



# **Micro Focus Visual COBOL 2.2 Update 2 for Eclipse**

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**Release Notes**

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# Micro Focus Visual COBOL 2.2 Update 2 for Eclipse 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.



**Note:** Visual COBOL now includes support for creating Web service and Enterprise Java Bean applications using the Interface Mapping Toolkit (IMTK) in conjunction with Enterprise Server. If you are upgrading to this release from an earlier version of Visual COBOL, you may need to apply for a new authorization code in order to access the functionality - please contact Micro Focus SupportLine to receive an updated authorization code. Note that the Visual COBOL Personal Edition license does not support the IMTK functionality.



**Important:** Application executables that were compiled using earlier Micro Focus products must be recompiled from the sources using Visual COBOL.

## Micro Focus Heartbleed Update

The OpenSSL library used in this product has been updated to the latest version, 1.0.1i, to fix various vulnerabilities.

# Installation

## Installing Visual COBOL on Windows

### System Requirements for Visual COBOL for Eclipse (Windows)

#### Hardware Requirements

Visual COBOL has the following requirements in addition to the requirements of Eclipse. See the Eclipse documentation for details of its requirements.

The disk space requirements are, approximately:

| Platform              | Visual COBOL | Sentinel RMS License Manager |
|-----------------------|--------------|------------------------------|
| x86 Windows platforms | 1.05GB       | 25MB                         |
| x64 Windows platforms | 1.2GB        | 25MB                         |



**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



**Note:** You can produce 64-bit and 32-bit applications on 64-bit operating systems.

For a list of the supported operating systems, check the *Product Availability* section on the Micro Focus SupportLine Web site: <http://supportline.microfocus.com/prodavail.aspx>.



**Note:** The Enterprise Server feature is not supported on Windows XP.

#### Software requirements

##### Eclipse requirements

- Visual COBOL only supports the 32-bit Eclipse IDE and requires a 32-bit Java installation.
- Though Visual COBOL does not support the 64-bit Eclipse, you can use the 32-bit Eclipse to create both 32-bit and 64-bit applications.
- Visual COBOL ships with Eclipse 3.8. After the installation, you can install the Visual COBOL plug-in into other instances of Eclipse available on the same machine. The supported versions are 3.8, 4.2 and 4.3 for the 32-bit Eclipse only. See *Installing Visual COBOL into other instances of Eclipse* for instructions.


##### Other software requirements

The setup file will check your machine for whether the prerequisite software is installed and will install any missing prerequisites and the product components.

- If no Java is installed on your machine, the setup file installs Java 1.6u27 32-bit.

- The setup file will also install .NET Framework v4.0.

If you are installing Visual COBOL on a machine that has Java 8 installed, see the *Java Support* in the *Known Issues and Restrictions* section in your product help for considerations that apply to using the Eclipse IDE.

 **Important:** This release requires version 10000.2.990 or later of the Micro Focus licensing software. For local servers, you do not need to install it separately, as the setup file installs a new Visual COBOL client and a new licensing server on the same machine.

If you have a network server, you must update the license server before installing the product as the client is not able to communicate with license servers of versions older than 10000.2.660. On Windows, you can check the version of your license server by clicking **Help > About** in the Micro Focus Licensing System Administration tool. To check the version of the license server on UNIX, run `/var/microfocuslicensing/bin/mfcesver` or `/var/microfocuslicensing/bin/cesadmintool.sh`.

You can download the new version of the license server software from the Micro Focus SupportLine Web site: <http://supportline.microfocus.com>.


## Additional Software Requirements on Windows

To ensure full functionality for some Visual COBOL features, you might be required to obtain and install additional third-party software in addition to the prerequisite software installed automatically by the Visual COBOL setup file. The following information specifies the third-party software required for each feature.

- [Application server support for JVM COBOL](#) on page 6
- [Java Development Kit \(JDK\)](#) on page 6
- [Consolidated Trace Facility](#) on page 7
- [Database Access](#) on page 7
- [Database Access - COBSQL \(Pro\\*COBOL\)](#) on page 7
- [Database Access - OpenESQL](#) on page 8
- [Database Access - HCO for SQL Server \(HCOSS\)](#) on page 8
- [Database Access - DB2 ECM](#) on page 9
- [XML Extensions](#) on page 10

### Application server support for JVM COBOL

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 **Restriction:** This feature applies only when the Enterprise Server feature is enabled.

The following application servers are supported using the following JDKs:

| Application Servers | JDK version | Containers support version |
|---------------------|-------------|----------------------------|
| Tomcat 7.0.39       | 1.6 / 1.7   | Servlets 2.5               |
| JBoss 7.1.1         | 1.6 / 1.7   | Servlets 2.5               |
| WebLogic 12.1.1     | 1.6 / 1.7   | Servlets 2.5               |
| WebSphere 8.5       | 1.6 / 1.7   | Servlets 2.5               |


You need Oracle's JDK. The earliest supported release of Oracle's JDK 1.6 is 1.6.027. You can download Oracle's JDK from [Oracle's Web site](#)

### Java Development Kit (JDK)

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**Native COBOL and Java Interoperability** Oracle's Java Platform, Enterprise Edition (Java EE) 6 or Java 7 is required to run the Eclipse IDE, to execute COBOL JVM code and for native COBOL and Java interoperability. The earliest supported release of Java 6 is 1.6 Update 27. You can download Oracle's Java EE from [Oracle's Web site](#) and install it anywhere on your machine.

**Compiling Java** Either the IBM or the Oracle Java Development Kit (JDK), version 1.5 or later, is required for compiling Java.

**Interface Mapping Toolkit (IMTK)**  **Restriction:** This feature applies only when the Enterprise Server feature is enabled.

The JDK is required for generating Java interfaces from the Interface Mapping Toolkit or the `imtkmake` command.

**Java Beans** Your Java client needs to be compiled with JDK 1.6 or greater.

**EJBs** Use the same JDK vendor and version that is used by the application server.

After installing the JDK, you need to set up your Java environment.

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### Consolidated Trace Facility

- The Microsoft .NET Framework 2.0 or later is required for the CTF Viewer. It is available from the Microsoft .NET downloads area.


### Database Access

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Before you can use Visual COBOL to develop and deploy SQL applications that use COBSQL, DB2 ECM, HCO for SQL Server (HCOSS), or OpenESQL, ensure any third-party software prerequisites are installed and the environment is set properly.

### Database Access - COBSQL (Pro\*COBOL)

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 **Note:** COBSQL (Pro\*COBOL) is supported for native COBOL only.

#### Availability

| Feature/Platform       | 32-bit | 64-bit |
|------------------------|--------|--------|
| x86-64 running Windows | X      | X      |

**XA Switch Module** When the Enterprise Server feature is enabled, the Oracle XA switch module is provided for COBSQL (Pro\*COBOL), and is available on the same platforms as are indicated in the *Availability* section above.

**Certification of RDBMS Precompilers for Native COBOL** Certification of RDBMS precompilers with Micro Focus products is the responsibility of the RDBMS vendor, rather than Micro Focus. Certification information can be found within the relevant Oracle documentation. If you have an [Oracle MetaLink account](#), document # 43208.1 provides details of all language compilers certified by Oracle for use with their precompilers.

**Preprocessors** COBSQL supports the following database preprocessors:

- Sybase Open Client Embedded SQL/COBOL Version 11.1 or later
- Oracle Pro\*COBOL Version 11.1 (11gR1) or later
- Informix Embedded SQL/COBOL Version 7.3 or later

## Compiling

On x86 and x86-64 platforms, when compiling with COBSQL for use with Oracle, do not use the COBSQL directive option NOMAKESYN, since this directive results in COMP host variables, and on Intel platforms these are incompatible with the native byte order expected by Oracle.

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## Database Access - OpenESQL

### Availability

| Feature/Platform       | Native COBOL 32-bit | Native COBOL 64-bit |
|------------------------|---------------------|---------------------|
| x86-64 running Windows | X                   | X                   |

### XA Switch Module

When the Enterprise Server feature is enabled, the ODBC One-phase Commit switch module is provided and is available on the same platforms as are indicated in the *Availability* section above. The SQL Server XA switch module is also provided.

To build the SQL Server XA module, you must have the Windows Software Development Kit (SDK) installed for your version of Windows.

### Native COBOL and .NET Managed COBOL

- OpenESQL supports access to relational databases using ODBC 3.0-compliant drivers
- Refer to your driver vendor's documentation to determine whether your driver is suitable for use with OpenESQL

### JVM Managed COBOL

OpenESQL supports access to relational databases using JDBC 4.0-compliant JDBC drivers. To use JDBC DataSource Objects, you must also install and configure a JNDI server.

If you are using a Java application server, it includes a JNDI server you can use to configure DataSource Object. This process is described in the Java documentation for the application server.

If you are not using a Java application server, or if you require a standalone JNDI server to configure DataSource objects for initial evaluation and development, see the *Simple-JNDI* topic in this documentation set for instructions on downloading, installing, and using the open source JNDI server Simple-JNDI for this purpose.

## Database Access - HCO for SQL Server (HCOSS)

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### Microsoft SQL Server

SQL Server 2008 R2 or later, Developer or Enterprise Editions, including Microsoft SQL Server Management Studio.

### Database Migration

- Microsoft .NET Framework 4.0
- Microsoft OLE DB Provider for DB2, available in the SQL Server 2008 R2 or later Feature Pack



**Note:** Be sure to configure the OLE DB Provider to connect to the mainframe. See your Microsoft documentation for details.

- Mainframe DB2



**Note:**

- We support only the mainframe DB2 versions that are currently under IBM support.
- If you intend to develop applications on your local machine, but deploy applications to a SQL Server database on a remote machine, you can install SQL Server Native Client 10.x (or later) for ODBC connectivity on your local machine instead of installing SQL Server. For SQL Server 2014 connectivity, you can install Microsoft ODBC Driver 11.0 for SQL Server. For information on configuring a deployment machine, see the section *Deploying Native Applications* below.

**Deploying Native Applications****Development Machine**

- Visual COBOL for Eclipse
- If SQL Server 2008 R2 or 2012 is not installed, you must have Microsoft SQL Server 2008 R2 or 2012 Native Client installed. For SQL Server 2014, you must have Microsoft ODBC Driver 11.0 for SQL Server.

**Development SQL Server Machine**

SQL Server 2008 R2 or later

**Note:** This can be the same machine as the development machine, but is not required to be**Deployment Machine**

- COBOL Server or COBOL Server for Unit Testing installed
- If SQL Server 2008 R2 or 2012 is not installed, you must have Microsoft SQL Server 2008 R2 or 2012 Native Client installed. For SQL Server 2014, you must have Microsoft ODBC Driver 11.0 for SQL Server.

If you want to bind your application from the deployment machine, install the following software in addition:

- Microsoft .NET 3.5 framework, or later
- SQL Server 2008 R2 or later System CLR Types
- SQL Server 2008 R2 or later Shared Management Objects

**Deployment SQL Server Machine**

SQL Server 2008 R2 or later

**Note:** This can be the same machine as the deployment machine, but is not required to be**Database Access - DB2 ECM**[Back to Top](#)**Availability**

| Feature/Platform       | 32-bit | 64-bit |
|------------------------|--------|--------|
| x86-64 running Windows | X      | X      |

**XA Switch Module**

When the Enterprise Server feature is enabled, the DB2 XA switch module is provided and is available on the same platforms as are indicated in the *Availability* section above.

**Certification of RDBMS**

Certification of RDBMS precompilers with Micro Focus products is the responsibility of the RDBMS vendor, rather than Micro Focus. You can find IBM

**Precompilers for Native COBOL** document certification information for DB2/COBOL applications within the IBM Information Center for DB2, in the topic *Support for database application development in COBOL*.

**Preprocessor** DB2 ECM supports the following database preprocessors:

- IBM DB2 LUW Version 9.5 or later
- IBM DB2 Connect Version 9.5 or later

## XML Extensions

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- XML Extensions has the same requirements as Visual COBOL. Both 32-bit and 64-bit versions are available. See the *XML Extensions for Visual COBOL*, available from the Visual COBOL product documentation section of the Micro Focus SupportLine Web site for more details.
- Additionally, XML Extensions may be used in conjunction with Terminal Server.

# Installing Visual COBOL for Eclipse (Windows)

## Downloading the Product

1. Use the download links in your Electronic Product Delivery email.

For more information follow the links for the installation instructions and the End User License Agreement.

## Product Co-Existence

- Visual COBOL and COBOL Server cannot coexist on the same machine.
- Visual COBOL and Enterprise Developer cannot coexist on the same machine regardless of which IDE (Visual Studio or Eclipse) you install.
- Visual COBOL is available in different IDE variants, each one of which is targeted by one specific variant of the development product:
  - COBOL Server - the deployment environment for COBOL applications created with Visual COBOL for Visual Studio 2010 or Visual COBOL for Eclipse
  - COBOL Server 2012 - the deployment environment for COBOL applications created with Visual COBOL for Visual Studio 2012
  - COBOL Server 2013 - the deployment environment for COBOL applications created with Visual COBOL for Visual Studio 2013

## Installing as an Upgrade

This release will update an existing installation of Visual COBOL 2.2.

- Before installing this release as an upgrade to an existing installation of the previous version 2.2 of the product, you must uninstall any HotFixes of 2.2. This is to avoid some problems that might result in files not being installed.
- Before installing this release as an upgrade, ensure you create a back-up of your Enterprise Server configuration. To do this, on the Enterprise Server Administration home page, click Export and then select **Export Enterprise Server configuration and Security Manager definitions**. This creates a backup folder in the `c:\programdata\micro focus\Enterprise Developer\MFDS`. You can restore the Enterprise Server configuration after installing this release - click Import on the Enterprise Server Administration home page.

## Installing



### Note:

- Before installing, check *Installation Restrictions and Requirements*.
- The setup file installs Visual COBOL and Eclipse 3.8. After the installation is completed, you can install Visual COBOL into a newer version of Eclipse such as version 4.2 or 4.3 for the 32-bit Eclipse only - see *Installing Visual COBOL into other instances of Eclipse* for instructions.
- See *Installing as an Upgrade* first for important information when upgrading an existing installation of Visual COBOL.
- This version of the product is a full install.

These are the steps to install this product:

1. Run the `vce_222.exe` file and follow the wizard instructions to complete the installation.

By default, this installs Visual COBOL in the `%ProgramFiles(x86)%\Micro Focus\Visual COBOL` folder and installs a full version of Eclipse 3.8, with the Micro Focus plugins already installed, in the `C:\Users\Public\Micro Focus\Product Name\eclipse` directory. On older versions of Windows, Eclipse might be installed in a different folder, such as for Windows XP, in `%ProgramFiles(x86)%\Micro Focus\Visual COBOL\eclipse`. The setup file installs any missing prerequisite software as listed in the topic *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 **Add or Remove Programs** (Windows XP) or **Program and Features** (Windows Vista or later), 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 SupportLine 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 Visual COBOL but you can install it if you wish.

## 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.

To install silently use the following command:

```
start /wait install-file.exe /q [parameters]
```

where *install-file* for the following products is as follows:

**Visual COBOL**

`vce_222.exe`

To see what parameters you can use, execute the following from the command line:

```
install-file /help
```

See the *Examples* section further in this topic for examples of some of the parameters you can use.

After the application installation is complete you can install the license silently by executing the following commands:

**If you have access to the Internet and an authorization code**

For 32-bit Windows environments:

```
start /wait "" "C:\Program Files\Common Files\SafeNet Sentinel\Sentinel RMS License Manager\WinNT\cesadmintool" -term activate AuthorizationCode
```

For 64-bit Windows environments:

```
start /wait "" "C:\Program Files (x86)\Common Files\SafeNet Sentinel\Sentinel RMS License Manager\WinNT\cesadmintool" -term activate AuthorizationCode
```

**If you don't have access to the Internet but have a file from Micro Focus that contains the license string**

For 32-bit Windows environments:

```
start /wait "" "C:\Program Files\Common Files\SafeNet Sentinel\Sentinel RMS License Manager\WinNT\cesadmintool" -term install -f FileName
```

For 64-bit Windows environments:

```
start /wait "" "C:\Program Files (x86)\Common Files\SafeNet Sentinel\Sentinel RMS License Manager\WinNT\cesadmintool" -term install -f FileName
```

where *FileName* is the name of the text file that contains all the license strings to be used.

### Directory considerations

- You must have read and write access for every directory accessed during the installation.
- You can override the default installation folder using the INSTALLDIR parameter:
- If a path in a definition contains spaces, then the path must be preceded by a backslash and double quotation mark (\"). For example:

```
INSTALLDIR=path  
INSTALLDIR=\"c:\MyProduct\  
INSTALLDIR=\"c:\Program Files\Micro Focus\My Product\"
```

- Installing creates a log file in %temp%\*LogFilename* by default. To change the location or name, use the /log parameter on your Setup command line and specify the path and file name, for example:

The default names for the log files are as follows:

|   |   |
|---|---|
| Micro_Focus_Visual_COBOL_for_IDE_date<br>.log | for the Visual COBOL wrapper  |
| Micro_Focus_Visual_COBOL_for_IDE_date<br>.log | for Visual COBOL, where ?? is "86" for 32-bit systems and "64" for 64-bit systems |
| lmsetup_install_log.txt                       | for Micro Focus License Administration  |

- The log filename and folder name cannot contain spaces
- The log file folder must exist before beginning the silent install

### Examples

- To silently install Visual COBOL into a directory other than the default:


```
start /wait vce_222.exe /q InstallFolder=c:\DirectoryName
```

- If you want to silently install the Eclipse IDE in a location other than the default, execute:

```
start /wait vce_222.exe /q InstallFolder2=c:\EclipseInstallDirectory
```

## Installing Visual COBOL into other instances of Eclipse

Visual COBOL ships with Eclipse 3.8 but can be installed in other instances of Eclipse available on the same machine. The supported versions of Eclipse are 3.8, 4.2 and 4.3 only for the 32-bit Eclipse.

 **Note:** Though Visual COBOL does not support the 64-bit Eclipse, you can use the 32-bit Eclipse to create both 32-bit and 64-bit applications.

To assist you with automatically installing the Micro Focus plug-ins in other instances of Eclipse, Visual COBOL provides an installation utility, `installeclipseplugins.bat` available in `%ProgramFiles(x86)%\Micro Focus\Visual COBOL\installer`.

To use the script to install Visual COBOL into another instance of Eclipse:

1. Start a Visual COBOL command prompt.
2. At the command prompt, navigate to the location of the install utility.
3. Run the install utility from the command prompt using the following syntax:

```
installeclipseplugins -eclipse <EclipseInstallDir> -version <version> [-cobdir <InstallDir>]
```

Where:

- *EclipseInstallDir* - full path to the installation directory of the instance of Eclipse you are installing into.
- *version* - version number of the instance of Eclipse that you are installing into. The valid version numbers are 3.8, 4.2 and 4.3 and these also cover for minor version numbers such as 3.8.1 or 4.2.2.
- *InstallDir* - optional. The full path to the installation directory of Visual COBOL. If this is not specified, the COBDIR environment variable is used.

Running the utility installs the Visual COBOL plug-ins into the specified version of Eclipse and copies the Visual COBOL UpdateSite folders into `EclipseInstallDir\eclipse\dropins`.


For example, to install Visual COBOL into an instance of Eclipse 4.3 available in the `c:\eclipse` folder, run the install utility with the following parameters:

```
installeclipseplugins -eclipse c:\eclipse -version 4.3
```

## After Installing

If you have used Eclipse from the same workspace before, the Eclipse perspective settings are not reset after installing any Micro Focus product. To pick up any new features, you must reset the COBOL perspective after installation:

1. Open the existing workspace with this product.  
You may receive some warnings or errors which you can ignore.
2. Make sure you are in the COBOL perspective by clicking **Window > Open Perspective > COBOL**.
3. Click **Window > Reset Perspective**.
4. Click **OK**.
5. Reapply any customizations.

 **Note:** For applications created with earlier Micro Focus products, note the following:

### Existing Applications

Application executables that were compiled using earlier Micro Focus products must be recompiled from the sources using Visual COBOL.

### Open PL/I Compiler



**Important:** If you are installing this release as an upgrade to Enterprise Developer 2.2 Update 1, after the upgrade you must rebuild any applications that are compiled using the `-zp1` option.

The behavior of the `-zp1` option has been reverted to that of versions of Enterprise Developer earlier than 2.2 Update 1, with an additional correction relating to Char Varying data items.

The behavior has been restored to that in Enterprise Developer versions earlier than 2.2 where, when compiling with `-zp1`, all parameters are treated as unaligned. (In Enterprise Developer 2.2 Update 1, the behavior when compiling with `-zp1` was to not treat parameters as if unaligned).

When using the `-zp1` compiler option, all Character Varying data items are now treated as if unaligned. In previous versions of Open PL/I, for Character Varying data items, the `-zp1` unaligned requirement was applied only to structure members and parameters.

To illustrate the change, consider the following example:

```
zptest: proc options(main);

    dcl 1 st1,
        2 c char,
        2 x(4) char(7) var init ('a', 'xx', 'yyy', 'zzzz');

    dcl y(4) char(7) var init ('a', 'xx', 'yyy', 'zzzz');

    dcl sub entry ((4) char(7) var);

    call sub (x);

    call sub (y);

end;

sub: proc (z);

    dcl z(4) char(7) var;

    dcl i fixed bin(31);

    do i = 1 to hbound(z);
        z(i) = 'x';
    end;

end;
```

Where:

- For `x` and `z`, each `char (7) var` item is 7 plus 2 bytes which equals 9 and then multiplied by 4 equals 36.
- If `y` were aligned on half-word by default, each array element is half-word aligned and each equals 10 bytes (9 + 1 pad byte), and the total size equals 40 bytes.
- At `call sub (x)`, the calling argument and parameter are matched.
- At the `call sub (y)`, the `y` element size (10 bytes) is mismatched against the parameter `z` element size (9 bytes) due to `-zp1`. This is incorrect and causes unexpected program behavior.

Due to this correction of treating all Char Varying data items as if unaligned when using `-zp1`, the size of CHAR VARYING arrays now differs from previous versions of Open-PL/I. For example:

```
dcl X(4) char(7) var;
```

```
Put skip list (size(X)) /* size is 36 bytes vs. 40 bytes in
previous versions of Open-PL1 */
```

## Installing X Windows on Windows

Some features of Visual COBOL for Eclipse on Windows require an X Windows installation, hence Micro Focus ViewNowX is provided with the product. To install, run the file `ViewNow_X_Server.exe` in your Visual COBOL installation. By default this will be in the `%ProgramFiles(x86)%\Micro Focus\Visual COBOL\ViewNowX` folder.

ViewNowX requires that your client machine has Microsoft Visual C++ 2008 SP1 Redistributable Package (x86) installed. If it is missing from your machine, the ViewNowX installation will offer a link to download the package.

## 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.

To repair your installation on versions of Windows Vista or later:

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

To repair your installation on older versions of Windows, such as Windows XP:

1. Click **Start Menu > Control Panel > Add/Remove Programs**.
2. Click your Micro Focus product in the list of installed programs.
3. Click **Click here for support information**.
4. Click **Repair**.

## Uninstalling

### Windows

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** (or **Add/Remove Programs** on older versions of Windows) in **Control Panel**.
3. On older versions of Windows such as Windows XP, ensure that **Show Updates** (at the top of the Add or Remove Programs dialog) is checked, so that any hot fixes or WrapPacks are listed.
4. Select the product and click **Remove** or **Uninstall** as appropriate.

When you uninstall, the only files deleted are those that the installation software installed. 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 Visual COBOL and Micro Focus License Administration. Uninstalling only Visual COBOL 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 Visual COBOL for Eclipse (UNIX)

## System Requirements for Visual COBOL for Eclipse (UNIX)

### Hardware Requirements for Visual COBOL for Eclipse

Visual COBOL has the following requirements in addition to the requirements of Eclipse. See the Eclipse documentation for details of its requirements.

The disk space requirements are approximately:

| Platform                     | Setup file size (MB) | Disk space required for the installation (GB) | Disk space required for running the product (MB) | Sentinel RMS license server (MB) |
|------------------------------|----------------------|---|--|----------------------------------|
| x86-64 running Red Hat Linux | 710                  | 2.84  | 1.42   | 40                               |
| x86-64 running SuSE SLES     | 714                  | 2.87  | 1.43   | 40                               |

### Operating Systems Supported



**Note:** You can produce 64-bit and 32-bit applications on 64-bit operating systems.

For a list of the supported operating systems, check the *Product Availability* section on the Micro Focus SupportLine Web site: <http://supportline.microfocus.com/prodavail.aspx>.

### Software Requirements

#### Eclipse requirements

- Visual COBOL only supports the 32-bit Eclipse IDE and requires a 32-bit Java installation.
- Though Visual COBOL does not support the 64-bit Eclipse, you can use the 32-bit Eclipse to create both 32-bit and 64-bit applications.
- Visual COBOL ships with Eclipse 3.8. After the installation, you can install the Visual COBOL plug-in into other instances of Eclipse available on the same machine. The supported versions are 3.8, 4.2 and 4.3 for the 32-bit Eclipse only. See *Installing Visual COBOL into other instances of Eclipse* for instructions.

#### Other software requirements

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

- The pax archiving utility is required by the setup file. Pax is distributed with most UNIX/Linux systems but, if it is missing, you must install it separately. To verify pax is installed, run `pax --help` or `pax --version` at the command line.
- On Red Hat 6.x and Red Hat 7, you must have the following operating system libraries installed:



**All Visual COBOL products**

glibc-\*.x86\_64  
 glibc-\*.i686  
 libgcc-\*.x86\_64  
 libgcc-\*.i686  
 libstdc++-\*.x86\_64  
 libstdc++-\*.i686

**Additional libraries for Visual COBOL for Eclipse**

| Library                        | Platform                            |                                     |
|--------------------------------|-------------------------------------|-------------------------------------|
|                                | Red Hat 6.x                         | Red Hat 7                           |
| gtk2-*.x86_64                  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| gtk2-*.i686                    | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| gtk2-engines-*.i686            | <input checked="" type="checkbox"/> | -                                   |
| gtk2-engines-*.s390            | <input checked="" type="checkbox"/> | -                                   |
| gtk2-engines-*.x86_64          | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| libXtst-*.x86_64               | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| libXtst-*.i686                 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| libcanberra-gtk2-*.x86_64      | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| libcanberra-gtk2-*.i686        | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| libgnome.x86_64                | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| libgnome.i686                  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| PackageKit-gtk-module-*.x86_64 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| PackageKit-gtk-module-*.i686   | <input checked="" type="checkbox"/> | -                                   |
| PackageKit-gtk-module-*.s390   | <input checked="" type="checkbox"/> | -                                   |
| PackageKit-gtk3-module-*.i686  | -                                   | <input checked="" type="checkbox"/> |
| PackageKit-gtk3-module-*.s390  | -                                   | <input checked="" type="checkbox"/> |
| webkitgtk.x86_64               | <input checked="" type="checkbox"/> | -                                   |
| webkitgtk.i686                 | <input checked="" type="checkbox"/> | -                                   |
| webkitgtk3.x86_64              | -                                   | <input checked="" type="checkbox"/> |
| webkitgtk3.i686                | -                                   | <input checked="" type="checkbox"/> |

| Library             | Platform                            |                                     |
|---------------------|-------------------------------------|-------------------------------------|
|                     | Red Hat 6.x                         | Red Hat 7                           |
| xterm (any version) | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

**Additional libraries required to use the core\_on\_error runtime variable** gdb - the gdb packages (for the GNU Project Debugger) can be installed from the install media for your OS.

**Additional libraries for Micro Focus Visual COBOL Development Hub** glibc-devel-\*.x86\_64  
glibc-devel-\*.i686

In addition, on IBM System z (390), you must have the following operating system libraries installed:

**Additional libraries for Micro Focus Visual COBOL Development Hub** glibc-devel-\*.s390  
glibc-devel-\*.s390x

Visit the [Red Hat Web site](#) for more information.

- Xterm, the terminal emulator for the X Window System, is part of your UNIX/Linux distribution but is not installed by default. Use your UNIX/Linux installation media to install it.
- Oracle's Java Platform, Enterprise Edition (Java EE) 6 or Java 7 is required to run the Eclipse IDE, to execute COBOL JVM code and for native COBOL and Java interoperability. The earliest supported release of Java 6 is 1.6 Update 27. You can download Oracle's Java EE from [Oracle's Web site](#) and install it anywhere on your machine.



**Note:** On Linux, the 32-bit version of Java is required to install and use Visual COBOL for Eclipse. When you start the installation, if the 64-bit version of Java is already installed on your Linux machine, you might not be able to install Visual COBOL. This is a *known issue* with the Oracle Java installers for Linux which prevent you from installing both the 32-bit and the 64-bit versions of Java on the same machine. To work around this problem:

- Download the 32-bit Java distribution in a compressed .tar format from the Oracle Web site.
- Untar the distribution into a location different from the one used for the 64-bit Java version. For example, untar in /usr/local/java32 and not in /usr/local/java.
- Set JAVA\_HOME and LD\_LIBRARY\_PATH to the 32-bit version of Java so that it is used to install and run Visual COBOL.

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

- You need to set the JAVA\_HOME environment variable. When installing the product, set this variable to a 32-bit Java installation or the installation terminates. For example, execute the following:

```
JAVA_HOME=java_install_dir
```

where *java\_install\_dir* is the path to the JAVA installation directory such as /usr/java/javan.n

- You need to add \$JAVA\_HOME/bin to your system PATH variable. To do this, execute:

```
export PATH=$JAVA_HOME/bin:$PATH
```

- You need to set the LANG environment variable to pick up localized messages. The LANG settings are English and Japanese only.



**Important:** This release requires version 10000.2.990 or later of the Micro Focus licensing software. For local servers, you do not need to install it separately, as the setup file installs a new Visual COBOL client and a new licensing server on the same machine.

If you have a network server, you must update the license server before installing the product as the client is not able to communicate with license servers of versions older than 10000.2.660. On Windows, you can check the version of your license server by clicking **Help > About** in the Micro Focus Licensing System Administration tool. To check the version of the license server on UNIX, run `/var/microfocuslicensing/bin/mfcesver` or `/var/microfocuslicensing/bin/cesadmintool.sh`.

You can download the new version of the license server software from the Micro Focus SupportLine Web site: <http://supportline.microfocus.com>.


## Additional Software Requirements on Linux and UNIX

To ensure full functionality for some Visual COBOL features, you might be required to obtain and install additional third-party software in addition to the prerequisite software installed automatically by the Visual COBOL setup file. The following information specifies the third-party software required for each feature.

- [Application server support for JVM COBOL](#) on page 19
- [Database Access](#) on page 19
- [Database Access - COBSQL \(Pro\\*COBOL\)](#) on page 20
- [Database Access - OpenESQL](#) on page 21
- [Database Access - DB2 ECM](#) on page 21
- [Java Development Kit \(JDK\)](#) on page 22
- [XML Extensions](#) on page 22

### Application server support for JVM COBOL

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 **Restriction:** This topic applies only when the Enterprise Server feature is enabled.

The following application servers are supported using the following JDKs:

| Application Servers        | JDK version                    | Containers support version |
|----------------------------|--------------------------------|----------------------------|
| Tomcat 7.0.39              | 1.6 / 1.7                      | Servlets 2.5               |
| JBoss 6.1                  | 1.6 / 1.7                      | Servlets 2.5               |
| WebLogic 12.1.1            | 1.6 / 1.7                      | Servlets 2.5               |
| WebLogic 12.1.1 on AIX 6.1 | 1.6.0 SR10 FP1 / 1.7 Release 1 | Servlets 2.5               |
| WebSphere 8.5              | 1.6 / 1.7                      | Servlets 2.5               |
| WebSphere 8.5 on AIX 6.1   | 1.6.0 SR10 FP1 / 1.7 Release 1 | Servlets 2.5               |

 **Note:**

- On AIX and zLinux, you need to have IBM's JDK. The earliest supported release of IBM's JDK 1.6 is 1.6.0.13. You can get IBM's AIX JDK from [IBM's Web site](#).
- On HP-UX, you need to have HP-UX JDK. The earliest supported release of HP-UX JDL 1.6 is Java 6.0.13. You can get the HP-UX Java JDK from [HP's Web site](#).
- On all other platforms, you need Oracle's JDK. The earliest supported release of Oracle's JDK 1.6 is 1.6.027. You can download Oracle's JDK from [Oracle's Web site](#).


### Database Access

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Before you can use Visual COBOL to develop and deploy SQL applications that use COBSQL, DB2 ECM, or OpenESQL, ensure any third-party software prerequisites are installed and the environment is set properly.

## Database Access - COBSQL (Pro\*COBOL)

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 **Note:** COBSQL (Pro\*COBOL) is supported for native COBOL only.

### Availability

| Feature/Platform                | 32-bit | 64-bit |
|---------------------------------|--------|--------|
| x86-64 running Red Hat Linux    | X      | X      |
| x86-64 running SuSE Linux       | X      | X      |
| IBM System p running AIX        | X      | X      |
| IBM System z running SuSE Linux | X      | X      |
| Itanium running HP-UX           | X      | X      |
| x86-64 running Solaris          | X      | X      |
| SPARC running Solaris           | X      | X      |

### XA Switch Module

When the Enterprise Server feature is enabled, the Oracle XA switch module is provided for COBSQL (Pro\*COBOL), and is available on the same platforms as are indicated in the *Availability* section above.

### Certification of RDBMS Precompilers for Native COBOL

Certification of RDBMS precompilers with Micro Focus products is the responsibility of the RDBMS vendor, rather than Micro Focus. Certification information can be found within the relevant Oracle documentation. If you have an Oracle MetaLink account (<http://metalink.oracle.com>), document # 43208.1 provides details of all language compilers certified by Oracle for use with their precompilers.

### Preprocessors

COBSQL supports the following database preprocessors:

- Sybase Open Client Embedded SQL/COBOL Version 11.1 or later
- Oracle Pro\*COBOL Version 11.1 (11gR1) or later
- Informix Embedded SQL/COBOL Version 7.3 or later

### Compiling

On x86 and x86-64 platforms, when compiling with COBSQL for use with Oracle, do not use the COBSQL directive option NOMAKESYN, since this directive results in COMP host variables, and on Intel platforms these are incompatible with the native byte order expected by Oracle.

### Executing

On HP-UX, to execute an application precompiled using Pro\*COBOL (or COBSQL) after you have created a callable shared object of Oracle DBMS routines, you need set an environment variable, LD\_PRELOAD, to point to the Oracle client callable shared object, for example:

```
LD_PRELOAD=$ORACLE_HOME/libdir/libclntsh.so
export LD_PRELOAD
```

where *libdir* is:

- lib32 for 32-bit environments
- lib for 64-bit environments.

A script is available that creates an executable run-time system or a callable shared object containing Oracle support (applies to UNIX environments only). You can find

the script in the Micro Focus Knowledge Base article titled *Building and executing Pro\*COBOL applications on UNIX*.

## Database Access - OpenESQL

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### Availability

| Feature/Platform                | Native COBOL 32-bit | Native COBOL 64-bit |
|---------------------------------|---------------------|---------------------|
| x86-64 running Red Hat Linux    | X                   | X                   |
| x86-64 running SuSE Linux       | X                   | X                   |
| IBM System p running AIX        | X                   | X                   |
| IBM System z running SuSE Linux | X                   | X                   |
| Itanium running HP-UX           | X                   | X                   |
| x86-64 running Solaris          | X                   | X                   |
| SPARC running Solaris           | X                   | X                   |

### XA Switch Module

When the Enterprise Server feature is enabled, the ODBC One-phase Commit switch module is provided and is available on the same platforms as are indicated in the *Availability* section above. For Windows environments, the SQL Server XA switch module is also provided.

### Native COBOL and .NET Managed COBOL

- OpenESQL supports access to relational databases using ODBC 3.0-compliant drivers
- Refer to your driver vendor's documentation to determine whether your driver is suitable for use with OpenESQL

## Database Access - DB2 ECM

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### Availability

| Feature/Platform                | 32-bit | 64-bit |
|---------------------------------|--------|--------|
| x86-64 running Red Hat Linux    | X      | X      |
| x86-64 running SuSE Linux       | X      | X      |
| IBM System p running AIX        | X      | X      |
| IBM System z running SuSE Linux | X      | X      |
| Itanium running HP-UX           |        | X      |
| x86-64 running Solaris          |        |        |
| SPARC running Solaris           | X      |        |

- XA Switch Module** When the Enterprise Server feature is enabled, the DB2 XA switch module is provided and is available on the same platforms as are indicated in the *Availability* section above.
- Certification of RDBMS Precompilers for Native COBOL** Certification of RDBMS precompilers with Micro Focus products is the responsibility of the RDBMS vendor, rather than Micro Focus. You can find IBM document certification information for DB2/COBOL applications within the IBM Information Center for DB2, in the topic *Support for database application development in COBOL*.
- Preprocessor** DB2 ECM supports the following database preprocessors:
- IBM DB2 LUW Version 9.5 or later
  - IBM DB2 Connect Version 9.5 or later

## Java Development Kit (JDK)

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- Compiling Java** Either the IBM or the Oracle Java Development Kit (JDK), version 1.5 or later, is required for compiling Java. The JDK is downloadable from the Oracle and IBM Web sites. After installing the JDK, you must put the `tools.jar` file for the JDK on your classpath, using a command similar to:

```
set classpath=jdk-install-directory\lib\tools.jar
```

After installing the JDK, you need to set up your Java environment.

## XML Extensions

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- XML Extensions has the same requirements as Visual COBOL. Both 32-bit and 64-bit versions are available. See the *XML Extensions for Visual COBOL*, available from the Visual COBOL product documentation section of the Micro Focus SupportLine Web site for more details.
- Additionally, XML Extensions may be used in conjunction with Terminal Server.

# Installing Visual COBOL for Eclipse (UNIX)


## Downloading the Product

1. Use the download links in your Electronic Product Delivery email.

For more information follow the links for the installation instructions and the End User License Agreement.

## Installing

### Installing the software

 **Note:** The setup file installs Visual COBOL and Eclipse 3.8. After the installation is completed, you can install Visual COBOL into a newer version of Eclipse such as version 4.2 or 4.3 for the 32-bit Eclipse only - see *Installing Visual COBOL into other instances of Eclipse* for instructions.

1. Give execute permissions to the setup file:

```
chmod +x setup_visualcobol_deveclipse_2.2_update2_platform
```


2. Run the setup file with superuser permissions:

```
./setup_visualcobol_deveclipse_2.2_update2_platform
```

If you don't run this as superuser, you are prompted to enter the superuser password during the install. The COBOL environment is installed by default into `/opt/microfocus/VisualCOBOL`, (COBDIR). A full version of Eclipse, with the Micro Focus plugins already installed, is present in the `COBDIR/eclipse` directory.

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

```
. /setup_visualcobol_deveclipse_2.2_update2_platform -installlocation="full path of new location"
```

 **Note:** You can use variables or the tilde syntax for the path for `-installlocation`. For example, the following examples are equivalent:

```
-installlocation="/home/myid/installdir"
```

```
-installlocation="~/myid/installdir"
```

```
-installlocation="~/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.

 **Note:**

- 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_visualcobol_deveclipse_2.2_update2_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, remove the file and install Sentinel RMS server manually.

## Setting up the environment


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

1. To set up your product, execute:

```
. /opt/microfocus/VisualCOBOL/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.

## Starting the product

To start Eclipse:

- If you are using a GUI interface, double-click the product icon (automatically installed on your desktop).
- 
**Note:** The installer automatically creates a shortcut icon for the product on the desktop for the user for which you ran the install script. If you need to create desktop icons for other users' desktops on the same machine, or if the icon was not created on the desktop for the root user, run the following shell script as the user you need to login as: `$COBDIR/bin/createdesktopicon.sh`
- If you are using a non-GUI interface, such as a terminal emulator, type the following from a command prompt:

```
eclipse
```

## Installing as an upgrade

This release works concurrently with the previous version of Visual COBOL, so you do not need to uninstall it. There are two options for installing the latest version in this case:

- Move the existing installation to a different location and install the latest version to the default install location specified by the COBDIR environment variable ( `/opt/microfocus/VisualCOBOLeclipse`, by default).

This ensures you do not need to change your environment. To move the existing older installation to a different location:


1. Execute the following command as root:

```
mv /opt/microfocus/VisualCOBOLeclipse /opt/microfocus/  
VisualCOBOLeclipseversion
```

2. Install the latest version as described in the section *Installing*.
- Install the latest version in a different location and set the environment to point to it. To do this, run the Visual COBOL installer with the `-installlocation` option:

1. Execute the following command:

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

- 
**Note:** You can use variables or the tilde syntax for the path for `-installlocation`. For example, the following examples are equivalent:

```
-installlocation="/home/myid/installdir"
```

```
-installlocation="~/myid/installdir"
```

```
-installlocation="~/installdir"
```

```
-installlocation="$HOME/installdir"
```


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

```
./opt/microfocus/VisualCOBOL/bin/cobsetenv
```

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.

## Installing Visual COBOL into other instances of Eclipse

Visual COBOL ships with Eclipse 3.8 but can be installed in other instances of Eclipse available on the same machine. The supported versions of Eclipse are 3.8, 4.2 and 4.3 only for the 32-bit Eclipse.

- 
**Note:** Though Visual COBOL does not support the 64-bit Eclipse, you can use the 32-bit Eclipse to create both 32-bit and 64-bit applications.

To assist you with automatically installing the Micro Focus plug-ins in other instances of Eclipse, Visual COBOL provides an installation utility, `installeclipseplugins` (UNIX) available in `/opt/microfocus/VisualCOBOL/eclipse`.

To use the script to install Visual COBOL into another instance of Eclipse:



1. Start a terminal.
2. At the terminal, navigate to the location of the install utility.
3. Run the install utility from the command prompt using the following syntax:

```
installeclipseplugins -eclipse <EclipseInstallDir> -version <version> [-cobdir <InstallDir>]
```

Where:

- *EclipseInstallDir* - full path to the installation directory of the instance of Eclipse you are installing into.
- *version* - version number of the instance of Eclipse that you are installing into. The valid version numbers are 3.8, 4.2 and 4.3 and these also cover for minor version numbers such as 3.8.1 or 4.2.2.
- *InstallDir* - optional. The full path to the installation directory of Visual COBOL. If this is not specified, the COBDIR environment variable is used.

Running the utility installs the Visual COBOL plug-ins into the specified version of Eclipse and copies the Visual COBOL UpdateSite folders into *EclipseInstallDir/eclipse/dropins*.

## UNIX and Linux Installer Issues

### Installing on Linux

On Linux, the 32-bit version of Java is required to install and use Visual COBOL for Eclipse. When you start the installation, if the 64-bit version of Java is already installed on your Linux machine, you might not be able to install Visual COBOL. This is a [known issue](#) with the Oracle Java installers for Linux which prevent you from installing both the 32-bit and the 64-bit versions of Java on the same machine. To work around this problem:


- Download the 32-bit Java distribution in a compressed .tar format from the Oracle Web site.
- Untar the distribution into a location different from the one used for the 64-bit Java version. For example, untar in `/usr/local/java32` and not in `/usr/local/java`.
- Set `JAVA_HOME` and `LD_LIBRARY_PATH` to the 32-bit version of Java so that it is used to install and run Visual COBOL.

### License Infrastructure Installer

- On some Solaris platforms, you can receive the following error message when SafeNet license server needs to be installed or upgraded on your machine:

```
tar: /safenet.tar: No such file or directory
```

To resolve this issue, wait for the installation to complete and then perform the following:

1. Navigate to the `safenet` directory in the COBDIR location.
  2. With superuser permissions execute: `./MFLicenseServerInstall.sh`
-  **Note:** The following information applies when you are installing on Red Hat Enterprise Linux (RHEL) 7. (RHEL 7 is a beta version and support for it is a technical preview only).

Certain configuration changes in RHEL 7 (such as the `/etc/inittab` file no longer available) required a change in the MF SafeNet license installer for this platform and the way you can manually manage the licensing service.

By default, the MF SafeNet licensing service is still configured so that it starts automatically when starting your machine. Only on RHEL 7, you must use the `systemctl` command available with the OS if you need to override the default behaviour – for example, if you do not want run the MF SafeNet licensing service at start-up or if you do not want the service to automatically start when you are configuring trace levels.

1. Create a file, `MFSafeNet.service`, in `/usr/lib/systemd/system/` with the following contents:

```
----- start of /usr/lib/systemd/system/
MFSafeNet.service -----
[Unit]
    Description=Micro Focus SafeNet licensing daemons.
    Documentation=http://supportline.microfocus.com

[Service]
    Type=forking
    ExecStart=/var/microfocuslicensing/bin/startboth.sh
    ExecStop=/var/microfocuslicensing/bin/stopboth.sh
    Restart=no

[Install]
    WantedBy=multi-user.target
----- end of /usr/lib/systemd/system/
MFSafeNet.service -----
```

2. Use the `systemctl` command to manage the SafeNet service:

```
[ asroot ] systemctl option MFSafeNet
```

Where some of the values that *option* can take are:

- reenable**     Installs the SafeNet service.
- is-enabled**   Checks the status of the SafeNet service. Does not require root privileges.
- start**         Starts the SafeNet service.
- stop**          Stops the SafeNet service.
- restart**        Restarts the SafeNet service.
- disable**        Disables the SafeNet service so it does not start when the machine is booted.
- enable**         Enables the SafeNet Service so it starts when the machine is booted.

For more information about `systemctl`, refer to the help available with the RHEL OS.

## 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.

## 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:

```
-silent -IacceptEULA
```

For example, execute:

```
[as root] setup_filename -silent -IacceptEULA
```

After the application installation is complete you can install the license silently by executing the following commands:

**If you have access to the Internet and an authorization code**

Run the following as root:

```
cd /var/microfocuslicensing/bin  
./cesadmintool.sh -authorize AuthorizationCode
```

**If you don't have access to the Internet but have a file from Micro Focus that contains the license string**

Run the following as root:

```
cd /var/microfocuslicensing/bin  
./cesadmintool.sh -install FileName
```

where *FileName* is the name of the text file that contains all the license strings to be used.

## After Installing

If you have used Eclipse from the same workspace before, the Eclipse perspective settings are not reset after installing any Micro Focus product. To pick up any new features, you must reset the COBOL perspective after installation:

1. Open the existing workspace with this product.

You may receive some warnings or errors which you can ignore.

2. Make sure you are in the COBOL perspective by clicking **Window > Open Perspective > COBOL**.
3. Click **Window > Reset Perspective**.
4. Click **OK**.
5. Reapply any customizations.

## Configuring the Environment for Developing RDBMS Applications on UNIX



### Note:

- If you are working with remote projects, you need to configure the environment before you start the remote server process.
- On UNIX, if you are working with local projects, you need to configure the environment before you start Eclipse.

1. Ensure the COBOL and the third-party software environments are set.
2. Set up the RDBMS environment.

Refer to your RDBMS vendor documentation for details.

3. Set COBCPY as required in order for the IDE to locate any copybooks that are external to your project.
4. If working with Pro\*COBOL/Cobsql applications you need to set COBOPT. This sets the appropriate linker options for the platform and the COBOL working mode:

To do this, execute the following at the command line:

```
$COBDIR/src/oracle/set_cobopt_oracle  
COBOPT=$PWD/cobopt.ora  
export COBOPT
```

## Repairing

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

## Uninstalling



**Note:** Before you uninstall the product, ensure that the Enterprise Server instances and the Micro Focus Directory Service (MFDS) are stopped.

To uninstall this product:

1. Execute as root the `Uninstall_VisualCOBOLEclipse2.2.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.
- The latest version of the SafeNet licensing software is required. See the *Software Requirements* section in this document for more details.
- Your entitlement for using this product is governed by the Micro Focus End User License Agreement and by your product order. 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 SupportLine](#).

## To buy and activate a full unlimited license

To buy a license for Visual COBOL, contact your sales representative or Micro Focus SupportLine.

For instructions on using the Micro Focus Licensing Administration Tool, see *Licensing* in the Visual COBOL help.

## To start Micro Focus License Administration

### Windows

From the Windows Taskbar click **Start > All Programs > Micro Focus License Manager > License Administration**.



**Note:** On Windows 8 and Windows Server 2012, you use the Start screen to invoke programs.

### UNIX

Log on as root, and from a command prompt type:

```
/var/microfocuslicensing/bin/cesadmintool.sh
```

## Installing licenses

### If you have a license file

#### Windows

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 `.mflic`).
  - Drag and drop the license file from Windows Explorer to the **License file** field.

- Open the license file in a text editor, such as Notepad, then copy and paste the contents of the file into the box below the **License file** field.

4. Click **Install Licenses**.

Alternatively, you can install the license file from within the IDE as follows:

1. Start Visual COBOL.
2. Click **Help > Micro Focus > Product Licensing** to open the **Product Licensing** dialog box.
3. Ensure **I have a full Visual COBOL license** is checked.
4. Click **Browse** next to the **License file** field.
5. Select the license file (which has an extension of `.mflic`), and then click **Open**.
6. Click **Finish** to install the license.

## 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.

# If you have an authorization code

## Authorizing your product when you have an Internet connection



**Note:** This topic only applies if you have an authorization code.

The following procedure describes how to authorize your product using a local or network license server. The license server is set up automatically when you first install the product.

### Windows

1. Start Micro Focus License Administration.
2. Click the **Install** tab.
3. Type the authorization code in the **Enter authorization code** field.
4. Click **Authorize**.

If you change the name of the machine running your license server after it has granted licenses, the licenses stop working.

### UNIX

1. Start Micro Focus License Administration.
2. Select the **Online Authorization** option by entering 1 and pressing **Enter**.
3. Enter your authorization code at the **Authorization Code** prompt and then press **Enter**

## Authorizing your product when you don't have an Internet connection



**Note:** This topic only applies if you have an authorization code.

This method of authorization is required if your machine does not have an Internet connection or if normal (automatic) authorization fails.

### Windows

1. Start Micro Focus License Administration.
2. Click **Manual Authorization** on the Install page.

3. Make a note of the contents of the **Machine ID** field. You will need this later.
4. Do one of the following:
  - If your machine has an Internet connection, click the SupportLine Web link in the Manual Authorization Information window.
  - If your machine does not have an Internet connection, make a note of the Web address and type it into a Web browser on a machine that has an Internet connection.

The Micro Focus SupportLine Manual product authorization Web page is displayed.

5. Type the authorization code in the **Authorization Code** field. The authorization code is a 16-character alphanumeric string supplied when you purchased your product.
6. Type the Machine ID in the **Machine ID** field.
7. Type your email address in the **Email Address** field.
8. Click **Generate**.
9. Copy the generated license string (or copy it from the email) and paste it into the box under the **License file** field on the Install page.
10. Click **Install Licenses**.

## UNIX

In order to authorize your product you must have the following:

- Your authorization code (a 16-character alphanumeric string).
- The machine ID. To get this, start the Micro Focus License Administration tool and select the **Get Machine Id** option by inputting 6. Make a note of the "Old machine ID".

If you have previously received the licenses and put them in a text file, skip to step 6.

1. Open the Micro Focus license activation web page <http://supportline.microfocus.com/activation> in a browser.
2. Enter your authorization code and old machine ID and, optionally, your email address in the **Email Address** field.
3. Click **Generate**.
4. Copy the licenses strings from the web page or the email you receive into a file.
5. Put the license file onto your target machine.
6. Start the Micro Focus License Administration tool and select the **Manual License Installation** option by inputting 4.
7. 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 Visual COBOL, contact your sales representative or Micro Focus SupportLine.

# New Features in Visual COBOL 2.2 Update 2

## Enhancements in the Eclipse IDE

Visual COBOL provides the following new functionality and improvements:

- Support for Eclipse 4.2 and 4.3 - Visual COBOL ships with Eclipse 3.8 but also supports Eclipse 4.2 and 4.3 (the 32-bit IDE only). To use Visual COBOL with a newer version of Eclipse, you need to install Visual COBOL first and then use the `installeclipseplugins.bat` script in `%ProgramFiles(x86)%\Micro Focus\Visual COBOL\installer` (Windows) or `installeclipseplugins` script in `/opt/microfocus/VisualCOBOL/installer` (UNIX). See *Installing into other instances of Eclipse* for more details.
- Remote JVM COBOL projects - this release provides enhanced support for remote JVM COBOL projects.
- Remote project connections - the diagnosis tool for remote connection issues has been improved. There is now a client-side diagnosis tool and a server-side diagnosis tool for diagnosing connection problems to remote projects and connections to your Micro Focus Visual COBOL Development Hub. You should run both tools for a complete diagnosis.

## Character set enhancements

The following character sets, available using the `MFCODESET` environment variable, have been enhanced or added in this release:

- Thai Extended (0066) - new
- Korean (0082)
- Simplified Chinese (0086)
- Traditional Chinese (0886)

There are also a number of double-byte character sets that are now capable of mixed single-byte and double-byte character conversion; see the definition of `MFCODESET` in *Environment Variables in Alphabetical Order* for more information.

## Code Analysis

Code Analysis helps you understand and optimize your COBOL applications. This release of Visual COBOL provides Dead Code analysis.

## Database Access

The following new features have been added as part of database access support:

- COBSQL**      The new `KEEPCOMP` directive resolves `COMP/COMP-5` issues with Oracle applications on little-endian platforms.



**DB2** This release introduces a new DB2 ECM compiler directive option, GEN-HV-FROM-GROUP, that generates host variables for all elementary data items when a multiple-level group variable is used in a FETCH or singleton SELECT DB2 statement.

**OpenESQL** This version provides the following new OpenESQL features:

**SQL Server** Support for SQL Server 2014.

**SQL compiler directive options** The following are new SQL compiler directive options:

**DETECTDATE=SERVER** Resolves host variables alignment with column data types in an SQL table.

**GEN-HV-FROM-GROUP** Generates host variables for all elementary data items when a multiple-level group variable is used in a FETCH or singleton SELECT SQL statement.

**Sample applications** The following native COBOL SQL sample applications are new with this version:

**Get Diagnostics** Demonstrates how to use GET DIAGNOSTICS EXEC SQL calls to get diagnostic information from various DBMSs.

**LOB Data Types** Demonstrates how to INSERT and SELECT LOB data in a native application using various DBMSs.

**XA switch modules**



**Restriction:** This feature applies only when the Enterprise Server feature is enabled.

The Oracle (Windows and UNIX platforms) and SQL Server (Windows platforms only) XA switch modules are now compiled with one source file rather than two.

## Micro Focus COBOL enhancements

The following enhancements have been made to Micro Focus COBOL:

- The following phrases have been added to the XML GENERATE statement:
  - NAME
  - TYPE
  - SUPPRESS
- The following intrinsic functions have been added:
  - ULENGTH
  - UPOS
  - USUBSTR
  - USUPPLEMENTARY
  - UVALID
  - UWIDTH

## External Security Facility (ESF)

The Enterprise Server External Security Facility (ESF) now supports caching the results of some security queries. This can improve the performance of enterprise server instances and of the MFDS when they are configured to use external security.

To enable caching, you need to set non-zero values for the **Cache limit** (maximum size of the cache) and **Cache TTL** (Time To Live, or how long before a cached result expires) settings on the **MFDS Security** tab, the **Default ES Security** tab, or on the **Security** tab for an individual enterprise server. (Currently, the cache settings for Security Managers have no effect; you need to set cache parameters on one of the three Security pages mentioned earlier.)

For more information, see <http://supportline.microfocus.com/examplesandutilities/doxygen/caching.html>.

## New tunables

The following tunables have been added in this release:

**reduce\_java\_signals** This tunable specifies the options that are passed to a JVM when mixing Java and COBOL.

# Known Issues

Refer to the *Known Errors and Restrictions* topic in the *Product Information* section of your product Help.

In addition, note the following:

## COBOL Watchpoints

The debugger ignores a COBOL watchpoint that is hit if there is no statement following the statement that modifies the data on which that watchpoint is set.

## Debugging

There is an issue with "Wait for attachment" when you use Visual COBOL for Eclipse to debug applications that run on some UNIX/Linux platforms. Eclipse connects to the debugger on the remote machine, but might not attach to the process to debug the code.

To work around this issue, ensure that on the remote machine the TMPDIR environment variable is unset or has the same value for both Micro Focus Visual COBOL Development Hub server and for the running process you wish to debug. The Micro Focus Visual COBOL Development Hub server is the server which you started either directly with the \$COBDIR/remotedev/startrdoserver script or indirectly using the daemon which is started with the \$COBDIR/remotedev/startrdodaemon script.

To check the variable used by the Micro Focus Visual COBOL Development Hub server:

1. Open Remote Systems view in Eclipse on the Windows machine.
2. Right-click the **Shells** element of the server connection to be tested and click **Launch Shell**.
3. In the **Remote Shell** view, type `echo $TMPDIR` in the **Command** field, and press **Enter**.

The value of the TMPDIR environment variable is shown - ensure it is the same as the one used by the process to be debugged.



**Note:** The value of TMPDIR used by the Development Hub server cannot be changed in the remote shell and must be set before you start the daemon or server.

## Documentation

- A problem in Visual COBOL results in an error when you try to submit the JCL file as described in the tutorial *Getting started with Visual COBOL for Eclipse* in the product help. To work around this, when you follow the steps in the topic *Importing the BankDemo project and adding the source files*, execute the step *Setting Compiler directives* before executing the step *Specifying the copybook paths for the project*. This ensures the BankDemo projects is rebuilt. The instructions have been updated in the [Micro Focus Infocenter](#) version of the help.
- A known issue in JRE 1.7.0\_45 (issue JDK-8028111) causes problems with searching and indexing the help in the Eclipse help viewer if you are running Eclipse on a machine that has this version of JRE installed.

## Database Access

If you have a remote COBOL project under Eclipse that uses DB2 ECM in Visual COBOL or HCO for DB2 LUW in Enterprise Developer and the DB2 software is not installed on the client machine where you are using the Eclipse IDE, you receive background parsing errors in your application. To resolve the issue, you can do either one of the following:

- Disable background parsing **Window > Preferences > Micro Focus > COBOL > Editor** and disabling the checkbox for **Background parsing**.
- Install the IBM DB2 client-side software on the machine on which you are running Eclipse. Go to the IBM Support Home and locate the page entitled "IBM Download Fix Packs for IBM Data Server Client Packages" .

### Enterprise Server

- The Historical Statistics Facility may generate incorrect records for SSTM-enabled enterprise servers.

### ICETOOL Emulation

ICETOOL emulation for managed code is not available in this release.

### Installation

- Before installing this release as an upgrade to an existing installation of the previous version 2.2 of the product, you must uninstall any HotFixes of 2.2. This is to avoid some problems that might result in files not being installed. This is required only on Windows.
- Before installing this release as an upgrade, ensure you create a back-up of your Enterprise Server configuration. To do this, on the Enterprise Server Administration home page, click Export and then select **Export Enterprise Server configuration and Security Manager definitions**. This creates a backup folder in the c:\programdata\micro focus\Enterprise Developer\MFDS. You can restore the Enterprise Server configuration after installing this release - click Import on the Enterprise Server Administration home page.
- On UNIX, check [UNIX Installer Issues](#) before you start the installation.

### Resource Adapters

Trying to deploy the local resource adaptor `mfcobol-localtx.rar` to WebLogic may fail with a `ClassCastException`. To work around this issue, you need to deploy `mfcobol-xa.rar` first, then need to undeploy this file and deploy the local one, `mfcobol-localtx.rar`. If there are issues deploying using the WebLogic GUI, you can use the command line. If there are issues with this as well, try reducing the length of the command (for example, by moving the file to a location with a shorter path).

# Significant Changes in Behavior or Usage

This section describes significant changes in behavior or usage. These changes could potentially affect the behavior of existing applications or impact the way the tools are used.

The numbers that follow each issue are the Support Incident Numbers followed by the Reported Problem Incident (RPI) number (in parentheses).

- [Compiler](#)
- [Compiler Front-end](#)
- [Documentation](#)
- [J2EE Connector](#)

## Compiler

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- When using the HOSTRW directive with the mainframe dialect, Report Writer will now produce the full range of ASA control characters and will emulate mainframe print files.  
2697615 (1094527)

## Compiler Front-end

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- Fixed Binary (p<=7) is now an 8-bit, signed, 2's complement binary integer by default.

## Documentation

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- The default setting for the MFALLOC\_PCFILE environment variable has changed; the default is now set to Y, which means that when cataloguing a file that has a DCB attribute of DSORG=PS, a physical file is created for it if one does not exist. Previously, the default was set to N, which meant that a file was not created.  
2697571 (1094370)

## J2EE Connector

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- The listSystem.properties file in package com.ibm.ctg.client was missing documentation for some sections.  
(606556)

# Resolved Issues

The numbers that follow each issue are the Support Incident Numbers followed by the Reported Problem Incident (RPI) number (in parentheses).

- [Adis](#)
- [Animator \(Character version\)](#)
- [CAS \(COBOL App Server\) General](#)
- [CAS Admin Console](#)
- [CAS Security](#)
- [CAS XA Switch modules](#)
- [CCI TCP/IP](#)
- [Compiler](#)
- [Codeset Support](#)
- [Data Tools Converter](#)
- [Data Tools Layouts](#)
- [Documentation](#)
- [Enterprise Analyzer Integration](#)
- [Eclipse IDE](#)
- [ES Cluster](#)
- [File Handling: External File Handler](#)
- [HCO for Microsoft SQL Server](#)
- [JVM: Compiler](#)
- [JVM: Run-Time System](#)
- [MF Communications Server](#)
- [MF Directory Server](#)
- [MFA Server](#)
- [MFA SyncMon](#)
- [MFBSI](#)
- [MFIO](#)
- [NCG](#)
- [OO Run-Time System \(32-bit\)](#)
- [Run-Time System](#)
- [Setup Issues](#)
- [SQL: Cobsql](#)
- [SQL: DB2 ECM](#)
- [SQL: HCO for SQL Server](#)
- [SQL: OpenESQL](#)
- [Unassigned](#)
- [Web Service Client](#)
- [XML syntax support runtime](#)

## **Adis**

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- When using X"AF" function 81, screen attributes are now inherited correctly.  
2782580 (1094878)

- Using an ACCEPT statement followed by a display of an OUTPUT RIGHT item and an ERASE EOL item no longer causes a corruption of a screen section.

2695444 (1093924)

### **Animator (Character version)**

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- Programs compiled with the CHARSET(EBCDIC) Compiler directive now show the correct values for Query in the Animator.

2780466 (1094644)

### **CAS (COBOL App Server) General**

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- Using the INPUTMSG parameter for the XCTL and LINK commands is now working correctly.

2790518 (1095805)

- On user syncpoint, a 500-error no longer returns to the client if the application did not issue a WEB SEND.

2780958 (1094671)

- When linking to a program with a channel, the current channel was not always honoured.

2779977 (1094556)

- Enterprise Server is not longer sending a FREEKB to the terminal at the end of a task when there is more work pending for the terminal.

2691707 (1093544)

- You no longer receive an intermittent signal 11 in MFCS during shutdown.

### **CAS Admin Console**

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- When starting an enterprise server instance, the location of the work files may differ depending on whether the instance was started using a browser or from the command line. See the documentation for "system directory" in the topic "Server Instance Properties General".

2660616 (1090612)

### **CAS Security**

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- The es-ldap-update.cmd script has been updated for the Visual COBOL product line. The script is used to install a sample set of security definitions when LDAP-based security is used with Enterprise Server.

### **CAS XA Switch modules**

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- When using HCOSS, if a global temporary table is declared twice, the current transaction will no longer be implicitly rolled back.

2780353 (1094629)

- HCOSS concurrency issues with DECLARED GLOBAL TEMPORARY TABLEs have been resolved. As a result, in this release we no longer support user-defined (i.e., persistent) tables in the SESSION schema.

2697852 (1094184)

- EXEC SQL RESET CONNECTION has been updated and is used to drop Global Temporary Tables at the end of tasks.  
2693269 (1093613)
- EXEC SQL SYNCPOINT has been updated and now correctly handles ON COMMIT actions for DECLARED global temporary tables.  
2682648 (1093611)

## CCI TCP/IP

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- CCITCP client connections could intermittently fail on some platforms due to transient errors in the TCP/IP stack. CCITCP is now more aggressive at detecting and retrying client connections under these conditions. This primarily affects COBOL Web services clients, some Enterprise Server command-line utilities, and Fileshare clients.  
2794263 (1096355)
- INT and CSO modules that use the Casfile API can now successfully connect to SSL-secured Enterprise Server listeners.  
2696022 (1094318)

## Compiler

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- Programs with a mainframe dialect that contain a paragraph declaration that is not preceded by a period and that is previously referenced now compile as expected.  
2793046 (1096112)
- Complex table VALUE syntax is now working as expected.  
2792013 (1095954)
- Compilation no longer hangs when REPLACE and COPY REPLACING is active and the source code has multiple lines ending in a comma.  
2791425 (1095905)
- READ and WRITE statements with the RM filehandler for files defined with the "RECORD VARYING FROM 0 TO ..." syntax now behave as expected.  
2785986 (1095385)
- An INSPECT CONVERTING statement on a subscripted sliding item now executes as expected.  
2785328 (1095244)
- Setting the LINE-COUNT(2) Compiler directive on a project no longer causes the IDE to crash during a background syntax check.  
2784751 (1095114)
- Data items with DBCS characters which are defined as SQL data types are now processed correctly.  
2783799 (1094976)
- The OSEXT and COPYEXT directives now work with quoted names (with or without spaces).  
2780350 (604653)
- Compiling programs that use both the "WITH DEBUGGING MODE" and "IS INITIAL" clauses now produces correct object code.  
2779266 (1094498)
- Programs that use an external report file now execute as expected.  
2698699 (1094352)



- The performance of the syntax constructs "SET ADDRESS OF .. TO ADDRESS OF ..." when using the AMODE compiler directive has been improved.  
2697051 (1094174)
- Using the "Determine Directives" command on a source file that has an asterisk in column one (which is not a Micro Focus-style comment) now returns results as expected.  
2696946 (1094680)
- A MOVE of 'ALL <alphanumeric literal>' to a numeric display item is now correctly emulated under DIALECT(RM).  
2648551 (1089534)
- The IDE now correctly indicates the location of errors in multi-program source.  
2541308 (1081744)
- Using Watch/Quick Watch on a data item with subscripts, where one of the subscripts is also subscripted, now produces the correct results.  
2463792 (1075281)
- A program that exceeds the system limit of 254 DETAIL groups for a report now receives an appropriate error message "COBCH1692S Too many DETAIL groups specified for report".  
2458349 (1096071)

### **Codeset Support**

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- The offset of input segments is now calculated correctly. In order to apply the fix, you must regenerate the MFS source.  
2695463 (1093948)

### **Data Tools Converter**

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- Converting a data file using record layouts will now report an error if a field within the selected record layout exceeds the length of the data file record being converted.  
2699617 (1094446)
- The GUI data file converter no longer terminates data item conversion prematurely when using a record layout with an ODO data item.  
2692803 (1093839)

### **Data Tools Layouts**

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- Creating a record or a segment layout file no longer fails when the COBOL names contain double-byte characters.

### **Documentation**

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- The documentation for the MFBSI CTF trace option has been corrected in the online help. It now reads: mftrace.comp.mfbsi.emx#all = true  
2693323 (1093631)
- The description for the MULTI-NESTED topic under DB2 Compiler Directive Options was incorrect.  
2783274 (1094953)

- The topic about the ILSMARTLINKAGE Compiler directive in the product help now includes information about the `get_Reference()` method (JVM COBOL) and the `.Reference` property (.NET COBOL) that the classes and types generated with ILSMARTLINKAGE produce. If you pass such a class or type as a parameter to a program that receives it "by reference", you need to use the "by reference" object by specifying the `get_Reference()` method or `.Reference` property, respectively. This returns an object that encapsulates the ILSMARTLINKAGE parameter so it be used with a method that is declared as "by reference". You also need to use `get_Reference()` or `.Reference` with the `RunUnit:Call()` method.  
2779516 (1094514)
- The product help now includes an overview of the Eclipse IDE in **Welcome > Introduction to Eclipse** and provides information about how Working Sets work - when you are have enabled a Working Set, Eclipse performs a full build of the projects that are part of that working set or have a file that is part of the working set.  
2694881 (1094169)
- The setup file installs the product and any missing third party software, and will install the Java 7 Update 27. This information is now included in the *Software Requirements* section of the product help.  
2785427 (1095199)
- The setup file installs the product and any missing third party software, and will install the .NET Framework v4.0. This information is now included in the *Software Requirements* section of the product help.  
2672774 (1095057)

## Enterprise Analyzer Integration

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- An issue with the DISPLAY ... LINE statement being unable to process expressions has been fixed.

## Eclipse IDE

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- Executing the "Determine Directives" command on a project with a build configuration that has the "Override project COBOL settings" option enabled now sets the dialect at both build configuration and project level.  
2790210 (1095782)
- The IDE now prevents adding remote folders as linked folders to a remote project unless both the folders and the project are on the same connection. For samba-style projects, it is not possible to map the project to the samba drive.  
2789973 (1096026)
- When importing a Net Express project which has multiple INT and GNT targets into Eclipse, the IDE no longer creates separate projects for each INT or GNT target. Eclipse now creates a single project for all INT/GNT targets and will appropriately select or deselect the file-specific option to generate the `.gnt` file.  
2789861 (1095749)
- When running or debugging a project, the Console Size settings on the Run-time Configuration page within the project's properties was ignored.  
2786714 (1095307)
- You can specify additional object files when linking an application and when the Eclipse build configuration output path is set to a linked directory.  
2781741 (1094863)
- You no longer receive a "Graphic is disposed" error when opening a COBOL file from a CA SCM/Harvest.  
2779498 (1094643)

- You no longer receive error messages for missing copybook files in COBOL projects if they reference COBOL Copybook projects that are stored in a Jazz source control system.  
2697816 (1094507)
- If a COBOL project is specified in a debug launch configuration, the IDE will only build this project and its referenced projects before launching the configuration. Previously, the IDE performed a full rebuild of all projects in the workspace except when you launched a project as part of a COBOL Application configuration that had the "Program is part of project build configuration" option checked.  
2695131 (1093912)
- It is now possible to build JVM projects on remote machines and to use 64-bit JREs to launch COBOL JVM classes.
- This release provides support for remote JVM COBOL projects and for launching the output classes using a 64-bit JRE.

## ES Cluster

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- In a clustered configuration of Enterprise Server, on some platforms, MFCS could crash during startup of an enterprise server instance due to attempting to process communications with the cluster manager before initialization was complete.

## File Handling - External File Handler

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- An automatic close of a file opened in a container no longer causes a rollback.  
2790362 (1095956)
- Previously, a file could be left with its integrity bit set to transactional if a process included a mix of transactional and non-transactional opens and the last close of the file was a non-transactional one.  
2785682 (1095657)
- The transaction log now correctly shows the timestamp for the prepare, commit and rollback operations.  
2784948 (1095162)
- If a VSAM file is opened for an OUTPUT in a RANDOM/DYNAMIC access mode, the file virgin state is changed to a non-virgin even if no records are written to it. If the file is opened for an OUTPUT in a SEQUENTIAL access mode, its virgin state is retained.  
2781975 (1094779)
- The MFALLOC\_PCFILE environment variable now works as expected. Previously, it would be bypassed when the ES\_ALLOC\_OVERRIDE environment variable was also specified.  
2692290 (1093977)
- During Open OUTPUT of a VSE VSAM reusable file, with DISP=OLD, the file is no longer reset; the file is opened in EXTEND mode.  
2638640 (1089073)

## HCO for Microsoft SQL Server

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- When trying to compile an OpenESQL program with an invalid combination of the BIND ACCESS and DBRMLIB Compiler directives, you now receive an error message.  
2694907 (1093864)
- The HCOSS Data Transfer tool now supports SQL Server 2014. The executable for SQL Server 2014 for the command line is: mfdatatransferctlr14.exe.

## **JVM - Compiler**

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- The INSPECT CONVERTING statement, when applied to DBCS data, now produces the expected results when compiling to JVM COBOL.  
2784715 (1095080)
- A STRING statement that has contiguous literal operands with a total length of more than 8192 bytes no longer causes system errors during compilation.  
2700765 (1094513)
- When compiling JVM COBOL, moving subscripted operands to multiple targets now works as expected.  
2695442 (1093923)
- Previously, with JVMGEN on, the Compiler was failing to compile a program that includes a working-storage section with a very large number of VALUE clauses. Although this may still happen in some cases, the incidence of problem programs has been greatly reduced.  
2693676 (1094165)

## **JVM - Run-Time System**

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- Previously, when compiling an application with the JVMGEN Compiler directive and the application included a large number of "value" clauses in the working-storage section, the "value" clauses were not always.  
2784025 (1095274)
- Negative single digit results no longer evaluate to zero.  
2696486 (1094062)

## **MF Communications Server**

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- Certain Enterprise Server administration actions such as notifying a running enterprise server of a security update could cause MFCS to hang.  
2784219 (1095045)

## **MF Directory Server**

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- The Enterprise Server Administration no longer terminates when trying to display a list of users registered on an external Security Manager.  
2788461 (1095505)
- The 64-bit MFDS is now able to read and write XML configuration data.

## **MFA Server**

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- This release provides a fix for abend 0C4 in XDBWWWM0.

## **MFA SyncMon**

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- Previously, PDS members without ISPF statistics caused an error message "Input string was not in a correct format" when processing the timestamp. Now the current time is used. SyncMon2 also downloads the entire PDS every time.

2783738 (1094996)

- The product now displays a useful error message and not an exception when a user specifies an illegal output.
- Removing a rule from the SM2 dialog no longer causes other rules to be removed from the dialog.

## MFBSI

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- Support has been added for the Control-M \$JULIAN/\$GREG/\$WEEK# functions using the Control-M expression or variable parameters.

2698531 (1094301)

## MFIO

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- Specifying a leading ";" in an environment variable containing a file path no longer results in the file not being found.

2693286 (1093707)

## NCG

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- Using a "MOVE alphanumeric-item to numeric-item" statement in programs generated with the CHECKNUM directive now correctly results in a Run-Time System error 163 (invalid numeric data) message.

2796191 (1096340)

- Building programs that use DIALECT(RM) and that contain calls with more than eight parameters no longer fails with a RTS 114 error.

2788746 (1095583)

- An issue with statements of type "compute edited-item = expression", where expression evaluates to a value larger than the value that edited-item can store, and so truncation is required, has been fixed. This only affected Intel x86 32-bit generated code when the HOSTARITHMETIC Compiler directive was set.

2782400 (1094841)

- Compiling code that contains alphanumeric intrinsic functions with very long parameters could previously result in an error at generate time. It now generates successfully.

2782306 (1094942)

- A bug in the MOVE statement where the source item is S9(15)V99 COMP-3 and the target item S9(8)V9(9) comp-3 has been fixed.

2697129 (1094607)

- The performance of arithmetic with COMP-3 items on the 390 platform has been greatly improved.

2683340 (1092877)

- Programs that include 8-byte comp/comp-5 variables in a PERFORM loop termination condition, with the OPT Compiler directive specified, now compiles successfully in 32-bit mode.
- An issue with the code generated for alphanumeric moves on Intel x86-32 when the OPT(4) Compiler directive was specified has been fixed.
- You no longer receive an RTS 114 error when processing invalid directives.

- You no longer receive an RTS 200 error in debuggable generated code (.gnt) programs compiled with the amode(31) Compiler directive.
- A problem with setting breakpoints on some EXEC SQL statements has been fixed.

### **OO Run-Time System (32-bit)**

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- Native object-oriented programs with multiple methods that use local-storage data now execute as expected.

### **Run-Time System**

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- You can now use a configuration file that has a spacey filename to start Audit Manager as a service.  
2785459 (1095200)
- The debugger now displays correctly the content of non-ASCII characters in programs compiled with the CHARSET(EBCDIC) Compiler directive.  
2782246 (1094947)
- In some situations, the processing of a Run-Time System error in an Enterprise Server container could cause the container to hang or crash. This has been fixed.  
2690883 (1094783)

### **Setup Issues**

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- The mfsupport permissions have been modified so that any user with access to the product can now run mfsupport.  
2781319 (1094713)

### **SQL: Cobsq1**

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- COBSQL now correctly processes source lines that only contain a single character at column 72.  
2781493 (1094727)
- COBSQL now correctly processes SQL statements with continuation lines.  
2781299 (1094716)

### **SQL: DB2 ECM**

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- A new directive option, DB2(ALEBRA), has been added to the DB2 ECM preprocessor to prevent ASCII/EBCDIC translation of host variables used in SQL statements. DB2(ALEBRA) is applicable only when using the EBCDIC character set and the Alebra Remote DB2 Access software.  
2789897 (1095736)
- Programs using SQL TYPE AS CLOB compiled with host variables were flagged with COBCH0233S Compiler error because the reserved word "AS" is not supported in mainframe dialects such as Enterprise COBOL. The DB2 pre-compiler now resolves this by adding "AS" as a valid reserved word.  
2698988 (1094584)
- While editing the source code in the IDE during syntax checking, the DB2 pre-compiler sometimes generated incorrect error messages for DECLARE CURSOR statements if they were defined in the WORKING-STORAGE section when the DB2 BACKGROUND PARSING option was set to NONE.

2698133 (1094267)

- COMP-3 host variables prevented the porting of JVM COBOL object code between machines with different byte ordering architectures.

2695871 (1094325)

## SQL: HCO for SQL Server

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- SQL decimal result columns with a maximum precision of 38 could not be retrieved.

2698172 (1094215)

- The HCOSS data conversion tool did not support mainframe DB2 tables and corresponding indexes that were created under different schemas.

2696111 (1094539)

- HCOSS did not correctly extract mainframe syssequence table entries with MAXVALUE greater than 31 digits.

2696106 (1094067)

- When HCOSS converts DB2 TIME() functions, the seconds component will now be truncated rather than rounded in order to match mainframe behavior.

2692917 (1093579)

- HCOSS now supports DB2 multi-row INSERT statements.

2683979 (1094036)

## SQL: OpenESQL

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- The OpenESQL preprocessor incorrectly terminated a host variable lookup resulting in a COBES0109 error.

2795391 (1096265)

- Using a SQL Server fast forward cursor with an ODBC driver that does not support MARS caused a rollback when the cursor was closed.

2793798 (1096126)

- Applications migrated from earlier products that used the tokens ON and ROW\_NUMBER as column names in SQL statements were compiling with errors.

2793301 (1096088)

- The OpenESQL preprocessor produced a compilation error for EXEC SQL select ... INTO <TableName> ... END-EXEC.

2792715 (1096102)

- The OpenESQL runtime for ADO.NET was incorrectly returning the native database error in SQLERRD(1).

2790152 (1095758)

- A problem fetching decimal columns using OpenESQL for ODBC in locales where the decimal point is not '.' has been fixed. In addition, to optimize performance for the majority of ODBC applications, the default setting for SQL(DECDEL) has been changed from NODECDEL to DECDEL=LOCAL. Use an explicit SQL(NODECDEL) directive for Windows applications that change the effective locale dynamically at runtime.

2788986 (1095766)

- The insertion of values larger than 8000 characters from a PIC X host variable into a SQL Server VARCHAR(MAX) column caused an error.

2787574 (1095428)

- Some valid ODBC SQL expressions caused the OpenESQL preprocessor to issue errors when it encountered a 'BY' token.  
2787068 (1095429)
- Valid SQL "PARTITION BY" clauses caused compiler errors when using OpenESQL.  
2786991 (1095386)
- Performance of the OpenESQL runtime system for ODBC required improvement when fetching character data.  
2785410 (1095165)
- The OpenESQL preprocessor generated invalid code resulting in undefined ECM error code 302 when an array host variable was mixed with regular host variables in a parameter list in the EXEC SQL CALL statement.  
2785284 (1095354)
- A memory leak occasionally occurred when multiple prepares of the same dynamic SQL statement existed in the OpenESQL JDBC runtime system.  
2784039 (1095123)
- The OpenESQL preprocessor incorrectly interpreted the SQL CONCAT character as DBCS when using SQL(CONCAT=124) for the CONCAT character, resulting in compilation error.  
2783615 (1094981)
- When compiling for ODBC, the OpenESQL preprocessor now generates an error message, COBES0123, when it encounters an EXEC SQL statement that contains a host or indicator variable that uses a subscript. Subscripts of this type are not supported in ODBC.  
2781022 (1094686)
- The GEN-HV-FROM-GROUP SQL compiler directive option intermittently caused truncation of SQL VARCHAR data type occurrences.  
2780748 (1094649)
- SQL(CHECK) caused compilation errors when compiling source programs containing DBCS characters in column names. Programs containing DBCS characters in column names that were compiled using SQL(NOCHECK) caused runtime errors.  
2780185 (1094588)
- The GEN-HV-FROM-GROUP compiler directive option has been added to the OpenESQL preprocessor to support the selection of multiple levels in a group item. Specify SQL(GEN-HV-FROM-GROUP) when compiling to generate host variables for each elementary definition in a group record.  
2699622 (1094395)
- OpenESQL for JDBC did not correctly open insensitive cursors.  
2699442 (1094415)
- OpenESQL Assistant was inconsistently inserting the query function in the "B" area for queries and column 8 for other code.  
2697908 (1094190)
- The OpenESQL preprocessor sometimes incorrectly defined host variables when an indicator variable array was used with an SQL statement.  
2696332 (1094052)
- You no longer receive errors when parsing Oracle INTERVAL expressions.  
2694071 (1094337)
- A problem that prevented a COBOL stored procedure from being called from a nested trigger has been fixed.  
2690749 (1094042)



- The restriction that program names in an application must be unique in the first 24 characters in order for OpenESQL to handle cursors correctly has been increased to 30 characters. This is to restore backwards compatibility with earlier Micro Focus products.

2685901 (1093808)

- HCOSS now provides better control for ODBC applications that use data that:
  - o Uses the DATE and TIME formats specified by SQL(DATE) and SQL(TIME)
  - o Is stored as character data in the databaseYou can now do any of the following:
  - o Specify host variable types to use with DETECTDATE.
  - o Set the ODBC runtime to determine parameter data types by querying the server (this option uses additional runtime overhead).
  - o Tag string literals in SQL statements with special SQL comments that specify the type of literal. With this option, literals tagged with /\*#CHAR\*/ are not reformatted when SQL(DIALECT=MAINFRAME) is set.

2685625 (1093540)

### **Unassigned**

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- A channel created by a program invoked by a CALL statement is now visible to the programs running at the same level.

2698335 (1094225)

### **Web Service Client**

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- Namespaces not declared on the schema root, i.e. declared either with an element declaration or on the WSDL root, will now be processed properly and no longer ignored.

2583853 (1085102)

### **XML syntax support runtime**

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- The HTMLPP preprocessor now handles copybooks with filenames longer than eight characters correctly.

2783315 (1095092)

# Updates and SupportLine

Our Web site gives up-to-date details of contact numbers and addresses.

## Further Information and Product Support

Additional technical information or advice is available from several sources.

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

- The WebSync service, where you can download fixes and documentation updates.
- The Knowledge Base, a large collection of product tips and workarounds.
- Examples and Utilities, including demos and additional product documentation.

To connect, enter <http://www.microfocus.com> in your browser to go to the Micro Focus home page.



**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, [www.microfocus.com](http://www.microfocus.com). 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.

## Information We Need

However you contact us, please try to include the information below, if you have it. The more information you can give, the better Micro Focus SupportLine can help you. But if you don't know all the answers, or you think some are irrelevant to your problem, please give whatever information you have.

- The name and version number of all products that you think might be causing a problem.
- Your computer make and model.
- Your operating system version number and details of any networking software you are using.
- The amount of memory in your computer.
- The relevant page reference or section in the documentation.
- Your serial number. To find out these numbers, look in the subject line and body of your Electronic Product Delivery Notice email that you received from Micro Focus.

On Windows, if you are reporting a protection violation you might be asked to provide a dump ( `.dmp` ) file. To produce a dump file you use the **Unexpected Error** dialog box that is displayed when a protection violation occurs. Unless requested by Micro Focus SupportLine, leave the dump setting as `Normal` (recommended), click **Dump**, then specify a location and name for the dump file. Once the dump file has been written you can email it to Micro Focus SupportLine.

Alternatively, you might be asked to provide a log file created by the Consolidated Tracing Facility (CTF) - a tracing infrastructure that enables you to quickly and easily produce diagnostic information detailing the operation of a number of Micro Focus software components.

On UNIX, you can use the Micro Focus UNIX Support Scan Utility, `mfsupport`, to create a log file that contains the details about your environment, product, and settings. The `mfsupport` script is stored in `$COBDIR/bin`.

To run `mfsupport`:

1. Start a UNIX shell.

2. Set COBDIR to the product with issues.
3. Execute `mfsupport` from a directory where you have write permissions.

This creates a log file, `mfpoll.txt`, in that directory.

4. When the script finishes, send the `mfpoll.txt` file to your Micro Focus SupportLine representative.



**Note:**

If COBDIR is set to a location that does not contain `etc/cobver`, the script outputs the contents of `/opt/microfocus/logs/MicroFocusProductRegistry.dat` which keeps a list of the installed Micro Focus products.

## Creating Debug Files

If you encounter an error when compiling a program that requires you to contact Micro Focus SupportLine, 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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