

MHtran-2

For COBOL Translation & Upgrade

MHtran-2 is a comprehensive systems software product that automatically converts existing mainframe COBOL dialects (e.g., OS/VS COBOL, COBOL II) to higher-level COBOL dialects.

If you are making the move to the current release of COBOL, you can make the transition cost-effectively with the ease and translation accuracy afforded by MHtran-2.

Converts code automatically and thoroughly

Designed to operate in MVS environments, MHtran-2 also supports CA-Panvalet, CA-Librarian, CA-IDMS, IMS, DB2 and more, allowing for thorough conversion with very little manual intervention. In most cases, MHtran-2 translates more than 99% of all code.

Assuring quality

To ensure that each program is completely and accurately translated, MHtran-2 signals any lines that need review or manual intervention with a unique Exception Flag — an @ sign in column seven — which can be easily located and checked by the programmer. Because the translated program cannot be compiled successfully until all Exception Flags are resolved, the risk of incorrect compilation and execution is eliminated.

Summary Table

Tells you exactly what was done and where

One of the informative, time-saving features of MHtran-2 is the easily read Summary Table at the end of the translation report. This synopsis affords you an at-a-glance review of every change MHtran-2 made and the percentage of your program that MHtran-2 was able to convert. You will see immediately:

- **The number of changes made, with page numbers noted**
- **Where your attention is required for an occasional section of code that must be reviewed or translated manually**
- **The percentage of code that was successfully converted — usually 99% or higher**

The overall benefit: MHtran-2 lets you implement the translation with confidence, because you see exactly where

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to make adjustments and know precisely how much of the program MHtran-2 was able to convert. Messages detailing specific instructions or suggestions are noted in the body of

the printout. The Summary Table also includes annotations, explaining why certain passages should be checked or why a section of code could not be converted directly.

An example of a typical MHtran-2 summary table and its key features.

PAGE	CHANGE	CHECK	NEEDS-WORK	MESSAGE
4	5			
5	3	1		016S - COPY BOOK NOT FOUND
12	3			
15	1			
16	4			
17	2			
18	1			
21	3			
34			1	PD01 - "NOT" IN ABBREVIATED RELATIONAL CONDITION MAY BE INTERPRETED DIFFERENTLY IN TARGET DIALECT
61			1	040W - THERE IS NO <CLOSE> STATEMENT FOR FILE-NAME <TAPE-IN>

NUMBER OF LINES IN TRANSLATED PROGRAM	2,992
NUMBER OF LINES REQUIRING MANUAL ATTENTION (NEEDS WORK)	2
NUMBER OF LINES TO REVIEW (CHECK)	1
PERCENTAGE OF CODE REQUIRING MANUAL ATTENTION	0.1%
PERCENTAGE OF CODE TO REVIEW	0.1%
PERCENTAGE OF CODE FULLY RESOLVED BY MHTRAN-2	99.8%

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Features facilitating precise translation

When you make MHtran-2 part of your COBOL migration process, you're taking advantage of the latest in migration technology.

1. CURRENT-DATE

handling. CURRENT-DATE, one of the most common constructs, is not valid in new COBOL dialects.

Adjusting this command manually requires a multi-step process; MHtran-2 reformats syntax to the new system date syntax (or CICS ASKTIME) automatically—in just one step.

2. Reserved word.

There are over 100 additional reserved words in new COBOL dialects.

DAY-OF-WEEK, for example, was used in this program as a field name, and is now a reserved word in the selected target dialect. With MHtran-2, user-coded names that are now among the new COBOL reserved words are prefixed to make them non-reserved words. You can select the prefix.

3. Verb replacement.

MHtran-2 analyzes verbs and automatically translates them to their appropriate equivalent. In this example, TRANSFORM and EXAMINE were changed to a compliant INSPECT syntax.

01	COB2-YMMMDD.			*****	GENERATED	
02	COB2-YMMMDD-YY		PIC 99.	*****	GENERATED	
02	COB2-YMMMDD-MM		PIC 99.	*****	GENERATED	
02	COB2-YMMMDD-DDPIC 99.			*****	GENERATED	
01	COB2-CURRENT-DATE			*****	GENERATED	
02	COB2-CURRENT-MM PIC XX.			*****	GENERATED	
02	FILLER PIC X VALUE '/'.			*****	GENERATED	
02	COB2-CURRENT-DD PIC XX.			*****	GENERATED	
02	FILLER PIC X VALUE '/'.			*****	GENERATED	
02	COB2-CURRENT-YY PIC XX.			*****	GENERATED	
1	...					
	MOVE CURRENT-DATE TO REPT-RUN-DATE.			*****	GENERATED	DELETED
	ACCEPT COB2-YMMMDD FROM DATE			*****	GENERATED	
	MOVE COB2-YMMMDD-MM TO COB2-CURRENT-MM			*****	GENERATED	
	MOVE COB2-YMMMDD-DD TO COB2-CURRENT-DD			*****	GENERATED	
	MOVE COB2-YMMMDD-YY TO COB2-CURRENT-YY			*****	GENERATED	
	MOVE COB2-CURRENT-DATE TO REPT-RUN-DATE.			*****	GENERATED	
	...					
2	05 DAY-OF-WEEK		PIC 9	VALUE ZERO.	*****	DELETED
05	COB2-DAY-OF-WEEK		PIC 9	VALUE ZERO.	*****	GENERATED
3	EXAMINE DESCRIPTION REPLACING ALL '?' BY ' '			*****	GENERATED	DELETED
	INSPECT DESCRIPTION REPLACING ALL '?' BY ' '			*****	GENERATED	
	...					
	TRANSFORM PH41NRI (PH41IND) CHARACTERS FROM LOW-VALUE TO SPACE			*****	GENERATED	DELETED
	INSPECT PH41NRI (PH41IND) REPLACING ALL LOW-VALUE BY SPACE			*****	GENERATED	
	...					
	WRITE PRINTOUT AFTER POSITIONING DETAIL-CC.			*****	GENERATED	DELETED
	MOVE DETAIL-CC TO COB2-CC*****			*****	GENERATED	
	PERFORM COB2-WRITE-PRINTOUT THRU COB2-WRITE-PRINTOUT-EXIT.			*****	GENERATED	
	*					
	*					
	*					
	COB2-WRITE-PRINTOUT SECTION.			*****	GENERATED	
	EVALUATE COB2-CC			*****	GENERATED	
	WHEN SPACES			*****	GENERATED	
	MOVE 1 TO COB2-CONVERT-POSITION			*****	GENERATED	
	WHEN ZERO			*****	GENERATED	
	MOVE 2 TO COB2-CONVERT-POSITION			*****	GENERATED	
	WHEN '-'			*****	GENERATED	
	MOVE 3 TO COB2-CONVERT-POSITION			*****	GENERATED	
	WHEN '+'			*****	GENERATED	
	MOVE ZERO TO COB2-CONVERT-POSITION			*****	GENERATED	
	WHEN '1' GENERATED			*****	GENERATED	
	MOVE -1 TO COB2-CONVERT-POSITION			*****	GENERATED	
	WHEN OTHER			*****	GENERATED	
	DISPLAY 'UNABLE TO TRANSLATE POSITIONING DATA-NAME.'			*****	GENERATED	
	END-EVALUATE			*****	GENERATED	
	IF COB2-CONVERT-POSITION NOT =-1			*****	GENERATED	
	WRITE PRINTOUT AFTER ADVANCING COB2-CONVERT-POSITION			*****	GENERATED	
	ELSE			*****	GENERATED	
	WRITE PRINTOUT AFTER ADVANCING PAGE			*****	GENERATED	
	END-IF.			*****	GENERATED	
	SKIP1			*****	GENERATED	
	COB2-WRITE-PRINTOUT-EXIT.			*****	GENERATED	
	EXIT.			*****	GENERATED	
5	01 SRW-WORK-AREA COPY SRWJHL.			*****	GENERATED	DELETED
01	SRW-COPY-AREA.			*****	GENERATED	
	LINKAGE SECTION.					
	01 BLL-CELLS.			*****	GENERATED	DELETED
	03 FILLER		PICS9 (8) COMP.	*****	GENERATED	DELETED
	03 MAP410		PICS9 (8) COMP.	*****	GENERATED	DELETED
	03 PHREC		PICS9 (8) COMP.	*****	GENERATED	DELETED
	...					
	...					
	...					
	EXEC CICS GETMAIN SET [MAP410] LENGTH [MPLN]			*****	GENERATED	DELETED
	EXEC CICS GETMAIN SET [ADDRESS OF PHDS410] LENGTH [MPLN]			*****	GENERATED	
	...					
	...					
	...					
	SERVICE RELOAD PHREC.			*****	GENERATED	DELETED
	IF TRAN-IND GREATER THEN TRAN-MAX			*****	GENERATED	DELETED
	IF TRAN-IND GREATER THAN TRAN-MAX			*****	GENERATED	
	...					
	...					
	IF SRWSR-ADJ-DATE-COST-RET > THAN ZEROS			*****	GENERATED	DELETED
	IF SRWSR-ADJ-DATE-COST-RET > ZEROS			*****	GENERATED	
	...					
	...					
	...					
	SORT SORT-FILE ON ASCENDING KEY ISSORT-MAIN-KEY			*****	GENERATED	DELETED
	SORT SORT-FILE ON ASCENDING KEY SORT-MAIN-KEY			*****	GENERATED	
8a	READY USAGE-MODE IS EXCLUSIVE UPDATE.					
8b	MOVE USAGE-MODE TO SAVE-USAGE-MODE.			*****	GENERATED	DELETED
	MOVE COB2-USAGE-MODE TO SAVE-USAGE-MODE. *****			*****	GENERATED	
	++INCLUDE MISCWORK					
9	01 MISC-WORK-AREAS.					
05	STORE-VSAM-RETURN-CODE		PIC X (2) VALUE SPACE.		P	
05	ABORTCODE		PIC 9 (4) VALUE 4092.		P	
10	ON 1			*****	GENERATED	DELETED
	ADD 1 TO COB2-ON-COUNT-001			*****	GENERATED	
	IF COB2-ON-COUNT-001 = 1			*****	GENERATED	

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4. POSITIONING TO ADVANCING. Translating this command is straightforward in cases where the POSITIONING quantity is specified. In this example, however, a variable must be interrogated to determine the POSITIONING amount. The generated code then determines the value and executes the appropriate format of WRITE AFTER ADVANCING.

5. Old format COPYs. MHtran-2 automatically translates LANGLVL (1) COPY format to the new COBOL syntax.

6. Base linkage locator (BLL) handling. MHtran-2 replaces the construct of BLL-n with ADDRESS of dataname-n. The translator also provides for cases where multiple BLLs were required for a given dataname.

7. Misuse of COBOL words. Unlike its predecessor, the new COBOL compilers require strict adherence to syntax rules. MHtran-2 corrects

many syntax errors in old programs, allowing them to be compiled successfully.

8. CA-IDMS capability. CA-IDMS uses over 30 of the words that are now reserved in new COBOL dialects. When the IDMS option is set, MHtran-2 will not translate CA-IDMS reserved words, allowing them to operate as before. For example: (a) shows the handling of a new reserved word during the translation of an CA-IDMS program; (b) illustrates the handling of the same word during a non-CA-IDMS translation.

9. CA-Panvalet and CA-Librarian support. MHtran-2 handles CA-Panvalet and CA-Librarian included text as simply as it does COPY statements. The included text is logically merged with the program for translation, then translated and output separately to the appropriate library.

10. ON conditional. Since the ON condition is not supported by new COBOL dialects, MHtran-2 sets up a counter for each ON conditional, increments it, and then tests it with an IF statement.

MHtran-2 overview

- **Automatically identifies and translates your OS/VS COBOL and VS COBOL II programs**
 - Converts both batch and CICS COBOL programs.
 - Upgrades programs to current releases of COBOL.
- **Ensures complete, accurate translation**
 - Signals lines needing review and prevents inadvertent compilations with Exception Flags.
 - Records key translation activities with On-line Migration Database for better management control.
 - Provides a Summary Table describing the results of each translation.
- **Simplifies the migration process**
 - Is menu-driven for maximum programmer productivity.
 - Supports CA-Panvalet, CA-Librarian, CA-IDMS, IMS, DB2 and more.
 - Affords quick and easy installation; requires no IPL, no SVC.
- **Comes with unparalleled migration support**
 - Supported by technicians with 25 years of migration expertise. Includes a Help Line supported by developers to solve migration problems.
 - Tailors migration planning suggestions to your specific environment.

