LINKLST dataset. This is because only authorized assembler programs can issue SAPI requests. Installing to a LINKLST dataset allows use of STEPLIB to non-authorized application via STEPLIB concatenation in JCL.

**Note:** Installing to an APF-authorized library will work, but if Enrichment must call other applications, such Mailstream Plus, or a user exit, those applications must also be installed into an APF authorized library.

**Note:** If you execute Enrichment applications that utilize the SAPI JES interface out of an unauthorized library, you will experience S047 when attempting to issue the SAPI requests. S047 abends are the result of a non-privileged application attempting to execute a privileged instruction. If you receive an S047, ensure that PDRJES00 and PDRSW000 are being installed and run from the LINKLST and that no other application involved in the Enrichment job are causing the task to lose APF authorization.

PDRJES00 switches to Supervisor State temporarily and only long enough to issue SAPI requests to locate the job, the datasets associated with the job, and then to release the job when finished. When not actively issuing SAPI requests, Enrichment and PDRJES00 will be running in normal "Problem" state.

### *Installing to existing Enrichment systems*

To install the new JES interface on a system that already has Enrichment 6.1.2 or later installed, follow these steps.

**Note:** Enrichment 6.1.2 or later is required for the SAPI version of the JES interface. If you do not have Enrichment 6.1.2 or later installed you must use the non-SAPI version of the JES interface.

1. Modify the installation JCL ([HLQ].STREAMW.JCL) so that only the dataset referenced in IN11 is installed. (The dataset referenced in IN11 is PDR.STREAMW.LOADLE22.)
2. Execute the installation JCL.
3. After the installation completes, use ISPF Option 3.3 (Utility, Move/Copy) to copy the following to the desired LINKLST library.

PDRSW000

PDRJES01

PDRKEY00

- Using ISPF Option 3.1 (Utility, Library), rename PDRJES01 to PDRJES00 in the LINKLST dataset.

**Note:** PDRJES01 is distributed by that name in order to prevent overlay of any previous version of the Enrichment JES2 interface that may be installed. When reading JES files during processing, Enrichment will always call module PDRJES00. It is therefore important to rename the module to PDRJES00.

- Relink PDRSW000 and PDRJES00 to set AC(1) by executing the following JCL.

```
//userid JOB(),CLASS=A,MSGCLASS=D,NOTIFY=&SYSUID
//LINK EXEC PGM=HEWLKED,
// PARM=('LET,LIST,MAP,AMODE=31,RMODE=ANY')
//SYSLMOD DD DISP=SHR,DSN=user.streamw.loadlib
//SYSUT1 DD DISP=NEW,UNIT=VIO,SPACE=(CYL,(2,2))
//SYSPRINT DD SYSOUT=*
//SYSLIN DD *
INCLUDE SYSLMOD(PDRSW000)
SETCODE AC(1)
NAME PDRSW000(R)
//
```

- Submit `streamwhlq.STREAMW.JCL(RUNJES2)` for processing and check the resulting condition codes. All condition codes must be 0 for successful verification.

## Installing to new Enrichment systems

To install the new JES interface on a system that does not already have Enrichment installed, follow these steps.

- Using ISPF Option 3.3 (Utility, Move/Copy), copy the following to the desired LINKLST library.

PDRSW000

PDRJES01

PDRKEY

- Using ISPF Option 3.1 (Utility, Library), rename PDRJES01 to PDRJES00 in the LINKLST dataset.
- Relink PDRSW000 and PDRJES00 to set AC(1) by executing the following JCL.

```
//userid JOB(),CLASS=A,MSGCLASS=D,NOTIFY=&SYSUID
//LINK EXEC PGM=HEWLKED,
// PARM=('LET,LIST,MAP,AMODE=31,RMODE=ANY')
//SYSLMOD DD DISP=SHR,DSN=user.streamw.loadlib
//SYSUT1 DD DISP=NEW,UNIT=VIO,SPACE=(CYL,(2,2))
//SYSPRINT DD SYSOUT=*
//SYSLIN DD *
INCLUDE SYSLMOD(PDRSW000)
SETCODE AC(1)
```

```
NAME PDRSW000 (R)
//
```

4. Submit `streamwhlq.STREAMW.JCL (RUNJES2)` for processing and check the resulting condition codes. All condition codes must be 0 for successful verification.

## Installing the non-SAPI interface

The non-SAPI interface allows Enrichment to read from a JES2 queue. The JES2 interface is required only if you will read from the JES2 queue as input to Enrichment. If you will only write to JES2, this interface is not required. Most installations do not require the JES2 interface.

**Note:** Follow this procedure only if your version of JES does not support the SAPI version. We recommend that you use the SAPI version if possible. For information on installing the SAPI version, see [Installing the SAPI JES interface](#) on page 9.

The JES2 interface requires you to compile and link an Assembler program to create the load module `streamwhlq.STREAMW.LOAD (PDRJES00)`. Procedures for editing the JCL are given in the steps below. A portion of each JES2 installation JCL is given in the figures that follow.

1. Edit `streamwhlq.STREAMW.JCL (JESZ12IN)` as follows:
  - a) Modify the job card for your site.
  - b) Change all occurrences of `streamwhlq` to the HLQ for your installation.
  - c) Change `SYS1.MACLIB` to the correct Assembler library specification for your site.
  - d) If necessary, change `SYS1.MODGEN` and `SYS3.JES2V430.HASPSRC` or `SYS3.JES2V510.HASPSRC` (your JES HASP source library) to the correct Assembler library specifications for your site.
  - e) If necessary, change the following values on records 45 and 46 of `streamwhlq.STREAMW.JCL (JESZ12IN)`:
    - Substitute the JES2 subsystem name in use at your site for `JES2` in `JESID=JES2`.  
Generally, you can find your JES2 subsystem name in `SYS1.PARMLIB (IEFSSN00)` or `SYS1.PARMLIB (SMFPRM00)`.
    - Substitute the unit type of the spool volumes in use at your site for `3390` in `UNIT=3390`. The unit type must be `3350`, `3380`, or `3390`.
    - Substitute the data set name for the spool volume definition name in use at your site for `SYS1.JV4SPACE` in `SPOOL=SYS1.JV4SPACE`.  
Generally, you can find your sites spool volume definition in `SYS1.PARMLIB (JES2PARM)` on the record that reads `SPOOLDEF DSNAME=SYS1.JV4SPACE`.
2. Submit the appropriate JCL for processing. Upon completion, check the batch job output for the following condition codes:

- If the ASM370 steps return condition code 4, the step was successful.
  - If the LINK steps return condition code 0, the step was successful.
3. Edit the JCL in `streamwhlq.STREAMW.JCL(MAKEJES2)` as follows:
    - Modify the job card for your site.
    - Change all occurrences of `streamwhlq` to the HLQ you chose in step 1.
  4. Submit `streamwhlq.STREAMW.JCL(MAKEJES2)` for processing.
  5. Edit the JCL in `streamwhlq.STREAMW.JCL(RUNJES2)` as follows:
    - Modify the job card for your site.
    - Ensure STEPLIB includes Enrichment loadlib, C runtime, and SuperC utility loadlibs as necessary.
    - Change `SYS3.ISPF.ISRLPA` to the name of the data set under which SuperC is stored on your system.
    - Change both occurrences of `JOBNAME` to the job name from `MAKEJES2`.
    - Change both occurrences of `JOBNUM` to the job number from `MAKEJES2`.
  6. Submit `streamwhlq.STREAMW.JCL(RUNJES2)` for processing and check the resulting condition codes. All condition codes must be 0 for successful verification.

### Hints

To make JES2 verification work effectively, please note:

- The JESFILE1 DD statement and parameter where you need to replace 'JOBNUM' and 'JOBNAME' with the appropriate entries for the job that created the JES file to be input.
- In your control file instead of specifying DD:FILENAME in your input <FILE> statement, use JES:DD:FILENAME (replacing FILENAME with the DD statement name of the DD that contains the JES2 file parameter).

## Verifying installation

After you install Enrichment, you must verify that it is complete and operational. Enrichment consists of a number of standard and optional modules. All of these modules are included in the primary load module provided in `streamwhlq.STREAMW.LOAD(PDRSW000)` and, for 64-bit, `streamwhlq.STREAMW.X64.LOAD`.

Your Enrichment key unlocks the optional modules licensed by your site.

The verification job does not include verification of Mailstream Plus.

**Note:** If you will be using Finalist or Mailstream Plus, make sure the job libraries for these programs are correct in VERIFY JCL and change the PBCASS and/or the PBPRSTSET statements.

**Note:** Address databases for Finalist are available in varying configurations. All Enrichment verifications assume that the national address databases are installed. The verification routines assume the current versions of Finalist and Mailstream Plus. If your site runs different versions of these products or uses regional databases only, your verification results may vary.

To verify your installation, do the following:

1. Edit the JCL in `streamwhlq.STREAMW.JCL(VERIFY)` as follows:
  - a) Add a valid job card for your site.
  - b) Change all occurrences of `streamwhlq` to the HLQ you chose when you installed Enrichment.
  - c) As appropriate, include DDs in the JOBLIB for Finalist, Mailstream Plus, and COBOL run-time.
 

**Note:** If you use Finalist, do not include XPLINK.LOAD in the JOBLIB. Enrichment does not interface with this library.
  - d) Referring to the comments to the right of each variable in the JCL, change the variables in the SET statements to appropriate values.
  - e) Uncomment the appropriate INCLUDE statements in the JCL to verify the Enrichment modules purchased.
2. Submit `streamwhlq.STREAMW.JCL(VERIFY)` and check the condition codes for each step. All condition codes must be 0 for successful verification, except for COMP01, which could have a condition code 0 or 1.

The new output is stored in `streamwhlq.STREAMW.NEWOUTx`, where `x` is either 1 or 2. When an example gives multiple outputs, the first output is placed in `NEWOUT1` and the second in `NEWOUT2`. Similarly, shipped output is stored in `streamwhlq.STREAMW.GOODOUTx`.

Enrichment runs SuperC to compare outputs created by the verifications with outputs shipped with the installation. Check the results of the comparison using a utility to view your JES output queue. For example, if Spool Display and Search Facility (SDSF) is installed on your system, use it to check the compare steps in the JCL. There should be no difference between the new and shipped outputs. Enrichment verification reports can be found in `streamwhlq.STREAMW.REPORT`.

3. View the reports in `streamwhlq.STREAMW.REPORT` for each verification. The report lists the Enrichment modules unlocked by your key.
4. After you complete verification, you can eliminate all data sets installed from the Enrichment install except for the LOAD, JCL, and EXEC libraries. This reduces the amount of required DASD to approximately 100 tracks.

**Attention:** Do not delete the LOAD and EXEC libraries that you use to run Enrichment.

Depending upon your Enrichment installation, you may also need to keep one or more of the following libraries or data sets:

- If you will use Enrichment with user-written functions, you may also want to keep the FUNCTION, GOODOUT1, and GOODOUT2 data sets. These data sets contain sample data for COBOL, Assembler, and C user-written functions.
- If you want to use the sample files that are discussed in the *Enrichment Sample Applications Guide*, save the files that start with HANDSON.

## Troubleshooting

If the INIT section of the batch output report from running `streamwhlq.STREAMW.JCL(VERIFY)` fails, make sure the version of Enrichment matches the appropriate run-time library. For more information, see [System requirements for mainframe](#) on page 4.

If the PBCASS section of the batch output report from running `streamwhlq.STREAMW.JCL(VERIFY)` abends, the CASS™ database might be out of date. Make sure it runs stand-alone.

If the PBPRST section of the batch output report from running `streamwhlq.STREAMW.JCL(VERIFY)` fails, do the following:

- Make sure Presort runs stand-alone.
- Make sure the Inkjet VSAM file has been created with the proper record length. It should match the length specified in the <OUTFILE1> tag.

If you receive the error CEE3191E An attempt was made to initialize an AMODE24 application without using the ALL31(OFF) and STACK(, , BELOW), change your EXEC PDRSW000 statement to include `PARM='ALL31(OFF) , STACK(, , BELOW) /'`.

# 2 - Installing Enrichment on Windows

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# System requirements for Windows

The following requirements must be met before installing Enrichment on a Windows machine.

- Windows 10, Windows Server 2008, Windows Server 2012, Windows Server 2016
- 1 MB of free disk space for installation and verification files
- 10 MB of free disk space for the Enrichment executable
- A minimum of 32 MB of RAM (at least 512 MB recommended)

## Installing Enrichment

Prior to installing Enrichment, consult your system administrator as to the directories under which you should install the software.

**Note:** You must have administrator rights to install Enrichment. Administrator rights are necessary because the Enrichment installation updates environment variables.

1. Download the installation. For more information, please refer to your company's ship to contact or send an email to [pbs\\_fulfillment@pb.com](mailto:pbs_fulfillment@pb.com).
2. Double-click `setup.exe`.
3. Follow the instructions on the screen.
4. When prompted, enter the temporary software key that you received with Enrichment. If you do not have a key, click **Next** without entering a key. If a valid key was entered in a previous install, you do not need to enter it again.

**Note:** The key value is case sensitive.

5. When the installation is complete, obtain your permanent key by following these steps:
  - a) Open a command prompt and navigate to `..\Enrichment\bin` directory.
  - b) Enter the following command:

```
hostid
```

- c) Send the information to Software Support with your request for your permanent software key.
- d) Enter the permanent key you receive from Support in the `PBSSTTY` environment variable in Windows.



The key will be 30 characters in length, or 50, if the key includes secondary CPUs.

## Finalist configuration

If you will use Enrichment with Finalist for CASS™ address cleansing, you must perform the following configuration:

1. Verify that the Finalist bin directory is included in your PATH environment variable. For example:  
`C:\Program Files\Precisely\Finalist\bin`
2. If you want to use the default Finalist configuration file `pbfncfg`, place this file in the current working directory. However, you can specify the full path to another configuration file using the <LPCFINAL> tag in the <CASS> tag group. For more information about this tag, see the *Enrichment Language Reference Guide*.
3. If you want to use a Finalist configuration file named anything other than `pbfncfg`, verify that you do not have a file named `pbfncfg` file in the current working directory.
4. If you will be using DPV™ or LACSLink™, put the following files, which come with Finalist, in the current working directory (the directory from which you run your Enrichment jobs):
  - `xxf.su$` - This is required for DPV™ processing.
  - `xxl.su$` - This is required for LACSLink™ processing.

For example, if you run your Enrichment jobs using a batch file located in `C:\SWJobs`, you would put these files in `C:\SWJobs`. The files must be in the directory where you run your Enrichment jobs, which may be different from the directory where the Enrichment executable is located.

## Mailstream Plus configuration

If you will use Enrichment with Mailstream Plus for postal presort, the Mailstream Plus setup script will configure the necessary environment variables, including adding the Mailstream Plus installation `\bin` directory to your PATH environment variable. For example:

```
C:\Program Files\Pitney Bowes\MSP\bin
```

## Verifying installation on Windows

After you install Enrichment, you must verify that it is ready to run on your system. Enrichment includes a verification script. To verify installation on Windows, follow these steps:

1. Open a Command Prompt window.
2. Navigate to the `..\Enrichment\bin` directory.
3. Type `VERIFY` at the command prompt and press **Enter**.
4. After you verify installation you can remove the installation and verification files.

**Note:** Do not remove any files from the `..\Enrichment\bin` directory. The files in this directory are necessary for proper Enrichment operation.

## Removing Enrichment

To remove Enrichment from your Windows machine, perform the following steps:

1. Click **Start > Settings > Control Panel**.
2. Double-click the **Add/Remove Software** icon.
3. Select Enrichment from the list, and click **Add/Remove**. A message is displayed asking if you want to remove the program.
4. Click **Yes**.

# 3 - Installing Enrichment on Unix

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# System requirements for Unix

The following requirements must be met before installing Enrichment on a Unix server.

- AIX 7.1 and higher, Sun Solaris 11, HP/UX 11i v3
- 1 MB of free disk space for installation and verification files

**Note:** After you verify installation, you can remove the installation and verification files.

- 15 MB of free disk space for the Enrichment executable
- 32 MB RAM minimum (64 MB recommended)
- Swap space should be twice the amount of RAM on the workstation. For example, if you have 32 MB of RAM, then a minimum 64 MB of swap space is required. Refer to your operating system documentation for more information.
- Use of the Korn shell is recommended for scripts shown in this guide.

## Installing Enrichment

Enrichment installation consists of these primary activities:

- Install the software. [Install the Enrichment software](#) on page 20
- Customize the swvrex script. [Customize the swvrex script](#) on page 22
- (Optional) [Specify Finalist system variables](#) on page 23
- (Optional) [Configure Mailstream Plus](#) on page 23
- (Optional) [Configure EngageOne Inform](#) on page 23
- (Optional) [unixODBC](#) on page 24

## Install the Enrichment software

**Attention:** When installing Mailstream Plus and/or Finalist on the same machine as Enrichment, make sure you install Enrichment last.

Prior to installing Enrichment, consult your system administrator as to the directories under which you should install the software and any necessary privileges you may need.

1. Download the software and, if necessary, FTP the installation files to your UNIX system.

For more information about downloading the software, please refer to your company's ship to contact or send an email to [pbs\\_fulfillment@pb.com](mailto:pbs_fulfillment@pb.com).

2. At the command prompt, type `./swinst` and then press **Enter**.
3. When prompted for a path to put the `./Enrichment` directory, type the path under which you want to install Enrichment and then click **Enter**.

**Note:** You must have permission to write to the directory you specify. If you do not have access to the path you entered the installation process stops. Also, the directory you specify must already exist.

The installation files are decompressed. The installation script lists directory structures and files as they are installed.

4. When the installation completes, ask your system administrator to give the Enrichment users access to the `<user>/Enrichment` directory (that is, the Enrichment home directory).
5. Verify that users have access to the proper directories by typing `which sweaver` and press **Enter**. If the proper directories are found in user's PATH environment variable, the system will issue a message similar to this:

```
.../Enrichment/bin/sweaver
```

If `sweaver` is not found in the PATH environment variable, the system will issue a message similar to the one shown below.

```
no sweaver in ./opt/SUNWspro/bin /usr/bin /usr/sbin /usr/ucb
/usr/openwin/bin
/usr/ccs/bin/share/home1/local/bin
/usr/local/bin/SunOS
```

6. If you are upgrading an existing installation, do the following:
  - a) Enter your temporary Enrichment key in the PBSSTTY environment variable for the user by typing the following:

```
export PBSSTTY=softwarekey
```

- b) Obtain the CPU ID of the system where you have installed Enrichment. The CPU ID appears on the Enrichment report. You can also obtain the CPU ID by following the instructions in the following table. On all platforms you can find the CPU ID on the Enrichment Report.

To locate the CPU ID	Issue command	Result
on HP	<code>uname -i</code>	The last six characters of the response indicate the CPU ID.
on AIX	<code>uname -m</code>	Bytes 3-8 of the response indicate the CPU ID.

To locate the CPU ID	Issue command	Result
on Sun	<code>hostid</code>	The number returned is in hexadecimal format. Convert this number to decimal. The last six characters of the decimal value indicate the CPU ID.

- c) Contact Software Support and provide the CPU ID.
- d) When you receive your permanent key enter the key in the PBSSTTY environment variable.

## Customize the swvrex script

The script file `.../Enrichment/bin/swvrex` provides an easy way to run Enrichment while ensuring that the proper environment has been created. The file `swvrex` can be found two levels under the directory you specified during the installation step, `swinst`. For example, if you specified `/home/user/swvr` for installation, `swvrex` will be put to `/home/user/swvr/Enrichment/bin`. To customize `swvrex`, edit `../Enrichment/bin/swvrex` and do the following:

1. Change all occurrences of the `/pb` directory level in `/pb/pbssmc` to the directory in which you installed Mailstream Plus.
2. If you are installing on AIX or Solaris, do one of the following:
  - For systems running AIX, change all occurrences of `/usr/lib/cobol` to the directory in which COBOL resides on your system.
  - For systems running Solaris, change all occurrences of `/opt/lib/cobol` to the directory in which COBOL resides on your system.
3. Change all occurrences of the `/pb` directory level in `/pb/Enrichment/` to the directory in which you installed Enrichment.
4. If you are going to use Finalist for CASS™ processing, change all occurrence of `/finalist` to the directory in which you installed Finalist.
5. Change `softwarekey` of `export PBSSTTY=softwarekey` to your software key.
6. If you will be processing input or output files larger than 2 GB change the executable from `sweaver` to `sweaverL`.

After you customize `swvrex` you will not need to export any variables to the operating system before running Enrichment.

**Note:** After you run the Enrichment verification job, you must uncomment the last line of the `swvrex` script. Verification will not work if you uncomment the last line of the `swvrex` script before you run the verification.

## Specify Finalist system variables

You must include the path to the `libpbfm.so` file, which is located in the Finalist installation location.

The name of the environment variable depends on the flavor of UNIX you are using:

- **AIX:** LIBPATH
- **Solaris:** LD\_LIBRARY\_PATH
- **HP-UX:** SHLIB\_PATH

For example, if you installed Enrichment in the directory `.../Enrichment` on a system running AIX you would have the following environment variable:

```
LIBPATH=.../Enrichment/lib:$LIBPATH
```

Normally this environment variable is set by the `.../Enrichment/bin/swvrex` script. However, you can also set this variable using a login script or by the `export` command.

## Configure Mailstream Plus

If you will use Enrichment with Mailstream Plus for postal presort, the Mailstream Plus setup script will configure the necessary environment variables.

## Configure EngageOne Inform

You must include the path `libg1imbapi.so` or the `libg1imbapi.sl` file, which is located in the EngageOne Inform installation location.

The name of the environment variable depends on the version of UNIX you are using:

- **AIX:** LIBPATH
- **Solaris:** LD\_LIBRARY\_PATH
- **HP-UX:** SHLIB\_PATH

For example, if you installed Enrichment in the directory `.../Enrichment` on a system running AIX you would have the following environment variable:

```
LIBPATH=.../Enrichment/lib:$LIBPATH
```

## unixODBC

Enrichment uses the unixODBC library to access relational databases. For more information, please refer to this website: [www.unixodbc.org](http://www.unixodbc.org).

## Verifying installation on UNIX

After you install Enrichment, you must verify that it is ready to run on your system. The distribution media includes an automatic verification script that will exercise all Enrichment functions.

**Note:** Make sure you have customized swvrex before you run the verification. If you do not customize swvrex before you run the verification, the verification may fail. For instructions on customizing swvrex, see [Customize the swvrex script](#) on page 22.

To verify the Enrichment installation, perform the following steps:

1. Change to the Enrichment home directory mentioned in step 2 of [Install the Enrichment software](#) on page 20. For example, if your Enrichment home directory is `/Enrichment`, type the following command and press **Enter**:

```
cd ../Enrichment/bin
```

2. Type the following command and press **Enter** to run the verification script:

```
./verify
```

The verify script will run a number of jobs to test Enrichment functions.

```
VERIF01    Line Data
VERIF02    Line Data
VERIF03    Line Data
VERIF04    Line Data
VERIF09    Line Data
VERIF10    Line Data
VERIF11    Line Data
VERIF12    AFP Data
VERIF13    AFP Data
VERIF14    AFP Data
VERIF15    Metacode Data
VERIF16    Metacode Data
VERIF17    Metacode Data
```

Each job's name is displayed as the script executes it. Pass or Fail is displayed after each job name. If any of the jobs fail, contact Software Support to determine the source of the problem.

- Jobs 12-14 will fail if you are not licensed for AFPDS.



- Jobs 15-17 will fail if you are not licensed for Metacode.
3. To make verification easier, you can capture the verify script output in a file. Review this file after all the jobs run. To capture the output, type the following command and press Enter:

```
./verify | tee verify.out
```

This command displays the script's output and saves that output to a file called `verify.out`. You can review `verify.out` with your text editor or the `more` command.

If all verification jobs pass, installation is complete.

After you successfully install and verify Enrichment, you can remove the installation and verification files from your system. The installation and verification files are located in the `/Enrichment/caselib` directory.

**Note:** Do not remove any files from the `.../Enrichment/bin` directory. The files in this directory are necessary for proper operation.

If you do not remove the verification directories, you can rerun the verification procedure at any time. You can also examine the control files in the verification directories as examples of Enrichment usage.

**Attention:** After you run the verification, uncomment the last line in `swvrex` so you can run Enrichment without exporting variables to the operating system.

## Enrichment directory structure

The following table shows the Enrichment directory structure.

Directory/File	Description
<code>./Enrichment/bin/sweaver</code>	Enrichment executable.
<code>./Enrichment/bin64/sweaver</code>	64-bit Enrichment executable.
<code>./Enrichment/bin/sweaverL</code> <code>./Enrichment/bin64/sweaverL</code>	Enrichment executable that supports files that are greater than 2 GB.
<code>./Enrichment/bin/callmsp</code> <code>./Enrichment/bin64/callmsp</code>	Script used to run Mailstream Plus from Enrichment.

Directory/File	Description
./Enrichment/bin/swvrex ./Enrichment/bin64/swvrex	PBSSTTY environment variable initialization and sweaver execution script.
./Enrichment/bin/verify ./Enrichment/bin64/verify	Verification shell script.
./Enrichment/bin/verify.name ./Enrichment/bin64/verify.name	Used by the verification shell script.
./Enrichment/bin/runout ./Enrichment/bin64/runout	Verification output directory.
./Enrichment/bin/dumpafp ./Enrichment/bin64/dumpafp	Unsupported AFP display utility.
./Enrichment/bin/etoa ./Enrichment/bin64/etoa	Unsupported ASCII-to-EBCDIC conversion program.
./Enrichment/bin/HOSTID	Reports the CPU of the system, as determined by Enrichment.
./Enrichment/caselib	Verification input master directory.
./Enrichment/caselib/control	Verification input control file directory.
./Enrichment/caselib/linedata	Verification input line data directory.
./Enrichment/caselib/list3820	Verification input AFPDS directory.
./Enrichment/caselib/listout1	Verification correct output directory 1.
./Enrichment/caselib/listout2	Verification correct output directory 2.
./Enrichment/caselib/vdf	Verification input variable definition file directory.

Directory/File	Description
<code>./Enrichment/lib</code>	Add-in and user function directory.
<code>./Enrichment/bin/reprint</code> <code>./Enrichment/bin64/reprint</code>	Reprint executable. 64-bit Reprint executable.
<code>./Enrichment/bin/reprintL</code> <code>./Enrichment/bin64/reprintL</code>	Reprint executable that supports files that are greater than 2 gigabytes.
<code>./Enrichment/bin/pdrxcme</code> <code>./Enrichment/bin64/pdrxcme</code>	Unsupported utility for Xerox line data.
<code>./Enrichment/bin/pdrccm2a</code> <code>./Enrichment/bin64/pdrccm2a</code>	Unsupported utility that changes machine carriage controls to ANSI carriage controls.
<code>./Enrichment/bin/pdrcca2m</code> <code>./Enrichment/bin64/pdrcca2m</code>	Unsupported utility that changes ANSI carriage controls to machine carriage controls.

## Removing Enrichment

You can remove Enrichment from your system by simply removing the directories that were loaded from the installation media. All files on the installation media are loaded into these directories.

If you do not know how to remove directories, see your system administrator or review your operating system documentation.

Alternatively, you can remove the installation and verification files from the system, leaving only files required to run and work with Enrichment. In this case, you would remove all directories and files loaded from the installation media except the `./Enrichment/bin` directory and the `./Enrichment/lib` directory, if present, and the files within it. The files in this directory are necessary for proper operation.

# 4 - Installing Enrichment on Linux

## In this section

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# System requirements for Linux

The following requirements must be met before installing Enrichment on a Linux server.

- CentOS 7.
- 1 MB of free disk space for installation and verification files.

**Note:** After you verify installation, you can remove the installation and verification files.

- 15 MB of free disk space for the Enrichment executable.
- 32 MB RAM minimum (64 MB recommended).
- Swap space should be twice the amount of RAM on the workstation. For example, if you have 32 MB of RAM, then a minimum 64 MB of swap space is required. Refer to your operating system documentation for more information.

## Installing Enrichment

Enrichment installation consists of these primary activities:

- **Install the Enrichment software** on page 29
- **Verify user access** on page 32
- (New installations only) **Enter software key** on page 32
- **Customize the swvexe script** on page 33
- (Optional) **Configure Mailstream Plus** on page 34

## Install the Enrichment software

**Attention:** When installing Mailstream Plus and/or Finalist on the same machine as Enrichment, make sure you install Enrichment last.

Prior to installing Enrichment, consult your system administrator as to the directories under which you should install the software and any necessary privileges you may need.

1. Download the software and, if necessary, FTP the installation files to your Linux system.

For more information about downloading the software, please refer to your company's ship to contact or send an email to [pbs\\_fulfillment@pb.com](mailto:pbs_fulfillment@pb.com).

2. At the command prompt, type `./swinst` and then press **Enter**.
3. When prompted for a path to put the `./Enrichment` directory, type the path under which you want to install Enrichment and then click **Enter**.

**Note:** You must have permission to write to the directory you specify. If you do not have access to the path you entered the installation process stops. Also, the directory you specify must already exist.

The installation files are decompressed. The installation script lists directory structures and files as they are installed.

4. When the installation completes, ask your system administrator to give the Enrichment users access to the `<user>/Enrichment` directory (that is, the Enrichment home directory).
5. Verify that users have access to the proper directories by typing `which sweaver` and press **Enter**. If the proper directories are found in user's PATH environment variable, the system will issue a message similar to this:

```
.../Enrichment/bin/sweaver
```

If `sweaver` is not found in the PATH environment variable, the system will issue a message similar to the one shown below.

```
no sweaver in ./opt/SUNWspro/bin /usr/bin /usr/sbin /usr/ucb
/usr/openwin/bin
/usr/ccs/bin/share/home1/local/bin
/usr/local/bin/SunOS
```

6. If you are upgrading an existing installation, do the following:
  - a) Enter your temporary Enrichment key in the PBSSTTY environment variable for the user by typing the following:

```
export PBSSTTY=softwarekey
```

- b) Obtain the CPU ID of the system where you have installed Enrichment. The CPU ID appears on the Enrichment report. You can also obtain the CPU ID by following the instructions in the following table. On all platforms you can find the CPU ID on the Enrichment Report.

To locate the CPU ID	Issue command	Result
on HP	<code>uname -i</code>	The last six characters of the response indicate the CPU ID.
on AIX	<code>uname -m</code>	Bytes 3-8 of the response indicate the CPU ID.
on Sun	<code>hostid</code>	The number returned is in hexadecimal format. Convert this number to decimal. The last six characters of the decimal value indicate the CPU ID.

- c) Contact Software Support and provide the CPU ID.
- d) When you receive your permanent key enter the key in the PBSSTTY environment variable.

## Installing Enrichment using the GUI

By default, Enrichment is installed in `/usr`, with the software installed in `/usr/lib/Enrichment-{the current version}` and symbolic links in `/usr/bin` pointing to the executables. If you want to install to a different location, see [Installing Enrichment using the command line](#) on page 31.

To install Enrichment using the GUI:

1. Download the software and, if necessary, FTP the installation files to your Linux system.
2. Determine the way in which you will be installing the software:
  - RedHat systems, double-click `Enrichment-{the current version}-1.i386.rpm`

**Note:** Red Hat Enterprise Linux comes with two desktops: GNOME and KDE. If double-clicking the rpm does not launch the installation, you may be using the GNOME desktop. Try switching to the KDE desktop. To do this, at the command prompt type `switchdesk KDE` then log out and log back in.

3. Enter your administrative password.
4. Click **Continue**.  
Enrichment is installed.
5. To verify that the installation completed successfully, open a command prompt and type:

```
type sweaver
```

You should get the following response:

```
/usr/bin/sweaver
```

Once the installation is complete, proceed to [Customize the swvrex script](#) on page 33.

## Installing Enrichment using the command line

By default, Enrichment is installed in `/usr`, with the software installed in `/usr/lib/Enrichment-{the current version}` and symbolic links in `/usr/bin` pointing to the executables.

If you want to install to a different location, use the `--prefix` option as described in this procedure. Before installing make sure that the directory you are installing to exists and has `lib` and `bin` sub-directories. The absolute path for the `--prefix` option must be specified.

To install Enrichment using the Linux command line perform the following steps:

1. Download the software and, if necessary, FTP the installation files to your Linux system.

2. Log in as root.
3. Depending on your OS, type one of the following:
  - For RedHat, type the following (use the `--prefix` option only if you are installing to an alternate location):

```
rpm -ivh Enrichment-{the current version}-1.i386.rpm --prefix /abspath
```

where `/abspath` is the absolute path to the installation directory you created.

4. To verify that the installation completed successfully, open a command prompt and type:

```
type sweaver
```

You should get the following response:

```
/usr/bin/sweaver
```

**Note:** If you installed Enrichment to an alternate location using the `--prefix` option, the system response indicates the absolute path you used, for example `/home/install/bin/sweaver`.

## Verify user access

To verify that users have access to the newly installed Enrichment:

1. When the installation completes, ask your system administrator to give the Enrichment users access to the `<user>/Enrichment` home directory.
2. To verify user access, type `which sweaver`. If the proper directories are found in user's `PATH` environment variable, the system will issue a message similar to this:

```
.../Enrichment/bin/sweaver
```

## Enter software key

If this is a new installation, enter your temporary key by following the steps below. If you are upgrading an existing installation you can skip this step.

1. Enter your temporary Enrichment key in the `PBSSTTY` environment variable for the user by typing the following:

```
export PBSSTTY=softwarekey
```



2. To obtain a permanent key:

- For a RedHat system - You will need the MAC address. You can obtain the MAC address by typing the following command:

```
/sbin/ifconfig
```

The MAC address is the portion of the output that follows the “HWaddr” label, as shown below in bold:

```
eth0      Link encap:Ethernet HWaddr 00:B0:D0:81:A5:43
```

3. Contact Software Support and provide the MAC address.
4. When you receive your permanent key enter the key in the PBSSTTY environment variable.

## Customize the swvrex script

The script file `.../Enrichment/bin/swvrex` provides an easy way to run Enrichment while ensuring that the proper environment has been created. The file `swvrex` can be found two levels under the directory you specified during the installation step, `swinst`. For example, if you specified `/home/user/swvr` for installation, `swvrex` will be put to `/home/user/swvr/Enrichment/bin`. To customize `swvrex`, edit `../Enrichment/bin/swvrex` and do the following:

1. Change all occurrences of the `/pb` directory level in `/pb/pbssmc` to the directory in which you installed Mailstream Plus.
2. Change all occurrences of the `/pb` directory level in `/pb/Enrichment/` to the directory in which you installed Enrichment.
3. If you are going to use Finalist for CASS™ processing, change all occurrence of `/finalist` to the directory in which you installed Finalist.
4. Change `softwarekey` of `export PBSSTTY=softwarekey` to your software key.
5. If you will be processing input or output files larger than 2 GB change the executable from `sweaver` to `sweaverL`.

After you customize `swvrex` you will not need to export any variables to the operating system before running Enrichment.

**Note:** After you run the Enrichment verification job, you must uncomment the last line of the `swvrex` script. Verification will not work if you uncomment the last line of the `swvrex` script before you run the verification.

## Configure Mailstream Plus

If you will use Enrichment with Mailstream Plus for postal presort, the Mailstream Plus setup script will configure the necessary environment variables.

## unixODBC

Enrichment uses the unixODBC library to access relational databases. For more information, please refer to this website <http://www.unixodbc.org>.

## Verifying installation on Linux

After you install Enrichment, you must verify that it is ready to run on your system. The distribution media includes an automatic verification script that will exercise all Enrichment functions.

**Note:** Make sure you have customized swvrex before you run the verification. If you do not customize swvrex before you run the verification, the verification may fail. For instructions on customizing swvrex, see [Customize the swvrex script](#) on page 33.

To verify the Enrichment installation, perform the following steps:

1. Change to the Enrichment home directory mentioned in step 2 of [Install the Enrichment software](#) on page 29. For example, if your Enrichment home directory is `/Enrichment`, type the following command and press **Enter**:

```
cd ../Enrichment/bin
```

2. Type the following command and press **Enter** to run the verification script:

```
./verify
```

The verify script will run a number of jobs to test Enrichment functions.

```
VERIF01    Line Data
VERIF02    Line Data
VERIF03    Line Data
VERIF04    Line Data
VERIF09    Line Data
VERIF10    Line Data
VERIF11    Line Data
VERIF12    AFP Data
VERIF13    AFP Data
```

```

VERIF14    AFP Data
VERIF15    Metacode Data
VERIF16    Metacode Data
VERIF17    Metacode Data

```

Each job's name is displayed as the script executes it. Pass or Fail is displayed after each job name. If any of the jobs fail, contact Software Support to determine the source of the problem.

- Jobs 12-14 will fail if you are not licensed for AFPDS.
  - Jobs 15-17 will fail if you are not licensed for Metacode.
3. To make verification easier, you can capture the verify script output in a file. Review this file after all the jobs run. To capture the output, type the following command and press Enter:

```
./verify | tee verify.out
```

This command displays the script's output and saves that output to a file called `verify.out`. You can review `verify.out` with your text editor or the `more` command.

If all verification jobs pass, installation is complete.

After you successfully install and verify Enrichment, you can remove the installation and verification files from your system. The installation and verification files are located in the `/Enrichment/caselib` directory.

**Note:** Do not remove any files from the `.../Enrichment/bin` directory. The files in this directory are necessary for proper operation.

If you do not remove the verification directories, you can rerun the verification procedure at any time. You can also examine the control files in the verification directories as examples of Enrichment usage.

**Attention:** After you run the verification, uncomment the last line in `swvrex` so you can run Enrichment without exporting variables to the operating system.

## Enrichment directory structure

The following table shows the Enrichment directory structure.

Directory/File	Description
<code>./Enrichment/bin/sweaver</code>	Enrichment executable.
<code>./Enrichment/bin64/sweaver</code>	64-bit Enrichment executable.

Directory/File	Description
./Enrichment/bin/sweaverL ./Enrichment/bin64/sweaverL	Enrichment executable that supports files that are greater than 2 GB.
./Enrichment/bin/callmsp ./Enrichment/bin64/callmsp	Script used to run Mailstream Plus from Enrichment.
./Enrichment/bin/swvrex ./Enrichment/bin64/swvrex	PBSSTTY environment variable initialization and sweaver execution script.
./Enrichment/bin/verify ./Enrichment/bin64/verify	Verification shell script.
./Enrichment/bin/verify.name ./Enrichment/bin64/verify.name	Used by the verification shell script.
./Enrichment/bin/runout ./Enrichment/bin64/runout	Verification output directory.
./Enrichment/bin/dumpafp ./Enrichment/bin64/dumpafp	Unsupported AFP display utility.
./Enrichment/bin/etoa ./Enrichment/bin64/etoa	Unsupported ASCII-to-EBCDIC conversion program.
./Enrichment/bin/HOSTID	Reports the CPU of the system, as determined by Enrichment.
./Enrichment/caselib	Verification input master directory.
./Enrichment/caselib/control	Verification input control file directory.
./Enrichment/caselib/linedata	Verification input line data directory.

Directory/File	Description
./Enrichment/caselib/list3820	Verification input AFPDS directory.
./Enrichment/caselib/listout1	Verification correct output directory 1.
./Enrichment/caselib/listout2	Verification correct output directory 2.
./Enrichment/caselib/vdf	Verification input variable definition file directory.
./Enrichment/lib	Add-in and user function directory.
./Enrichment/bin/reprint	Reprint executable.
./Enrichment/bin64/reprint	64-bit Reprint executable.
./Enrichment/bin/reprintL	Reprint executable that supports files that are greater than 2 gigabytes.
./Enrichment/bin64/reprintL	
./Enrichment/bin/pdrxcme	Unsupported utility for Xerox line data.
./Enrichment/bin64/pdrxcme	
./Enrichment/bin/pdrccm2a	Unsupported utility that changes machine carriage controls to ANSI carriage controls.
./Enrichment/bin64/pdrccm2a	
./Enrichment/bin/pdrcca2m	Unsupported utility that changes ANSI carriage controls to machine carriage controls.
./Enrichment/bin64/pdrcca2m	

## Removing Enrichment

You can remove Enrichment from your system by simply removing the directories that were loaded from the installation media. All files on the installation media are loaded into these directories.

If you do not know how to remove directories, see your system administrator or review your operating system documentation.

Alternatively, you can remove the installation and verification files from the system, leaving only files required to run and work with Enrichment. In this case, you would remove all directories and files loaded from the installation media except the `../Enrichment/bin` directory and the `../Enrichment/lib` directory, if present, and the files within it. The files in this directory are necessary for proper operation.

# 5 - Installing Visual Engineer

## In this section

---

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Installing Visual Engineer.....	40



# System requirements for Visual Engineer

The following requirements must be met before installing Visual Engineer.

- A supported version of Windows. See the Software Support website <https://www.pitneybowes.com/us/support.html> for a list of supported Windows versions for Enrichment.
- Pentium III 1 GHz or better.
- 48 MB hard drive space (for Visual Engineer and Help files).
- 256 MB RAM minimum, 512 MB RAM recommended.

## Installing Visual Engineer

To install Visual Engineer, perform the following steps:

1. Download Visual Engineer. For more information, please refer to your company's ship to contact or send an email to [pbs\\_fulfillment@pb.com](mailto:pbs_fulfillment@pb.com).
2. Double-click `setup.exe`.
3. Follow the onscreen instructions to complete the installation.
4. (Optional) After the install completes, specify the location of the fonts used by the print streams you will be working with.
  - a) Select **Start > Programs > Visual Engineer {the current version}**.
  - b) Select **File > New**.
  - c) Select **Options > Resources....**
  - d) In the **Search Directory** field, specify the path to the fonts that you want to make available to Visual Engineer.
  - e) Click **Add**.
  - f) If there are additional directories that contain fonts you want to make available to Visual Engineer, add them as well.
  - g) Click **OK**.
  - h) Exit Visual Engineer. You do not need to save the file you created.
5. (Optional) If you plan to use Visual Engineer's Application Test feature to test Enrichment applications that call external programs, add the path to the external program to the Windows PATH environment variable.

For example, if you plan to test applications that call Finalist for CASS™ processing, then add the Finalist program directory to the PATH environment variable.



6. (Optional) If you plan to run Visual Engineer from a network drive you may not be able to access the Visual Engineer online help due to Microsoft Windows security restrictions. To use Visual Engineer from a network drive and have access to the online help you need to modify the Windows registry, see the Microsoft Knowledge Base, article number 896054: <http://www.support.microsoft.com/kb/896054/>.

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