MICRO FOCUS

Micro Focus Visual COBOL Development Hub 5.0

Release Notes

2019-09-26

Contents

Visual COBOL Development Hub 5.0 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* for any updates to the documentation which might have been uploaded.

What's New

This release provides enhancements in the following areas:

- *Enterprise Server Common Web Administration*
- *Data File Tools*
- *Enterprise Server Security*
- *Platform Support*

Enterprise Server Common Web Administration

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Note: This feature is in Early Adopter Product (EAP) release status.

Visual COBOL now includes a new Enterprise Server Common Web Administration interface (ESCWA). ESCWA is a web user interface and server for modern administration, monitoring and control of Enterprise Server. It offers improved usability that consolidates the different Enterprise Server user interfaces so that native and managed regions, and security stores can be managed in one place. Features include:

- Administering directory servers across multiple hosts.
- Monitoring and control of Enterprise Server instances.
- Configuring and administering a security store, defined in an LDAP-compatible security manager such as Microsoft Active Directory or OpenLDAP.
- Administering the Scale-Out features - enable you to specify logical groups of Enterprise Server instances, and configure and run Performance Availability Clusters (PACs) and their related Scale-Out Repositories (SORs).
- Administering, monitoring and control of Enterprise Server for .NET regions and listeners.
- The use of current web frameworks that have a greater focus on security.
- (Included with 5.0 Patch Update 2) - support for Enterprise Server XA, MQ and PL/I configuration and monitoring. This includes support for XA resources, configuring MQ, Listeners and Writers, PL/I, MFCS console, Region Trace options, displaying the current ESMs on logon page and Local/loopback connections warning changes.

Data File Tools

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This release provides the following enhancements:

- The Data File Editor now includes a Compare Files tool that enables you to compare the contents of two data files side-by-side.
- Structure files, and the layouts within them, can now be created within the Data File Editor; you no longer need to use the Classic Data File Tools utility to manage your layouts.
- When connecting to a VSAM dataset stored in an enterprise server region, you can store any passwords required for access, for the duration of your current session.
- You can view archived JES spool jobs that have been merged into one spool file using the merging archived spool files process.
- You can now quickly duplicate records in non-indexed files, using the Duplicate Record option.

Enterprise Server Security

This release includes the following enhancements:

- Security - security features can now be employed when developers and administrators install new COBOL services (web services and EJBs) into an enterprise server instance over the network. There are a number of authentication and authorization options that can be enabled. See *Deployment Listeners* and *The .mfdeploy File* in your product Help.
- Vault Facility - a new security feature has been added that enables some Enterprise Server components to keep certain sensitive information in a form of storage defined as a vault, accessible via a configurable vault provider. The default vault provider stores data in encrypted format on disk.
- OpenSSL 1.1.1 - the OpenSSL security provider has been updated to OpenSSL version 1.1.1.

  This is the stable Long Term Support version of OpenSSL.

  - Added support for the ratified TLS protocol version 1.3. TLS 1.3 benefits include:

    - Much shorter initial connection negotiation sequence. This reduces the time taken to establish a link before starting to transmit data.
    - Using only the most secure ciphers and hash methods.
    - TLS 1.3 will be negotiated in preference to the older TLS protocols.

  - Added support for new Ciphers and Key Exchange groups in line with TLS 1.3 requirements.
  - The default security level for previously configured endpoints has been moved from Security Level 0 to Security Level 1. This removes the ability to accidentally make use of known-weak elements such as SSL3 and MD5. Similar changes to the default Security Level have recently happened to Java, Chrome, Firefox, and other systems providing secure connections.

- Fileshare Security - the Fileshare Secure TCP/IP transport provider now supports the trusted use of X509 certificates bearing the name of the Fileshare service as the Common Name element of the certificate.

  In previous releases, a secure connection to a Fileshare server was made using a certificate that represented the network location upon which the Fileshare service was located. This method is still supported, but does not distinguish between the exact Fileshare server that is being connected to when more than one service can exist on a single host system. With this change, individual Fileshare services can identify themselves by using a unique certificate. While running on the same host and registered with the same network endpoint.

- Support for Active Directory user groups and group name mapping - the Enterprise Server External Security Facility's MLDAP ESM Module can now use Active Directory user group objects for Enterprise Server user groups. Also, the module can now map long group names to the 8-character-maximum names required for mainframe emulation.
- Selective auditing - administrators can audit only security activity of particular interest, reducing audit overhead and the volume of events. The Enterprise Server External Security Facility's MLDAP ESM Module can now enable ESF Audit events only for particular users, groups, and resources.
- Improved interaction with LDAP client libraries resulting in fewer LDAP-related issues and easier diagnostics - the Enterprise Server External Security Facility's MLDAP ESM Module has improved interoperation with LDAP client libraries:

  - The client library vendor and version information is logged after the library is loaded
  - The module has better heuristics for loading the correct library supplied by the OS vendor, so the "provider" configuration option can generally be omitted
  - For OpenLDAP, the module sets its proprietary "connect timeout" option

- SNI support (requires 5.0 Patch Update 1 or later) - support has been added in Patch Update 1 for the Server Name Identification (SNI) extension to TLS. This helps to avoid connectivity issues related to a growing number of Web services being hosted on SNI servers.

Platform Support

Support is now available for the following additional or updated operating systems:

- SUSE (Power) 11 SP3, 12
- Red Hat (Power) 7.2, 7.3
- Windows Server 2019

For a full list of supported platforms, check *HTTPS://SUPPORTLINE.MICROFOCUS.COM/ PRODAVAIL.ASPX*.

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).

- *Common Communications Interface*
- *Compiler*
- *Data Tools*
- *Documentation*
- *Enterprise Server*
- *Enterprise Server Auditing*
- *File Handling*
- *Interface Mapping Toolkit*
- *Micro Focus Directory Server*
- *MFCRYPTLIB*
- *Request Packet Interface API*

Common Communications Interface

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- Certificate subject names are now correctly checked against the name the client is attempting to connect to. Certificates registered to "localhost" should now work as expected.
- The default Cipher Suites List now includes @SECLEVEL=0. This indicates that backwards compatibility with old certificates such as MD5 is to be retained. As a result of this change, you need to review your use of the Cipher Suites List and of any old certificates.
- If using Micro Focus Common Client(MFCC) or Micro Focus Communications Server(MFCS) to connect to a non-existent remote host, it was possible to create a connection to a server listening on the same port on the local system. This is no longer possible and a bad address error is reported in the error logs.
- By default, in this and previous releases an SSL/TLS CCI client can trust a server which resides on an IP address that is not an intended connection target. You can now specify the ssl_only_verify_literally option in your CCI.INI file to restrict the certificate check to improve security. See "CCITCP Security Options in the CCI.INI File" in your product Help for more information. When connecting to a non-CCI protocol server, all clients perform strict certificate checking as the new default behavior

Compiler

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- The Search order has been updated, to allow the Compiler to find Java.

Data Tools

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- Accessing a dataset through the Data File Editor now obtains a shared lock on Enterprise Server when you open the file in shared mode.

  3170479 (1115346)

Documentation

- The ANIM Compiler directive has changed its default when compiling from the command line on Windows platforms. The default is now ANIM. (Compiling from the IDE still defaults to ANIM.)

- The validation of server certificates for TLS (also known as SSL) connections has been corrected. This is likely to cause connection failures in cases where previously connections were incorrectly allowed. For example, if Fileshare is secured with TLS, client applications must be configured to use the hostname of the Fileshare server as it appears in the server's certificate. If the Micro Focus Directory Server is secured with TLS, then MFDS clients, such as the casstart command-line utility, will need to connect to it using a hostname that appears in the certificate MFDS is using. (Note that a certificate can contain multiple hostnames.) Consult your Certification Authority administrator for more information.

   3192497 (1117068)

Enterprise Server

- A number of audit events now contain some additional information.

   3140310 (1112666)

- Previously, the /x option of the CASRDTEX utility had been duplicated to drive XML output. This prevented the export of transactions which was the original meaning of /x. To generate an XML export, you must now specify the option /xm.

   3180233 (1116108)
- casfhsf could hang when processing HSF files that contain records from tasks that ran in different months.

   3177385 (1115884)
- A new system transaction, CRCN, is now available to monitor the state of XA connections for each resource manager (RM) entry defined in the system. CRCN is a replacement for the former XA Reconnect facility that recycled SEPs on connection loss. The XA Reconnect facility was configured by setting the ES_XA_RECONNECT environment variable. CRCN also uses this environment variable, although its usage differs slightly. For more information see your product Help.

   3174272 (1115727)

Enterprise Server Auditing

- Auditing on big-endian platforms now correctly interprets numeric audit data.

File Handling

- RELFORMAT=MF|RM is now enabled for FOLDER and other filename tags.

   3164916 (1114803)
- The SORT-CONTROL special register is now supported during a SORT statement.

   3159740 (1114389)
- To direct the handling of relative files to a particular file handler (either MF COBOL or RM/COBOL), use the RELFORMAT=MF or RELFORMAT=RM configuration options within the [REL-DEFAULT] tag of the EXTFH.CFG file. (The default is RELFORMAT=MF.)

   3157247 (1114149)

Interface Mapping Toolkit

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- If you try to deploy a stateful EJB SVI from the Visual Studio IDE after unchecking the "Reuse container after application termination" check box (in the Deployment Characteristics tab of the Runtime Environment Configuration dialog box), you receive a warning message informing you that the "Reuse container after application termination" setting will be set to true for the deployment in order to prevent the crash. In the Eclipse IDE, the unchecking of this option will just be ignored, and the option re-selected. A warning to not uncheck the option for stateful EJB SVIs is also displayed on the prior page (to the dialog box).

  2663812 (1090987)

- WSDL and JSON Schema files generated for bottom-up CICS Web services now include a "maxLength" parameter for all string fields.

  3175039 (1116241)

Micro Focus Directory Server

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- The event codes for several MFDS audit points have changed.

MFCRYPTLIB

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- Passing an incorrect keyfile passphrase no longer results in receiving an RTS115 error in MFDS.

  3181743 (1116186)

Request Packet Interface API

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- The default behaviour for TLS certificate Common Name (CN) matching has changed for release 5.0. It now requires a strict match on the CN value or any Subject Alternate Name (SAN). For example, 127.0.0.1 and localhost are no longer implicitly equivalent, nor are hostname and its IP address or fully-qualified domain name (FQDN) variants. When starting a region from the Enterprise Server Administration Web interface, a resolved IP address is used for the casstart -m parameter value. A resolved IP address is also used even if a hostname is specified on a command line startup.

  To change this behavior and use a resolved hostname value (as determined by the machine TCP configuration, for example, hosts file entries.) set the environment variable MFDS_DNS_RESOLVE=Y. To use an unresolved string literal hostname, for example, a value explicitly passed in via the casstart –m command line parameter, set MFDS_DNS_RESOLVE=N.

  3194613 (1117203)

Resolved Issues

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

- *Adis*
- *Codeset Support*
- *Data Tools*
- *Dialog System*
- *Documentation*
- *Embedded HTML Pre-Processor*
- *Enterprise Server*
- *File Handling*
- *Interface Mapping Toolkit*
- *Licensing*
- *Micro Focus Common Client*
- *Micro Focus Directory Server*
- *Micro Focus Server Administrator*
- *OpenSSL*
- *Run-Time System*
- *Setup*
- *SQL: COBSQL*
- *SQL: DB2*
- *SQL: MBDT Utilities*
- *SQL: OpenESQL*
- *SQL Option for DB2*
- *Web Service Client*
- *XML Support*

Adis

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- ERASE EOL no longer stops Keisen attributes being inherited when enabled by x"AF" function 81.

  3169584 (1115178)
- ACCEPT LINE POSITION data-item, where data item has the JUST clause, now works as expected when the ADISCF pre-clear option is selected.

  3126794 (1111471)
- BLANK SCREEN BACKGROUND-COLOR n, where n > 7, now sets the intensity so that the bright version of the color is used to fill the screen.

  2856949 (1103978)

Codeset Support

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- Conversions from ASCII to EBCDIC, with null data, no longer get corrupted.

  3155499 (1114114)

Enterprise Server

- There is no longer an issue with the order of file retrieval for the list of console logs affecting the calculated maximum log number.

  3192214 (1117023)
- LRECL fields are now displayed correctly in Data File Tools when accessing Enterprise Server hosted data files.

  3186524 (1116586)
- An issue with stopping printer terminals has now been resolved.

  3185553 (1116498)
- MQ Security is now used when using DSNRLI.

  3183523 (1116641)
- In Data Files Tools, the performance of opening a PO dataset that is hosted within Enterprise Server has been improved.

  3178780 (1116293)
- An issue that caused CTG requests using SNT users to be rejected has now been resolved.

  3178729 (1115967)
- An issue with IBM PCOM was resulting in different colors in BMS in RUMBA and PCOMM. To work around this, use the new environment variable ES_3270_REMOVE_NULL_COLOR_ATTRIB. Set ES_3270_REMOVE_NULL_COLOR_ATTRIB to y or Y to prevent the color attribute set to null from being sent in a 3270 flow.

  3176924 (1115831)
- The MQ XA switch modules now supports the BATCHONLY option.

  3173781 (1115552)
- Previously, xwbauth user exit was not invoked if URIMAP path was greater than 64 characters.

  3173349 (1115514)
- When a region was configured to use Extended User Storage, the associated memory was not registered with MFPM. This resulted in issues when using GETMAIN SHARED from a program compiled with the AMODE directive.

  3173307 (1115549)
- casout will no longer crash when using the /v option and there are more than 256 initiators/batch printers/mprs.

  Information for approximately 1300 processes can now be returned. If more than that exist, then casout will return as much as it can and set return-code to 4.

  This may be caused by schedulers using the entry point 'casout_getSEPS'. This can be called after using the casout API with the /v option. The signature for this entry point is:

  entry 'casout_getSEPS' using lk-casout-area.

  lk-casout-area is defined in casbout.cpy but can only hold information for up to 256 processes. If there are more than 256 processes then a call to this entry point will return truncated data (that is, 256 instances) and set return-code to 4.

  Since casout /v can now return data for more than 256 processes, a new optional parameter, which is a pointer, has been added to casout_getSEPS:

  entry 'casout_getSEPS' using lk-casout-area lk-casout-user-area-ptr.

  If there is data for more than 256 processes, then this pointer will be set to the address of the entire block of data.

  3171604 (1115376)

- Transaction routing requests from the same terminal to an ISC connected region involving a DPL request to an APPC connected SYSTEM now execute successfully.

  3170073 (1115270)
- Transactions with a timeout that was running over midnight were timing out prematurely at midnight.

  3169194 (1115144)
- Event manager exits that are enabled for SEP termination events are now invoked when a SEP, Initiator, MPR or a printer is stopped cleanly (from ESMAC and casout) and not just when they are killed.

  3168159 (1115051)
- The cursor position is now correctly identified when using floating maps - a map on top of another map.

  3166543 (1114958)
- If created from a previous run, cas_ipcs.lst and cas_ps.lst will now be deleted at the next region startup.

  3165807 (1114872)
- In a heavily loaded Enterprise Server cluster, it was possible for jobs to be dispatched to a printer process instead of to a batch initiator. This would result in the job's lock being permanently held and prevent further submission of jobs of that name.

  3162806 (1116082)
- When Enterprise Server activates an LU62 connection to the mainframe or to another APPC linked system, you can now leave the modename to SPACE. This indicates that the remote side of the APPC connection should use an elected default modename.

  3162296 (1114713)
- The position of a cursor on a map which size is different from that of the terminal size was incorrect. This has been fixed.

  3158745 (1114273)
- In an ESM secure region, when the userid field in a terminal definition was populated, there were issues at region startup or when trying to install the TERMINAL resource.

  3158468 (1115137)
- The environment variable ES_DDBG_PORT_RANGE now supports ports that include less than five characters.

  3158205 (1114237)
- With ES_XA_NB_RETRIES=-1 specified, Enterprise Server would leak SHM if the connection to the XA RM was lost.

  3158011 (1114246)
- An issue where a region would take too long to start up and eventually fail to start has been resolved.

  3153774 (1113875)
- Return codes from file operations on the spool files are now displayed correctly when there is an error.

  3153516 (1113882)
- When Data File Editor accesses files managed by an enterprise server region, users now need UPDATE permissions in order to access the file exclusively.

  3152798 (1113831)
- When connecting a TN3270 to an Enterprise Server instance, if the connection was lost, the printer could not be reconnected. Now you can navigate back to ESMAC, then Clients, and stop the printer in order to reconnect it after a loss of the connection.

  3142113 (1112847)
- Formatting a trace that was captured during the period when the clocks went back an hour will now format the entire trace. Previously, the formatter would exit at the point when the clocks changed.

  2876312 (1106883)

- An issue with exporting PCT resources has been resolved.

- Enterprise Server, LDAP-based security: The use of Active Directory groups, or other group classes that specify membership using LDAP Distinguished Names, now works correctly when the "user ID attribute" configuration option is also used.

  3187284 (1116696)

- The Enterprise Server External Security Facility (ESF) now strips leading and trailing whitespace from the user ID and other relevant fields in Verify (user authentication) requests.

  3185569 (1116548)

- For Enterprise Server LDAP-based security, recent fixes to group processing exposed an issue when multiple LDAP repositories are used and all-groups mode is enabled. This could cause some or all of a user's group memberships to be disregarded, leading to incorrect denial of access to resources. The problem has been corrected.

  3182724 (1116269)

- Enterprise Server's MLDAP ESM Module now supports setting LDAP passwords using salted SHA2-512 hashes. Otherwise known as the SSHA512 LDAP password type.

  3178540 (1116077)

- In Enterprise Server with LDAP-based security where a security configuration uses two or more LDAP-based Security Managers, and use-all-groups mode and group federation are enabled, in some cases group membership was not processed correctly. Messages about "configured number of groups exceeded" could be logged. This issue has been resolved.

  3178071 (1115917)

- With certain Enterprise Server security configurations, the Data File Editor could display a "signon failed" error when attempting to edit a dataset. This has now been fixed.

  3177366 (1116022)

- The cache feature of the Enterprise Server External Security Facility now ignores some metadata when comparing requests with cache entries. This is configurable. By default, the subsystem (CICS, JES, etc.) and facility (terminal name, if any) are ignored. No ESM Modules supplied with the product use that information in making security decisions. This significantly improves the cache hit rate and system performance in some environments. See "Enabling and Configuring Caching" in the product documentation for more information.

  3172719 (1115513)

- When using LDAP-based security for Enterprise Server with an OpenLDAP-based provider (client) library, the "connect timeout" setting now works correctly.

  3172554 (1115522)

- When using Enterprise Server with LDAP-based security, it is now possible to specify an LDAP attribute for user-group objects which specifies an alternative name for the group using the group short name attribute. See "MLDAP ESM Module Custom Configuration Information" in your product Help for more information.

  3171437 (1115364)

- Enterprise Server LDAP-based external security no longer experiences a rare failure ("error code 7") when verifying a user with advanced group processing options enabled.

  3168197 (1115048)

- LDAP-based security for Enterprise Server could produce MD5 password hashes (using the "mode=bind" and "password type=MD5" configuration option; note this is rarely used) which did not use the canonical Base64 encoding. Some LDAP servers did not recognize these password verifiers, resulting in sign-on failures after users changed their passwords. This has been fixed.

  3162441 (1114843)

- In Enterprise Server, the MLDAP ESM Module now supports the short-to-long username mapping option of the External Security Facility (ESF).

3160464 (1114394)

- Enterprise Server now includes LDIF (LDAP Data Interchange Format) files suitable for configuring LDAP-based security using the OpenLDAP server.

3147666 (1113475)

- Enterprise Server's optional LDAP-based security (External Security Facility with MLDAP ESM Module) now supports the Microsoft "group" LDAP class, as used by Active Directory and AD/LDS. Consult the online product Help or ask Micro Focus Customer Care for additional information.

3109881 (1110084)

- On Linux and UNIX platforms, the MLDAP ESM module in Enterprise Server LDAP-based security, by default searches for an appropriate LDAP provider (client shared object) in the default locations used by the OS vendor's preferred LDAP client package. It is also no longer necessary to specify the "provider" option in a Security Manager configuration.

- An issue which resulted in the DELETE and DETAILS button staying disabled in the casrdo45 page has now been fixed.

3181230 (1116351)

- Previously, when viewing cataloged datasets or Spool files in ESMAC, it was not possible to view any lines beyond line 99,999. Now the limit for the START field in ESMAC has been increased to hold any number up to 99,999,999.

3181032 (1116152)

- An RTS error 153 occurred when more than 6400 PCT entries were displayed in ESMAC. This has been fixed.

3167388 (1115007)

- With some specific LDAP configurations there were problems with accessing datasets from ESMAC where the configuration should have allowed access. This has now been fixed.

3167364 (1114989)

- The response time for catalog searches using 44 character strings in ESMAC has been improved.

3162969 (1114933)

- Remove locks is now enabled if the user has authorization in ESMAC.

3157534 (1114372)

- Deprecation of set-cookie meta tag in newer versions of some browsers such as Chrome or Microsoft Edge caused issues with the cookies used by ESMAC. This has now been resolved.

3154175 (1113973)

- The esfadmin command-line utility now allows command-line and option-file parameters of any length, up to the maximum command-line length of 8192 bytes. All esfadmin parameters can appear in the option file except -o (which specifies the name of the option file).

2881372 (1107519)

- When using Enterprise Server with LDAP-based security, with two or more LDAP External Security Managers, with the use-all-groups mode enabled, and with federation either enabled or in compatibility mode (the default), it is no longer necessary to have a definition for each user in each LDAP ESM. Specifically, once one LDAP ESM has identified the user, subsequent ESMs (those specified later in the list of security managers) can specify additional groups for that user without having to define the user again. For example, a security configuration specifies two LDAP security managers, LDAP-A and LDAP-B. LDAP-A contains only user records. LDAP-B contains only group records and resource access rule records. All-groups mode and federation are enabled. This configuration now works as expected.

2545079 (1081762)

- xa_open in the switch module now returns the correct return-code.

3171133 (1115386)

- The path of ESDB2XA switch module is not required in the environment variable LD_LIBRARY_PATH when the application is compiled with XAID option and the dynamic switch module is used.

  3164301 (1114734)
- Within the DB2 LUW switch module, issues associated with ESLOGGING xa_open string parameter have been addressed, and better handling of impersonated userid when using USERP has been provided.

  3156639 (1114209)

Data Tools

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- The cursor is now visible in the free-text editing pane when the pane has focus whether it is in Shared or Exclusive mode. The cursor position will start counting from column 1, rather than column 0 as well.

  3154869 (1113954)
- On systems with a Japanese Locale, the Data File Tools utility no longer includes the phrase "Technical Preview" in its title.

Dialog System

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- An issue which prevented character mode Dialog System from recognizing ctrl-J and other key combinations has been resolved.

  3189921 (1116908)

Documentation

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- Result precision has been added to the following built-in functions topics in the LRM: INDEX, MAXLENGTH, SEARCH, SEARCHR, VERIFY, VERIFYR.

  3183332 (1116336)
- The product help now includes a clarification in the topic "To run a native COBOL application from a network server". It states that you must remove any individual copies of run-time system modules (for example, cblrtsm.dll) that might have been copied into your application's working directory. This is to avoid issues with running the application such as "245 no valid licenses found" as the run-time system is not loading from the expected location, or where the copied run-time modules are from other versions of the product versions. Removing such modules ensures that any run-time system modules are only loaded from the Enterprise Server instance installed on the server.

  3176098 (1116309)
- The Software Requirement on UNIX topic in the docs and in the Release Notes now specifies that SafeNet licensing requires that you have glibc-locale-32bit library installed on 64-bit machines.

  3167672 (1115010)
- Depending on the environment, you need to export (UNIX) or set (Windows) environment variables in a script. See "To specify environment variables for an application" for more information.

  3164533 (1116625)
- The documentation now includes the instruction that when deploying a subset of Run-time System files, you must include run.cfg in a sub-directory named 'etc'.

  3160902 (1114441)
- When performing a sort that specifies more than one input file, you cannot specify one of those same files as the output file unless it is the first input file specified.

  3153333 (1113833)

- Details of how to use ILBOABN0 have been added to the documentation.

  3148996 (1113634)
- The documentation (in the COBOL Language Reference) has been updated to clarify the use of the OPTIONAL keyword, and the use of (managed) optional parameters within the Procedure Division Header.

  2883545 (1107792)
- The National Locale Support (NLS) Library Routines section of the documentation now contains all available NLS routines.
- The *Significant Changes in Behavior* section of the documentation now includes the default change for FASTINIT. (This change occurred in version 3.0, as stated in the release notes on release.)
- The documentation has been improved for the CBL_LOCATE_FILE library routine concerning the use of space- and null-terminated strings.
- The Rebuild syntax differs between UNIX and Windows platforms. For any of the Rebuild options, UNIX platforms use a hyphen (-) prefix before the letter, and Windows platforms use a forward-slash (/) before the letter.
- The recommended method of high availability for VSAM files in Enterprise Server is to use standalone Fileshare. The documentation has been changed to reflect this.
- The documentation has been updated to reflect that 'DEFAULT' is a reserved word when running under an ENTCOBOL dialect.
- In the documentation, the code example given in the 'Thread-specific Data Handling Routines' topic now compiles cleanly.

- The parameter definition for OOCTRL"+/-W" has been clarified in the documentation.

- The documentation now contains a topic - Using a File Handler in JVM COBOL - detailing how to manually configure the File Handler that a JVM COBOL project uses.

- A link to the IBM documentation added to the 'DSNRLI Functions used for RRSAF' topic - this is to enable you to locate full details on required parameters, and to give examples of its use.

  3184952 (1116524)
- The documentation now states that the section heading when adding environment variables through the Enterprise Server UI is case sensitive.

  3177135 (1115979)
- The documentation explaining the scope for the HOST-NUMCOMPARE directive has been simplified.

  3156368 (1114075)
- The "To specify the location of application files" topic has been updated to clarify the location of IMS copybooks.

  3111136 (1109993)
- Documentation for all Java API classes is now provided in HTML format and contained in an archive file located by default in the %ProgramFiles(x86)%\Micro Focus\<product name>\javaee-ccl\docs directory. See the Java API Classes topic in your product documentation for details.

  3109273 (1109725)
- Documentation for all Java API classes is now provided in HTML format and contained in an archive file located by default in the %ProgramFiles(x86)%\Micro Focus\<product name>\javaee-ccl\docs directory. See the Java API Classes topic in your product documentation for details.

  3109271 (1109724)
- The sample code listed in the CBL_DIR_SCAN_READ documentation has been formatted to enable you to copy and paste the code, ready for compilation.
- The sample in the documentation on 'Using FHRedir and an allocation override rule' has been corrected to show the spool filenames in their correct case (upper case).
- The documentation now includes a definition for the system abend code S913 (which is "Security Violation - the user is not permitted to access the resource").

Embedded HTML Pre-Processor

Back to the list

- An issue that caused the embedded HTML preprocessor to display incorrect banner information has been corrected.

    3160255 (1114437)

File Handling

Back to the list

- Warning messages when checking disk space for Fileshare advanced logging are now only displayed when necessary. Previously, a disk space warning was given even if sufficient space was available.

    3174510 (1116078)

- A Fileshare server shutdown no longer leaves files opened or users remaining logged on.

    2837526 (1108076)

- CFLE updating large record no longer results in an RTS252 error with the HA-VSAM configuration.

    3167973 (1115057)

- You will no longer receive an RTS114 error when a failing primary node is restarted and attempts to re-join the HA group (as a standby node), as long as it closed all files successfully before the failure.

    3159872 (1114360)

- Rollback recovery will no longer hang when processing a bad log entry during a scan of the transaction log file.

    3168055 (1115049)

- A new MFJSORT option allows input LSEQ files to be treated as FB through setting the environment variable MFJSLSEQFB=ON.

    3190089 (1116876)

- SORT operations no longer compare field data that is outside of the current record length.

    3187044 (1116633)

- MFJSORT now ignores the RECORD TYPE value if the SORTIN dataset is non-VSAM.

    3163293 (1114669)

- During a SORT, the SUM statement now correctly handles 8-bytes BI fields.

    3161349 (1114540)

- An internal SORT program no longer returns a COBRT252 error for cataloged files when being compiled with AMODE"31" and dialect"entcobol".

    3161100 (1114586)

- SORT no longer produces an RTS114 error when both outfil and sortout datasets are not defined.

    3154290 (1113901)

- MFJSORT now correctly honors MFJ_INPUTDS_ERROR=N on missing physical concatenated datasets.

    3153313 (1113826)

- MFJSORT OUTREC now applies the correct length for EDIT patterns.

    3145526 (1113484)

Interface Mapping Toolkit

Back to the list

- For clients and services generated from WSDL, generated copybooks are no longer missing declarations for complex WSDL fields with duplicate names.

  3188506 (1116761)

- A problem that caused invalid xsd:date types in a CICS Web Service WSBIND file generated from a WSDL file has been fixed. xsd:date types are now generated as collapsed fields.

  3184571 (1116456)

Licensing

Back to the list

- cesadmintool.sh now searches for " version" string in the Java version and ignores any additional output that might appear.

  3185425 (1116559)

- In Docker environments, the license administration program, MFLicenseAdmin, now copes with longer-than-usual license strings. These occur with longer pieces of customer information embedded in the license.

  3174371 (1115634)

- There is no longer an entry in the Uninstall column for licenses installed on remote machines.

  3131570 (1112101)

Micro Focus Common Client

Back to the list

- Applications which use the Micro Focus Common Client (MFCC), such as the Interface Mapping Toolkit (when deploying a COBOL web service or EJB to Enterprise Server), can now specify credentials when binding to the Micro Focus Directory Server. This provides additional security. If credentials are not configured, MFCC will use an anonymous bind, as it did in earlier product versions. Credentials are specified using the mf-client.dat configuration file.

Micro Focus Directory Server

Back to the list

- The Enterprise Server Administration Web UI will only display user session details if the logged in user is authorized.

  3190235 (1116886)

- Additional Enterprise Server Administration Web UI server-side checks were added to guard against non-editable field value changes for started Enterprise Server instances and active security configurations.

  3185626 (1116719)

- Establishing a connection to a TLS-enabled MFDS process if non-default (non-DemoCA) certificates were used now works as expected.

  3174276 (1115675)

- The MFDS journal data format has been enhanced to be platform and bitism independent.

  3169565 (1115249)

- Improved validation of data input to Enterprise Server Administration Web UI.

  3163386 (1114693)

- Adding or editing TCP listener-requested endpoint values using the Enterprise Server Administration web UI so that a port clash may occur now gives a warning rather than being disallowed and treated as a user input error.

- If the Enterprise Server Administration Web UI is hosted in a Docker container, the displayed hyperlinks to reach the Micro Focus Communications Process web pages can now be configured to use an address which is valid outside the container.
- URLs to SSL-enabled MFCS Control Channel addresses displayed in the Enterprise Server Administration HTML UI now use an https prefix.
- A new field, "Server CA Root Certificate", is available in the Communications Process Control Channel page (id: c400). The value specified here is used unless the MFDS_server_CAROOT environment variable was specified as it takes precedence. You must specify the server CA root certificate if the Communications Process Control Channel is SSL/TLS-enabled and if communications with the MFDS process are required such as to respond to keepalive and any other administration control requests.
- Enterprise Server Administration Web UI would sometimes display the successful logon splash screen instead of a logon error message.
- The MFDS process could terminate when copying the definition of an Enterprise Server instance if it contained a very long description text.
- Trying to view or edit the properties of a Security Manager that is not in the Directory Server Security Manager list now results in receiving an appropriate warning message instead of an HTTP 404 error.
- MFDS now saves any changes made to the Communications Process immediately instead of at shutdown.

Micro Focus Server Administrator

Back to the list

- If Enterprise Server Administration was set to restricted access, some MQ listener configuration pages would not be displayed.

  3152874 (1113782)
- The Enterprise Server Administration HTML UI no longer displays the IP address but only the host name used by the Web administration server process.

  3140974 (1112912)

OpenSSL

Back to the list

- Visual COBOL, Enterprise Server, and Enterprise Developer now include an updated collection of public Certification Authority root and intermediate certificates (CARootCerts.pem) derived from the public collection maintained by Mozilla.org.

Run-Time System

Back to the list

- Under certain circumstances, if a file was opened multiple times and an error occurred, then any physical locks on the file could be lost.

  3177819 (1116043)
- In a threaded environment, when using critical-sections and simultaneously loading/unloading shared-objects, a race condition would sometimes create a deadlock. This no longer occurs.

  3177711 (1116154)
- The use of the P(COBSQL) Compiler directive in a Visual Studio or Eclipse project no longer causes the IDE to crash intermittently at termination.

  3133807 (1112077)
- The COBRT243 Class could not be loaded error message now contains the name of the class that could not be found.

  3104988 (1109420)

- Calls to CBL_MEM_VALIDATE might not have given the full memory corruption details if the corruption occurred in freed memory. This is now fixed.
- When using the Character Animator, you can enter Ctrl+C to interrupt the running process you are debugging. This would sometimes fail to stop the running process, but should now behave as expected.
- When setting the out-length parameter of the CBL_STRING_CONVERT API to zero in order to get the size of the buffer required for the conversion, the API no longer fails with a ArgumentNullException when running on the .NET environment. Under JVM COBOL, this API no longer corrupts the output buffer if the output length has been set to 0.
- In managed COBOL, for a very small set of cases for exponentiation and DIVIDE ROUNDED, performance was very poor. Also, for some of this set of cases, the result of DIVIDE ROUNDED could round in the wrong direction. These issues have been fixed.

  3185807 (1116589)
- Within JVM COBOL, a MOVE operation from a COMP-2 item containing a negative value to an unsigned COMP-5 item now gives the correct result.

  3175547 (1115719)
- Under JVM COBOL, RunUnit GetEnvironmentVariable() is now case insensitive on look-up of environment names.

  3161925 (1114545)
- CALL "SYSTEM" in a JVM COBOL program that is executed from a run unit in Java no longer produces a COBRT200 error if RunUnitStartupOptions.UseSingleThreadedRuntime is set.

  3151448 (1114573)
- JVM COBOL only. An issue has been resolved whereby some arithmetic expressions using a binary item (COMP, COMP-5) that had the value -2147483648 (- 2**31) could result in stack overflow.

Setup Issues

Back to the list

- The Data File Tools AddPack can now be installed alongside Enterprise Server.

  3158290 (1114230)
- The installer error handling has been extended to cater for certain conditions.

  3152023 (1113706)

SQL: COBSQL

Back to the list

- COBSQL now handles "ELSE EXEC SQL" correctly when it is all on the same line in the source file.

  3176046 (1115778)
- The XAID option did not work properly for COBSQL when CHARSET(EBCDIC) was used.

  3174070 (1115697)
- A compilation error that was caused by the COBSQL preprocessor incorrectly handing sections declared inside of a copybook has been fixed.

  3164533 (1116863)
- An unreadable copybook caused COBSQL to loop when stacked with the CP preprocessor. This has been fixed.

  3156374 (1114103)
- An unreadable copybook caused COBSQL to loop when stacked with the CP preprocessor. This has been fixed.

  3156374 (637041)

- An issue that caused a compilation error when COBSQL encountered inline comments in an EXEC SQL statement has been fixed.

  3123025 (1111044)
- COBSQL messages have been updated to provide more information when failure is due to a missing list file, and when the list file is missing due to use of the LTYPE=NONE directive.

  2883514 (624749)
- To prevent exceeding the COBSQL directive buffer size, the maximum directive buffer size has been increased to a maximum of 8000 characters.

  2852872 (1104084)
- To prevent hanging or a compilation error, COBSQL has been updated to properly handle conditional statements in the same line as EXEC SQL statements.

  2804004 (1097225)
- An issue that sometimes caused SQL error text to display as truncated on the command line has been fixed by increasing the maximum error length to 250 characters, and updating the logic used to construct the message.
- An issue that caused an error when a space was present between an END-EXEC statement and a period has been fixed.
- The COBSQL precompiler interprets the SOURCETABSTOP COBOL compiler directive as SOURCETABSTOP(8) in all cases. This is due to Pro*COBOL honoring only SOURCETABSTOP(8), and is a permanent restriction for COBSQL.

SQL: DB2

Back to the list

- An optional 'FROM' keyword in SQL statements such as 'FETCH FROM <cursor-name>' used to cause compiler errors.

  3191635 (1116976)
- There is no longer an issue with negative line numbers being generated in the .bnd file when the COBOL source file has more than 32700 lines of code.

  3188178 (1116814)
- An issue with the DB2 preprocessor caused it to incorrectly classify PL/I variables greater than 4000 bytes as LONG VARCHAR when it should have classified PL/I variables less than 32767 bytes as VARCHAR as it does for COBOL variables. This has been fixed.

  3185976 (1116539)
- DB2 XA switch source is now shipped for Linux ppc64le platforms.

  3184287 (1116424)
- The DB2 pre-compiler incorrectly generated a compile error when hyphen was used in SQL command without a space between the hyphen and host variable name. This has now been fixed.

  3180089 (1116102)
- DB2 LUW now supports dashes in cursor names, so the DB2 pre-compiler no longer changes dashes to underscores in cursor names.

  3177271 (1115912)
- The DB2 pre-compiler incorrectly passed COBOL variable names to PL/I programs when generating code to handle EXEC SQL SET CURRENT PACKAGE PATH statements.

  3175885 (1115744)
- The DB2 and OpenESQL pre-compilers now qualify generated code that uses SQLSTATE to qualify SQLSTATE similar to this one: SQLCA.SQLSTATE.

  3173295 (1115512)

- An issue that caused the DB2 preprocessor to incorrectly reject FILLER as a valid host variable name in PL/I programs has been fixed.

  3164600 (1114767)
- An issue that occurred with user personalization on user names exactly eight characters long has been resolved.

  3156639 (1114163)
- When a DBCS database is used with CHARSET(EBCDIC), the data of a char field following a varchar field will no longer be corrupted.

  3155499 (1114065)

SQL: MBDT Utilities

Back to the list

- There is no longer an issue with using more than one "AND/OR" statements in the WHEN clause for SQLUTB UNLOAD. An issue with the JCL parser in SQLUTB where parsing JCL input for SQLUTB UNLOAD has been fixed.

  3181572 (1116360)
- Space padding to the maximum length no longer occurs when loading EBCDIC data into VARCHAR fields if the "EBCDIC" option is specified on the LOAD card. The actual lengths of the loaded data are used in inserting data into the columns.

  3179487 (1116036)
- An issue with unintentionally submitting a JCL job to run SQLUTB when the XA is disabled has been resolved. The SQLUTB program now verifies the status of opening the XA connection before it proceeds.

  3178489 (1116084)
- In SQLUTB loads, formatted PIC X(8) - PIC X(10) fields that contained char values resembling times had '.' chars transformed to ':' incorrectly. For example, for "99.99.99" the result table would show "99:99:99". This is now prevented.

  3174745 (1115676)
- SQLUTB now returns COND CODE 8 (rather than 0) when it encounters an invalid DSN connection.

  3169290 (1115166)
- An issue that caused an SQL0007N error when loading data into a table with child relationships to empty tables has been fixed.

  3166222 (1115027)
- An issue that prevented the SQLUTB utility from extracting views and tables from DB2 LUW has been fixed.

  3163010 (1114645)
- When SQLUTB was run with input DD DUMMY, it returned an error message indicating that the input data had an LRECL of 0. This has been corrected so that SQLUTB now behaves as the IBM load utility, ignoring the DUMMY input LRECL.

  3161957 (1114698)
- An issue that occurred when using SQLUTB LOAD without field specifications in the JCL has been fixed.

  3157802 (1114247)
- The SQLUTB utility, when run on Linux Red Hat machines, failed to produce meaningful error messages. This has been corrected.

  3155177 (1114016)
- There is no longer an issue with using synonyms to load data into the underlying tables for SQL Server with SQLUTB. An issue with truncating tables via synonyms in SQL Server has been fixed for SQLUTB.

3152952 (1113855)

SQL: OpenESQL

- JDBC now returns SQLCODE=+1 when the fetched value is NULL and NULL indicator is not used.

  3191192 (1116953)
- Decimal value is now inserted correctly into Oracle DB when DECDEL=COMMA is set.

  3189836 (1116947)
- An issue that caused performance degradation when using a STATIC cursor has been fixed.

  3185894 (1116518)
- The OpenESQL run-time now handles the compiler directive SQL(NOAUTOFETCH) correctly.

  3177780 (1115994)
- OpenESQL has been updated to provide cobrhcedsn64.so for 64-bit only platforms.

  3174065 (1116801)
- HCOSS now accepts FOR READ ONLY clauses in cursors before FETCH FIRST clauses. This is undocumented behavior for DB2 z/OS but HCOSS now supports it to ensure mainframe compatibility.

  3173586 (1115528)
- An issue where WITH HOLD cursors could remain open after an IMS transaction had terminated for SQL Server, ODBC and PostgreSQL XA resources has been fixed. SQL(NOCHECKDUPCURSOR) can now be used to override duplicate cursor checking when SQL(DIALECT=MAINFRAME) is used.

  3172382 (1115430)
- A new SQL directive [NO]ALLOWSERVERSELECT supports server-specific SELECT statements that are not recognized by OpenESQL as valid ESQL SELECT ... INTO statements. This behavior was the default in Net Express.

  3165092 (1114866)
- An issue that caused the OpenESQL runtime to incorrectly handle binary parameter markers for PIC X(n) VARYING host variables has been fixed.

  3163759 (1114719)
- The SQL Directives dialog box that appeared for .NET project types in the Visual Studio IDE erroneously omitted the SQL(HSFTRACE) option for DBMAN=ADO. This has been fixed.

  3162428 (1114593)
- Data type information that was incorrectly mapped by the OpenESQL Assistant caused it to display column information improperly when using an IBM DB2 ADO.NET provider connected to a DB2 z/OS data source. This has been corrected.

  3161285 (1114478)
- An issue that occurred when the SQL BEHAVIOR compiler directive option was set to UNOPTIMIZED caused the OpenESQL runtime to generate an RTS 114 error when the COBOL application exited. This has been fixed.

  3158065 (1114288)
- Problems with SQL Server and PostgreSQL that surfaced when working with large binary columns have been fixed.

  3156215 (1114335)
- An issue that caused the OpenESQL preprocessor to generate an incorrect error message when SQL(DBRMLIB) was not set prior to specifying SQL(VERSION) has been fixed; the OpenESQL preprocessor now generates the correct error message.

  3155275 (1114004)

- SQL FETCH ABSOLUTE CURSOR was not returning rows. A COMP position value is now supported in the SQL FETCH ABSOLUTE/RELATIVE statement and it behaves as expected.

  3153738 (1113903)
- An issue that prevented HCOSS from correctly handing IS [NOT] DISTINCT predicates has been fixed.

  3152630 (1113764)
- An issue that caused HCOSS to incorrectly apply QUALIFIERs to common table expression names has been fixed.

  3152008 (1113714)
- The DSNRLI function SWITCH TO is now supported for Enterprise Server Mainframe Subsystem applications using DB2, Microsoft SQL Server, and PostgreSQL.

  3151779 (1113680)
- An issue that caused HCOSS to incorrectly handle FETCH FIRST ROW ONLY when no literal row count was present has been fixed.

  3151398 (1113734)
- An issue that caused the OpenESQL runtime to execute a core dump on exit when the MEMORY_STRATEGY tunable was set has been fixed.

  3142107 (1113077)
- A program that contained zoned decimal host variables used in SQL statements and compiled using charset(EBCDIC) and dialect(MF) sometimes caused a run-time error. This has been corrected.

SQL Option for DB2

Back to the list

- The XDB pre-compiler incorrectly generated line and column number information used by the IDE to get COBOL information about field on EXEC SQL INSERT statements.

  3182574 (1116350)
- The XDB pre-compiler incorrectly tried to generate interface logic in nested COBOL routines without checking if a SQLCA copybook was defined. This resulted in an "Undefined ECM error" error message. This has been fixed.

  3168445 (1115099)

- An issue caused by an uninitialized stack variable that resulted in a server violation has been fixed.

  3168714 (1115237)

- A number of XDB components have been enhanced to better implement bulk INSERT/UPDATE/ MERGE statements using both local XDB engines and XDB Link in dynamic and static mode to z/OS DB2.

  3175084 (1115695)
- XDB Link has been updated to support the invocation of stored procedures that return multiple result sets on z/OS DB2.

  3168036 (1115315)

- A memory leak in DRDA Continue Query Reply Message processing has been fixed.

  3160580 (1114426)

- An issue that prevented XDB Server configuration from allowing the full length of 16 characters in the Global Security Location text box has been fixed.

  3168821 (1115106)
- An issue with SQL step processing related to CASE expression evaluation that caused the SQL COALESCE scalar function to return the wrong result has been fixed.

3160595 (1114413)

- Support has been added for the SOUNDEX() and DIFFERENCE() scalar functions.

  3155733 (1114043)

- An issue that caused a buffer overflow when processing a very large UPDATE WHERE CURRENT OF in the XDB Link has been resolved.

  3151725 (1113807)

- An problem with XUTLB (XDB emulation of DSNUTILB) erroneously reporting an invalid isolation level has been resolved.

  3134586 (1112183)

- An issue with join optimization using differing lengths of DECIMAL data has been resolved.

  3131870 (1111903)

- An issue with a scalar query using a DATETIME value returning an error indicating that the value was invalid has been resolved.

  3129637 (1111872)

- An issue with Query Descriptor mapping when performing XDB Server to Server connectivity has been fixed.

  3112564 (1110514)

- An issue with an uninitialized stack space causing a thread abend in XDB SQLDA code page processing has been fixed.

  2990360 (1108708)

Web Service Client

Back to the list

- When a generated Web service client executes, an additional optional user-supplied exit program, exit-http-resp-headers, is now called to provide access to any and all HTTP headers present in the response message from the service.

  3172598 (1115452)

XML Support

Back to the list

- XML PARSE now handles "WITH ENCODING" clauses correctly.

  3175231 (1115707)

- Data within the CDATA tag is now processed by the managed XML syntax support run-time.

  3166588 (1114954)

- XML PARSE did not handle lengthy CONTENT-CHARACTERS correctly which caused the event to be returned twice.

  3162231 (1114582)

- Literals positioned beyond column 72 in the editor are now being handled correctly and compile without any issues.

  3152550 (1114087)

Known Issues

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

Other Issues Resolved in This Release

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

- 3177187 (1115851)
- 3181887 (1116201)
- 3177661 (1116118)
- 3134735 (1112201)
- 3170148 (1115245)
- 3171080 (1115373)
- 3161109 (1114775)
- 3160774 (1114530)
- 3187599 (1116668)
- 3176925 (1115833)
- 2802311 (1097060)
- 3140337 (1112673)
- 3175137 (1115685)
- 3170946 (1115402)
- 3128586 (1111526)
- 3105876 (1109394)
- 2990180 (1108737)
- 2854004 (1103682)
- 2851622 (1103230)
- 2844942 (1102368)
- 2841043 (1102369)
- 2590883 (1085717)
- 3181941 (1116211)
- 3103315 (1109252)
- 2990950 (1108778)
- 2865338 (1105207)
- 2597474 (1088223)
- 3164898 (1114811)
- 3150507 (1113583)
- 3122080 (1110968)
- 3122020 (1110949)
- 3114654 (1110269)
- 2887726 (1108356)
- 2885799 (1108108)
- 2873642 (1106416)
- 2835954 (1101265)
- 2795293 (1096771)
- 2652488 (1090826)
- 2587952 (1086146)
- 3123593 (1111108)
- 2642528 (1090004)
- 2594601 (1086032)
- 3181445 (1116188)
- 3168020 (1115032)
- 3164533 (1115215)
- 3162064 (1114546)

- 3158311 (1114231)
- 3158072 (1114399)
- 3141381 (1112770)
- 3164533 (1115570)
- 3193749 (1117140)
- 3158936 (1114346)
- 3156405 (1114097)
- 3152246 (1113749)
- 3157702 (1114217)
- 3157956 (1114290)
- 3127953 (1111577)
- 3159456 (1114310)
- 2867519 (1105516)
- 3191105 (1116958)
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- 3189442 (1116934)
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- 3188582 (1116744)
- 3178509 (1115958)
- 3160759 (1114427)
- 3150188 (1113906)

- 3161964 (1114569)
- 3172126 (1115445)
- 3103315 (1109252)
- 3187219 (1116640)

Unsupported Functionality

This section includes information about features or functionality that 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. This is a change since version 3.0 of this product.

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 `–ESadminID=[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	462 MB	1.85 GB	924 MB	41 MB
HP IA	Micro Focus	847 MB	3.39 GB	1.74 GB	79 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	382 MB	1.53 GB	764 MB	39 MB
x86-64 running Red Hat Linux	Micro Focus	455 MB	1.82 GB	910 MB	50 MB
ppc64le running Red Hat Linux	Micro Focus	267 MB	1.07 GB	534 MB	1 MB
SPARC running Solaris	Micro Focus	456 MB	1.82 GB	912 MB	41 MB
x86-64 running Solaris	Micro Focus	431 MB	1.72 GB	862 MB	33 MB
System Z running SUSE SLES	Micro Focus	280 MB	1.12 GB	560 MB	39 MB
x64 running SUSE SLES	Micro Focus	333 MB	1.33 GB	666 MB	50 MB
ppc64le running SUSE SLES	Micro Focus	247 MB	988 MB	494 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 1.1.1b.

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 "awk", "ed", "sed" and "tar" utilities must be installed and added to the PATH.
- On SUSE 12, you can only install and use the 64-bit version of Visual COBOL.
- 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 12[1]	Red Hat 7
glibc	glibc-*.i686	glibc-*.x86_64	glibc-*.s390		X
libgcc	libgcc-*.i686	libgcc-*.x86_64	libgcc-*.s390		X
libstdc++	libstdc++-*.i686	libstdc++-*.x86_64	libstdc++-*.s390		X
glibc-devel	glibc-devel-*.i686	glibc-devel-*.x86_64	glibc-devel-*.s390		X
gcc[2]	gcc*.i686	gcc*x86_64	X	X	X
cpp[2]		cpp*x86_64			X

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

- [1] On SuSe 12, you can only install the 64-bit version of Visual COBOL. The glibc-locale-32bit library is still required by the SafeNet Sentinel licensed components.
- [2] On Red Hat these libraries are required to enable COBOL to compile.

- Java 8 (32 or 64-bit versions), and Java 11 (64-bit version only) are supported for executing JVM COBOL code and for native COBOL and Java interoperability. You can download AdoptOpenJDK's OpenJDK 8 with Hotspot from *AdoptOpenJDK's Web site* and unpack the archive 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. If you install IBM's JDK 8, on AIX you must install its latest fix - JDK 8 SR5 FP16. 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*.
   - On Solaris platforms (both SPARC and Intel) only the 64-bit version of Java 8 and later is supported.

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:

```
export JAVA_HOME=java_install_dir
```

   where *java_install_dir* is the path to the JAVA installation directory such as /usr/java/java*n.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:** For local servers, you do not need to install the Micro Focus License Administration tool 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`.

If Micro Focus License Manager version 10000.2.02070 or older is installed, it must be uninstalled before the product installation or upgrade can continue.

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 Product Documentation pages on Micro Focus SupportLine.

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_5.0_platform
   ```
2. Run the installer with superuser permissions:

   ```
   ./setup_visualcobol_devhub_5.0_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_5.0_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 Product Documentation pages on Micro Focus SupportLine.

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:

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

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

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_5.0_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="Y/N" ] [ -ESadminID="User ID" ] [ -CASrtDir="location" ]`, where:

-ESsysLog	Use this to enable ("Y") or disable ("N") Enterprise Server system logging. Logging is enabled by default. Log files are saved in `/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. You need to execute the commands as root:

```
-silent -IacceptEULA
```

For example, execute:

```
setup_filename -silent -IacceptEULA
```

After Installing

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

Setting up the product

If you have installed the product to a directory other than the default one, you need to set the environment as described below.

Note: The default directory is /opt/microfocus/Visual COBOL/.

1. To set up your product, execute:

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

2. To verify that your product is installed, execute:

   ```
   cob -V
   ```

Important: These commands set the environment only for the current shell. You need to execute them for each new shell that you start.

To avoid having to run `cobsetenv` for every shell, add these commands to the shell initialization files (such as `/etc/profile`, `/etc/bashrc`).

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

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 8 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_VisualCOBOLDevelopmentHub5.0.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 string of 16 alphanumeric characters.

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. Go to *https://supportline.microfocus.com/websync/ productupdatessearch.aspx*
- The *Examples and Utilities* section of the Micro Focus SupportLine Web site, including demos and additional product documentation. Go to *https://supportline.microfocus.com/examplesandutilities/ index.aspx*.
- The *Support Resources* section of the Micro Focus SupportLine Web site, that includes troubleshooting guides and information about how to raise an incident. Go to *https://supportline.microfocus.com/ supportresources.aspx*

To connect, enter *https://www.microfocus.com* in your browser to go to the Micro Focus home page, then click **Support & Services** > **Support** > **Support Resources** > **All Support Resources by Product**. In the **Browse by Product** field, click the product you require, and then 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, *https://www.microfocus.com/support-and-services/contact-support/*. If you obtained the product from another source, such as an authorized distributor, contact them for help first. If they are unable to help, contact us.

Also, visit:

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