Micro Focus Visual COBOL 2.2 Update 2 for ISVs

Release Notes

Contents

Micro Focus Visual COBOL 2.2 Update 2 for ISVs Release Notes

The Micro Focus Visual COBOL for ISVs package comprises the following products which you can download from your Electronic Product Delivery Note:

- Visual COBOL for Visual Studio - delivers the richest development experience for COBOL programming available on Windows using either Microsoft's Visual Studio 2010 or Visual Studio 2012 integrated development environments. Visual COBOL supports the development and deployment of both managed .NET and native code applications.

  Note: The product is available in two variants - Visual COBOL for Visual Studio 2010, and Visual COBOL for Visual Studio 2012.

  Visual COBOL for Visual Studio 2010 and Visual COBOL for Visual Studio 2012 each target a different version of the COBOL run-time system - COBOL Server 2010 and COBOL Server 2012 respectively.

  Ensure that after you've edited the project in the preferred version of Visual Studio, you compile your source code in that version of Visual COBOL which targets the version of the COBOL run-time in which you want your applications to run.

  For example, if you build your application using Visual COBOL for Visual Studio 2010 you cannot deploy the target files to COBOL Server 2012; you must use COBOL Server 2010.

- Visual COBOL for Eclipse - provides an Eclipse-based integrated COBOL development environment for Windows or Linux. Provides COBOL JVM support and enhanced compatibility with ACUCOBOL. Can be used standalone for developing local applications or in conjunction with the Development Hub to develop remote projects in Linux and UNIX.
- Visual COBOL Development Hub - provides a rich desktop development environment based on the Eclipse IDE with high-performance server-based tools for managing builds, source code access and debugger engine. The Development Hub also provides a central administration site, simplifying the development tool distribution and maintenance process.

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

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.

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.

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.

System Requirements

System Requirements for Visual COBOL for Visual Studio

Hardware Requirements

Visual COBOL has the following requirements in addition to the requirements of Microsoft Visual Studio. See the Visual Studio documentation for details of the Microsoft requirements.

The disk space requirements are, approximately:

Platform	Visual COBOL	Sentinel RMS License Manager
x86 Windows platforms	250MB	25MB
x64 Windows platforms	350MB	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: If you are using Visual COBOL on a 64-bit operating system, you can produce either 32-bit or 64-bit applications.

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:

- Visual COBOL for Visual Studio 2012 is not supported on versions of Windows earlier than Windows 7.
- The Enterprise Server feature is not supported on Windows XP.

Software Requirements

Visual Studio IDE

This product requires any of the following versions of Visual Studio:

- A full version of Microsoft Visual Studio 2010 or 2012 Premium, Professional, or Ultimate edition, or the respective version of Microsoft's Visual Studio Integrated Shell.

  Note:

  - Microsoft Visual Studio Express Edition is not supported.
  - You can download the Visual Studio Integrated Shell from the *Microsoft Download Center*. If you choose to install the Shell, ensure you run the installer to complete the installation - run `vsintshell.enu.exe` from the location where you installed the download.
- If you do not have any of these versions of Visual Studio installed, the setup file will install the Visual Studio Integrated Shell.

- Microsoft Windows SDK is required if you are using the Visual Studio Shell. See the *Microsoft Download Center* and search for Windows SDK.
- Microsoft .NET Framework 4.0. This is included with the above versions of Visual Studio.
- Microsoft .NET Framework 4.5. This is included with Visual Studio 2012.

> **Note:**
> - Visual Studio 2010 Service Pack 1 is required if you are using Visual COBOL for Visual Studio 2010 and Visual COBOL for Visual Studio 2012 on the same machine. If you are connected to the Internet, the setup file downloads and installs Visual Studio 2010 Service Pack 1 automatically. If you do not have Internet access, you need to download Visual Studio 2010 Service Pack 1 on a machine that has Internet connection, and then copy the installer to your machine.
> - In addition, when building a native COBOL project that contains resources you must replace the `cvtres.exe` in the `bin` and `bin64` directories of your Visual COBOL installation with the version of the file which gets installed with Visual Studio 2010 SP1. You can download Service Pack 1 for Visual Studio 2010 from the *Microsoft Download Center*.

Other Requirements

> **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*.

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*.

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	☑	☑

Library	Platform	
	Red Hat 6.*x*	Red Hat 7
gtk2-*.i686	☑	☑
gtk2-engines.*.i686	☑	-
gtk2-engines.*.s390	☑	-
gtk2-engines.*.x86_64	☑	☑
libXtst-*.x86_64	☑	☑
libXtst-*.i686	☑	☑
libcanberra-gtk2-*.x86_64	☑	☑
libcanberra-gtk2-*.i686	☑	☑
libgnome.x86_64	☑	☑
libgnome.i686	☑	☑
PackageKit-gtk-module-*.x86_64	☑	☑
PackageKit-gtk-module-*.i686	☑	-
PackageKit-gtk-module-*.s390	☑	-
PackageKit-gtk3-module-*.i686	-	☑
PackageKit-gtk3-module-*.s390	-	☑
webkitgtk.x86_64	☑	-
webkitgtk.i686	☑	-
webkitgtk3.x86_64	-	☑
webkitgtk3.i686	-	☑
xterm (any version)	☑	☑

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*.

System Requirements for Visual COBOL Development Hub

Hardware Requirements for Micro Focus Visual COBOL Development Hub

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)
POWER running AIX	361	1.44	722	33
HP IA	695	2.7	1390	61
System Z running Red Hat Linux	315	1.26	630	34
x86-64 running Red Hat Linux	324	1.3	648	40
SPARC running Solaris	370	1.48	740	38
x86-64 running Solaris	346	1.38	692	30
System Z running SuSE SLES	319	1.28	638	34
x86-64 running SuSE SLES	328	1.31	656	40

Operating Systems Supported

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

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	☑	☑
gtk2-*.i686	☑	☑
gtk2-engines.*.i686	☑	-
gtk2-engines.*.s390	☑	-
gtk2-engines.*.x86_64	☑	☑
libXtst-*.x86_64	☑	☑
libXtst-*.i686	☑	☑
libcanberra-gtk2-*.x86_64	☑	☑
libcanberra-gtk2-*.i686	☑	☑
libgnome.x86_64	☑	☑
libgnome.i686	☑	☑
PackageKit-gtk-module-*.x86_64	☑	☑
PackageKit-gtk-module-*.i686	☑	-
PackageKit-gtk-module-*.s390	☑	-
PackageKit-gtk3-module-*.i686	-	☑
PackageKit-gtk3-module-*.s390	-	☑
webkitgtk.x86_64	☑	-
webkitgtk.i686	☑	-
webkitgtk3.x86_64	-	☑
webkitgtk3.i686	-	☑
xterm (any version)	☑	☑

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 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 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*.

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*.

Installation

Installing Visual COBOL for Visual Studio

Installation restrictions and requirements

Before starting the installation you should consider the following:

- If, when you install Visual COBOL for Visual Studio 2010, the machine does not have Microsoft Visual C++ 2010 Redistributable Runtime already installed, it is installed as required by Visual COBOL. The installation of Microsoft Visual C++ 2010 Redistributable Runtime adds a number of `.dll` files, without digital signatures, into the `winsxs` directory.
- If, when you install Visual COBOL for Visual Studio 2012, the machine does not have Microsoft Visual C++ 2012 Redistributable Runtime already installed, it is installed as required by Visual COBOL. The installation of Microsoft Visual C++ Redistributable Runtime adds a number of `.dll` files, without digital signatures, into the `winsxs` directory.
- If you are installing this as an upgrade, make sure that none of the product files are in use when you start the installation. Also, the Visual Studio Help Viewer must not be opened.
- You need to be logged in with a user-ID that has write access to the registry structure under HKEY_LOCAL_MACHINE, HKEY_CLASSES_ROOT, and HKEY_CURRENT_USER so the installation software can set the environment appropriately. You also need to be logged on with Administrator privileges.

- Before installing this product, make sure that any existing Micro Focus Directory Server (MFDS) or CCITCP2 Windows service (on Windows) or a process (on UNIX) from an existing product is stopped and uninstalled. On Windows, do this as follows:

  1. Stop the MFDS and CCITCP2, using either the Windows Service Management Console GUI (`services.msc`) or from a command line prompt by typing:

     ```
     net stop mf_ccitcp2
     ```

     Only one instance of the MFDS or CCITCP2 service can run on a Windows machine.
  2. Uninstall the MFDS or CCITCP2 service.

     For MFDS, from a command line prompt enter: `mfds -u`

     For CCITCP2: `ccitcp2 -u`

To run an earlier version of MFDS as a service after you have installed a later version:

1. Stop and uninstall the MFDS service, as described above.
2. Reinstall the earlier version, as follows:

   a. Open a Visual COBOL command prompt.
   b. Install the service. Enter the following command: `mfds -i`
   c. Start the service. Enter the following command: `net start mf_ccitcp2`

   Note: The two versions use different paths for environment and registry values, so the list of configured enterprise servers might be different depending on which version has been started, since, by default, different MFDS data repositories are used.

MFDS 5.1 and later are able to import or use Enterprise Server configuration data generated by earlier versions of MFDS, but 5.0 or earlier versions of MFDS might not be able to read data generated by later versions.

It is possible to run MFDS from a command prompt ("mfds") rather than as a service, but by default the "mfcobol" port is used (86) and this can only be used by one process at a time

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.

You can download Visual COBOL for Visual Studio 2012 from the Micro Focus SupportLine Web site and from the *Product Updates* section.

Installing Visual COBOL for Visual Studio

> **Note:** 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.

To install this product:

1. Run the `vcvs2010_22.exe` (or `vcvs2012_22.exe` when installing the product for Visual Studio 2012) file and follow the wizard instructions to install the prerequisite software and the product.

> **Note:**
> - When the installation has completed, on some editions of Windows you might receive a notification that Visual Studio 2012 has compatibility issues. This is a Microsoft's known problem. To resolve it, follow the instructions in the notification for obtaining help online, or download the KB2781514 update for Visual Studio 2012 from the *Microsoft Download Center*.
> - 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 Visual Studio and 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 as an Upgrade

This release will update existing installations 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.

After Installing

You are now ready to run Visual COBOL. From the Windows taskbar click **Start > All Programs > Micro Focus Visual COBOL > Visual COBOL for Visual Studio** *nnnn*.

Note: The Start menu is not available on Windows 8 and Windows Server 2012. You use the Start screen to invoke programs.

Note: For applications created with earlier Micro Focus products or earlier versions of Visual COBOL, note the following:

Database Access	Managed applications using SQL(DBMAN=ODBC) that were compiled in Visual COBOL 2.1 Update 1 must be recompiled in Visual COBOL 2.2 Update 2.
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 */
```

Please refer to the *Start Here* and *Product Information* sections in your product Help. Here, you will find information on getting started including tutorials and demonstration programs.

Note:

- The first release of Visual Studio 2010 has a browser-based help system, Microsoft Help Viewer 1.0, which does not include an index for the locally-installed help. Navigation of the content is only available using the table of contents and Search and the help contents for the Help system does not expand and collapse in the same way as previous Help systems.
- If you have problems trying to view the Micro Focus help, ensure that the Visual Studio Help Library is pointing to local help. From the Visual Studio menu click **Help > Manage Help Systems > Choose online or local help** and check the **I want to use local help** button.
- Visual Studio 2010 SP1 provides an upgrade of the help system, Microsoft Help Viewer 1.1, which provides a stand-alone help viewer with an index and a fully expandable table of contents.
- If you do not want to install Visual Studio 2010 SP1, you can install some third-party tools that enable the index or the fully expanding table of contents. For more information, see the topic *Help on Help*.

- To view the help in Visual Studio 2012, ensure that the Visual Studio Help Library is pointing to local help. From the Visual Studio menu click **Help > Set Help Preferences > Launch in Help Browser**.
- For full details of the Visual Studio 2012 Help system, see the locally installed Microsoft Help Viewer 2.0 Help, which is available from Help menu in the IDE.
- On Windows 8 and Windows Server 2012, an issue with Microsoft Help Viewer 2.0 and Internet Explorer's security being turned on can cause the Help content to be displayed as raw HTML code. To resolve the issue, you need to turn off the Internet Explorer Enhanced Security Configuration (IE ESC) for both administrators and users. Check the Microsoft Windows help for more information on how to do this.

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.

> **Note:** 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.

Some registry entries are not removed by the uninstallation process and you need to manually delete them.

The following folders might not be removed:

- The `Micro Focus Product Name` folder in the Start menu - you can delete it manually.
- `%systemdrive%\Users\Public\Documents\Micro Focus` - includes the binaries and the log files of the samples which you have built.
- `%ProgramData%\Micro Focus` - includes some data files used by the Micro Focus licensing system.
- `%Program Files%\Micro Focus` - you can delete it manually.

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
```

In addition, the following registry entries are not removed. These are created the first time that an Enterprise Server that has been enabled for performance monitoring starts up:

- Micro Focus Server\Performance\Active Servers
- Micro Focus Server\Performance\PerfIniFile

Installing Visual COBOL for Eclipse (Windows)

Installation restrictions and requirements

Before starting the installation, you should consider the following:

- Visual COBOL and COBOL Server cannot coexist on the same machine.
- Visual COBOL and Enterprise Developer cannot coexist on the same machine.

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 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:**
> - When the installation has completed, on some editions of Windows you might receive a notification that Visual Studio 2012 has compatibility issues. This is a Microsoft's known problem. To resolve it, follow the instructions in the notification for obtaining help online, or download the KB2781514 update for Visual Studio 2012 from the *Microsoft Download Center*.
> - 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 Visual Studio and 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 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 or earlier versions of Visual COBOL, note the following:

Database Access	Managed applications using SQL(DBMAN=ODBC) that were compiled in Visual COBOL 2.1 Update 1 must be recompiled in Visual COBOL 2.2 Update 2.
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
```

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 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 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`.

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.

Installing Visual COBOL Development Hub

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

Note:

During the installation process, the installer configures the product's Enterprise Server System Administrator Process User ID. The Process User ID will be the owner of all Enterprise Server processes except the one for the Micro Focus Directory Server (MFDS). The Directory Server process (Enterprise Server Administration) runs as root as this allows it to access the system files and ports.

All Enterprise Server processes you start from Enterprise Server Administration run under the Process User ID which can affects the file access and creation.

By default, the installer uses the login id of the user that runs the installer for the Process User ID. To change the user id after you complete the installation, execute `$COBDIR/bin/casperm.sh`.

These are the steps to install this product:

1. Give execute permissions to the setup file:

```
chmod +x setup_visualcobol_devhub_2.2_update2_platform
```

2. Run the installer with superuser permissions:

```
./setup_visualcobol_devhub_2.2_update2_platform
```

If you don't run this as superuser you will be prompted to enter the superuser password during the installation.

The COBOL environment is installed by default into `/opt/microfocus/VisualCOBOL`, (COBDIR).

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

```
./setup_visualcobol_devhub_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.

You can use the following options to configure the Enterprise Server installation: `[ -ESsysLog="location" ] [ -ESadminID="User ID" ] [ -CASrtDir="location" ]`, where:

-ESsysLog Specifies a location in which the build will create the Enterprise Server System log file - for example, `-ESsysLog="/home/esuser/logs"`. The default location is `/var/mfcobol/logs`.

-ESadminID Sets the Enterprise Server System Administrator Process User ID from the command line - for example, `-EDadminID="esadm"`. The default user ID is the one that runs the installer.

-CASrtDir Specifies the location were the Enterprise Server run-time system files are placed - for example, `-CASrtDir="/home/esuser/casrt/es"`. The default location is `/var/mfcobol/es`.

> ✏ **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_devhub_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.

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.

> ✏ **Note:** For information about the Micro Focus Visual COBOL Development Hub, check the help for Visual COBOL for Eclipse that is available online on the *Micro Focus Infocenter*.

Installing as an Upgrade

This release works concurrently with the previous version of Micro Focus Visual COBOL Development Hub, 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/VisualCOBOL`, 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/VisualCOBOL /opt/microfocus/VisualCOBOLversion
     ```
  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 Micro Focus Visual COBOL Development Hub installer with the –installlocation option:

  1. Execute the following command:

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

> **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/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.

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
   ```

Configuring the Remote System Explorer Support

The remote development support from the Eclipse IDE relies upon Visual COBOL Development Hub running on the UNIX machine and handling all requests from the IDE for building and debugging programs. Visual COBOL Development Hub provides a UNIX daemon, the Remote Development Option (RDO) daemon, which initiates the RDO as Eclipse clients connect to it. Whichever environment is used to start the RDO daemon will be inherited for all servers and hence all build and debug sessions.

Configuring the Environment

You may need to configure some aspects of the environment before you start the daemon. This is because when a build or debug session is initiated on the Development Hub from one of the Eclipse clients, the environment used will be inherited from whatever was used to start the daemon. A typical example of the kind of environment that might need to be set up would include database locations and settings for SQL access at build/run time.

Starting the Daemon

> **Important:** Before starting the daemon you must have the following on your UNIX machine:

- a version of Perl
- a version of Java
- the `as` (assembler) and `ld` (linking) programs on the path, as specified by the PATH environment variable

To start the daemon on the default port (4075) as a background process, perform this command with superuser authority:

```
$COBDIR/remotedev/startrdodaemon
```

The daemon will now listen for any Eclipse client processes connecting to that machine on port 4075. If you want to use another port, specify another port number on the `startrdodaemon` command.

The daemon can also be configured to instantiate the servers on a specified port or range of ports. This is particularly relevant when you want to only open certain ports through a firewall. To do this, perform this command with superuser authority:

```
$COBDIR/remotedev/startrdodaemon [<port> | <low port>-<high port>]
```

where:

- *<port>* is the port number the daemon should use to listen for connections from Eclipse on the client machine. If no value is given, it will be assigned a default value of 4075. This value matches the value assigned within the Eclipse installation.

  For example,

  ```
  $COBDIR/remotedev/startrdodaemon 4999
  ```

  This command will start a daemon listening on port 4999 and will use random server ports.
- *<low port>-<high port>* is the range of ports on which the servers (launched by the daemon) should use to communicate with Eclipse on the client machine.

  For example,

  ```
  $COBDIR/remotedev/startrdodaemon 4080 4090-4999
  ```

  This command will start a daemon listening on port 4080 and server ports will be in the range 4090 to 4999.

Stopping the Daemon

To stop the daemon, type the following command with superuser authority:

```
$COBDIR/remotedev/stoprdodaemon <port>
```

Repairing on UNIX

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_VisualCOBOLDevelopmentHub2.2.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:**
> - This package provides eight licenses for using Micro Focus Development Hub on all platforms.
> - 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 Help > Product LicensingHelp > 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 **AuthorizeFinish** to install the license.

   You should see a dialog box with a confirmation that the licenses have been installed successfully.

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

Visual Studio Support

Visual COBOL provides enhancements in the following areas:

- Call Hierarchy - support for the Call Hierarchy window has been enhanced and it now shows types and members across the entire solution.
- Debugging enhancements - includes enhanced support for the Autos windows for native and managed COBOL, support for querying EBCDIC data in managed code, and support for the standard visualizers for data items and groups in native COBOL.
- Expanded Copybook View (only supported in Visual Studio 2012 and Visual Studio 2013) - now supports Intellisense, collapsing and expanding of outlining regions, and code snippets.
- Find All References - you can now configure the scope of the Find All References command. The default behavior is to search for references in the current COBOL project and now, you can enable Find All References to search for matches in all managed COBOL projects that are part of your solution.
- Net Express Project Import wizard - now includes a number of usability enhancements.
- Run-time configuration - you can now use the application configuration file, `Application.config`, in native COBOL projects to set all run-time tunables.

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 for Eclipse provides Dead Code analysis.

Visual COBOL for Visual Studio can produce the following reports:

- Dead Code - finds unreferenced items or any piece of code that can't be reached during execution.
- Unreferenced Data - finds any data items that are not explicitly referenced in the Procedure Division of a program.
- Undeclared Procedures - finds any procedures that are referred to but not defined.
- Copybook Structure - displays the hierarchy of any copybooks defined in a program.
- Program Statistics - provides general information, such as number of source code lines, number of data items, and size of data items.
- Unexecuted Procedures - finds any procedures that are defined but not referred to.

Database Access

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

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:

ASP.NET

It is not possible to run ASP.NET Web Sites or Web Services on a production machine (one that has Micro Focus COBOL Server installed) without an additional setup. This is because the production machine does not contain development tools such as the COBOL Compiler. To workaround this, you need to do the following steps:

1. Compile the site prior to deploying it using the **Publish Web Site** command in Visual Studio.
2. Edit the `.asmx` file of the Web service project or the `.aspx` file of the Web site and delete the `Language="COBOL"` statement.
3. Edit the `Web.config` file with a text editor and delete the line which contains: `<compiler language="COBOL"...`
4. Ensure that a .NET Server license is installed using Apptrack.

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.

- In Visual Studio 2012, clicking **Help** > **Micro Focus Product Help** > **Product Documentation** results in the message "Cannot find requested topic on your computer". If you see this message, click Micro Focus Visual COBOL 2.2 for Visual Studio 2012 in the **Contents** tab to display the documentation as expected.
- If you install Visual COBOL for Visual Studio 2012 and its documentation is not available in the Microsoft Help Viewer, perform the following steps:

  1. In Visual Studio 2012, click **Help** > **Add and Remove Help Content**.
  2. Choose the **Manage Content** tab.
  3. Check the **Disk** radio button, then navigate to the folder containing the Visual COBOL for Visual Studio 2012 documentation. By default, this is `C:\Program Files (x86)\Micro Focus\<product name>\help`.
  4. Select `helpcontentsetup.msha` and click **Open**.
  5. In the content list, click **Add** next to the Visual COBOL entry.
  6. Click **Update**.
  7. Click **Yes** on the User Account Control and Microsoft Help Viewer 2.0 dialog boxes to enable the update to continue.

  The documentation for Visual COBOL for Visual Studio 2012 is added to the Microsoft Help Viewer.

  > **Note:**
  >
  > This problem only occurs if you install Visual COBOL for Visual Studio 2012 while documentation for Visual Studio 2012 is being downloaded or updated, which typically happens when you install Visual Studio 2012 or run it for the first time.

- 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.

Expanded Copybook View (in Visual Studio 2012)

- When you add a COPY statement in a COBOL program and then show it in Expanded Copybook View, the line for the copybook statement is read-only. If you then perform an Undo in the COBOL program, the COPY statement is removed while the contents of the copybook is still shown in the program.
- **Replace All** does not work inside the Expanded Copybook View
- For copybooks with file extensions that are not traditionally associated with COBOL you must first add the file extension to the list of known copybooks extensions in

	Tools > Options > Text Editor > File Extensions before you can show them in Expanded Copybook View.
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.
	• When installing this product for Visual Studio 2010, if you already have Visual Studio 2010 Isolated Shell with Service Pack 1 (SP1) installed, you might experience problems with starting Visual Studio after the installation. This is a Microsoft issue relating to the Integrated Shell (installed as part of the Micro Focus product installer) overwriting some Visual Studio SP1 components. To resolve the issue you need to repair Visual Studio 2010 SP1.
	• On UNIX, check *UNIX Installer Issues* before you start the installation.
Native COBOL	On Windows XP, when building a native COBOL application in Visual Studio, a dialog may pop up with error "Unhandled exception at 0xc0006866 in cobol.exe: 0xC0000005: Access violation reading location 0xc0006866)". This is caused by Symantec antivirus runtime protection. To resolve this, you need to apply the following fix from Symantec: *http://www.symantec.com/business/support/index? page=content&id=TECH97280&locale=en_US*.
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).
Visual Studio IDE	• In the properties of a managed project, the **Application** page currently allows you to select any of the static methods in the application as a **Startup** object. This is incorrect. You should always set only the first static method or the program name as a Startup object in order for the project to build.
	• Using Call Hierarchy locks the source files currently opened in the editor. To work around this problem, you need to trigger a syntax check - for example, by making a small change to one of the open files.

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

Back to the list

- 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

Back to the list

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

Documentation

Back to the list

- 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

Back to the list

- 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).

- *.NET Compiler*
- *.NET ESQL Support*
- *.NET Run-Time System*
- *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*
- *Visual Studio IDE*
- *Web Service Client*
- *XML syntax support runtime*

.NET Compiler

Back to the list

- Comparisons between PIC N or PIC G items and ALL hex-literals are now working correctly.

  2795393 (1096266)
- The CURRENT-DATE function, using reference modification with an implied length (e.g. FUNCTION CURRENT-DATE(3:)), now behaves as expected when compiled to managed COBOL.

  2788009 (1095691)
- In Managed COBOL only, an unreferenced elementary field of an "IS EXTERNAL" data item would not be initialized by the INITIALIZE verb, even though the containing group item was referenced. This is now working correctly.

  2787385 (1095405)
- The performance of the .NET Compiler has been enhanced. Previously, programs that included multiple pointers and comp-5 items with value clauses could take a long time to load. The use of the XML preprocessor could lead to this condition, since it generates data of this type.

  2784731 (1095278)
- Correct behavior is now being displayed when the INITIALIZE statement is used on DBCS data, where the initializing literal is a single-byte alphanumeric.

  2784714 (1095079)
- Exponentiation with a literal exponent of 2 (or multiple of 2) on a signed field is now working as expected. In previous versions of the product, such an operation could lead to invalid code.

  2784503 (1095063)
- Compatibility of SPZERO with native COBOL code has been improved in the following two cases: 1) If a-9 = space (where a-9 is defined as pic 9(n) DISPLAY) With SPZERO on, this comparison will now always yield a false result. 2) Move a-x to a-9 (where a-x is pic x(n) and a-9 is pic 9(n)) In the case where a-x contains spaces, this move will now result in a-9 containing zeroes.

  2676477 (1093768)

.NET ESQL Support

Back to the list

- When using OpenESQL for ADO.NET, the first execution of a statement for SQL Server no longer locks the varbinary host variable sizes.

  2791617 (1095920)
- The OpenESQL pre-compiler sometimes generated incorrect code if a PIC X(n) VARYING host variable was used in a COBOL JVM project.

  2787380 (1095934)
- The managed SQL run-time system now correctly handles variable string lengths for both 49-level COMP fields and 49-level COMP-5 fields.

  2782088 (1094793)
- The OpenESQL native ODBC wrapper used in managed applications would sometimes incorrectly set index past the end of table before moving information to the table which resulted in a COBOL subscript error.

  2780447 (1094665)

.NET Run-Time System

Back to the list

- In managed code, multiple processes using the same input file in a SORT statement will no longer get intermittent open failures.

  2790155 (1095759)

Adis

Back to the list

- 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)

Back to the list

- 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

Back to the list

- 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

Back to the list

- 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

Back to the list

- 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

Back to the list

- 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

Back to the list

- 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

Back to the list

- 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

Back to the list

- 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

Back to the list

- 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

Back to the list

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

Documentation

Back to the list

- 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

Back to the list

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

Eclipse IDE

Back to the list

- 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

Back to the list

- 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

Back to the list

- 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

Back to the list

- 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

Back to the list

- 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

Back to the list

- 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

Back to the list

- 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

Back to the list

- 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

Back to the list

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

MFA SyncMon

Back to the list

- 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

Back to the list

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

  2698531 (1094301)

MFIO

Back to the list

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

  2693286 (1093707)

NCG

Back to the list

- 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)

Back to the list

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

Run-Time System

Back to the list

- 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

Back to the list

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

  2781319 (1094713)

SQL: Cobsql

Back to the list

- 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

Back to the list

- 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

Back to the list

- 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

Back to the list

- 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 database You 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

Back to the list

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

  2698335 (1094225)

Visual Studio IDE

Back to the list

- When debugging a native COBOL program and querying an alphanumeric data item, you now have access to the visualisers to view the data.

  2785437 (1095170)
- A problem where WPF event handler methods were not created in the code when using Visual Studio 2013 Update 2 has been resolved.

  2782479 (1094867)
- All run-time tunables can now be set using the Application.config file in the Visual Studio IDE.

  2779522 (603989)
- The SQL page in the project's properties now handles SQL(NOINIT) correctly.

  2697905 (1094189)
- Using the left button of the mouse to click in the editor margin below the end of a source file no longer causes an exception to occur.
- The Create New Enterprise Server dialog no longer loses track of the location of the server templates.

  (604449)
- After installing or updating the product, the options in **Tools > Options > Text Editor > Micro Focus COBOL** are now set correctly.
- Previously, using the call hierarchy would lock some source files until the next time the IDE performed a syntax check.
- If you used the OF or IN phrase with a COPY statement, it was not possible to show the corresponding copybook in the Expanded Copybook view or open it using the **Open Document** command. This fix is not available for copybooks stored in library files (where you have used the COPYLBR Compiler directive).

- If the Call Hierarchy is requested for the same named item in more than one program both items are now displayed.
- When navigating from the results in the Call Hierarchy window, the caret is now correctly positioned at the beginning of a method name, paragraph name or section name.
- If a copybook contains multiple consecutive COPY statements, showing those consecutive copybooks no longer causes Visual Studio to display an exception message.
- When stepping from a program into another program and directly into a copybook referenced using COPY... REPLACING, the expanded copybook view now correctly shows the contents of the copybook with the replaced values.
- If you opened a source file in more than one view and if you then attempted to debug that file, the debugger could sometimes fail to step into the expanded copybooks view and could sometimes show other unpredictable behaviour.
- When adding existing files to a native mainframe subsystem project, the Add Existing Item dialog now shows the correct set of files.

Web Service Client

Back to the list

- 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

Back to the list

- 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*. 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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