Micro Focus
Visual COBOL
Development Hub 3.0

Release Notes

2017-06-26

Contents

Visual COBOL Development Hub 3.0 Release Notes

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

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

What's New

This release provides enhancements in the following areas:

- *Application Server JCA support for Enterprise Server*
- *Data File Tools*
- *Deployment on multiple platforms*
- *Documentation*
- *Enterprise Server*
- *iFileshare*

Application Server JCA support for Enterprise Server

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

In this release, EJBGEN has been updated to generate an EAR file as a part of the COBOL deployment process, which enables you to deploy EJBs to Java Application Server.

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Data File Tools

This release provides the following enhancements to Data File Tools:

- Opening files in shared mode - it is now possible to switch between read-only shared and edit modes. While a file is open in shared mode, others users can only open it in shared mode to ensure data consistency between users.
- Enterprise Server-level of security when accessing files - there is an improved level of security when exchanging data between Data File Tools and the targeted enterprise server instance. Users must now provide a user ID, group and a password when they try to access and view datasets in enterprise server instances. These are used for authentication and authorization checks to provide the same access level as Enterprise Server.
- Opening datasets using SSL - communication to a region is now possible using SSL. To enable the SSL communication, you need to provide a Java trust store which contains either a CA root certificate or a self-signed certificate of the region that it is communicating to. Java and the targeted region SSL configurations need to meet each other's standards in order for the communication to succeed.

  This feature enables you to secure the information exchange between Data File Tools and the targeted enterprise server.
- Auditing of access and updates on datasets - Audit Manager now audits the access and updates on datasets via Data File Tools.
- Support for existing .pro files - enables you to use your existing editor profiles.
- Support for existing .str files - enables you to use your existing COBOL structure files.
- Automatic timeout - if no internal operations or external actions (such as a mouse click) have been detected for 30 minutes, Data File Tools now displays a countdown message. If the user does not take any decision within the specified period, Data File Tools closes all opened files.

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Deployment on multiple platforms

This release provides support for deploying JVM COBOL applications on multiple platforms. You can compile an application on one platform (such as Windows) and then deploy its class files to a different platform (such as Linux or UNIX).

Some features of the COBOL language, however, are platform-specific and their behavior on different platforms might vary. See *Multi-Platform Deployment of JVM COBOL Applications* in your product Help for details.

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Documentation

The following new sections have been added to the product help:

- *Where do I start?* - located on the launch page of the product help, this section provides the information you need in order to get started depending on which aspects of the product you need to get to grips with first.
- *Multi-Platform Deployment of JVM COBOL Applications* - includes information about how to ensure the portability of your JVM COBOL applications between Windows and UNIX or Linux platforms.

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Enterprise Server

Improvements are available in the following areas:

Long user IDs and passwords:

- Enterprise Server now supports user IDs and passwords of up to 100 characters. It is possible to map IDs from long to short (or vice versa) to enable compatibility with programs that do not support long names.

SHA-256 support in DemoCA:

- By default, the Demonstration Certificate Authority (CA) now signs certificates with SHA-256. This ensures that the demonstration or evaluation certificates will be accepted by modern browsers and other software that has enhanced security requirements.

Syslog auditing:

- Enterprise Server now supports auditing using syslog events, which can be consumed by a wide range of Security Information and Event Management (SIEM) products. This replaces the Audit Manager auditing solution. Syslog auditing provides a much more efficient auditing mechanism, with significantly less impact on overall speed.

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iFileshare

iFileshare is no longer considered an Early Adopter Program, and contains the following enhancements in this release:

- An improved failover and recovery process. iFileshare now supports full recovery of nodes in the group. For high availability (HA-VSAM) groups, servers can now rejoin the group without the entire group having to be restarted. In addition:
  - A primary failover now results in a takeover from the most suitable node.
  - If configured, external clients will automatically reconnect to the new primary and will issue a notification if the transaction has been lost.
  - A failed node, when restarted, will rejoin the group, recover its files and request a log update from the current primary. Once this task has completed it will be considered an active hot-standby and will continue to process replication requests as normal.
  - Users will experience a higher level of uptime/availability with their Fileshare configuration and will be able to recover from errors more easily.
- A new exit procedure, `ifsexitproc.cbl`, can be configured to automate some aspects of iFileshare behavior.

- The iFileshare Control page in ESMAC contains details of the current iFileshare high availability group.
- The following new iFileshare-specific environment variables are available:

    - FSWRKDIR - enables you to specify the Fileshare working directory, overriding the default, which is the system directory of the region.
    - FSCHKLFH - determines if a check is performed when a high availability group is started, to test the consistency of the data files within the group.
- The database reference file (`dbase.ref`) now supports wildcard matching for filenames, allowing you to perform operations on multiple files at once; for example: `fs /d dbase.ref /f data\*` adds the entire contents of the data directory to the database reference file.

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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.

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

- *Compatibility AddPack*
- *Documentation*
- *Enterprise Server*
- *File Handling*
- *Micro Focus Directory Server*
- *OpenESQL*
- *Reserved words*
- *SQL Option for DB2*

Compatibility AddPack for Visual COBOL

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Compatibility AddPack for Visual COBOL is now deprecated and will not be available with release 3.0 and later.

The Dialog System GUI and run-time components and Dialog System Character Mode (on Windows and UNIX) which were part of the AddPack are now installed as part of Visual COBOL for Visual Studio. The run-time components are installed as part of COBOL Server. These are only included for backward compatibility and Micro Focus does not recommend that you use them for new development.

The other components which were part of the AddPack, the Character-Based Data File Editor, CSBIND and Screens, will be available upon request from Micro Focus SupportLine.

Documentation

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- There have been a number of new reserved words added to the language in this release; these are all in effect under MFLEVEL"19", which is the default level when running under the MF dialect. Any of the following words are now not allowed under default conditions, and you will need to remove/rename them, or specifically configure your environment to allow them: ALLOCATE FREE JSON END-JSON

Enterprise Server

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- WEB CONVERSE now supports a value of 0 for the USERLEN and PASSWORDLEN options which matches the behavior on the mainframe. There is no change to the behavior of WEB SEND (client) which is to return LENGERR 139/140 when USERLEN or PASSWORDLEN are 0.

  2989188 (1108602)

File Handling

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- Under certain circumstances, retry-lock requests on UNIX systems were sleeping for a second before re-attempting to acquire the lock. This no longer happens.

2988222 (1108521)

- A problem that generated a 39 error when attempting to access a VSAM file via an alternate index PATH element has been fixed.

2874622 (1106562)

Micro Focus Directory Server

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- In the Enterprise Server Administration HTML GUI, the "Scripts" page functionality is only available if administration access is restricted and the logged on user has sufficient authority.

3101625 (1109025)

- Some additional CSRF security measures have been added to the Enterprise Server Administration HTML GUI.

3101205 (1108916)

OpenESQL

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The new OpenESQL OPTIMIZECURSORS SQL compiler directive option is turned on by default for ODBC (DBMAN=ODBC). This ensures that embedded SQL cursors that use WITH HOLD and FOR UPDATE clauses have the same data integrity across all databases.

If your applications require the OpenESQL preprocessor to use the behavior provided in an earlier release, compile them using OPTIMIZECURSORS=NO.

Reserved words

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- There have been a number of new reserved words added to the COBOL language; these are all in effect under MFLEVEL"19", which is the default level when running under the MF dialect. Any of the following words are now not allowed under default conditions, and you will need to remove/rename them, or specifically configure your environment to allow them:

      ALLOCATE
      FREE
      JSON
      END-JSON

SQL Option for DB2

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- Help buttons previously available on the XDB Server Configuration Utility, XDB Service Controller, Options Dialog, Bind Utility, and Linker Config (Link Profile) UIs have been removed with the exception of error messages in the SQLWizard, Migrate, and Declaration Generator.

Resolved Issues

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

- *Adis*
- *Character Animator*
- *COBOL to XML Schema generation*
- *Codeset Support*
- *Common Communications Interface*
- *Data Tools*
- *Documentation*
- *Embedded HTML Pre-Processor*
- *Enterprise Server*
- *File Handling*
- *Interface Mapping Toolkit*
- *Micro Focus Directory Server*
- *Monitoring and Management*
- *OLE Class Library*
- *OpenSSL*
- *REX Support*
- *RM/COBOL*
- *Run-Time System*
- *SQL: COBSQL*
- *SQL: OpenESQL*
- *SQL Option for DB2*
- *XML Support*

Adis

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- PIC N items are now filled with double-byte space when required by ADISCTRL options 15 and 16.
  2913183 (1108448)

Character Animator

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- The Break>Cancel-All option no longer occasionally freezes the Animator.
  2879817 (1107460)

COBOL to XML Schema generation

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- CBL2XML now handles namespace correctly.
  2861655 (1104748)
- CBL2XML now correctly handles non-default type within <restriction>.
  2826345 (1100279)

Codeset Support

- The Codeset DBCS tables MFTR0886.A2E MFTR0886.E2A have been updated to match the latest IBM Traditional Chinese conversion tables below: Description of 9027: T-Ch Host Double-Byte including 6204 UDC including euro. Description of 21427: T-Ch DBCS-PC (IBM BIG-5) including 13493 CNS, 566 IBM selected, 6204 UDC & euro.

    3104948 (1109314)

Common Communications Interface

- Using CCI shared memory and receiving data with a max receive length less than the total amount of data received resulted in the data being received incorrectly on the final receive. This has now been fixed.
- After a communications failure, Enterprise Server shared-memory listeners would sometimes stop accepting new connections. This has now been fixed.

Data Tools

- Vision and RM files that contain a null (0x00) byte in the key now function correctly in the Data File Editor.

    2882159 (1107598)

- The following minor enhancements have been made to the Data File Editor: - Previous filter conditions are now remembered for each file when the dialog is loaded. - The default filter operator now defaults to 'Contains'. - Field attributes for reference conditions now default to 1:max-rec- length, instead of 1:1.

    2878521 (1107104)

Documentation

- The product documentation has been updated to include information and syntax for secure access to MFDS (mfds /b).

    2854625 (1103606)
- Documentation for environment variables has been improved.

- The casstart /w parameter prevents the casstart process from exiting until the region has either started or failed to start correctly.

    2868898 (1105712)

- A "redundant" or "high-availability" mode is now available in the Enterprise Server External Security Facility. It enables you to configure multiple equivalent Security Managers and let processing continue as long as at least one Security Manager is available. To enable this feature, add the following to the configuration text area for the security configuration (either in the default Enterprise Server Security, the MFDS Security, or on the Security tab for a specific enterprise server): [Operation] redundant=yes

    2989911 (1108665)
- Additional information on the Web Services and J2EE conversation type has been added to the "Configuring Listener Conversation Types" chapter in the product documentation.

    2877270 (1106896)
- The product documentation has been updated to include information on converting the input file used by casrdtup from EBCIDIC to ASCI.

2863611 (1104940)

- The documentation for bit zero of the 'thread-state' parameter of CBL_THREAD_LIST_START and CBL_THREAD_LIST_NEXT has been corrected.
- Documentation of CBL_LOCATE_FILE parameter corrected.

- The installation instructions included incorrect information about users having to stop and uninstall an existing Micro Focus Directory Server (MFDS) or CCITCP2 Windows service (on Windows) or a process (on UNIX) from an existing product. This has been removed from the product help.

2877431 (1106934)

Enterprise Server

- An issue where SOAP elements were not mapped to COBOL code has been resolved.

3106199 (1109416)

- When SOAP headers were part of the SOAP request, you no longer receive a "SOAP header malformed" response.

3105803 (1109367)

- An issue where a handler program in the pipeline caused issues with JSON GET/DELETE/HEAD requests has been fixed.

3104977 (1109274)

- An UNDEFINED_ELEMENT error message occurred when a JSON message (under CICS WEB SERVICES) did not include an object that was present as a "record 1" item in the wsbind or the jsbind files.

3102943 (1109085)

- When a CICS Web Service was invoked with no port in the URI, the default port for the scheme was not set up.

3100280 (1108870)

- EXEC CICS SEND and CONVERSE commands now send all user-written headers (EXEC CICS WRITE HTTPHEADER) even if the user provided values that contain null bytes. When browsing headers with EXEC CICS WEB READNEXT HTTPHEADER, CICS will now initialize the buffers that were supplied for the header name and value.

2990561 (1108733)

- A problem where a system process (CASTRC) was unable to allocate any local storage and, as a result, became unresponsive, has been resolved.

2886741 (1108236)

- Casout commands running in a loop from the same process used to exhausting resources. This was caused by an invalid path concatenation.

2886407 (1108426)

- An issue resulting in a Run-Time System error 205 "Invalid mainframe pointer" has been fixed.

2885280 (1108041)

- TRANSFORM was failing in situations where an XMLTODATA TRANSFORM contained an XML declaration with EBCDIC encoding.

2885262 (1108040)

- The EZASOKET traces are now controlled by a COMMS trace flag.

2884491 (1108174)

- Caching has been added for TS queues security checks.

2884070 (1108789)

- Commarea overrides are now honored for non-facility transactions.

  2884049 (1107879)
- Usernamelen and passwordlen options are not mandatory on exec cics web converse and web send (client).

  2880669 (1107365)
- Previously, using multiple CICS LINK statements (linking A to B to C and so on) could result in an RTS error 114 in the CAS system modules.

  2880542 (1107372)
- The spool active job queue will now display any jobs that were started prior to resetting the time for DST but that have not completed yet.

  2879116 (1107204)
- The debug file name generated when using CICS Web Services now includes the process ID and the task number. For example - inquireCatalogClient-19556(00028)-CWS-REQUESTER.TXT.

  2878485 (1107077)
- The SOAP to COBOL mapping under CICS Web services was incorrect when an optional element had no child elements (where the schema defined a minimum of one such child element and these child elements have been mapped to a container). In such cases, the number of instances of the child element would have an incorrect value of 1 where it should be 0.

  2877043 (1106879)
- If you used XA with more than 7281 transactions or had a number of JCL jobs that used XA, a record could be split across multiple blocks. After restarting the enterprise server, a large number of CASXO0029I errors were reported in the console log file. A block that can hold up to 7282 records is now used.

  2874024 (1106469)
- When casout is used to release a job, casmgr now attempts to dispatch the job immediately rather than waiting for its next dispatch cycle which previously could take 20 seconds.

  2873224 (1106621)
- If there were more than 20 TRANCLASS instances specified in the startup list, this could cause memory corruption.

  2868129 (1105682)
- The ESFCA0401I Cache Termination message is now available for JES, IMS DB, IMS TM, MQ, and iFileshare processes.

  2866750 (1105376)
- A duplicate security check about whether the user has enough permissions to run a JCL job has been removed.

  2866526 (1105336)
- When eci-tpn is used on a call to ECI for CTG or the Micro Focus implementation of ECI, Enterprise Server now verifies the transaction exist and is enabled. If the transaction is disabled, an abend AZI6 is returned. This is mainframe-compatible behavior.

  2863500 (1105165)
- An EXEC CICS LINK to a non-CICS module now handles the data context correctly and you no longer receive CDCD abends on any further LINKs.

  2858747 (1104275)
- CASxx5006I messages now display a return code.

  2853609 (1103516)
- All ESMAC pages are now secured. Users who are not authorized now receive an error message when trying to access any of these pages in their browser.

  2843901 (1102247)

- The CICS WEB services now support SOAP 1.2.

  2822822 (1099723)
- An issue that could cause an RTS error 119 on a casout command when starting a batch initiator has been fixed.

- An issue with certain length DNs that could cause DNs to become truncated has now been fixed.

  3103303 (1109366)
- If nested groups (user groups containing other groups) were used with LDAP-based security for Enterprise Server, it could result in Enterprise Server hanging at region startup, or users might not be assigned all of their groups. This has now been fixed.

  2988205 (1108935)
- The "check TLQ first" option has been added to the MLDAP ESM. The option can change the Rule processing algorithm. This option might improve performance when there are large numbers of resources in a class.

  2875051 (1106874)
- Enterprise Server no longer crashes on startup if LDAP-based external security with the "all-groups" and "redundant" options are both specified, but the "federated groups" option is not.

  2874010 (1106529)
- If the esfupdate utility is used to request an update of security information for a user, and that user was originally signed onto the system using a lowercase representation of their user ID, the update now correctly identifies and updates the user.

  2871297 (1106164)
- If the MFDS Security Configuration specifies that verify requests should be cached and the cache TTL and limit values are non-zero, for example, the MF Directory Server Security configuration page Security Facility configuration text contains: [Cache] requests=verify If a new password was specified in a Web interface logon request, then previously it was being ignored. Previously, if the user was logging on with an expired password and attempting to change the password the request would also be ignored and an expired password error would be returned.

  2868342 (1105626)

- An RTS 205 error during the execution of an AMODE application could occur when Assembler address 0 was erroneously de-registered. This is now fixed.

  3104561 (1109229)

- Under heavy loads, the ESFCA0401I log messages were not appearing at the correct intervals.

  2863222 (1104948)

- Enterprise Server listeners that are configured for TLS (also known as SSL) no longer hang if a client connects to them without sending any data.

  2873177 (1106408)
- In some HotFix releases of earlier versions of Enterprise Developer and Enterprise Server, SSL or TLS connections to an Enterprise Server could hang if client certificates were used and there was a delay of at least several seconds before the certificate was sent.

Embedded HTML Pre-Processor

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- The XML run-time system did not handle data items with the OCCURS clause correctly.

  3107418 (1109566)

File Handling

- The ESF LDAP Security Administration Web Interface now has a logoff button.

  2871551 (1106117)
- If data compression is specified when trying to open a fixed block file, when running under a mainframe dialect, the File Handler now checks to see if it is trying to open a VB file. If it isn't, compression will be turned off and the file will be opened as normal.

  2870022 (1105956)
- An internal field used to store the current file status was being overwritten by the allocation of a buffer. Now we store it off beforehand so its value can be restored, and an accurate file status returned.

  2868664 (1105707)
- When certain in-flight rewritten records were rolled back at the end of a transaction, the File Handler was setting incorrect values for the length field in some records and various warning messages were displayed during index file validation.

  2864802 (1106106)
- A CBL_FREE_MEM statement in Fileshare was missing a 'by value' clause, which was causing a run-time error. This is now fixed.

  2883421 (1107767)
- When running under Fileshare, a delete on a locked record no longer results in a record locked status if the same user had previously obtained a read lock on the file.

  2832909 (1108287)
- When REBUILDing from SEQ into IND with duplicate key, you will no longer get a corrupted file if you do not specify the target flag /t.

  2880311 (1107302)
- CSF to ZD negative sign conversion is now handled correctly during a sort operation.

  3103118 (1109125)
- JCL SORT no longer abends if no record is rewritten to a DUMMY data set.

  3102468 (1109052)
- Sorting ESDS files to RRDS files no longer truncates the first 4 bytes of each record.

  3101385 (1109112)
- Variable length SORT OUTFIL files are now created correctly when more than one data set is specified in the targeted OUTFIL.

  2881629 (1107551)
- MFSORT INCLUDE will no longer include the first record in the concatenated file if, according to the parameters, that record should be excluded; previously, the first record was included regardless of the parameters.

  2876259 (1106785)
- For an MFJSORT, a combination of numeric tests and logical comparisons now returns the correct records.

  2870986 (1106216)
- When copying concatenated files in MFJSORT, for sequential fixed block, the correct number of record is now used.

  2870506 (1106057)
- MFJSort now produces the correct number of records regardless of the value of the SORTSPACE setting.

2867668 (1105534)

- An error when writing the ICETOOL listing from an empty input file has been corrected.

2866176 (1106459)

Interface Mapping Toolkit

- A problem with Enterprise Server that caused an alphanumeric data item mapped to a SOAP Boolean to give results that were incompatible with the mainframe for invalid data values has been fixed.

2887795 (1108360)

- The performance of a COBOL Web client has been improved when processing services with interface parameters containing unbounded arrays.

2884760 (1108026)

- When a path specified as part of an ls2ws parameter contained at least one space, ls2ws would fail. This has been fixed.

(622294)
- EJB generation/deployment has been enhanced to produce an EAR file. Unlike the EAR file produced during client generation, this deploy-time EAR does not contain a WAR file and thus does not contain any JSP files.

Micro Focus Directory Server

- Fixed a memory leak in the MFDS process.

2876419 (1106799)
- A memory leak in the MFDS process occurred if non-SSL-enabled connection attempts were made against an SSL-enabled MFDS. This has now been fixed.

2869493 (1106567)
- The MFDS -g command-line option now correctly handles the import of multiple region definitions from a single XML file.

2840162 (1101798)
- An issue that could potentially cause heap corruption in MFDS if the configuration data for an individual object was greater than 1K has been fixed.
- The "Renew" option available in the Enterprise Server Administration Web interface now works if SSL is enabled.

Monitoring and Management

- Spurious STEP BYPASSED events for dummy steps were being passed to the user exit and the HSF exit.

2873504 (1106446)
- An issue where duplicate HSF records could be created has been fixed.

2856941 (1103977)

OLE Class Library

- A problem with accelerator keys being handled by an ActiveX control has been fixed.

  2990224 (1108719)

OpenSSL

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- The version of OpenSSL included in this product has been updated to version 1.0.2j.

REX Support

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- When running a REXX EXEC under Enterprise Server or Enterprise Server for .NET, an "Invalid Expression" error occurred for an assignment statement where the expression being assigned to the variable had been omitted. An empty string is now assigned to the variable if the expression is omitted.

  2880655 (1107390)
- A REXX exec could fail with a S0C4 abend or an RTS 114 error if it was greater than 4096 bytes in length and specified either as in-stream data or catalogued as an RECFM=F or RECFM=V dataset.

  2878613 (1107100)

RM/COBOL

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- When FILETYPE(21) was specified for a LINE SEQUENTIAL print file, you could receive a Run-Time System error "13". Writing to a printer from a Visual COBOL program through the RM File Manager (filetype 21) now works correctly.

  2874987 (1106616)

Run-Time System

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- Adis SCREEN SECTION ACCEPT statements for PIC N DISPLAY-1 items now correctly accept DBCS characters with a lead byte of x"87".

  3104586 (1109231)
- A error when using very long command lines with Profiler (or cobprof on UNIX) has been fixed.

  2884968 (625185)
- You can now double-click (to run) managed executables that use the ACUFH file handler; previously, they may have failed with a COBRT198 error.

  2880827 (1107388)
- When debugging a native Object COBOL application, the debugger no longer fails with an intermittent COBRT114 run-time error when getting the type and value of an object's handle.

  2875531 (1106808)
- A multi-threaded application that makes use of the COBOL syntax for handling mutexes, monitors, events and semaphores, or the corresponding CBL_ APIs, no longer fails intermittently with various run-time errors due to memory corruption.

  2860205 (1104446)
- Animating a core file that has been moved to a different directory, for a core file produced by an application compiled to executable, no longer fails with a "Program is not animatable" error. Previously, it would on certain platforms.

  2856631 (1103933)

- Detaching from animation that was started using the debug_on_error tunable could cause animation to re-start again for the initial error - this has now been resolved.
- A 12-byte (32-bit) memory leak has been prevented when calling native COBOL code from JVM COBOL when using the 'C' call-convention, or the RuntimeSystem.cobcall/cobrcall library APIs, with a parameter type that is a JVM array.

SQL: COBSQL

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- A problem that caused the COBSQL preprocessor to incorrectly parse comments beyond column 72 has been fixed.

  3101746 (1108980)
- A problem with COBSQL producing a duplicated cursor data item when KEEPCOMP was used has been fixed.

  2874051 (1106531)
- A problem that caused the COBSQL preprocessor to incorrectly process source lines with characters in column 73 and beyond has been fixed.

  2869958 (1109899)

SQL: OpenESQL

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- The OpenESQL preprocessor incorrectly expanded a group host variable used in a CURSOR SELECT statement, resulting in a run-time error. The preprocessor has been modified to generate a COBES0130 error message in this case.

  3104602 (1109289)
- A problem the prevented OpenEQL applications calling SQL Server stored procedures with no parameters when using the legacy 'SQL Server' ODBC driver has been fixed. Important: We strongly discourage use of the legacy 'SQL Server' ODBC driver. Instead, we recommend that for best performance and functionality, use the ODBC driver that corresponds to the version of SQL Server used by the application.

  3100550 (1109071)
- A problem with HCOSS code generation that occurred when duplicating input host variable references (for example when substr() is used with 2 rather than 3 parameters) has been fixed.

  3100098 (1108819)
- A problem with the OpenESQL native routine that provides DSNTIAR emulation sometimes caused an RTS114 error. This has been fixed.

  2989595 (1108699)
- A new OpenESQL directive, GEN-SQLCA, has been added to generate the SQLCA copybook in a program when it has not been explicitly included. This directive provides additional support when migrating applications compiled with STDSQL(YES) on the mainframe.

  2887858 (1108368)
- A problem with the MSSQL XA switch module sometimes causing a CICS transaction to abort if it ended without closing all FORWARD and READ ONLY cursors has been fixed.

  2887074 (1108340)
- An inconsistency in reporting data truncation warnings when using PostgreSQL has been fixed.

  2886648 (1108201)
- OpenESQL and OCI have been updated to to prevent RTS198 errors when using DSNTIAR with ODBC. To take advantage of this new functionality, specify the cob -d command flag to resolve DSNTIAR with the correct callable shared object. For example, to compile a COBOL program into an

executable on a 64-bit platform with OESQL DSNTIAR: cob -x program.cbl -d DSNTIAR@cobmfdsntiar64.so -L$COBDIR/lib -lmfpliz -lplidump -llmgr -lm Or, to compile a PL/I program into an executable on a 32-bit platform with OESQL DSNTIAR, execute the following two commands: mfplx -c PROGRAM.pli -sql odbc -optsql "behavior=mainframe nosmftrace" cob -x PROGRAM.o -d DSNTIAR@cobmfdsntiar.so -L$COBDIR/lib -lmfpliz -lplidump -llmgr -lm

2884651 (1107997)

- A problem when using OpenESQL for JDBC with the "Use Dynamic Calls" project option has been fixed.

2883500 (1107955)

- A problem with SQL(AUTOFETCH) that affected SQL Server FORWARD READ ONLY WITH HOLD cursors performance has been fixed.

2880840 (1107580)

- The ADO.NET Run-Time System for OpenESQL now returns the correct value in SQLERRD(3) after a cursor fetch when other statements are executed between any fetches on the cursor.

2880814 (1107386)

- OpenESQL now allows FREE to be used as an SQL identifier. It is server dependent if this is supported at compile time when using SQL(CHECK) and at run time.

2880673 (1107368)

- A new OpenESQL directive, CLOSE_ON_COMMIT, has been added to provide greater control over cursor behavior on COMMIT for cursors that are not explicitly declared using WITH HOLD.

2879558 (1107305)

- A problem with HCOSS handling of nested table references in DB2 statements has been fixed and error messages when using SQL(STRICTPARSE) have been improved.

2879503 (1107286)

- The SQLBGP COBSQL compiler directive option has been added to ensure successful background parsing of EXEC SQL statements when the Pro*COBOL installation resides on a remote machine and not on the local machine.

2877618 (1107292)

- A problem that prevented SQL(CHECK) from working correctly on some databases has been fixed.

2877284 (1107021)

- When used with the SQL(USER-SQLDA=MAINFRAME) directive, the OpenESQL preprocessor could incorrectly generate ES0100 errors if a group variable was used in an EXEC SQL FETCH statement. This has been fixed.

2876420 (1106803)

- The OpenESQL preprocessor sometimes failed to return comp data items correctly if compiled with SQL(DIALECT=MAINFRAME). This has been fixed.

2874931 (1106606)

- The OpenESQL preprocessor has been updated to generate a more meaningful message, COBES0129, when it encounters an undefined host variable.

2874408 (1106624)

- A problem with SQL(NORSLOCATORS) leaking SQL Server server cursors has been fixed.

2872613 (1106294)

- HCOSS handling of the DB2 CHAR() function did not always properly apply the compile-time settings of DATE and TIME as the default formats when CHAR was called with a date or time value but no date or time format parameter was supplied. This has been fixed.

2872518 (1106404)

- A new SQL compiler directive option, OPTIMIZECURSORS, has been added to optimize memory consumption when using OpenESQL for ADO.NET with Oracle, DB2, or PostgreSQL. The default

setting is SQL(OPTIMIZECURSORS=YES). See the OPTIMIZECURSORS reference topic in the documentation for complete information.

2871132 (1106056)

- Decimal and host variables with the same length are now converted to EBCDIC correctly when CHARSET(EBCDIC) is enabled; however, if you link native COBOL applications that use display numeric variables in SQL statements using CHARSET(EBCDIC), you might get a link error. To resolve this issue, see the OpenESQL topic under Known Issues and Restrictions.

2857755 (1104091)

- A problem with the ODBC switch module not reporting broken connections to Enterprise Server when xa_start() is called has been fixed.

2843672 (1108847)

- A problem that caused the OpenESQL preprocessor to incorrectly interpret UNICODE(PORTABLE) has been fixed.
- The SQL xa_open string has been updated to include the PACKAGEPATH option, which enables the use of substitution markers to customize the package path based on the current JCL or CICS user name, XA resource name, enterprise server region name, or a combination. In addition, when used with the UserP option, the PACKAGEPATH option value changes when the user for the connection changes.
- A problem using SQL(DATEDELIM) with SQL(DATE=JIS) has been fixed.
- OpenESQL has been updated to enable execution of selected SQL statements at compile time. You can use this functionality to create temporary tables during compilation and to enable the use of SQL(CHECK) with temporary as well as permanent tables.
- The encoding of the sqltype fields in SQLDA has changed and any applications that use dynamic SQL with SQLDAs might require application code change. The new sqltype encoding scheme adds 0x2000 to sqltype when an integer, a small integer or a big integer host variable is COMP and 0x1000 and when any indicator host variable is COMP. Otherwise, COMP-5 is assumed for indicators and for integer, small integer and big integer host variables.

SQL Option for DB2

- A problem with the Declaration Generator that prevented COBOL copybooks from being generated correctly for tables with timestamps and XML columns has been fixed.

2875742 (1106868)

- The XDB preprocessor has been updated to support source connect files that previously generated a "File not found" error for EXEC SQL INCLUDE statements located on the source connect drive.

2912819 (1108471)

- The XDB ECM has been enhanced to handle temporal table query syntax.

2876438 (1106807)

- Implemented the JDBC ResultSet Interface getBigDecimal methods that do not require a scale argument: getBigDecimal(int columnIndex) and getBigDecimal(String columnLabel).

2877817 (1106963)

- A problem that caused an X020 syntax error on SELECT DISTINCT (TRIM)has been fixed.

3105393 (1109324)

- A problem that prevented the XDB engines to successfully process a COUNT(DISTINCT expression) scalar function when the expression was a concatenated expression enclosed in parentheses has been fixed.

2884227 (1107903)

- A problem that caused a thread stack overflow on scalar function recursions that use CONCAT has been fixed.

2884046 (1107882)

- A problem with the XUTLB LOAD grammar prevented the reserved word DATE from being used as a table name. This has been fixed.

2882727 (1107652)

- An problem when correlating a subquery produced a PDMP242 error. This has been resolved.

2880672 (1107367)

- A problem that caused a FETCH FIRST clause in a scalar subquery to be ignored has been fixed.

2880671 (1107366)

- A problem using the reserved word DOCUMENT as an identifier in the first argument of a scalar function has been fixed.

2874154 (1106483)

- CAST AS TIMESTAMP using the special character 'T' as the date/time delimiter was not allowed. This is now allowed.

2874153 (1106484)

- An issue with the ordering of a result set caused the incorrect row to be returned on a FETCH FIRST ONLY clause. This has been fixed.

2873390 (1106435)

- An issue with index optimization of LIKE predicate processing has been resolved.

2873389 (1106391)

- A problem that sometimes caused the XDB Server to shut down before completing location checkpoint operations by maintenance threads has been resolved.

2847090 (1102750)

- An problem with LIKE predicate index query optimization that caused missing result set rows has been fixed.

2841168 (1101910)

- A problem that prevented the restoration of LOB data from a record with an LOB column after deleting the record and then rolling back from a Save Point has been fixed.
- XDBMONN has been updated to issue the correct error message when it is started, but the server is not running.
- The server Name be displayed in the status bar of the XDB SQL Wizard.

2865763 (1105197)

- Using ALLOW EDITING on an SQLWizard result set could result in the query being corrupted. This has now been fixed.

2865336 (1105171)

- The restriction that prevented the editing of result sets generated from alias tables has been removed.

2857585 (1104067)

- When the SQLWizard is invoked by MFA Drag & Drop to import unload data to a table it no longer returns an X352/X95 error.
- A problem that sometimes occurred when using the DB2(NOHCO) compiler directive option caused the return of incorrect codes at completion of program execution. This has been fixed.

3100172 (1108872)

- The DB2 preprocessor has been updated with a new DB2 compiler directive option, QUALIFY-CALL, that works with the QUALIFIER compiler directive option to qualify DB2 EXEC SQL CALL statements with the schema name specified by the DB2 QUALIFIER directive.

2884948 (1108032)

- The DB2 ECM has been updated to prevent an undefined ECM error when indicator variable arrays are used in SELECT SQL statements.

2884605 (1107947)

- The DB2 ECM preprocessor has been updated to support host variables defined as SQL TYPE IS XML AS BLOB-FILE/CLOB-FILE/DBCLOB-FILE.

2839654 (1101707)

XML Support

Back to the list

- XMLPARSE no longer returns -19 in XMLSS mode.

2913116 (1108661)
- Opened XML files are now closed when the COBOL program called by JCL is terminated.

2885450 (1108132)
- A new directive "OUTENC(INPUT)" is created to ensure encoding of the output text will be the same as the input encoding specified in the XML declaration.

2870879 (1106332)
- XMLIO now handles REDEFINE data items correctly.

2795744 (1096302)

Known Issues

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

In addition, note the following:

- *Resource Adapters*
- *REST/JSON IMTK implementation and the same-origin policy (SOP)*

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).

REST/JSON IMTK implementation and the same-origin policy (SOP)

- HTTP requests sent from scripts within a web browser to REST services deployed on an enterprise server might fail due to the same-origin policy (SOP). Some browsers might implement (or support plugins that implement) techniques for relaxing SOP such as cross-origin resource sharing (CORS) that enable sending cross-origin requests successfully. For REST services, Enterprise Server does not implement a method for relaxing SOP. This means that browsers that implement CORS (or any other SOP relaxation technique) might still forbid requests made from scripts due to Enterprise Server not implementing the equivalent technique on the server side.

Other Issues Resolved in This Release

The numbers listed are the Support Incident Numbers followed by the Reported Problem Incident (RPI) number (in parentheses).

- 2884374 (1107928)
- 2875256 (1106645)
- 2871954 (1106649)
- 3103304 (1109198)
- 2857117 (1106716)
- 3106240 (1109462)
- 2989573 (1108689)
- 2874306 (1106666)
- 2848671 (1102872)
- 2878662 (1107084)
- 2864100 (1104959)
- 3101450 (1108990)
- 2884755 (1107973)
- 2884754 (1108098)
- 2883962 (1108118)
- 2883962 (1108119)
- 2878826 (1107101)
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- 2875248 (1106679)
- 2874812 (1106627)
- 2874077 (1106516)
- 2872027 (1106210)
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- 2864164 (1105035)
- 2990780 (1108760)
- 2884757 (1108096)
- 2883769 (1107830)
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- 2872035 (1106199)
- 2867270 (1106437)
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- 3101467 (1109005)
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- 2873035 (1106735)
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- 2870557 (1106194)
- 2865051 (1105317)
- 2859144 (1104286)
- 2146936 (1059549)
- 2876653 (1106832)
- 2865001 (1105155)

Unsupported Functionality

The following features or functionality are no longer supported:

- The HOSTSIGNS Compiler directive is no longer supported. Micro Focus recommends that you use the following Compiler directives instead: SIGN-FIXUP, HOST-NUMMOVE, and HOST-NUMCOMPARE.

Installing Visual COBOL Development Hub

Before Installing

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.

UNIX and Linux Installer Issues

Installing while using AFS/Kerberos authentication

If you are using AFS/Kerberos authentication to log onto your Linux system then you need to ensure you have a local user ID which SOA and Visual COBOL components of the product can use. This user ID must be set up prior to running the installer. When running the installer you need to specify `-EDadminID=[User ID]` on the command line so it is used by the installer.

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.

System Requirements for Visual COBOL Development Hub

Hardware Requirements

The disk space requirements are approximately:

Platform	Installer type	Setup file size	Disk space required for the installation	Disk space required for running the product	Sentinel RMS license server
POWER running AIX	Micro Focus	442 MB	1.77 GB	884 MB	35 MB
HP IA	Micro Focus	800 MB	3.20 GB	1.60 GB	66 MB

Platform	Installer type	Setup file size	Disk space required for the installation	Disk space required for running the product	Sentinel RMS license server
System Z running Red Hat Linux	Micro Focus	362 MB	1.45 GB	724 MB	34 MB
x86-64 running Red Hat Linux	Micro Focus	431 MB	1.72 GB	862 MB	44 MB
ppc64le running Red Hat Linux	Micro Focus	262 MB	1.05 GB	524 MB	1 MB
SPARC running Solaris	Micro Focus	423 MB	1.70 GB	846 MB	38 MB
x86-64 running Solaris	Micro Focus	396 MB	1.58 GB	792 MB	30 MB
System Z running SUSE SLES	Micro Focus	243 MB	972 MB	486 MB	1 MB
x86-64 running SUSE SLES	Micro Focus	436 MB	1.74 GB	872 MB	44 MB
ppc64le running SUSE SLES	Micro Focus	243 MB	972 MB	486 MB	1 MB

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

✏ **Note:** This product includes OpenSSL version 1.0.2j.

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

- 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.

- 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.

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

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

Table 1: Default Libraries

The following table shows which of the required libraries are not installed by default on the specified platforms - X indicates the libraries are missing.

Library	32-bit Library Name	64-bit Library Name	s390 Library Name	Platform			
				SUSE 11	SUSE 12	Red Hat 6.*x*	Red Hat 7
glibc	glibc-*.i686	glibc-*.x86_64	glibc-*.s390			X	X
libgcc	libgcc-*.i686	libgcc-*.x86_64	libgcc-*.s390			X	X
libstdc++	libstdc++-*.i686	libstdc++-*.x86_64	libstdc++-*.s390			X	X
glibc-devel	glibc-devel-*.i686	glibc-devel-*.x86_64	glibc-devel-*.s390			X	X

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

- Oracle's Java Platform (64-bit) version 1.8.92 or above is required. Java 7 and 8 (32 or 64-bit versions) are supported for executing JVM COBOL code and for native COBOL and Java interoperability. 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 is 7.0 Service Refresh 8. 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 is JDK 7.0.11. You can get the HP-UX Java JDK from *HP's Web site*.

To execute JVM COBOL code, 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 64-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 License Administration tool. 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. To check the version of the license server on UNIX, run `/var/microfocuslicensing/bin/mfcesver` or `/var/microfocuslicensing/bin/cesadmintool.sh`.

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

Additional Software Requirements for Visual COBOL Development Hub

To ensure full functionality for some features, you might be required to obtain and install additional third-party software in addition to the prerequisite software installed automatically by the setup file.

Click here to see this information on the Micro Focus Infocenter.

Basic Installation

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

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

Installing Visual COBOL Development Hub

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

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

1. Give execute permissions to the setup file:

   ```
   chmod +x setup_visualcobol_devhub_3.0_platform
   ```
2. Run the installer with superuser permissions:

   ```
   ./setup_visualcobol_devhub_3.0_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).

SafeNet Sentinel considerations

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

  ```
  ./setup_visualcobol_devhub_3.0_platform -skipsafenet
  ```
- To protect the SafeNet Sentinel installation from accidental updating you can create an empty file named `SKIP_SAFENET_INSTALL` in `/var/microfocuslicensing/` as follows:

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

  While the file is present, the SafeNet installer does not make changes to the installation or shutdown the running license daemons. If licensing needs to be updated later, remove the file and install Sentinel RMS server manually.

  > **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`.

Advanced Installation Tasks

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

The advanced installation tasks include:

- *Installing as an Upgrade* - included in these Release Notes
- *Command line installation options* - included in these Release Notes
- *Installing using an RPM installer on Linux* - available in the product Help and in the Micro Focus Infocenter

Click here to see this information on the Micro Focus Infocenter.

Installing as an Upgrade

This release works concurrently with the previous version of Visual COBOL Development Hub, so you do not need to uninstall it.

Install the latest version in a different location and set the environment to point to it. To do this, run the Visual COBOL Development Hub installer with the –installlocation option:

1. Execute the following command:

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

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

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

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

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

Visual COBOL Development Hub Installation Options

Installing into a different location

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

```
./setup_visualcobol_devhub_3.0_platform -installlocation="full path of new
location"
```

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

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

Configuring the Enterprise Server installation

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, `-ESadminID="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`.

Installing Silently

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

You can use the following command line arguments to install silently on UNIX/Linux:

```
-silent -IacceptEULA
```

For example, execute:

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

After Installing

- Check the *Product Documentation* section of the *Micro Focus SupportLine Web site* and the *Micro Focus Infocenter* for any updates to the documentation which might have been uploaded.

Setting up the product

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:** If there are two or more products installed on the machine or the products are installed in non-default locations then the `/opt/microfocus/logs/MicroFocusProductRegistry.dat` data file can be used to find the product locations.

The file contains the following entries:

```
[ Install Location ]#[ Date of Installation ]#[ Product Name ]
```

For example:

```
/home/user1/VisCobol30#2017-01-20#Micro Focus Visual COBOL Development Hub
3.0
```

```
/home/user1/CobolServer30#2017-01-20#Micro Focus COBOL Server 3.0
```

Configuring the Remote System Explorer Support

Note: The following only applies if you are using Visual COBOL Development Hub with Visual COBOL for Eclipse.

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 1.7 or later.
- 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_VisualCOBOLDevelopmentHub3.0.sh` script in the `$COBDIR/bin` directory.

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

  To uninstall Micro Focus License Administration:

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

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

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

Licensing Information

> ✏️ **Note:**
> - If you have purchased licenses for a previous release of this product, those licenses will also enable you to use this release.
> - The latest version of the SafeNet licensing software is required. See the *Software Requirements* section in this document for more details.
> - 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

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

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

Installing licenses

You need either a license file (with a `.mflic` extension) or an authorisation code which consists of a 16-digit string of letters and numbers.

If you have a license file

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:**
> - It is not possible to install licenses remotely. You must be logged into the machine on which you are installing the licenses.

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.

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

This method of authorization is required if the machine you want to license does not have an Internet connection or if normal (automatic) authorization fails.

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

- Access to a computer which is connected to the Internet.
- 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.

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 *Product Updates* section of the Micro Focus SupportLine Web site, where you can download fixes and documentation updates.
- The *Examples and Utilities* section of the Micro Focus SupportLine Web site, including demos and additional product documentation.
- The *Support Resources* section of the Micro Focus SupportLine Web site, that includes troubleshooting guides and information about how to raise an incident.

To connect, enter *http://www.microfocus.com* in your browser to go to the Micro Focus home page, then click **Support & Services** > **Product Support**. In the **Browse by Product** field, click the product you require support for. Click **Log into SupportLine**.

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.

Also, visit:

- The Micro Focus Community Web site, where you can browse the Knowledge Base, read articles and blogs, find demonstration programs and examples, and discuss this product with other users and Micro Focus specialists. See *http://community.microfocus.com*.
- The Micro Focus YouTube channel for videos related to your product - see *https://www.youtube.com/user/MicroFocusIntl*.

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.

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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