



Migrating from ACUCOBOL to isCOBOL Evolve

Quick Reference Guide

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Table of Contents

Introduction	4
Introduction to isCOBOL Evolve	5
ACUCOBOL to Veryant Product Compatibility Table	6
Feature and Functionality Comparison List	9
Additional isCOBOL Advancements	11
Getting Started with a Move to isCOBOL	17
Conclusion	19

Introduction

ACUCOBOL-GT® (now 'Micro Focus® extend®') is a COBOL platform that was originally designed to provide developers with a suite of software solutions to maintain and modernize COBOL applications. With a complete line of ACUCOBOL replacement products, extensive compatibility, and 'acu-friendly' migration and modernization features, isCOBOL™ Evolve from Veryant offers a seamless transition plan and a stable path forward for ACUCOBOL-GT users. Backed by a dedicated team of COBOL experts and over 1,000 production installations, isCOBOL protects existing COBOL investments and offers the perfect blend of COBOL and Java for comprehensive, cost-effective development, deployment and modernization of COBOL applications.

This quick reference guide highlights the benefits of the isCOBOL platform, gives you advice on planning for the move to isCOBOL, and helps you understand similarities and differences between isCOBOL and ACUCOBOL.

The guide includes:

- An introduction to the isCOBOL Evolve platform
- An ACUCOBOL to Veryant product compatibility table
- Feature and functionality comparison details
- Information on additional isCOBOL advancements
- Details on how to get started with a move to isCOBOL

Introduction to isCOBOL Evolve

isCOBOL Evolve offers a compelling and cost-effective alternative to distributed COBOL platforms such as ACUCOBOL-GT and RM/COBOL. isCOBOL technology enables customers to retain and enhance valuable COBOL application and development assets, while taking full advantage of the flexible Java platform in deployment.

Core components of the isCOBOL suite include a 100% portable COBOL compiler and runtime environment; an Eclipse-based Integrated Development Environment (IDE) with a real-time syntax checker; and a 100% portable, graphical debugger that facilitates remote debugging.

With isCOBOL technology, all development and debugging tasks are performed in a familiar, flexible and user-friendly COBOL environment -- no retraining or rewriting code required. The isCOBOL™ Compiler translates COBOL source code into Java classes that are then executed with the Java Virtual Machine (JVM). Because the isCOBOL Runtime Environment is implemented entirely in Java, the result is an extremely portable, robust solution that simplifies development, administration and implementation tasks. Thin Client and distributed processing capabilities are included in the isCOBOL Runtime Environment, enabling developers to maintain one graphical user interface (GUI), regardless of platform choice or deployment model. Application modernization efforts, such as improved integration and interoperability are also made easier.

The modular design of isCOBOL Evolve supports a wide range of data access options. All common COBOL file organizations and record types are supported, including Indexed, Relative, Binary Sequential, and Line Sequential file organizations, with fixed and variable length records. isCOBOL has a built-in ESQL compiler that translates embedded SQL (EXEC SQL) statements to JDBC calls, and also supports Pro*COBOL and DB2 Precompilers.

isCOBOL Evolve supports ANSI-85 and legacy COBOL dialects, so application code can quickly be replatformed to an isCOBOL environment with typically little or no change. With isCOBOL Evolve, 'compile once, run anywhere' is truly delivered and new application modernization features and data options can be rapidly introduced.

ACUCOBOL to Veryant Product Compatibility Table

Many customers who deployed ACUCOBOL-based solutions incorporated a wide-range of Acucorp software products and utilities. In addition to Web 2.0 and other modernization features that go above and beyond where ACUCOBOL left off, isCOBOL Evolve includes an extensive array of ACUCOBOL-GT replacement products, including alternatives for products such as AcuConnect (thin client and distributed computing), AcuServer, Acu4GL, and AcuSQL. As detailed in Table 1, *Product Family Comparison Table*, isCOBOL provides a seamless path forward for valuable business assets implemented originally in isCOBOL.

Table 1. Product Family Comparison Table

	Acucorp Product	Veryant Equivalent
Product Family	Acucorp extend	isCOBOL Evolve
Development Environment	ACUCOBOL-GT Compiler	isCOBOL Compiler
	AcuBench	isCOBOL IDE
	AcuSQL	isCOBOL Compiler built-in ESQL support
	vutil, alfred, acu4glfd utilities	jutil/ctutil, gife, jdbc2fd utilities
	cblutil -lib	Java jar utility
	Boomerang	isCOBOL Remote Compiler
Runtime Environment	ACUCOBOL-GT Runtime	isCOBOL Runtime Framework
	ACUCOBOL-GT Runtime (CGI)	
	AcuConnect	isCOBOL Application Server
	AcuThin	isCOBOL Thin Client

	AcuXUI	isCOBOL Thin Client
	Vision	Veryant JISAM
	AcuServer	isCOBOL File Server
Add-on Products	Acu4GL	isCOBOL Database Bridge
	AcuODBC 6.1.5	isCOBOL ISAM ODBC
	AcuXDBC	Veryant UDBC Server

In addition to a long list of similarities, isCOBOL picks up where ACUCOBOL left off by delivering "next generation" features such as a Web-enabled Java Thin Client, the ability to call COBOL programs on the client, a multi-threaded Java Application Server, a Load Balancer, and no user interface limitations.

With the isCOBOL Web Direct 2.0 product, organizations can leverage existing COBOL syntax to develop and deploy a universally accessible, zero client rich Internet application (RIA) using standard COBOL screen sections and existing program procedure division and flow. No knowledge of object-oriented programming, JavaScript, HTML, or other Web languages is required.

For companies with numerous thin client end-users or specialized computing requirements, the isCOBOL Load Balancer is available as an add-on product to isCOBOL Application Server. The isCOBOL Load Balancer distributes workloads among clusters of server processes running on the same or different machines for enhanced horizontal scalability or workload separation.

Veryant offers Veryant™ JISAM with isCOBOL Evolve. Veryant JISAM is a 100% Java-based indexed sequential access (ISAM) file system that runs on a wide range of platforms. With Veryant JISAM, a business can deliver fast and efficient access to COBOL applications with ISAM data files anywhere Java technology runs, without the overhead of a relational database or investing in complex program change.

Veryant has also developed a number of useful tools and utilities, including:

- **COBFILEIO** - The COBFILEIO utility works together with the isCOBOL Compiler to read COBOL source code and generate Java classes that can be used to access COBOL files and records.
- **ISMIGRATE** – The ISMIGRATE utility can migrate files from and to any of the following file systems: isCOBOL JISAM, isCOBOL ISAM Server (c-tree), Acucorp's Vision and others that provide an EXTFH interface.
- **XML2WK** – The XML2WK utility creates a COBOL record description that can be used to read and write XML files.

Feature and Functionality Comparison List

By providing nearly 100% compatibility with ACUCOBOL, isCOBOL offers seamless transitions from the ACUCOBOL platform. Some of key areas where isCOBOL supports ACUCOBOL functionality have been highlighted below:

- Complete support for ACUCOBOL user interface programming including ACCEPT, DISPLAY, MODIFY, INQUIRE, character and graphical screen section and graphical controls, properties and styles* and even SET ENVIRONMENT "KEYSTROKE" ..
- Extensions to the ANSI standard listed in the ACUCOBOL-GT Appendix A.3**
- Implementor-defined*** COBOL rules and behavior
- Similar names for compiler options (e.g. -ce, -sp, -di, -dv, -dz, -rc, -rm, -rw, -va, -vh, -vu, -vx, -zi, -zy, and more)
- ACUCOBOL numeric storage enabled with the -dca compiler option
- ACUCOBOL-style handles and use of the word NULL enabled with the -ca compiler option
- ACUCOBOL-style thread programming
- ACUCOBOL XFD directives
- All commonly used C\$, W\$, WIN\$, CBL_, and REG_ library routines, including a platform independent implementation of WIN\$PRINTER
- File names starting with -P such as "-P SPOOLER" and "-P lp -s -dlaser"

isCOBOL also provides identical support for precompiler technologies such as Oracle Pro*COBOL.

Veryant further simplifies a migration to isCOBOL with support for features such as:

- The ability to import AcuBench and Totem projects directly into the Eclipse-based isCOBOL IDE.

- 100% compatible formats for sequential and relative files, including support for Vision indexed file support with a licensed copy of ACUCOBOL-GT
- Automatic conversion from Vision index files to Veryant JISAM or isCOBOL ISAM Server file formats
- Automatic conversion of ACUCOBOL runtime configuration file to the isCOBOL Java Properties file format
- Compatibility with existing relational database management system (RDBMS) tables originally accessed through Acu4GL

As denoted above, there are some exceptions to isCOBOL and ACUCOBOL compatibility that need to be taken into consideration during migration if utilized in a particular application:

- * Except for ActiveX, .NET and some WEB-BROWSER properties and a few rarely used TAB-CONTROL styles that are not supported by Java Swing.
- ** Excluding LOCK/UNLOCK THREAD, CANCEL SORT, the proprietary syntax relating to Microsoft ActiveX controls, COM and .NET objects. isCOBOL supports Object-Oriented COBOL syntax which provides a more natural way to interface with these types of objects.
- *** By default, isCOBOL follows ACUCOBOL in cases where the ANSI COBOL standard leaves a language rule or behavior to be defined by the implementor.

Additional isCOBOL Advancements

As previously mentioned, isCOBOL picks up where ACUCOBOL left off by delivering innovative features such as a Web-enabled Java Thin Client, the ability to call COBOL programs on the client, a multi-threaded Java Application Server, a Load Balancer, and no user interface limitations. As highlighted in Table 2, *isCOBOL Advancements*, Veryant continues to add new features and further refine the isCOBOL offering. These features are implemented in the same style as other ACUCOBOL features, so they are very easy to learn and already familiar to the ACUCOBOL programmer.

Table 2. isCOBOL Advancements

Feature	isCOBOL	ACUCOBOL
Portable Java-based Thin Client supporting all GUI controls, properties, and styles	Yes	No
Web Launch of Thin Client including all GUI features	Yes	No
Zero-client web-browser deployment of COBOL screens	Yes	No
Create and use COBOL and Java objects using Object-oriented COBOL syntax	Yes	No
Create COBOL callable subprograms using the Java language	Yes	No
Access COBOL indexed files and records as Java classes	Yes	No
Seamless integration with all Java technologies	Yes	No
Unicode	Yes	No
Online live data backup, recovery and restore to point in time	Yes	No
Text resources 03 LABEL	Yes	No

<p>LINE 2 COL 2 SIZE 12</p> <p>R"username".</p> <p>(Set username=Username, username=Usuario, username=Benutzer, etc in language specific resource files)</p>		
<p>Variable length alphanumeric items</p> <p>77 my-var PIC X ANY LENGTH</p>	Yes	No
<p>Dynamic tables</p> <p>01 my-table OCCURS DYNAMIC CAPACITY num-items.</p> <p>03 my-item1 PIC X(10).</p> <p>03 my-item2 PIC 9(5).</p>	Yes	No
<p>Associate files with standard input, output and error streams</p> <p>SELECT stdin ASSIGN TO "-S IN"</p> <p>ORGANIZATION LINE SEQUENTIAL.</p> <p>SELECT stdout ASSIGN TO "-S OUT"</p> <p>ORGANIZATION LINE SEQUENTIAL.</p> <p>SELECT stderr ASSIGN TO "-S ERR"</p> <p>ORGANIZATION LINE SEQUENTIAL.</p>	Yes	No
<p>Print to PDFs and print preview</p> <p>SELECT pdf-file ASSIGN TO PRINT "-P PDF /docs/print.pdf"</p> <p>ORGANIZATION LINE SEQUENTIAL.</p> <p>SELECT ptr-prev ASSIGN TO PRINT "-P PREVIEW"</p> <p>ORGANIZATION LINE SEQUENTIAL.</p>	Yes	No
<p>Add icons to menu items</p> <p>WMENU-ADD-BITMAP, WMENU-CHANGE-BITMAP and WMENU-DELETE-BITMAP</p>	Yes	No

Capture the current screen W\$CAPTURE	Yes	No
Scale and rotate images, and inquire their size W\$SCALE, W\$ROTATE and W\$IMAGESIZE	Yes	No
Load fonts directly from ttf files (i.e. without installing them) W\$CREATEFONT	Yes	No
Determine which type of resource is associated with a handle FUNCTION HANDLE-TYPE	Yes	No
Retrieve current machine IP address and hostname J\$NETADDRESS	Yes	No
Call programs on the thin client CALL CLIENT "myclientprog" USING ...	Yes	No
Render HTML in graphical controls that display text For example, to show an animated GIF in a LABEL 03 LABEL line 2 col 25 lines 5 cells size 9 cells title '<html></html>'	Yes	No
Add tooltips on controls with the HINT property 03 ENTRY-FIELD line 2 col 25	Yes	No

size 9 cells value w-name hint "Enter your name here"		
Use RGB values to set colors of any control 03 LABEL line 2 col 25 size 9 cells title "gray label" color rgb x#c0c0c0.	Yes	No
Entry field format masks to assist user data entry 03 ENTRY-FIELD line 2 col 25 size 9 cells value w-date format-string "##/##/####"	Yes	No
Retrieve user selected text from entry-field INQUIRE ef-1 SELECTION-TEXT w-text.	Yes	No
Display vertical LABELs	Yes	No
Ability for user to reorder, sort GRID columns 03 GRID reordering-columns sortable-columns	Yes	No
Display controls in GRID cells during MSG-BEGIN-ENTRY	Yes	No

DISPLAY COMBO-BOX LINES 5 HANDLE ComboBoxHandle UPON GridHandle(EVENT-DATA-2, 4)		
Hide and show GRID columns	Yes	No
Add icons to COMBO-BOX items and TAB-CONTROL labels MODIFY ComboBoxHandle, ITEM = 1, BITMAP-NUMBER = 20 MODIFY TabControlHandle, TAB-INDEX = 1 BITMAP- NUMBER = 1	Yes	No
Allow user to edit TREE-VIEW items	Yes	No
Dynamically add and remove tab pages and change page labels in the TAB-CONTROL	Yes	No
New SLIDER control	Yes	No
Intercept mouse events on BITMAP control MSG-MOUSE-CLICKED, MSG-MOUSE-ENTER and MSG-MOUSE-EXIT	Yes	No
Interface with JAVA-BEAN controls	Yes	No
Add icons and colors to STATUS-BAR panels PANEL-BITMAP, PANEL-BITMAP-NUMBER, PANEL-BITMAP-WIDTH, PANEL- BITMAP-ALIGNMENT and PANEL-COLOR	Yes	No
Independently set text and icons on PUSH-BUTTONs	Yes	No
Undock TOOL-BAR using the MOVEABLE style DISPLAY TOOL-BAR MOVEABLE HANDLE toolbar-handle	Yes	No

<p>Docking windows</p> <p>DISPLAY DOCKING WINDOW</p> <p>LAYOUT W-LAYOUT</p> <p>[...]</p> <p>HANDLE h-main</p> <p>DISPLAY DOCKABLE WINDOW UPON h-main</p> <p>[...]</p>	<p>Yes</p>	<p>No</p>
<p>Pop-up list of proposals while user is editing an ENTRY-FIELD</p>	<p>Yes</p>	<p>No</p>
<p>Debugger source code colorization, background color for copybooks, show results of REPLACING, set and inquire graphical control properties, display group variables a tree, copy/paste selected lines, edit and continue debugging (in IDE), quick watch data-items and control properties, remote debugging.</p>	<p>Yes</p>	<p>No</p>

Getting Started with a Move to isCOBOL

Veryant's innovative isCOBOL technology is highly compatible with today's common COBOL dialects, enabling quick and efficient migration from ACUCOBOL to the isCOBOL platform.

As with other COBOL-to-COBOL transitions, the key steps involved in a conversion to isCOBOL are:

1. Set up the isCOBOL Evolve Software Development Kit (SDK)
2. Recompile the application with the isCOBOL Compiler; review the compiler output and make minor syntax modifications where necessary
3. Migrate data using conversion utilities included with isCOBOL (if necessary)
4. Set up the isCOBOL Runtime Environment, including environment variables and data connections
5. Integrate with external software libraries and routines such as those written in the C programming language

With isCOBOL, organizations have the choice of either migrating an entire application codebase at once, or of taking a phased approach which sets the pace of a conversion according to resource availability and desired timeframe. During a phased migration, an organization's developers continue to maintain an application with the ACUCOBOL compiler, while simultaneously working on the same set of source code to compile and execute with isCOBOL. With isCOBOL software's compiler and runtime compatibility settings, the overall level of effort required for conversion can be kept to a minimum.

When considering a move to isCOBOL, the Veryant support team can help assess the level of effort required. If desired, Veryant also offers services to build a limited representative prototype of an application running in an isCOBOL environment. This exercise includes a thorough analysis process that helps determine how straightforward the transition to Veryant will be for an organization.

With assistance from Veryant, it typically takes customers less than two days to get a clean compile of their application source code with isCOBOL. With an additional two days, a working prototype of an application running with isCOBOL can be produced.

The isCOBOL documentation set also includes a reference guide for transitioning from ACUCOBOL-GT.

Conclusion

Organizations are converting applications from ACUCOBOL-GT to the isCOBOL platform for many reasons:

- to gain the advantage of a COBOL development and Java deployment model without rewriting or retraining
- to improve ROI and dramatically lower COBOL licensing fees
- to deploy to multiple platforms using a single set of source code
- to modernize applications with graphical thin client and web client options
- to natively integrate with leading Web and application server technologies
- to support a wide range of data access options and capabilities

With over 1,000 production installations worldwide, isCOBOL protects existing COBOL investments and offers the perfect blend of COBOL and Java for comprehensive, cost-effective development, deployment and modernization of COBOL applications.

Veryant welcomes the opportunity to work together with you to develop a plan to protect and enhance your valuable COBOL-based assets.