



# **Micro Focus Enterprise Test Server 2.1**

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A decorative graphic consisting of a thick, blue, glossy ribbon that curves and loops across the lower half of the page. The ribbon has a gradient from dark blue to light blue, giving it a three-dimensional appearance.

**Release Notes**

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# Contents

<b>Micro Focus Enterprise Test Server Release Notes</b> .....	<b>4</b>
<b>Installation</b> .....	<b>5</b>
Installing on Windows .....	5
System Requirements for Enterprise Test Server for Windows .....	5
Installing Enterprise Test Server for Windows .....	6
<b>Licensing Information</b> .....	<b>12</b>
<b>What's New</b> .....	<b>13</b>
Features Added in Enterprise Test Server 2.1 .....	13
<b>Known Issues</b> .....	<b>17</b>
<b>Resolved Issues</b> .....	<b>18</b>
<b>Updates and SupportLine</b> .....	<b>26</b>
Further Information and Product Support .....	26
Information We Need .....	26
Creating Debug Files .....	26
<b>Disclaimer</b> .....	<b>28</b>

# Micro Focus Enterprise Test Server Release Notes

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



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

Enterprise Test Server is a test execution environment that allows you to test mainframe applications on a low cost Windows platform. Test Server can be used to relieve the mainframe test bottleneck by allowing you perform a substantial part of your application testing on Windows prior to moving the application back to the mainframe for final pre-production testing and deployment.

Enterprise Test Server supports IBM COBOL, High Level Assembler, CICS, IMS TM and DB, JCL, DB2, and z/OS file formats. It also supports common batch utilities such as SORT. This means that applications running under Enterprise Test Server behave just as they would on the mainframe, so you can perform a wide variety of pre-production testing activities on low-cost commodity hardware rather than on the mainframe.

To configure Enterprise Test Server your development administrator will work with the development teams to set up the Enterprise Test Server environment on your central Windows test server, as follows:

1. Enterprise Developer is used to recompile application source code for execution on Windows.
2. Test data sets or databases are made available either locally or on the mainframe through remote access.
3. Development and test teams are trained to ensure that they understand how to test applications within the Enterprise Test Server environment and to switch between the different test regions it supports.

Enterprise Test Server comes in two product variants:

- Enterprise Test Server which is the standard Test Server product and is a mainframe Test Execution environment.
- Enterprise Test Server Premium which provides two additional capabilities to extend the test execution platform:
  - Data Manager, which allows you to subset and mask mainframe data which is then available for testing under Enterprise Test Server.
  - Test Automator which is a test automation capability that allows you to create automated test suites that can be played back against Enterprise Test Server or against the host.

# Installation

## Installing on Windows

### System Requirements for Enterprise Test Server for Windows

#### Hardware Requirements

The disk space requirements are:

- 42MB for the Sentinel RMS license server.
- About 214MB for Enterprise Test Server.

 **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

The following platforms are supported:

- Windows 7 32/64-bit
- Windows Server 2008 SP2 32/64-bit
- Windows Server 2008 R2 32/64-bit

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

#### Software Requirements

 **Note:** If you use the Micro Focus Web Installer to install this product, it checks your system and installs the missing prerequisite software.

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

- A version of the Microsoft .NET Framework that is targeted by your applications:
  - Microsoft .NET Framework 2 - if your applications use the ILCLR(2) Compiler Directive or if they target the .NET Framework versions 2, 3 or 3.5. You might need to download these installers depending on the .NET Framework you are targeting.  
To download the Microsoft .NET Framework 2 [click here](#).  
Microsoft .NET Framework 2 or later is also required for the Micro Focus License Manager.
  - Microsoft .NET Framework 4 is required if your applications use the ILCLR(4) Compiler Directive or if they target the .NET Framework 4.  
To download the Microsoft .NET Framework 4 [click here](#).

 **Note:**

- If you do not target a specific version of the Microsoft .NET Framework, Micro Focus recommends that you install version 4.

- .NET Framework 3 is provided with Windows Vista, Windows Server 2008.
- .NET Framework 3.5 is provided with Windows 7, Windows Server 2008 R2
- Microsoft's Visual C++ 2010 Redistributable Package:
  - To download Microsoft's Visual C++ 2010 Redistributable Package (x86) [click here](#).
  - To download Microsoft's Visual C++ 2010 Redistributable Package (x64) [click here](#).



**Note:** If, when you install Enterprise Test Server, the machine does not have Microsoft Visual C++ 2010 Redistributable Runtime already installed, it will be installed as required by Enterprise Test Server. The installation of Microsoft Visual C++ 2008 Redistributable Runtime will add a number of .dll files, without digital signatures, into the `winsxs` directory.

- Microsoft's Web Platform Installer 2.0 if your application targets ASP.NET 4. This installs and sets up ASP.NET. To download the installer [click here](#).
- The Java Development Kit (JDK) is required for compiling Java. The JDK is downloadable from [www.oracle.com](http://www.oracle.com). After installing the JDK, you must put the `tools.jar` file for the JDK on your classpath, using a command similar to:

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

- A Web browser, such as Microsoft Internet Explorer 6.0 or Netscape Navigator 6.1, is required for Enterprise Server Administration in Enterprise Test Server.

To use your Web browser offline, you need the dial-up networking feature of Windows installed. Otherwise you might have TCP/IP errors such as being unable find "localhost" or the numeric equivalent (127.0.0.1).

- To use Enterprise Server Administration, scripting or JavaScript support must be enabled in your browser. This is on by default in Internet Explorer in most Windows operating systems. Also, active content must be allowed and not blocked. To enable both these in Internet Explorer:
  1. Click **Tools > Internet Options**.
  2. On the **Security** tab, click **Custom Level**. In the **Scripting** section, under **Active Scripting**, click **Enable**.
  3. On the **Advanced** tab, scroll down the list to the **Security** section, and ensure the item **Allow active content to run in files on My Computer** is checked.
- Enterprise Server Help requires the Java Runtime Environment on some Windows systems to enable the Search facility to work.



**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 Enterprise Developer 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.

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

## Installing Enterprise Test Server for Windows

### Installation Restrictions and Requirements

Before starting the installation, you should consider the following:

- Enterprise Developer and Enterprise Test Server cannot co-exist on the same machine.
- If you are installing this as an upgrade, make sure that none of the product files are in use when you start the installation.

- 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 from an existing product is stopped and uninstalled. Do this as follows:
  1. Stop the service, using either the Windows Service Management Console GUI 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 an Enterprise Developer 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 install 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 affect 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`.

To use the Web Installer:

1. Double-click the EnterpriseTestServer21\_webinstaller.exe file.
2. Click **Start** in the Web Installer dialog and follow the instructions to install the prerequisite software and the product.

Alternatively, you can use the setup file and install the product as follows:

1. Run the `EnterpriseTestServer21.exe` file and follow the wizard instructions to complete the installation.



**Note:**

- If you are installing onto a machine that has an existing Micro Focus product that uses an older Sentinel RMS License Manager, you might be prompted to remove it and install the Micro Focus License Manager. By doing this you maintain the existing Sentinel RMS license files while adding the Micro Focus License Manager. 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 Windows **Add or Remove Programs** and rerun the installation file.
- Trial licenses cannot be used with remote desktop services. If you want to use your product in this way, please contact Micro Focus SupportLine to obtain a relevant license.
- We recommend that you install any updates for the .NET Framework that are available at the [Microsoft Download](#) site.
- If you install JDK you might be prompted to install the latest update. The latest update is not required for use with Enterprise Developer but you can install it if you wish.

## Installing as an Upgrade

This release does not work concurrently with earlier releases and installing it uninstalls previous versions of the product.

Before installing, check *Installation Restrictions and Requirements*.

## 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**.

## Uninstalling

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

1. Log in with the same user-ID as you used when you installed the product.
2. Click **Uninstall a program** under **Programs** in **Control Panel**.
3. On versions of Windows Vista and later, click **View installed updates** in the left-hand pane.
4. Select the product and click **Remove** or **Uninstall**, respectively.

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 Enterprise Test Server and Micro Focus License Manager. Uninstalling only Enterprise Test Server does not automatically uninstall the Micro Focus Licensing Manager or any of the prerequisite software.

To completely remove the product you must uninstall the Micro Focus Licensing Manager as well.

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

# Installing Mainframe Access Server

## Introduction

The installation process for Mainframe Access Server uses a single FTP operation to transfer all of the mainframe software into a partitioned data set that you pre-allocate. When this transfer is complete, the remaining installation activities are all done on the mainframe. You customize and submit the pre-built FRESTORE job to restore the product data sets from the uploaded files and then continue with customization steps to create an operational Mainframe Access Server.

## Requirements

- IBM TCP/IP 4.0, or Interlink TCP/IP 3.1 or higher
- two APPLIDs, two TCP/IP ports
- APF security authorization support personnel availability
- Access to a network share with acceptable space for source and data, as well as the ability to access the IP address and ports used to access MFA
- The following installation-specific variable information:

Variable	Description
<i>drive</i>	
<i>userid</i>	TSO user-ID for FTP to your mainframe
<i>pswd</i>	TSO password for the FTP user-ID
<i>your.mainframe.name</i>	TCP/IP host name or IP address of your mainframe
<i>prodhq</i>	A NEW high level qualifier that will be assigned for all Host Connectivity data sets when the new Mainframe Access product is installed. These are NOT existing product data sets, but rather brand new files that you will be creating for this base version.



**Important:** The installation of a new version creates new product run-time data sets before the upgrade is applied. Any existing Host Connectivity 3.01 libraries remain intact, and can be used for fallback. If you prefer to retain your former production library names and re-use your existing *prodhq* then rename your old libraries beforehand.

Make a note of the maintenance level of your current Mainframe Access Server. Messages MFM0001I and MFM0014I on the syslog and XDBOUT sysout data set show the maintenance level at startup. You may need to know what level you are upgrading from when you complete post-installation customizations for this upgrade.

## Install Mainframe Access Server

In the instructions that follow, the information that you must provide is shown as one of the variable names from the table of information in the previous section. For example, if your high-level qualifier (*prodhq*) value is MY.MFA, then substitute MY.MFA for *prodhq*.

Follow these steps to load Mainframe Access Server:

1. Download the installation file from the link in your Electronic Product Delivery email and extract its contents to a directory on the PC.
2. On the mainframe, allocate a new partitioned data set named *prodhq*.UPLOAD to receive the uploaded files. Use the following data set characteristics for this upload library:

```
DSORG=PO          <=== PDS (partitioned data set)
RECFM=FB          <=== record format fixed and blocked
LRECL=80          <=== 80 character record size
```

```

BLKSIZE=3120          <=== 3120 character block size
SPACE=(3120,(3500,500,50)) <=== allocate blocks (BLKS) size 3120
                          3500 primary blocks
                          500 secondary blocks
                          50 directory blocks

```

3. On the PC, issue the following FTP commands. The actual text of the FTP prompts and responses that you see may differ slightly from those shown in this example.

- a. Start FTP:

```

C:\>ftpyour.mainframe.name
Connected to your.mainframe.name.
220-FTPD1 IBM FTP CS/390 VxRy at YOUR.MAINFRAME.NAME, hh:mm:ss
220 Connection will close if idle for more than 5 minutes.
User (your.mainframe.name:(none)): userid
331 Send password please.
Password: pswd
230 userid is logged on. Working directory is "userid.".

```

- b. Change the working directory on the mainframe to be the upload library that you allocated:

```

ftp> cd 'prodhlq.UPLOAD'
250 The working directory "hlq.UPLOAD" is a partitioned data set.

```

- c. Set file transfer type to binary:

```

ftp> binary
200 Representation type is Image

```

- d. Set FTP prompting off to transfer all files without interruption:

```

ftp> prompt
Interactive mode Off.

```

- e. Transfer all files from the extracted \Upload directory to members in the *prodhlq.UPLOAD* library:

```

ftp> mputdrive:\upload\*
200 Port request OK.
125 Storing data set prodhlq.UPLOAD(Fxxxxxxx)
250 Transfer completed successfully.
ftp: xxxx bytes sent in x.xx seconds (xxx.xx Kbytes/sec)
.
.
.

```

- f. When `mput` has transferred all files the `ftp>` prompt appears. End the FTP connection:

```

ftp> quit
221 Quit command received. Goodbye.

```

- g. On the mainframe, verify that all files transferred successfully and that for each `Fxxxxxxx` file in the `\Upload` directory there is a corresponding member in the *prodhlq.UPLOAD* data set. There should be 10 members, F1 through to F9 and FRESTORE.

4. On the mainframe, edit member FRESTORE in the upload library, *prodhlq.UPLOAD*. Follow the instructions in that member to customize the JCL and then submit that job to restore the product libraries from the uploaded files and populate your new product runtime libraries.
5. Start Mainframe Access Server.

### After installation

Since the program libraries can change between versions, it is necessary to either create new procedures, or back up the old procedures, and at least modify the `DSNQUAL=prodhlq` within your MFA sample started task procedures as provided by Micro Focus. The *prodhlq.LOADLIB* and *prodhlq.SASC.LINKLIB* must both be authorized.

Verify successful maintenance application by checking the Mainframe Access Server startup message:

```

MF0001I: Mainframe Access V4.00 (BASE ) is active

```

The "(BASE )" indicates the product maintenance level. Also check for "V4.00" in the Mainframe Access Data Connect server startup message:

```
MFA303I MFA/DATACONNECT V4.00 - BASE COPYRIGHT (C) 1987-2012 MICRO FOCUS...
```

When you are satisfied with the new version installation you may delete the UPLOAD data set from your system.

### **New parameters and members in the CNTL samples data set**

The following updated members are found in the CNTL data set.

MFA	sample MFA started task
MFAS	*new* sample MFAS started task for Data Connect
MFAAS	sample MFAAS application server started task
MFAVTAM	sample MFA VTAM definitions
PARMS	sample PARMS for MFA started task
PARMSAS	sample PARMSAS for MFAAS started task
SERVERS	sample SERVERS configuration for MFA
UPQUICK	configuration notes

If you are migrating from Host Connectivity 3.01 WebSync 10 or earlier, you may want to retain your existing CNTL members from your current version as an installation test. You can simply copy the existing MFA started task JCL and change the STEPLIB to reference the new product libraries. You will however be required to modify the MFAS started task JCL since the module names for Data Connect have been changed to allow co-residence within the same authorized library as MFA.

Review the Change Log in each of the new members. Read the documentation for any new parameters in the Readme and in the updated Mainframe Access Administrator's Guide. Add these new parameters and other changes to your working copies. If necessary, customize the new parameters for your installation.

Once you are satisfied with the operation of Mainframe Access, you can consolidate the configuration settings into the new high-level qualified CNTL members.

# Licensing Information



## Note:

- This release uses the license keys for the Enterprise Developer 2.0 release.
- If you are unsure about what your licensing policy is or what sort of license you require, consult your System Administrator or Micro Focus SupportLine to obtain a valid license.



## Note:

Be aware that the person who purchased this product has had to sign a license which states that you may use this product for testing only, and not for development work. If you are uncertain as to whether you will need to do development work, we recommend you speak to the person who purchased the product to see if you need a different license.

**Windows** Use the Authorization Code, supplied with your delivery notice, to license your product. To do this:

1. Click **Start > All Programs > Micro Focus License Manager > License Management System**.

The dialog box for the Micro Focus License System Administration Tool will be displayed.

2. Click the **Authorize** tab.
3. Enter your Authorization Code and click **Authorize**.
4. Close the Micro Focus License System Administration Tool.

If you wish to install the license silently, execute the following after the product has been installed:

```
start /wait <install-dir>\bin\cesadmintool -term activate  
AuthorizationCode
```

# What's New

The following sections outline the new features that have been added in this release of Enterprise Developer.

## Features Added in Enterprise Test Server 2.1

### Enterprise Test Server Enhancements

#### Building to .int, .gnt, and .lbr files

All sources for native COBOL and mainframe subsystem projects can be built to either `.int` or `.gnt` files. Native COBOL projects can optionally be bundled into an `.lbr` file.

#### Compiler directives

The following new Compiler directives are now available

- `DISPLAY` - Defines the default behavior of standard `DISPLAY` statements.
- `COMP1` - Specifies the behavior of a `COMP-1` data item.
- `COMP2` - Specifies the behavior of a `COMP-2` data item.
- `RESTRICT-GOTO` - Generates a syntax error for `GO TO` statements that transfer control to outside of the current section.
- `ILSMARTRESTRICT` - Limits the generation of properties in `ILSMARTLINKAGE` classes to non-redefining elementary items.

The following Compiler directives have changed:

- `DATAMAP` - Two new parameters allow you to display either the address or offset values for data items in your program.

### Data Manager

Data Manager masks and subsets mainframe DB2 data, enabling you to move the transformed data into SQL Option for DB2, which is a common DBMS used in test server environments. Masking and/or reducing your mainframe DB2 data before you move it into Enterprise Test Server provides a robust and efficient environment for testing application using SQL.

The major components of Data Manager are:

- `Data Builder` module - the core module that enables you to take inventory of your data, and store information in the Data Manager Knowledge Base, which resides on z/OS. Data Builder works with both Data Masking and Data Subset Extraction.
- `Data Masking` module - enables you to generate a test environment where personal and sensitive data has been made anonymous by using predefined or customized masking routines.
- `Data Subset Extraction` module - enables you to generate a test environment where a consistent and congruent subset of data has been extracted to allow for a manageable volume of data.
- `Workspace` - a two-dimensional working environment definition from which you can categorize and classify data stores for your test environment.
- `Data Manager Knowledge Base` - a collection of tables within a database that contain all information about catalogued files, including properties and processing rules. The Knowledge Base for the Data Manager for z/OS solution is a Mainframe DB/2 repository located in your z/OS environment.

## Enterprise Server

- CICS External Call Interface (ECI) - Micro Focus proprietary support for ECI is now available. ECI uses the Micro Focus BINP protocol and negates the need for third-party middleware. For more information about ECI support, read the section *IBM External Call Interface (ECI)* in your product help.
- Enterprise Server Batch Clustering is now available as a technology preview. Features include:
  - Support for sharing of both the catalog and spool between multiple batch regions is included as a technology preview.
  - Allows multiple batch regions to share commonly configured resources by providing global locking facilities to manage contention.

For further details about this feature, contact your Micro Focus technical account management team.

- Micro Focus Batch Scheduler Integration solution - enables you to submit, execute, and feedback between Enterprise Server and a scheduler that controls JCL job execution.
- Support for running TSO commands in a TSO batch session using the IDAEFT01 (IKJEFF01) utility is now available.
- The `mfd`s `-x` export command line option has been extended to support repository export to an XML-format file. The syntax is as follows:

```
mfd
```

s `-x` [*repository type*] [*repository address*] [*server name*] `<opts>` `<user id>` `<password>`

Where:

- |   |  |
|---|--|
| <b>[<i>repository type</i>]</b>                                       | <ul style="list-style-type: none"><li>• 1 = file:///</li><li>• 5 = XML</li></ul>   |
| <b>[<i>server name</i>]</b>   | * = export all servers   |
| <b><code>&lt;opts&gt;</code></b>                                      | <ul style="list-style-type: none"><li>• D = (default) do not delete or overwrite any existing repository contents at specified location</li><li>• O = delete and overwrite any existing repository contents at specified location</li><li>• S = export server and security manager configuration</li></ul> |
| <b><code>&lt;user id&gt;</code> and <code>&lt;password&gt;</code></b> | the MFDS credentials required if administration access is restricted   |

- The new `-g` option is used to allow XML format repository import. The syntax is as follows:

```
mfd
```

s `-g` [*repository type*] [*repository address*] `<opts>` `<user id>` `<password>`

- |                                  |                       |
|----------------------------------|-----------------------|
| <b>[<i>repository type</i>]</b>  | 5 = XML               |
| <b><code>&lt;opts&gt;</code></b> | Not currently in use. |

- XML repository import - extends the MFDS repository export to XML and import from XML introduced in Enterprise Developer 2.0 to UNIX platforms. This allows administrators to export, modify and then reimport Enterprise Server instance configuration data in XML format.

## Mainframe Access

**MFA Server** MFA Server has been updated to version 4.00 (BASE), and provides the following enhancements:

- Double-byte character support using the following code pages:
  - Traditional Chinese with Taiwanese additions (BIG5)
  - Korean (KSC5601)
  - Simplified Chinese (SCHINESE)

Japanese - Kanji (SJISKANJI)  
Traditional Chinese (TCHINESE)

- Additional qualifiers for use with the new code pages:

**default**

EBCDIC SI/SO added on upload, removed on download

**-SOSI-K**

EBCDIC SI/SO assumed on upload, preserved on download

**-SOSI-A**

ASCII SI/SO assumed on upload, preserved on download

**-SOSI-S**

Spaces converted to SI/SO on upload. SI/SO converted to spaces on download



**Note:** This will only work correctly with text that originates on a host.

## IMS support

- Non-discardable message exit (early release) - provides you with functionality present in Mainframe IMS that allows messages destined for an abended IMS application program to be deleted, put on the suspend queue, requeued to the original transaction, or routed to an alternate destination.
- IMS printer support (early release) - IMS application LU1, LU3 MFS, or LTERM output can now be spooled to printers using TCP/IP protocols. You now have the ability to print IMS output on local or networked printers.



**Note:** Print spool API support is not available. Users are responsible for associating printers with a user or a department.

## General Enhancements

### JVM auto-runtime

If you are developing a COBOL JVM project, you don't have to choose whether to use the native or pure JVM file handling systems. You can use just one runtime that configures itself for the environment it is executing in.

### Managed code enhancements

**Delegates and Events**

Delegates and events are now implemented on the JVM platform.

This release provides support for combining delegates, using the METHOD keyword to specify method groups, and implicit conversion from a method group or an anonymous method to the suitable delegate type.

**Handling Invalid Numeric Data**

The handling of invalid numeric data is controlled by a number of Compiler directives: HOSTNUMMOVE, HOSTNUMCOMPARE and SIGNFIXUP. These directives were previously only available in native code but are now supported in managed code.

**Resolving Types**

In this release, the Compiler attempts to resolve types to those defined in the current compilation unit wherever possible. The Compiler will attempt to resolve such types to an external name only if no suitable type exists in the current compilation unit. For example:

```
$set ilusing"System"  
class-id MyNamespace.EventHandler.
```

```
01 o type EventHandler.  
end class.
```

In this release, `01 o type EventHandler.` resolves to `MyNamespace.EventHandler` and not to `System.EventHandler`.

### **Specifying Properties**

In previous versions of the products, properties declared using the PROPERTY keyword on a data item were generated as final properties. Starting with this release, they are generated as virtual properties by default. In order to make the properties final, you need to specify the word FINAL following PROPERTY. This change may affect the generation of Proxy classes, for example, if you are using WCF.

# Known Issues

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

In addition, please note the following:

- |                          |   |
|--------------------------|---|
| <b>COBOL Watchpoints</b> | 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.  |
| <b>ICETOOL Emulation</b> | ICETOOL emulation for managed code is not available in this release.  |
| <b>Enterprise Server</b> | On versions of Windows Vista and later, Enterprise Server listens only on the IPv4 loopback address (127.0.0.1). As a result, an attempt to connect to localhost with a TN3270 emulator such as RUMBA may fail. To work around this issue, in your emulator's configuration use 127.0.0.1 in preference to localhost or your host machine's name. |

# Resolved Issues

The resolved issues that customers have reported are listed in this section. The numbers that follow each issue are the Reported Problem Incident number followed by the Customer Incident Numbers (in parentheses). RPIs that have numbers only (and no text) are included to confirm that the RPIs have been fixed, since no further information is required.

- [.NET Compiler](#)
- [.NET ESQL Support](#)
- [CAS Security](#)
- [CCI TCP/IP](#)
- [Compiler](#)
- [Documentation](#)
- [File Handling - External File Handler](#)
- [File Handling - Fileshare](#)
- [File Handling - Sort / JCL Sort](#)
- [JVM Compiler](#)
- [JVM Run-Time System](#)
- [MF Directory Server](#)
- [MFIO](#)
- [MTO - CICS ECM/Preprocessor/Translator](#)
- [MTO - CICS ESMAC](#)
- [MTO - JCL Utils](#)
- [MVS REXX Emulation](#)
- [Run-Time System](#)
- [SQL: COBSQL](#)
- [SQL: DB2 ECM](#)
- [SQL: OpenESQL](#)
- [Vision File System](#)
- [XDB DCLGEN Utility](#)
- [XDB Server](#)
- [XML syntax support runtime](#)

## **.NET Compiler**

- When compiling for managed code, you can no longer use the ALTER, ON or EXHIBIT CHANGED statements in class programs. You can only use these statements in procedural COBOL programs (i.e. programs specified with the PROGRAM-ID header).  
1084928 (2581987)
- When compiling to managed COBOL, we no longer produce an error for MOVE statements in which the source is a PIC N field and the target is an object reference of type string.  
1084133 (2572679)
- In managed COBOL, using the EXIT PARAGRAPH and NEXT SENTENCE statements in the same paragraph could lead to bad control flow.  
1084070 (2572411)
- When compiling to managed code, the ASSIGN TO DISK FROM data-name clause (of the SELECT statement) is now working correctly.  
1085027 (2582960)

- A write to a record of a file defined in a class could result in the generation of a bad code if that record was not referenced in your code.  
1083955 (2570957)
- The use of extended ACCEPT or DISPLAY statements in Windows applications (ilsystem"2") now produces error COBCH1634: Extended ACCEPT/DISPLAY not allowed with a Windows GUI executable (ILSUBSYSTEM"2"). Remove the syntax or change the output type of your application to 'Console Application'.  
1084365 (2575702)
- The directive NOIOCONV no longer causes the compiler to produce system errors when compiling for managed code.  
1071930 (2359629)
- When a pic x item is passed as a parameter to a method that is expecting a character (System.Character or char in C#), conversion from the current locale to the relevant Unicode character is performed. Previously, the conversion did not take place, causing corruption.  
1084595 (2577800)
- Access to indexers using zero-based indexing (e.g. display simpleIndexer[2]) is now working correctly.  
1084699 (2579210)

### **.NET ESQL Support**

- The OpenESQL pre-compiler no longer converts underscores in COBOL host variables in EXEC SQL statements to dashes.  
1085254 (2585445)
- The default setting of SQL(BEHAVIOR) is MAINFRAME for versions of Visual COBOL and Enterprise Developer 2.0 and later. If you are upgrading existing applications that support ADO.NET, use Microsoft SQL Server, and depend on cursors that are not explicitly declared as forward-only, read-only being implemented as ADO.NET datasets, ensure that in the latest version of the Micro Focus products they use the directive SQL(BEHAVIOR=UNOPTIMIZED), or update their code to declare cursors using the scrolloption 'dataset' that requires a dataset-based cursor.  
1084942 (2582082)

### **CAS Security**

- The MLDAP ESM Module can now be configured to support an additional wildcard character, "+", which matches any one character in the resource, user, or group name. To enable this wildcard, set "plus-wildcard=yes" in the [Operation] section of the Security Manager configuration area.  
1083460 (2565125)

### **CCI TCP/IP**

- CAS utilities such as cassub or casout, and COBOL Web Service clients, no longer timeout prematurely when used with an SSL-enabled connection.  
1082906 (2557202)

### **Compiler**

- The DBCSSOSI directive now compiles correctly.  
590357 ( )
- DISPLAY MESSAGE BOX ... RETURNING syntax now returns an E-level error message stating that it is unsupported in this COBOL system.  
584600 ( )

- You can now configure the DATAMAP clause to output either addresses or offsets. DATAMAP(ADDR) or DATAMAP with no option shows addresses. DATAMAP(OFFSET) shows offsets. Compile managed COBOL code sets DATAMAP(OFFSET) at the end of directive processing as addresses are not available for managed code.  
1054182 (2093752)
- Compilation of ACU DISPLAY windowing syntax will no longer receive spurious internal error messages during a background syntax check.  
591227 ( )
- Compiling with a large number of ADDSYN directives specified now works as expected.  
1083917 (2567767)
- The maximum value for the PAGE LIMIT clause has been increased from 999 to 9999.  
1084391 (2576431)
- DISPLAY(CONSOLE) is a new directive available to override the behavior set by RM or ACU directives, so that standard DISPLAY syntax is processed as standard ANSI DISPLAYs, directed to CONSOLE. RM and ACU directives set DISPLAY(CRT) immediately, allowing you to set DISPLAY(CONSOLE) after either of those directives, if required.  
1084496 (2577799)
- A compiler bug that produced illegal int-code for "call ... returning pointer-item" under DIALECT(RM) has been fixed.  
1085375 (2586367)

### Documentation

- When you create or edit a CICS SIT resource in ESMAC, the paths of recoverable and non-recoverable temporary storage queues are now specified in separate fields, Path (rc) and Path (nr).  
1084877 (2578440)

### File Handling - External File Handler

- Reading IDXFORMAT"9" records non-transactionally over fileshare no longer causes any issues.  
1083646 (2566578)
- When opening a mainframe file for input, the file is now not optional as per the mainframe.  
1082362 (2506971)
- When attempting to OPEN I/O a read-only file using the RM/COBOL File Handler, a 37, 07 error message is displayed if the program is running in ANSI85 mode. The error message is not displayed if the program is running in ANSI74 mode.  
1084329 (2573607)
- Cobfhrepro now works correctly when session id is specified.  
590271 ( )
- Invalid XML syntax in MF.MFFH.XML has been corrected.  
589406 ( )
- The maximum field length that MFSORT supports for PD summary fields is extended from 9 bytes to 18 bytes.  
1084961 (2581353)

### File Handling - Fileshare

- If you are accessing RM/COBOL files through Fileshare, the RETRYLOCK option is now working correctly.

1084744 (2579930)

- Closing a file using FSVIEW now correctly removes the file from fileshare's open file table.

587706 ( )

- The FSVIEW option 'stats get' gives the statistics for current users, peak users, file opens and peak file opens. The corresponding FSVIEW API is FSV-C-get-stats.

1083664 (2567737)

- FSVIEW will no longer process the last command in a command file twice.

589764 ( )

### **File Handling - Sort / JCL Sort**

- The informational "Operand 'VLSHRT' Ignored" message has been removed from the sort sysout.

1083225 (2562501)

- Using SYMNAMEs sometimes caused SORT to use the wrong field position and lengths.

1083320 (2563738)

- Data format FI is now supported in the OUTREC edit fields section.

1083495 (2565051)

- SORT now works correctly when there are concatenated VB files with different record lengths in SORTIN.

1084194 (2573990)

- SORT now gracefully handles the error when there is an INCLUDE/OMIT condition with invalid HEX/ Binary digit.

1084231 (2574465)

- SORT now ignores the operand 'WORK' along with its value.

1081023 (2533397)

- A sort using SORTTEMPSPACE no longer ever results in a COBRTS 252 error.

1081943 (2546898)

- CENTWIN and Y2PAST are now supported as PARMS.

1080717 (2531364)

- The MFSORT help screen now shows that OPTION is supported.

590260 ( )

- SORT worked incorrectly for multiple fields to be converted in INREC/OUTREC/OUTFIL OVERLAY syntax.

1084481 (2577157)

- The TOTAL field length calculation now works correctly when TOTALs are zeros.

1082887 (2558079)

- Trailers are now included in the SYSOUT outfil record count.

1084193 (2573272)

- Records following HEADER2 and HEADER3 will now be the correct length.

590270 ( )

- Header lengths are now calculated correctly, taking line feeds into account instead of giving a SORT099I error. Headers will now be printed for outfiles that do not have any records.

1083701 (2565909)

- SORT now works correctly when SYSIN is given as LSEQ PDS Member.

1082529 (2550678)

- When using MFJTOOL with a VB input file, an appropriate error is thrown when the output file is not VB or has not worked successfully when the output file is VB. Previously, a COBRTS 139 error was thrown.  
1084567 (2577626)
- Sort now works correctly when OPTION COPY is given before the SORT FIELDS in SYSIN.  
1083679 (2565053)
- SORT caused different sort processing for large sort cards. This has been fixed so SORT now returns an error message and exits the sort processing when the sort card has more than 1024 INCLUDE/OMIT conditions.  
1084065 (2571660)
- When using MFSORT, smaller records are padded to the size of the minimum record length of a VB file and the record length is changed to the minimum of sortout.  
1082943 (2554482)
- Sort now displays HEADER2 at the start and TRAILER2 at the end of each page.  
1083702 (2566545)

### **JVM Compiler**

- Java verification errors or incorrect program flow occurring in very large JVM COBOL programs is now fixed. Previously, in very large programs, the compiler would process GO TO statement incorrectly, and could jump to the wrong program locations.  
1084569 (2578716)
- Some problems with the use of nested classes defined in COBOL have been resolved.  
1083183 (2561420)

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

- A stack overflow no longer occurs if you execute a call to a method inside a constructor and this method contains a COBOL statement. Previously, the runtime would jump back to the constructor and go into a loop, producing a stack overflow.  
1083181 (2561418)
- The JVM COBOL library routines CBL\_DIR\_SCAN\_ now return the correct results when searching for directories.  
590261 ( )

### **MF Directory Server**

- A problem with some of the security configuration pages in the Enterprise Server Administration HTML GUI not being displayed correctly in Mozilla Firefox Web browser has been resolved.  
592374 ( )
- When you used Enterprise Server Administration to create a new security resource entity, the initial ACL string value was displayed as an incorrect value.  
592375 ( )
- In Enterprise Server Administration, if a server listener has been defined to use SSL, the "Authorise" URL now uses a hostname instead of an IP address if the Communications Process Control Channel listener has been defined using a hostname address. This avoids potential issues where the IP address might be invalid on a remote client because of NAT configuration.  
1083989 (2563805)
- If MFDS\_DNS\_RESOLVE=Y is set in the MFDS process, you could get sign on errors. These was caused by the HTML GUI "Log On" menu option URL using the IP address and not the fully qualified hostname. These issues have now been fixed. As well as resolving the NAT address issues for remote

clients, the HTML GUI "Log On" menu option also allows browser clients to connect to the GUI without receiving a certificate warning. This has been fixed in versions of the MFDS 1.14.27 and later.

1084209 (2573815)

### **MFIO**

- Logons to MFA sometimes failed because the userid or password contained zeros.

1082548 (2552652)

### **MTO - CICS ECM/Preprocessor/Translator**

- The WEB OPEN function is supported.

1081796 (2545562)

### **MTO - CICS ESMAC**

- If external security is configured (MLDAP) and the default ESMAC user is not allowed to login, the region does not startup.

1082337 (2550800)

### **MTO - JCL Utils**

- In IEBCGENER, if the SYSUT1 dataset is a DUMMY dataset it will now be processed as an empty dataset.

1083514 (2565707)

### **MVS REXX Emulation**

- The DATE() function now formats the year correctly when converting between a Julian and a standard date format.

1083437 (2564240)

- The LISTDSI external function now correctly sets values for the SYSREFDATE and SYSMGMTCLASS variables.

1084902 (2581611)

### **Run-Time System**

- The call MVS\_REGISTER\_DDNAME is an MFE-only call used by the IDE. FileHandler no longer calls this routine.

1083028 (2559292)

- IF NUMERIC validation of COMP-3 slack nibbles (when there is an even number of digits in the picture clause) is now done in a way that is compatible with that on the mainframe.

1083801 (2569340)

- The RUN program now accepts command line arguments of up to 1023 characters long.

1083215 (2561567)

### **SQL: COBSQL**

- The Cobsql preprocessor was updated to no longer misinterpret WORKING-STORAGE items whose definitions were spread across multiple source lines.

1080078 (2507684)

- The Cobsql preprocessor has been updated to correctly process variables defined as USAGE COMP after an EXEC SQL INCLUDE SQLCA when the CP preprocessor directive NOSQL is specified.  
1084463 (2577593)
- The Cobsql preprocessor has been updated to correctly process Pro\*COBOL-generated data items when the first WORKING-STORAGE variable in user code contains a VALUE clause with the literal value on a separate source line.  
1084753 (2579264)

### **SQL: DB2 ECM**

- The DB2 pre-compiler now generates GOBACK instead of STOP RUN at the end of program source, so that poorly coded programs do not fail when running under IMS or other transaction monitors.  
1083235 (2559616)

### **SQL: OpenESQL**

- The OpenESQL preprocessor has been updated such that when a program or application is compiled with the SQL(DBMAN=ADO) compiler directive, the calls generated do not modify user data when a null value is returned.  
1083563 (2561563)
- The OpenESQL preprocessor no longer accepts singleton select statements that have no INTO clause, or host variables that are not preceded by a colon, apart from SQLDA references in dynamic SQL. In rare cases where a singleton select without an INTO clause is required, code it by placing the SELECT statement inside of a BEGIN/BEND block.  
1084430 (2576585)
- The ODBC Compiler did not identify specialized classes such as ENUMS, and incorrectly generated SQL interface code for them that caused Compiler errors. The ODBC Compiler has been enhanced so that it no longer generates SQL interface code for those classes.  
1083144 (2561349)
- Previously, the SQL pre-compilers did not always recognized the EXEC SQL INCLUDE statements during the syntax checking phase and returned incorrect error messages.  
1085057 (2582967)

### **Vision File System**

- When you configure your application to return RM/COBOL file status codes, by setting COBFSTATCONV=rmstat, the codes returned are ANSI'85 codes.  
1082469 (2553438)

### **XDB DCLGEN Utility**

- A protection violation sometimes occurred when you used the XDB Declaration Generator tool on 64-bit Windows platforms.  
591030 ( )

### **XDB Server**

- Support has been added to enable the execution of DESCRIBE INPUT statements.  
1079821 (2508551)
- A mutex deadly embrace no longer results in a server hang.  
1085199 (2583889)

### **XML syntax support runtime**

- An issue with the PREXML preprocessor has been resolved and it now does not truncate data names longer than 30 characters.

1085342 (2586384)

- In previous releases, the documentation for XML Input/Output was missing from the online help. This documentation is now included in the online help.

1084119 (2572393)

# Updates and SupportLine

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

## Further Information and Product Support

Additional technical information or advice is available from several sources.

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

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

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



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

If you obtained this product directly from Micro Focus, contact us as described on the Micro Focus Web site, [www.microfocus.com](http://www.microfocus.com). If you obtained the product from another source, such as an authorized distributor, contact them for help first. If they are unable to help, contact us.

## Information We Need

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

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

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

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

## Creating Debug Files

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