Micro Focus Enterprise Server for Stored Procedures 9.0

Release Notes

Contents

Micro Focus Enterprise Server for Stored Procedures 9.0 Release Notes

These release notes contain information that might not appear in the Help. Read them in their entirety before you install the product.

Note:

- This document contains a number of links to external Web sites. Micro Focus cannot be responsible for the contents of the Web site or for the contents of any site to which it might link. Web sites by their nature can change very rapidly and although we try to keep our links up-to-date, we cannot guarantee that they will always work as expected.
- Check the *Product Documentation* section of the *Micro Focus Customer Support Documentation Web site* for any documentation updates.

Product Overview

Enterprise Server for Stored Procedures (ESSP) is a scaled-back version of Micro Focus Enterprise Server consisting of the Micro Focus Run-Time System only components required to execute COBOL and PL/I DB2 and SQL Server stored procedures. ESSP streamlines stored procedure execution by providing exactly what you need to get the job done without having to implement the full Enterprise Server product. ESSP maximizes performance as well because it runs remotely on the same machine that hosts your database.

You can run ESSP on Windows and Linux/UNIX platforms. Platform specifications are the same as those for the full Enterprise Server product. For COBOL DB2 stored procedures specifications, see the Availability tables under HCO for DB2 LUW in the Database Management Systems (DBMSs) topic.

For details, see *Deploying to Enterprise Server for Stored Procedures* in the Enterprise Developer product Help - *click here*. For resolved issues in this release, check the Enterprise Developer Release Notes - *click here*.

Installation

Installing on Windows

Before Installing

Downloading the Product

- Use the download links in the *Software Downloads* section of the *Micro Focus Software Licenses and Downloads* Web site.

System Requirements

Hardware Requirements

The disk space requirements are approximately:

Enterprise Server for Stored Procedures
Approx. 2 Gb

> **Note:** This includes the space needed to cache information locally so that you can modify the installation without the original source media.

Operating Systems Supported

For a list of supported operating systems, see *Supported Operating Systems and Third-party Software* in your product documentation.

> **Note:**
> - This product can be installed on earlier versions of Windows but it has not been tested on them.

Software Requirements

> **Note:**
> - The setup file will check your machine for whether the prerequisite software is installed and will install any missing prerequisites and the product components.
> - This product includes OpenSSL version 3.0.

Before installing this product, you must have the following software installed on your computer:

- The Microsoft .NET Framework - the setup file installs the .NET Framework 4.5.2 . You might need to install the following version of the .NET framework manually, if it is targeted by your applications:

  - Microsoft .NET Framework 2 - if your applications use the ILCLR(2) Compiler Directive or if they target the .NET Framework versions 2, 3 or 3.5. You might need to download these installers depending on the .NET Framework you are targeting.

    To download the Microsoft .NET Framework 2 *click here*.

    Microsoft .NET Framework 2 or later is also required for the Micro Focus License Manager if you install this on a separate machine as a license server.

- Microsoft's Web Platform Installer 2.0 if your application targets ASP.NET 4. This installs and sets up ASP.NET. To download the installer *click here*.

License Manager requirements

- The Micro Focus License Administration tool requires Java to run. It supports Java 1.7 or later.
- For local servers, you do not need to install the Micro Focus License Administration tool separately, as the setup file installs a new Enterprise Developer client and a new licensing server on the same machine.
- If you have any network license servers, you must update them before you update the client machines.
- If you are upgrading from Enterprise Developer release 2.2 or earlier, uninstall the license manager before installing the product.

You can download the new version of the license server software by following these steps:

1. Log into the Software Licenses and Downloads (SLD) site at *https://sld.microfocus.com/mysoftware/ download/downloadCenter*.
2. Select your account and click **Downloads**.
3. Select a product and a product version from your orders.
4. In the list of software downloads, locate the **License Manager**.
5. Click **Download** to download an archive with the installers.
6. Run the installer suitable for your Operating System to install License Manager on your machine.

Installation Restrictions and Requirements

Before starting the installation, you should consider the following:

- You need to be logged in with a user-ID that has write access to the registry structure under HKEY_LOCAL_MACHINE, HKEY_CLASSES_ROOT, and HKEY_CURRENT_USER so the installation software can set the environment appropriately. You also need to be logged on with Administrator privileges.

Product Co-Existence

Note: The following applies to Windows only.

- Enterprise Server for Stored Procedures cannot coexist on the same machine with any of the following products - Enterprise Developer, Enterprise Server, Enterprise Test Server, Visual COBOL, or COBOL Server.

Basic Installation

The instructions in this section apply when you are performing a basic installation of this product for the first time. If you are an administrator, you can perform a basic installation on a local machine before performing a more advanced installation when rolling out the product to developers within your organization.

For considerations when installing this product as an upgrade, for additional installation options or non-default installations and for installing the mainframe components, see *Advanced Installation Tasks* in your product Help.

Installing on Windows

Note: If there is an earlier version of Enterprise Server for Stored Procedures installed on your machine, check *Installing as an Upgrade* first.

These are the steps to install this product:

1. Run the `essp_90.exe` file and follow the wizard instructions to install the prerequisite software and the product.

   The setup file will also install any missing prerequisite software as listed in *Software Requirements*.

   Note:

   - If you are installing onto a machine that has an existing Micro Focus product that uses an older Sentinel RMS License Manager, you might be prompted to remove it and install the Micro Focus License Administration. By doing this you maintain the existing Sentinel RMS license files while adding the Micro Focus License Administration. If you are unsure about existing licenses on your computer or removing the Sentinel RMS License Manager, consult your System Administrator. If you want to proceed, remove Sentinel RMS License Manager by using **Program and Features**, and rerun the installation file.
   - Trial licenses cannot be used with remote desktop services. If you want to use your product in this way, please contact Micro Focus Customer Care to obtain a relevant license.
   - We recommend that you install any updates for the .NET Framework that are available at the *Microsoft Download* site.
   - If you install JDK you might be prompted to install the latest update. The latest update is not required for use with Enterprise Server for Stored Procedures but you can install it if you wish.

Advanced Installation Tasks (Windows)

This section includes instructions about how to perform a non-default installation, install this product as an upgrade, or about how to install any additional components.

Installing as an Upgrade

Before installing, check *Installation Restrictions and Requirements*.

- This release cannot be installed as an upgrade to an earlier release of Enterprise Server for Stored Procedures. You must uninstall the previous version before installing 9.0.

Enterprise Server for Stored Procedures Installation Options (Windows)

To install Enterprise Server for Stored Procedures you run the installer, `essp_90.exe` , which contains a number of product `.msi` files (Windows Installer packages). When run, the executable performs some initial system checks then sequentially installs the `.msi` files.

The executable can take a number of parameters, enabling you to specify a number of different types of installation:

- Standard Installation

  Format:
  `essp_90.exe`
  Summary:
  Full installation including License Manager and Enterprise Server for Stored Procedures. During installation you can specify options including the location to which the components are installed.
- Non-interactive Installation

  Format:
  `essp_90.exe /passive`
  Summary:
  Full installation, but the components are installed non-interactively using default options and directories.

- Silent Installation

    Format:
    ```
    start /wait essp_90.exe /q
    ```
    Summary:
    Full installation, but the components are installed non-interactively with no user interface, using default options and directories.
- Modified Silent Installation

    Format:
    ```
    start /wait essp_90.exe /q InstallFolder=d:\cobolrts
    ```
    Summary:
    Full installation, but the components are installed non-interactively with no user interface, and Enterprise Server for Stored Procedures is installed to `d:\cobolrts`.

To see what parameters you can use, execute the following from the command line: `essp_90.exe /?`.

Note:

- Log files that are created during installation are saved in the folder specified by the TEMP environment variable. To change the location or name of the files, use the `/log` parameter on your setup command line and specify the path and file name, for example: `filename /log d:\temp \log.txt`. This creates a log file, named `log.txt`, in the `d:\temp` directory.

After Installing

- See *Deploying to Enterprise Server for Stored Procedures* in the Enterprise Developer product Help (*click here*) for information about how to use this product.
- See *Changes in Behavior or Usage* in the Enterprise Developer product documentation and in the Enterprise Developer Release Notes for important information about changes in this release that might affect existing applications.

Also, note the following:

Repairing

If any product files, registry settings or shortcuts are accidentally removed at any point, you can perform a repair on the installation to replace them.

Important: Before performing a repair of the installation, Micro Focus recommends that you create backups of any configuration files of the product that you might have changed.

To repair your installation:

1. From the **Control Panel**, click **Uninstall a program** under **Programs**.
2. Right-click your Micro Focus product and select **Repair**.

Uninstalling

To uninstall the product, you cannot simply delete its files from your hard disk. To uninstall the product:

1. Log in with the same user-ID as you used when you installed the product.
2. Click **Uninstall a program** under **Programs** in **Control Panel**.
3. Select the product and click **Remove** or **Uninstall** as appropriate.

During the uninstall process, only those files added during the installation (to the installation and Samples directories) are removed.

If the product directory has not been removed, delete any unwanted files and subdirectories within it using Windows Explorer.

> ⚠️ **Important:** The installer creates separate installations for Micro Focus Enterprise Server for Stored Procedures and Micro Focus License Administration. Uninstalling only Enterprise Server for Stored Procedures does not automatically uninstall the Micro Focus License Administration or any of the prerequisite software. To completely remove the product you must uninstall the Micro Focus License Administration as well.
>
> You can optionally remove the prerequisite software. For instructions, check the documentation of the respective software vendor.

To silently uninstall the product, you need the setup file and you need to execute the following at the command line:

```
start /wait install-file.exe /quiet /uninstall
```

Installing on UNIX

Before Installing

Downloading the Product

* Use the download links in the *Software Downloads* section of the *Micro Focus Software Licenses and Downloads* Web site.

System Requirements

> ✏️ **Note:** For detailed information about required third-party software, see the topics listed under *Additional Software Requirements* in the Enterprise Developer product Help.

Hardware Requirements

The disk space requirements are approximately:

Platform	Installer type	Setup file size	Disk space required for the installation	Disk space required for running the product	Licensing technology
x64 running Amazon Linux 2	Micro Focus	174 MB	696 MB	348 MB	50 MB
POWER running AIX	Micro Focus	327 MB	1.31 GB	654 MB	41 MB
SPARC running Solaris	Micro Focus	286 MB	3.02 GB	1.51 GB	42 MB
System Z running Red Hat Linux	Micro Focus	188 MB	752 MB	376 MB	39 MB
System Z running Red Hat Linux	RPM	82 MB	328 MB	164 MB	39 MB
x86-64 running Red Hat Linux	Micro Focus	290 MB	1.16 GB	580 MB	50 MB
x86-64 running Red Hat Linux	RPM	113 MB	452 MB	226 MB	50 MB

Platform	Installer type	Setup file size	Disk space required for the installation	Disk space required for running the product	Licensing technology
x64 running Red Hat Linux	Micro Focus	294 MB	1.18 GB	588GB	39MB
x86-64 running SUSE SLES	Micro Focus	219 MB	876 GB	438 MB	50 MB
x86-64 running SUSE SLES	RPM	85 MB	340 MB	170 MB	50 MB
x64 running Ubuntu	Micro Focus	219 MB	472 MB	438 MB	50 MB
x86-64 running Rocky Linux	Micro Focus	290 MB	1.16 GB	580 MB	50 MB
x86-64 running Rocky Linux	RPM	113 MB	452 MB	226 MB	50 MB
x86-64 running Oracle Linux - Red Hat Compatibility Kernel	Micro Focus	290 MB	1.16 GB	580 MB	50 MB
x86-64 running Oracle Linux - Red Hat Compatibility Kernel	RPM	113 MB	452 MB	226 MB	50 MB
x86-64 running Oracle Linux - Unbreakable Enterprise Kernel	Micro Focus	290 MB	1.16 GB	580 MB	50 MB
x86-64 running Oracle Linux - Unbreakable Enterprise Kernel	RPM	113 MB	452 MB	226 MB	50 MB

Operating Systems Supported

For a list of supported operating systems, see *Supported Operating Systems and Third-party Software* in your product documentation.

On some platforms, there is only a 64-bit version of this product. 64-bit versions of the product support compiling to and running 64-bit programs only.

Software Requirements

Note: This product includes OpenSSL version 3.0.

The setup file requires that the following software and libraries are installed before you start the installation, and that certain environment variables are set.

- *Software required by the setup file*
- *Libraries required by the setup file*

- *Required environment variables*
- *License Manager requirements*

Software required by the setup file

- The "awk", "ed", "ps", "sed", tar", "sed" and "which" "tar" utilities must be installed and added to the PATH.
- If SELinux is installed and you plan to use anything other than core COBOL functionality, or plan to use Enterprise Server within an environment with ASLR enabled, the "SELINUX" configuration must be disabled. To do this, set `SELINUX=disabled` in `/etc/selinux/config`.

Libraries required by the setup file

Required libraries for Red Hat and SUSE Linux platforms - The installer checks that both the 32-bit and 64-bit libraries listed below are installed on both 32-bit and on 64-bit Operating Systems for this product to install and work correctly.

If installing on a 64-bit OS, the 32-bit libraries are not installed by default and must be installed before you start the installation.

Library	Bitism		Platform							
	32-bit	64-bit	s390	SUSE 12[1]	SUSE 15[1]	Red Hat 6.*x*	Red Hat 7	Red Hat 8	CentOS 7	Ubuntu 18/20
glibc[2]	X	X	X			X	X	X	X	
libgcc	X	X	X			X	X	X	X	
libstdc++	X	X	X			X	X	X	X	
libgc1c2		X								X

- Libraries marked with an 'X' are not included in the platform and need to be installed separately.
- In addition to these, you also need to install the GCC and CPP libraries if you use Enterprise Server for Stored Procedures to compile to `.int` code. These libraries are not required during the installation.
- [1]On SUSE 12 or 15, you can only install the 64-bit version of this product. The glibc-locale-32bit library is still required by the SafeNet Sentinel licensed components.
- [2]On 64-bit Red Hat 7, you only need to install glibc-2.17*.x86_64 and glibc-2.17*.i686.

  Visit the *Red Hat Web site* for more information.

Required environment variables

Before you start the installation, you need to set the environment as follows:

- You need to set the LANG environment variable to pick up localized messages. If you do not set it as specified here, the installation will run but you might experience unexpected behavior from the installer.

  The LANG settings are English and Japanese only so set it to one of the following locales:

  ```
  C, default, en_GB, en_GB.UTF-8, en_US, en_US.UTF-8
  ```

  ```
  ja_JP, ja_JP.SJIS, ja_JP.UTF-8, ja_JP.eucJP, ja_JP.eucjp, ja_JP.sjis,
  ja_JP.ujis, ja_JP.utf8, japanese
  ```

  You can set LANG before running the setup file as follows:

  ```
  export LANG=C
  ```

  Alternatively, add it to the start of the setup command line:

  ```
  LANG=C ./setupfilename
  ```

See *Using the LANG Environment Variable* in the product Help for the development product for details.

License Manager requirements

- For local servers, you do not need to install the Micro Focus License Administration tool separately, as the setup file installs a new Enterprise Developer client and a new licensing server on the same machine.
- If you have any network license servers, you must update them before you update the client machines.
- If you are upgrading from Enterprise Developer release 2.2 or earlier, uninstall the license manager before installing the product.

You can download the new version of the license server software by following these steps:

1. Log into the Software Licenses and Downloads (SLD) site at *https://sld.microfocus.com/mysoftware/ download/downloadCenter*.
2. Select your account and click **Downloads**.
3. Select a product and a product version from your orders.
4. In the list of software downloads, locate the **License Manager**.
5. Click **Download** to download an archive with the installers.
6. Run the installer suitable for your Operating System to install License Manager on your machine.

Installation on UNIX and Linux (Known Issues)

Installing on Red Hat 8.x s390

On Red Hat 8.x s390, the RPM non-root install method is not supported due to errors given by cpio. You receive the following messages:

```
error: unpacking of archive failed on file /usr/lib/.build-id/1b/
af99f26c6b4c00ca499a3199a574b73aeb3854;6092b79c: cpio: symlink failed - No
such file or directory
error: Micro_Focus_cobol_server-7.0.0.0-100700.s390x: install failed
```

As a result, the installation in this scenario is incomplete.

License Server

You need to configure the computer hostname to ensure the license server will start properly.

To avoid performance issues, "localhost" and the computer hostname must not both be mapped to IP address 127.0.0.1. You should only map "localhost" to IP address 127.0.0.1.

The following is an example of how to specify these entries correctly in the `/etc/hosts` file:

```
127.0.0.1 localhost.localdomain localhost
IP machinelonghostname machineshorthostname
```

where *IP* is the unique IP address of the computer in xx.xx.xx.xx format.

Basic Installation

Installing on UNIX

Micro Focus offers two types of installers on UNIX and Linux - a proprietary Micro Focus installer for installing on UNIX and Linux and a standard RPM (RPM Package Manager) installer for installing on Linux. See your product Help for instructions on how to use the RPM installer.

Before starting the installation, see *Software Requirements*.

These are the steps to install this product using the Micro Focus installer:

1. Give execute permissions to the setup file:

   ```
   chmod +x setup_ent_server_stored_proc_9.0_platform
   ```
2. Run the installer with superuser permissions:

   ```
   ./setup_ent_server_stored_proc_9.0_platform
   ```

   If you don't run this as superuser, you are prompted to enter the superuser password during the install.

   🖉 **Note:** On Ubuntu, the prompt for superuser password is not available. On this platform you must either log in as root or use the `sudo` command to get root permissions before you run the installer.

   If you set COBDIR to an already installed product, the installer will back up the existing installation and will install this release in the location COBDIR points to. If COBDIR is not set, the installer does a fresh install.

   The COBOL run-time is installed by default into `/opt/microfocus/EnterpriseDeveloper`, (COBDIR).

SafeNet Sentinel considerations

- The installation of this product could affect the SafeNet Sentinel licensed components running on your machine. During installation licensing is shutdown to allow files to be updated. To ensure the processes running on your machine are not affected, you need to use the `-skipsafenet` option, which skips the installation of SafeNet:

  ```
  ./setup_ent_server_stored_proc_9.0_platform -skipsafenet
  ```
- To protect the SafeNet Sentinel installation from accidental updating you can create an empty file named `SKIP_SAFENET_INSTALL` in `/var/microfocuslicensing/` as follows:

  ```
  touch /var/microfocuslicensing/SKIP_SAFENET_INSTALL
  ```

  While the file is present, the SafeNet installer does not make changes to the installation or shutdown the running license daemons. If licensing needs to be updated later, you can rerun the `MFLicenseServerInstall.sh` from within the `$COBDIR/safenet` folder with the force command line option:

  ```
  cd $COBDIR/safenet
  ./MFLicenseServerInstall.sh force
  ```

AutoPass Licensing considerations

- The installation of this product could affect the AutoPass licensed components running on your machine. During installation, the licensing shuts down to allow files to be updated. To ensure the processes running on your machine are not affected, you need to use the -skipautopass option, which skips the installation of AutoPass:

  ```
  ./setup file -skipautopass
  ```
- To protect the AutoPass installation from accidental updating, you can create an empty file named `SKIP_AUTOPASS_INSTALL` in `/opt/microfocus/licensing` as follows:

  ```
  touch /opt/microfocus/licensing/SKIP_AUTOPASS_INSTALL
  ```

  While the file is present, the AutoPass installer does not make changes to the installation or shutdown the running license daemons. If licensing needs to be updated later, you can rerun the `MFLicenseServerInstall.sh` from within the `$COBDIR/safenet` folder with the force command line option:

  ```
  cd $COBDIR/safenet
  ./MFLicenseServerInstall.sh force
  ```

Installing as an Upgrade

This release works concurrently with the previous version of Enterprise Server for Stored Procedures, so you do not need to uninstall it.

Install the latest version in a different location and set the environment to point to it. To do this, run the Enterprise Server for Stored Procedures installer with the –installlocation option:

1. Execute the following command:

```
./InstallFile -installlocation="/opt/microfocus/EnterpriseDeveloper"
```

> **Note:** You can use variables when specifying an absolute path for `-installlocation`. For example, the following examples are equivalent:
> ```
> -installlocation="/home/myid/installdir"
> ```
> ```
> -installlocation="$HOME/installdir"
> ```

2. Execute cobsetenv to set the environment and point to the new install location:

```
. <product-install-dir>/bin/cobsetenv
```

> **Note:** `cobsetenv` is only compatible with POSIX-like shells, such as bash, ksh, or XPG4 sh. It is not compatible with C-shell or pre-XPG4 Bourne shell.

Preserving Product Configuration

The following information applies when you are upgrading from releases 6.0, 7.0, or 8.0.

If you install this release to the same install location as release 6.0, 7.0, or 8.0, the product in the current location is moved to a backup directory name.

For example, if the 7.0 product is installed in the default install location, `/opt/microfocus/EnterpriseDeveloper`, during the installation process it is moved to `/opt/microfocus/EnterpriseDeveloper.BKP.YYYY-MM-DD.HH:MM:SS`. The new release will be installed in `/opt/microfocus/EnterpriseDeveloper`. The backup location will store your original installation along with any files you deployed to that directory. It will also contain any configuration files you modified post-install.

When installing 9.0 the installer moves a number of specific configuration files to a different configuration location and symbolically links them back to the new release install location. The configuration location will be one of the following:

- The default `config` location is `/opt/microfocus/config/`.
- For non-root installation, the default location is `$HOME/microfocus/config/`.
- To specify your own configuration location, run the setup file with the following command-line option: `-mfconfiglocation=[location]`

The setup file creates a directory in the configuration location using a 5-digit checksum of the $COBDIR path. This is so that each configuration location is unique to each product installation. The configuration files and directories are then placed in this COBDIR checksum directory. In the following example, the install location generates a checksum of `39082`.

The file `/opt/microfocus/config/39082/COBDIRlocation.txt` details the COBDIR the configuration area is associated with.

If you have changed any other files in the original installation, you need to be copy these manually from the backup directory, `/opt/microfocus/EnterpriseDeveloper.BKP.YYYY-MM-DD.HH:MM:SS`, into the install location after the upgrade installation is complete.

You can access the configuration area from `$COBDIR/etc/config`.

Currently, the setup file only moves the following files and directories, where applicable:

Source	Destination
$COBDIR/etc/mfds	/opt/microfocus/config/39082/mfds/mfds
$COBDIR/etc/ccsid	/opt/microfocus/config/39082/config/ccsid

Source	Destination
`$COBDIR/etc/secrets`	`/opt/microfocus/config/39082/secrets`
`$COBDIR/bin/mf370ctl.cfg`	`/opt/microfocus/config/39082/config/mf370ctl.cfg`
`$COBDIR/bin/CCI.INI`	`/opt/microfocus/config/39082/config/CCI.INI`
`$COBDIR/deploy/.mfdeploy`	`/opt/microfocus/config/39082/deploy/.mfdeploy`
`$COBDIR/etc/cas/CTFesjcl.cfg`	`/opt/microfocus/config/39082/cas/CTFesjcl.cfg`
`$COBDIR/etc/cas/dfhdrdat`	`/opt/microfocus/config/39082/cas/dfhdrdat`
`$COBDIR/etc/commonwebadmin.json`	`/opt/microfocus/config/39082/escwa/commonwebadmin.json`
`$COBDIR/etc/mfdsacfg.xml`	`/opt/microfocus/config/39082/mfds/mfdsacfg.xml`
`$COBDIR/etc/mfdsacfg.dat`	`/opt/microfocus/config/39082/mfds/mfdsacfg.dat`
`$COBDIR/etc/mf-client.dat`	`/opt/microfocus/config/39082/mfds/mf-client.dat`
`$COBDIR/etc/mf-server.dat`	`/opt/microfocus/config/39082/mfds/mf-server.dat`
`$COBDIR/etc/cobol.dir`	`/opt/microfocus/config/39082/config/cobol.dir`
`$COBDIR/etc/cobopt`	`/opt/microfocus/config/39082/config/cobopt`
`$COBDIR/etc/cobopt64`	`/opt/microfocus/config/39082/config/cobopt64`
`$COBDIR/etc/cobjvm.cfg`	`/opt/microfocus/config/39082/config/cobjvm.cfg`
`$COBDIR/etc/cobutf8.cfg`	`/opt/microfocus/config/39082/config/cobutf8.cfg`
`$COBDIR/etc/default.tcf`	`/opt/microfocus/config/39082/config/default.tcf`
`$COBDIR/etc/mfescache.cfg`	`/opt/microfocus/config/39082/config/mfescache.cfg`
`$COBDIR/etc/dsdef.cfg`	`/opt/microfocus/config/39082/config/dsdef.cfg`

Advanced Installation Tasks (UNIX)

This section includes instructions about how to perform a non-default installation, install this product as an upgrade, or about how to install any additional components.

Installation Options

Installing into a different location

To install in a different location use the `-installlocation="Location"` parameter to specify an alternative directory location. For example:

```
./ -installlocation="full path of new location"
```

> **Note:** You can use variables when specifying an absolute path for `-installlocation`. For example, the following examples are equivalent:
>
> ```
> -installlocation="/home/myid/installdir"
> ```
>
> ```
> -installlocation="$HOME/installdir"
> ```

You can see details about which additional parameters can be passed to the install script if you enter the `-help` option.

Installing Silently

You can install Micro Focus products silently by using command line parameters to specify the installation directory, user information, and which features to install. You must execute the command with superuser permissions.

You can use the following command line arguments to install silently on UNIX/Linux. You need to execute the commands as root:

```
-silent -IacceptEULA
```

For example, execute:

```
setup_filename -silent -IacceptEULA
```

Installing Without Superuser Credentials

Micro Focus recommends that you install this product with superuser permissions. If, however, you need to perform a non-root installation, check the information below. The setup file supports installing into non-root owned directories.

Licensing considerations

- Installations performed without SuperUser credentials (installations that use the `-noroot` option) do not support the SafeNet License Manager. The installation makes AutoPass the default License Manager, but after installation the AutoPass and Micro Focus License Manager services must be configured manually, with SuperUser credentials; see *AutoPass service configuration* and *MFCESD service configuration* for more information.
- Multiple users - on a machine that has multiple user accounts that need access to the product and licensing, you must install the product under a user ID that grants read, write, and execution permissions to all users.

  By default, most user account areas can only be accessed by the owner. In order for all of the users to be able to use the product and License Manager, the installation must be in an account whose $HOME directory can be accessed by all other users.

Performing a non-root installation

1. Give execute permissions to the setup file:
   ```
   chmod +x setup_ent_server_stored_proc_9.0_platform
   ```
2. Run the installer with the `-noroot` command line argument:
   ```
   setup_ent_server_stored_proc_9.0_platform -noroot
   ```

   This installs the product in the default location, `$HOME/microfocus/EnterpriseDeveloper`, where `$HOME` should point to the top-level login directory for the current user.

   The product configuration files are stored in `$HOME/microfocus/config`, and the CAS regions are stored in `$HOME/microfocus/es`, by default.

After installing

Once the installation is complete, you need to run the `cobsetenv` script in order to set up your COBOL environment. To do this, execute the following command:
```
. $HOME/microfocus/EnterpriseDeveloper/cobsetenv
```

In addition, on clean machines where licensing has not been installed before, or has not been installed as the root user, you must set the MFCES_INIT_LOCATION environment variable. By default, MFCES_INIT_LOCATION is set in cobsetenv within the installed product. You must also set it in any scripts which use the COBOL product or set the environment as follows:
```
MFCES_INIT_LOCATION=$HOME/microfocus/licensing/ces/bin/ces.ini
export MFCES_INIT_LOCATION
```

This provides the location of the `ces.ini` licensing configuration file in the non-root installation area for the COBOL Run-Time System.

You do not need to set MFCES_INIT_LOCATION on machines where licensing has been installed using the root user. On such machines, there are files in `/var/microfocuslicensing/bin` and mfcesd, and the SafeNet and/or Autopass processes are running as root. In this scenario, MFCES_INIT_LOCATION is commented out in `cobsetenv` and you do not need to update any of your scripts with the MFCES_INIT_LOCATION settings. The product installed in a non-root location uses the root install licensing.

Configuring ports

The `/etc/services` file for the registration of port 86 is owned by the root user and cannot be changed without superuser permissions.

You need to ensure that this file includes the `mfcobol` port entries. On most new operating systems, the entries are present.

However, on some operating systems these port entries might be missing. The setup file reports this issue before installing the product. To resolve it, you need to edit `/etc/services` manually in a text editor with root permissions and add the following two lines:
```
mfcobol         86/tcp     # Micro Focus Cobol
mfcobol         86/udp     # Micro Focus Cobol
```

Additional arguments

For non-default installation locations for the product and the product configuration files, use the `-installlocation`, `- mfconfiglocation` command line arguments. See *Installation Options* for details.

AutoPass service configuration

Installing the product without Superuser credentials does not create the required AutoPass service configuration file - `MFAutoPass.service`. A user with Superuser privileges must create this file (and the

one detailed in *MFCESD service configuration*) in `/usr/lib/systemd/system`, and then start the service before anyone can license and use the product.

```
[Unit]
Description=Micro Focus AutoPass Licensing Daemons.
Documentation=http://supportline.microfocus.com

[Service]
Type=forking
ExecStart=<HOME>/microfocus/licensing/autopass/autoPassdaemon.sh start
ExecStop=<HOME>/microfocus/licensing/autopass/autoPassdaemon.sh stop

Restart=no

[Install]
WantedBy=multi-user.target
```

where *<HOME>* is the path to the `home` directory for the user that installed the product.

⚠ **Important:** Any users required to license and use the product must have access to this `home` directory.

Once the configuration file has been created, the service can be managed, with Superuser privileges, using the following commands:

```
systemctl reenable MFAutoPass   *> enables the service
systemctl start MFAutoPass      *> starts the service
systemctl status MFAutoPass     *> checks the service status
```

MFCESD service configuration

Installing the product without Superuser credentials does not create the required MFCESD service configuration file - `MFCESD.service`. A user with Superuser privileges must create this file (and the one detailed in *AutoPass service configuration*) in `/usr/lib/systemd/system`, and then start the service before anyone can license and use the product.

```
[Unit]
Description=Micro Focus AutoPass Licensing Daemons.
Documentation=http://supportline.microfocus.com
After=network-online.target
Wants=network-online.target

[Service]
Type=forking
ExecStart=<HOME>/microfocus/licensing/ces/bin/startmfcesd.sh
ExecStop=<HOME>/microfocus/licensing/ces/bin/stopmfcesd.sh
Restart=no

[Install]
WantedBy=multi-user.target
```

where *<HOME>* is the path to the `home` directory for the user that installed the product.

⚠ **Important:** Any users required to license and use the product must have access to this `home` directory.

Once the configuration file has been created, the service can be managed, with Superuser privileges, using the following commands:

```
systemctl reenable MFCESD   *> enables the service
systemctl start MFCESD      *> starts the service
systemctl status MFCESD     *> checks the service status
```

RPM Installer

In addition to its proprietary installer for installing Enterprise Server for Stored Procedures on UNIX and Linux, Micro Focus also provides a standard RPM installer on most Linux platforms. RPM Package

Manager (RPM) is a technology available on all Linux operating systems for managing the installation of products.

The RPM installer for Enterprise Server for Stored Procedures supports all the RPM functionality.

Using the RPM Installer

Before starting a standard RPM installation, ensure that all of the prerequisite software is installed on your machine. See *Software Requirements* for details.

This is not necessary if you are using an RPM administration utility as it installs any missing prerequisite packages at the same time as installing the Micro Focus package.

Downloading the installer

The RPM installer for Enterprise Server for Stored Procedures is distributed as a `.bin` file and is available from your Electronic Delivery Receipt email.

To download and extract the file:

1. Use the links in your Electronic Delivery Receipt email to download the `filename.bin` file that includes the RPM installer.
2. Execute the `.bin` file from a terminal.
3. Accept the terms of the End User License Agreement to extract the `filename.rpm` file on your machine.

Standard RPM installation

To install Enterprise Server for Stored Procedures:

1. Open a terminal and navigate to the location of the .rpm file.
2. Execute the following command with superuser permissions:

```
rpm -i filename.rpm
```

This installs the product to the following default location - `/opt/microfocus/EnterpriseDeveloper`.

Alternatively, you can start the `filename.rpm` file from the file manager program available on your operating system:

1. Open the file manager program and navigate to the location of the `filename.rpm` file.
2. Start the file.

This installs the product and any missing prerequisites.

Installing using the yum utility

The yum repository must be configured before you start a yum installation. See your yum documentation for instructions. This is not necessary if you have a subscription to an RPM Web site.

To install from a CD or using an ISO image:

1. Mount the CD or mount the ISO on a virtual machine CD drive using a DevLab machine administration Web page.
2. Execute the following command to create a repository configuration file:

```
vi /etc/yum.repos.d/rhel-dvd.repo
```

3. Add the following code to the repository configuration file:

```
[dvd]
name=Red Hat Enterprise Linux Installation DVD
baseurl=file:///media/RHEL_6.1_DVD
```

```
enabled=1
gpgcheck=0
```

4. Execute the following command to start the installation:

```
yum install [filename.rpm]
```

5. Follow the instructions on the screen to install the package and any missing software prerequisites from the ISO image.

Installing using the YaST2 utility

To install using YaST2:

1. Open a terminal and navigate to the location of the .rpm file.
2. Execute the following command:

```
yast2 -i filename.rpm
```

3. Follow the instructions on the screen to complete the installation.

   If there is any missing prerequisite software, YaST prompts for the CD Media that includes the installation files.

Installing using the zypper utility

To installing using zypper:

1. Ensure the SUSE OS CD Media is mounted on your machine.
2. Execute the following from a terminal to see the repositories that are available on your machine:

```
zypper repos
```

   The output is similar to the following:

```
# | Alias         | Name          | Enabled | Refresh
--+-------------------------------+--------------------------------
+---------+--------
1 |  SLES12-12-0 |  SLES12-12-0 | Yes     | No
```

   Where the number 1 repository is the SUSE OS CD Media.
3. Execute the following command to select the OS CD Media as the repository to run:

```
zypper repos 1
```

4. Execute the following command to install the product and its dependencies:

```
zypper install [filename.rpm]
```

5. Follow the instructions on the screen to complete the installation.

Installing a Micro Focus product as an upgrade

When installing an upgrade or a HotFix release of a Micro Focus product, execute the following command with superuser permissions to upgrade the existing installation:

```
rpm -U filename.rpm
```

This upgrades the existing installation of your product in `/opt/microfocus/VisualCOBOL`.

The installed product that you want to upgrade might contain non-default configuration settings. In such cases, when you are installing an upgrade, the RPM installer creates copies of the existing configuration files with an extension `filename.rpmsave` before installing the configuration files from the newer product version.

To check whether the installer has created copies of any of the older configuration files, execute the following command after you install the product:

```
find /opt/microfocus/VisualCOBOL -name *.rpmsave -print
```

Installing without root user permissions

By default, you must run the RPM installer with superuser permissions so that it has write access to the RPM installation database.

In order to perform a non-root installation, you need to create and use a local user RPM installation database which does not require superuser permissions.

To install into a non-root location, execute the following commands:

On SuSE 11 only:

```
cd $HOME
mkdir -p $HOME/rpmdb
rpm --initdb --dbpath $HOME/rpmdb
MFCMD="-noroot" rpm --root $HOME --dbpath rpmdb -i --nodeps --prefix=$HOME/
VisualCOBOL
```

On SuSE 12 and Red Hat platforms:

```
cd $HOME
mkdir -p $HOME/rpmdb
rpm --initdb --dbpath $HOME/rpmdb
MFCMD="-noroot" rpm --dbpath $HOME/rpmdb -i --nodeps --prefix=$HOME/
VisualCOBOL
```

> **Note:** On Red Hat 8.x s390, RPM non-root install method is not supported due to errors given by cpio.

Installing the product into a non-default location

To install the product into a non-default location, execute the following command with superuser permissions:

```
rpm -i --prefix=[FullPath] filename.rpm
```

Where *FullPath* is the directory on your machine where you want to install the product.

Viewing the log files

During the installation, the RPM installer creates a log file in `/opt/microfocus/logs`. The log file contains all of the information that was displayed on the terminal screen during the installation as well as some additional information about the product configuration.

Other RPM Installer Options

The following list includes some additional command line options available for the RPM installer.

To display a list of all Micro Focus products installed on your machine:

```
rpm -qa | grep Micro_Focus
```

This returns *PackageName*, the RPM names of the Micro Focus products which are used to identify the install packages.

To show the RPM package information:

```
rpm -qi [PackageName]
```

To show the location of an installed product:

```
rpm -ql [PackageName] | head -1
```

To check which files have post-install changes:

```
rpm -V [PackageName]
```

To view a list of the contents of an RPM file:

```
rpm -qpl filename.rpm
```

To view the dependencies of an RPM file:

```
rpm -qpR filename.rpm
```

To view a list of the files in an RPM package before installing the product:

```
rpm -qip filename.rpm
```

To display the scripts that run during the installation:

```
rpm -qp --scripts filename.rpm
```

To check whether the RPM file is corrupt:

```
rpm -Kvv --nosignature filename.rpm
```

To find the default installation location for a package:

```
rpm -q --qf "%{PREFIXES}\n" -p filename.rpm
```

For Enterprise Developer, this is `/opt/microfocus/EnterpriseDeveloper`.

To install the product into a non-default location, execute the following command with superuser permissions:

```
rpm -i --prefix=[FullPath] filename.rpm
```

To install a product and skip any package dependencies:

```
rpm -i --nodeps filename.rpm
```

By default, RPM installers only install one product at a time. This is to avoid overwriting any products installed in the default location. To install two or more products on the same machine, use the --prefix and --nodeps options together to install the additional products:

```
rpm -i --nodeps --prefix=[FullPath] filename.rpm
```

To access the files in the installer and view the installer payload, you can extract the contents of an RPM file to your disk without installing the product. To do this, use the following command:

```
rpm2cpio filename.rpm | cpio -idmv
```

Uninstalling Using the RPM Installer

To uninstall a Micro Focus product:

1. Execute the following command to discover the name of the installed package:

   ```
   rpm -qa | grep Micro_Focus
   ```

   This returns *PackageName*, the RPM name of your Micro Focus product which is used to identify the install package.
2. Execute the following command to uninstall the product:

   ```
   rpm -e [ PackageName ]
   ```

Uninstalling several installation packages simultaneously

If you installed the same package more than once on the same machine using the --nodeps --prefix command line options, to remove all of these installations execute the following command:

```
[ as root ] rpm -e --allmatches [ package name ]
```

After Installing

- See *Deploying to Enterprise Server for Stored Procedures* in the Enterprise Developer product Help (*click here*) for information about how to use this product.
- See *Changes in Behavior or Usage* in the Enterprise Developer product documentation and in the Enterprise Developer Release Notes for important information about changes in this release that might affect existing applications.

Also, note the following:

Setting the Environment

When you have installed the product, you need to set the environment as described below.

1. To set up your product, execute:
   ```
   . <product-install-dir>/bin/cobsetenv
   ```
2. To verify that your product is installed, execute:
   ```
   cob -V
   ```

> ⚠️ **Important:** These commands set the environment only for the current shell. You need to execute them for each new shell that you start.
>
> To avoid having to run `cobsetenv` for every shell, add these commands to the shell initialization files (such as `/etc/profile`, `/etc/bashrc`).
>
> Note that `cobsetenv` is only compatible with POSIX-like shells, such as bash, ksh, or XPG4 sh. It is not compatible with C-shell or pre-XPG4 Bourne shell.

Enabling SHIFT-JIS

By default, support for the character encoding for the Japanese language, Shift-JIS, is not available on Ubuntu and on RedHat OS version 8 or later.

You need to generate the Shift JIS locale on your machine to be able to execute Shift-JIS applications on these platforms. You can do this as follows:

1. On RedHat 8, ensure that the `glibc-locale-source` package is installed.
2. Execute the following command with superuser rights in order to generate a Shift-JIS locale using the charset:
   ```
   sudo localedef -f SHIFT_JIS -i ja_JP ja_JP.sjis
   ```
3. Set the COBUTF8 environment variable to the generated Shift-SJIS locale and LANG to a UTF8 locale:
   ```
   export COBUTF8=ja_JP.sjis
   export LANG=ja_JP.UTF-8
   ```
4. Run the cobutf8 utility:
   ```
   cobutf8 <command>
   ```

   See your product documentation for more details about cobutf8.

Repairing

If a file in the installation of the product becomes corrupt, or is missing, we recommend that you reinstall the product.

Before performing a repair of the installation, Micro Focus recommends that you create backups of any configuration files of the product that you might have changed.

Uninstalling

To uninstall this product:

1. Execute as root the `Uninstall_EnterpriseServerStoredProcedures9.0.sh` script in the `$COBDIR/bin` directory.

> 📝 **Note:** The installer creates separate installations for the product and for Micro Focus License Administration. Uninstalling the product does not automatically uninstall the Micro Focus License Administration or the prerequisite software. To completely remove the product you must uninstall the Micro Focus License Administration as well.

To uninstall Micro Focus License Administration:

1. Execute as root the `UnInstallMFLicenseServer.sh` script in the `/var/microfocuslicensing/bin` directory.

   The script does not remove some of the files as they contain certain system settings or licenses.

You can optionally remove the prerequisite software. For instructions, check the documentation of the respective software vendor.

Licensing Information

> ✏️ **Note:**
> - If you have purchased licenses for a previous release of this product, those licenses will also enable you to use this release.
> - If you are unsure of what your license entitlement is or if you wish to purchase additional licenses, contact your sales representative or *Micro Focus Customer Care*.

> ⚠️ **Important:** The SafeNet Sentinel licensing system has been deprecated and will be not available in this product starting with the next major release - release 10.0.
>
> The SafeNet Sentinel licenses will not be supported after release 9.0. You can only use AutoPass licenses from release 10.0.
>
> You can replace your SafeNet Sentinel licenses with AutoPass licenses starting with release 8.0. However, it is not necessary to switch to AutoPass licenses unless you are adopting release 10.0. Contact Micro Focus Customer Care for further information.

To start Micro Focus License Administration

Windows: To start the GUI Micro Focus License Administration

Windows 10 From your Windows desktop, click **Start > Micro Focus License Manager > License Administration**.

Windows 11 Click the **Start** button in the Task Bar. Use the search field in the Start menu to find and start **License Administration**.

Windows: To start the command-line Micro Focus License Administration tool

1. At a command prompt, navigate to:
   ```
   C:\Program Files (x86)\Micro Focus\Licensing
   ```
2. Type `cesadmintool.bat`, and press **Enter**.

UNIX

Log on as root, and from a command prompt type:
```
/var/microfocuslicensing/bin/cesadmintool.sh
```

Installing licenses

You need a license file (with an `.xml` extension for AutoPass licenses). You need to install AutoPass licenses into the existing Micro Focus License Administration tool, and not in the AutoPass License Server.

If you have a license file

Windows: To use the GUI Micro Focus License Administration

1. Start Micro Focus License Administration.

2. Click the **Install** tab.
3. Do one of the following:

    • Click **Browse** next to the **License file** field and select the license file (which has an extension of `.xml`).
    • Drag and drop the license file from Windows Explorer to the **License file** field.

4. Click **Install Licenses**.

Windows: To use the command-line Micro Focus License Administration tool

1. Start the command-line Micro Focus License Administration tool.
2. Select the **Manual License Installation** option by entering `4`.
3. Enter the name and location of the license file.

UNIX

1. Start the Micro Focus License Administration tool and select the **Manual License Installation** option by entering `4`.
2. Enter the name and location of the license file.

To obtain more licenses

If you are unsure of what your license entitlement is or if you wish to purchase additional licenses for Enterprise Developer, contact your sales representative or Micro Focus Customer Care.

Updates and Customer Care

Our Web site provides up-to-date information of contact numbers and addresses.

Further Information and Customer Care

Additional technical information or advice is available from several sources.

The product support pages contain a considerable amount of additional information, such as:

- Product Updates on *Software Licenses and Downloads*, where you can download fixes and documentation updates.
  1. Log into the Software Licenses and Downloads (SLD) site at *https://sld.microfocus.com/mysoftware/download/downloadCenter* .
  2. Select your account and click **Entitlements**.
  3. Search for the product by using any of the available search parameters.
  4. Click **Show all entitlements**.
  5. Click **Get Software** in the Action column for the product you want to download or update.

     In the **File Type** column, you see entries for "Software" for any GA products, and "Patch" for any patch updates.
  6. Click **Download** on the relevant row.
- The *Examples and Utilities* section of the Micro Focus Customer Care Web site, including demos and additional product documentation. Go to *https://supportline.microfocus.com/examplesandutilities/index.aspx*.
- The *Support Resources* section of the Micro Focus Customer Care Web site, that includes troubleshooting guides and information about how to raise an incident. Go to *https://supportline.microfocus.com/supportresources.aspx*

To connect, enter *https://www.microfocus.com/en-us/home/* in your browser to go to the Micro Focus home page, then click **Support & Services** > **Support**. Type or select the product you require from the product selection dropdown, and then click **Support Portal**.

Note: Some information may be available only to customers who have maintenance agreements.

If you obtained this product directly from Micro Focus, contact us as described on the Micro Focus Web site, *https://www.microfocus.com/support-and-services/contact-support/*. If you obtained the product from another source, such as an authorized distributor, contact them for help first. If they are unable to help, contact us.

Also, visit:

- The Micro Focus Community Web site, where you can browse the Knowledge Base, read articles and blogs, find demonstration programs and examples, and discuss this product with other users and Micro Focus specialists. See *https://community.microfocus.com*.
- The Micro Focus YouTube channel for videos related to your product. See *Micro Focus Channel on YouTube*.
- Micro Focus webinars: *https://www.microfocus.com/en-us/resource-center/webinar*.

Information We Need

If your purpose in contacting Micro Focus is to raise a support issue with Customer Care, you should collect some basic information before you contact us, and be ready to share it when you do.

Click here to see the *Preparing to Raise a Support Case* topic on the Product Documentation pages on Micro Focus Customer Care.

Creating Debug Files

If you encounter an error when compiling a program that requires you to contact Micro Focus Customer Care, your support representative might request that you provide additional debug files (as well as source and data files) to help us determine the cause of the problem. If so, they will advise you how to create them.

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