



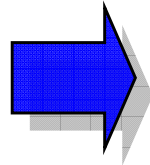
z/OS Problem Determination and Deployment Tools

Easytrieve to COBOL with IBM Migration Utility for z/OS and OS/390



Version 3.1

Agenda:



- ***Migration Utility Introduction***
- ***Easytrieve & Easytrieve Plus® Overview***
- ***Migration Utility Process Overview***
- ***Migration Utility “conversion” Utilities***
- ***Migration Utility Services***
- ***Summary***

IBM Migration Utility for z/OS and OS/390

- ***Replacement for Computer Associates Easytrieve and Easytrieve Plus z/OS Runtime and Compiler***
- ***Provides full support for Easytrieve users to continue to develop and support z/OS Easytrieve applications***
- ***Provides extended functional enhancements for Easytrieve applications***
- ***Reduces the cost of z/OS Easytrieve applications***

Advantages of IBM Migration Utility:

■ **Cost Reduction:**

- *Eliminate the cost of CA Easytrieve licenses on single and/or multiple CPUs*
- *All support function/features are in the single base Migration Utility product (i.e.. DB2, IMS, etc)*

■ **Application development and support “Flexibility”:**

- *Enable the on-going use of Easytrieve programming and/or convert one or more of the Easytrieve applications to COBOL for on-going development/support*

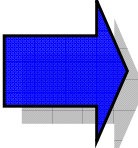
■ **Reduced runtime CPU runtime consumption:**

- *Running Easytrieve applications as native “OPTIMIZED” z/OS LE load modules that run “above the line”*

■ **Enhanced Report Formatting:**

- *Generating output reports in basic 1403 print and/or HTML browser viewable and/or CSV for spreadsheet import*

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What is Easytrieve & Easytrieve Plus®?

- **z/OS Report Generation Tool**
 - ***Interpretive*** Control Programming Language
 - **Automates** analysis report generation for data stored in z/OS data files:
 - Virtual Storage Access Method (VSAM)
 - Queued Sequential Access Method (QSAM)
 - Sequential Access Method (SAM)
 - DB2®
 - IMS™ (DL 1) Database
 - **Ease of Use:**
 - High level “free form” programming language for non-programmers

Easytrieve Plus® Report Program Syntax:

```

*-----*
* MIGRATION UTILITY DEMO APPLICATION *
*-----*
* CREATED BY: TIMOTHY DAVID MAGEE *
*           LEXINGTON, KENTUCKY *
*-----*
* FUNCTION: *
* THIS DEMO APPLICATION WILL READ THE DEMO FILE AND GENERATE A *
* REPORT SHOWING THE STATUS OF THE AD TOOLS SALES *
*-----*
FILE REPORT1 PRINTER

*-----*
* INPUT RECORD BUFFER *
*-----*
FILE FILEIN DISK  F (80)
REP      3    20  A HEADING ('TSS PRESENTER')
FA      25    1  A HEADING ('FA STATUS')
FM      26    1  A HEADING ('FM STATUS')
DT      27    1  A HEADING ('DT STATUS')
AM      28    1  A HEADING ('AM STATUS')
WS      29    1  A HEADING ('WS STATUS')
MU      30    1  A HEADING ('MU STATUS')
DATE    43    6  A HEADING ('CALL DATE')
COMPANY 49    32  A HEADING ('COMPANY')

JOB INPUT FILEIN

*-----*
* SELECT THE RECORDS TO DISPLAY BASED ON THE TOOLS SALES STATUS *
* FLAGS *
*-----*
IF DT = 3
  IF MU = 3
    IF FA = 3
      IF FM = 3
        PRINT RPT1
      END-IF
    END-IF
  END-IF
END-IF

REPORT RPT1 PRINTER REPORT1
* CONTROL REP FA
*-----*
* DEFINE THE REPORT HEADINGS AND FORMAT *
*-----*
TITLE 1  ' *-----* '
TITLE 2  ' * IBM PD TOOLS SALES REPORT * '
TITLE 3  ' *-----* '
LINE 1  COMPANY REP MU_ST FA_ST FM_ST DT_ST AM_ST WS_ST

```

Easytrieve & Easytrieve Plus® Report Output:

1 9/17/07

```

* -----*
* IBM PD TOOLS SALES REPORT *
*   CREATED BY TIM MAGEE   *
* -----*

```

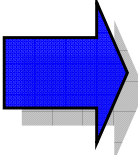
PAGE 1

	COMPANY	TSS PRESENTER	MU STATUS	FA STATUS	FM STATUS	DT STATUS	AM STATUS	WS STATUS
0	AZvance Auto Parts, Inc.	Strech Magee	SOLD	SOLD	SOLD	SOLD	SOLD	SOLD
	AZaska Air Group, Inc.	Timothy Magee	SOLD	SOLD	SOLD	SOLD	SOLD	SOLD
	AZlegheny Technologies Incorpora	Bones Magee	SOLD	SOLD	SOLD	SOLD	SOLD	SOLD
	AZERCO	Tim Magee	SOLD	SOLD	SOLD	SOLD	SOLD	SOLD
	AZerican Eagle Outfitters, Inc.	T.D. Magee	SOLD	SOLD	SOLD	SOLD	SOLD	SOLD
	AZerican Greetings Corporation	Global Magee	SOLD	SOLD	SOLD	SOLD	SOLD	SOLD
	AZL Time Warner Inc.	Scol Magee	SOLD	SOLD	SOLD	SOLD	SOLD	SOLD
	AZplied Materials, Inc.	Timothy Magee	SOLD	SOLD	SOLD	SOLD	SOLD	SOLD
	AZmstrong Holdings, Inc.	Bones Magee	SOLD	SOLD	SOLD	SOLD	SOLD	SOLD
	AZaya Inc.	Tim Magee	SOLD	SOLD	SOLD	SOLD	SOLD	SOLD
	AZon Products, Inc.	T.D. Magee	SOLD	SOLD	SOLD	SOLD	SOLD	SOLD
	TZe Bank of New York Company, In	Global Magee	SOLD	SOLD	SOLD	SOLD	SOLD	SOLD
	BZ&T Corporation	Strech Magee	SOLD	SOLD	SOLD	SOLD	SOLD	SOLD
	BZmis Company, Inc.	Scol Magee	SOLD	SOLD	SOLD	SOLD	SOLD	SOLD
	BZg Lots, Inc.	Timothy Magee	SOLD	SOLD	SOLD	SOLD	SOLD	SOLD
	TZe Boeing Company	Bones Magee	SOLD	SOLD	SOLD	SOLD	SOLD	SOLD
	BZunswick Corporation	Tim Magee	SOLD	SOLD	SOLD	SOLD	SOLD	SOLD
	BZrlington Northern Santa Fe Cor	T.D. Magee	SOLD	SOLD	SOLD	SOLD	SOLD	SOLD
	CZbot Corp	Global Magee	SOLD	SOLD	SOLD	SOLD	SOLD	SOLD
	CZrlisle Cos. Inc.	Strech Magee	SOLD	SOLD	SOLD	SOLD	SOLD	SOLD
	CZntex Corp.	Scol Magee	SOLD	SOLD	SOLD	SOLD	SOLD	SOLD
	CZarming Shoppes Inc.	Timothy Magee	SOLD	SOLD	SOLD	SOLD	SOLD	SOLD
	CZena Corp.	Bones Magee	SOLD	SOLD	SOLD	SOLD	SOLD	SOLD
	CZS Energy Corp.	Tim Magee	SOLD	SOLD	SOLD	SOLD	SOLD	SOLD
	CZlgate-Palmolive Co.	T.D. Magee	SOLD	SOLD	SOLD	SOLD	SOLD	SOLD
	CZmerica Inc.	Global Magee	SOLD	SOLD	SOLD	SOLD	SOLD	SOLD
	CZmpuware Corp.	Strech Magee	SOLD	SOLD	SOLD	SOLD	SOLD	SOLD
	CZnstellation Energy Group Inc.	Scol Magee	SOLD	SOLD	SOLD	SOLD	SOLD	SOLD
	CZrn Products International Inc.	Timothy Magee	SOLD	SOLD	SOLD	SOLD	SOLD	SOLD
	CZane Co.	Bones Magee	SOLD	SOLD	SOLD	SOLD	SOLD	SOLD
	DZVita Inc.	Tim Magee	SOLD	SOLD	SOLD	SOLD	SOLD	SOLD
	DZll Computer Corporation	T.D. Magee	SOLD	SOLD	SOLD	SOLD	SOLD	SOLD
	DZvon Energy Corporation	Global Magee	SOLD	SOLD	SOLD	SOLD	SOLD	SOLD
	DZllar General Corporation	Strech Magee	SOLD	SOLD	SOLD	SOLD	SOLD	SOLD
	DZT Systems, Inc.	Scol Magee	SOLD	SOLD	SOLD	SOLD	SOLD	SOLD
	DZnCorp	Timothy Magee	SOLD	SOLD	SOLD	SOLD	SOLD	SOLD
	EZstman Kodak Company	Bones Magee	SOLD	SOLD	SOLD	SOLD	SOLD	SOLD
	EZcompass Services Corporation	Tim Magee	SOLD	SOLD	SOLD	SOLD	SOLD	SOLD
	EZron Corp.	T.D. Magee	SOLD	SOLD	SOLD	SOLD	SOLD	SOLD
	EZuifax Inc.	Global Magee	SOLD	SOLD	SOLD	SOLD	SOLD	SOLD
	EZpeditors International of Wash	Strech Magee	SOLD	SOLD	SOLD	SOLD	SOLD	SOLD

The Users of Easytrieve and Easytrieve Plus®:

- ***z/OS Application Programming Staff***
 - Productivity tool, reduce the programming development/support effort for creating reporting programs
- ***Business Analyst (non programmers)***
 - Tool to analyze production data and generate reports, **not requiring IS programming support**
- ***z/OS Vendor Packages***
 - Installed z/OS “turn key” software packages that include the use of Easytrieve programs to generate reports (**requiring the purchaser of the packages to own a Easytrieve runtime license**)

Agenda:

- ***Migration Utility Introduction***
- ***Easytrieve & Easytrieve Plus® Overview***
-  ■ ***Migration Utility Process Overview***
- ***Migration Utility “conversion” Utilities***
- ***Migration Utility Services***
- ***Summary***

Migration Utility gives you a choice:

- **You can continue developing programs using the Easytrieve format:**
 - The only thing that changes is JCL. You use the Migration Utility translator and COBOL compiler in the place of Easytrieve. You can maintain the program source in Easytrieve format.

- **You can convert the Easytrieve programs to COBOL:**
 - You can convert existing and newly developed programs. After converting, you maintain COBOL code.

Migration Utility Advantages of COBOL runtime over Easytrieve:

- ***Migration Utility converts Easytrieve programs to IBM mainframe COBOL LE runtime z/OS executables***
- ***Its primary objective is to provide the ability to run Easytrieve programs in COBOL mode, eliminating Easytrieve inefficiencies.***
- ***The benefits are:***
 - *COBOL can run “above the line” utilizing virtual memory and in 31bit mode (Easytrieve compiler cannot)*
 - *COBOL I/O handling is more efficient (ie. pre fetch of VSAM and QSAM data records)*
 - *COBOL sorting and searching is more efficient*
 - *COBOL better coexists with other languages and environments*
 - *All COBOL debugging tools can be used for debugging*
 - *COBOL is portable to other platforms*
 - *Larger technical resource pool for COBOL application support than Easytrieve*

Migration Utility Features:

- **Compatibility with the Easytrieve & Easytrieve Plus® syntax**
- **Batch runtime compatibility**
- **Automated testing utility to validate old Easytrieve Plus® programs with the IBM Migration Utility**
- **Customer option to remove Easytrieve Plus® syntax and replace with COBOL**
 - Support for COBOL 85 standard
 - COBOL for VM & MVS, OS/390 COBOL, COBOL II, Enterprise COBOL, etc

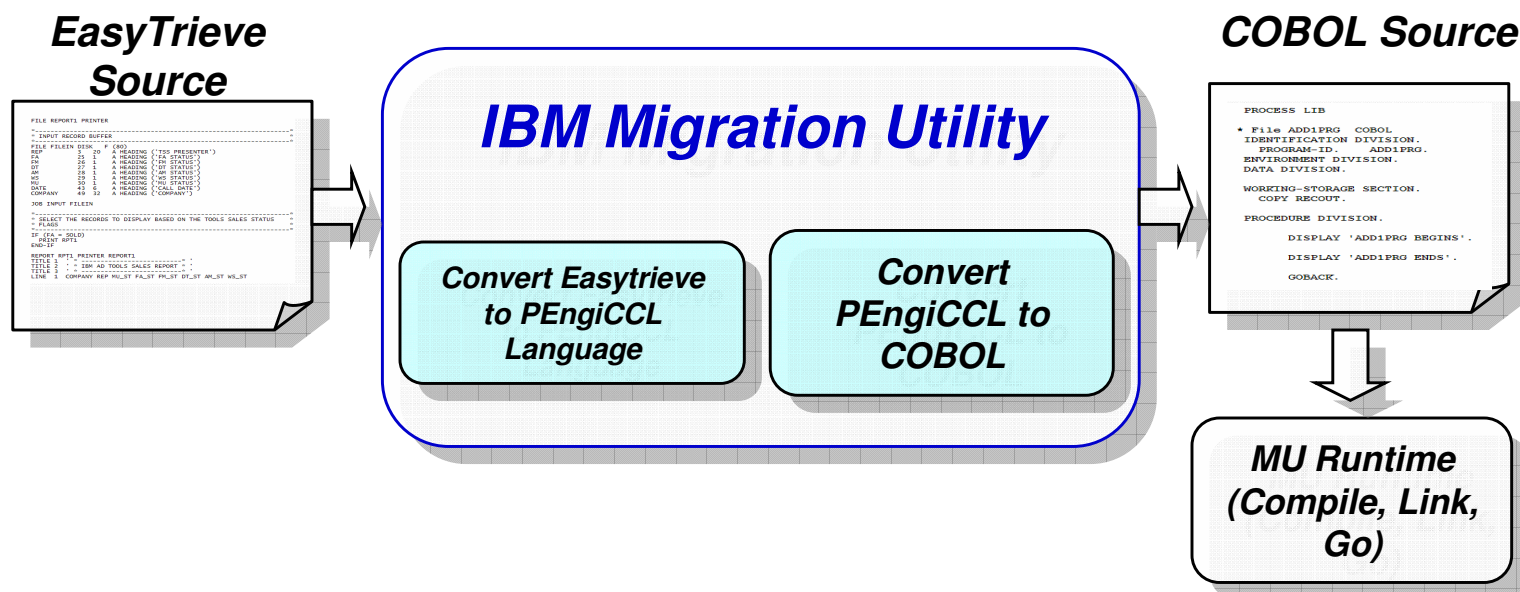
Migration Utility Features:

- ***Supported file types support included in the base IBM Migration Utility Product:***
 - *Virtual Storage Access Method (VSAM)*
 - *Queued Sequential Access Method (QSAM)*
 - *Sequential Access Method (SAM)*
 - *DB2® (Native and Ca-Easytrieve Plus mode)*
 - *IMS™ (DL 1) Database*
 - *Tape files and unit record devices*

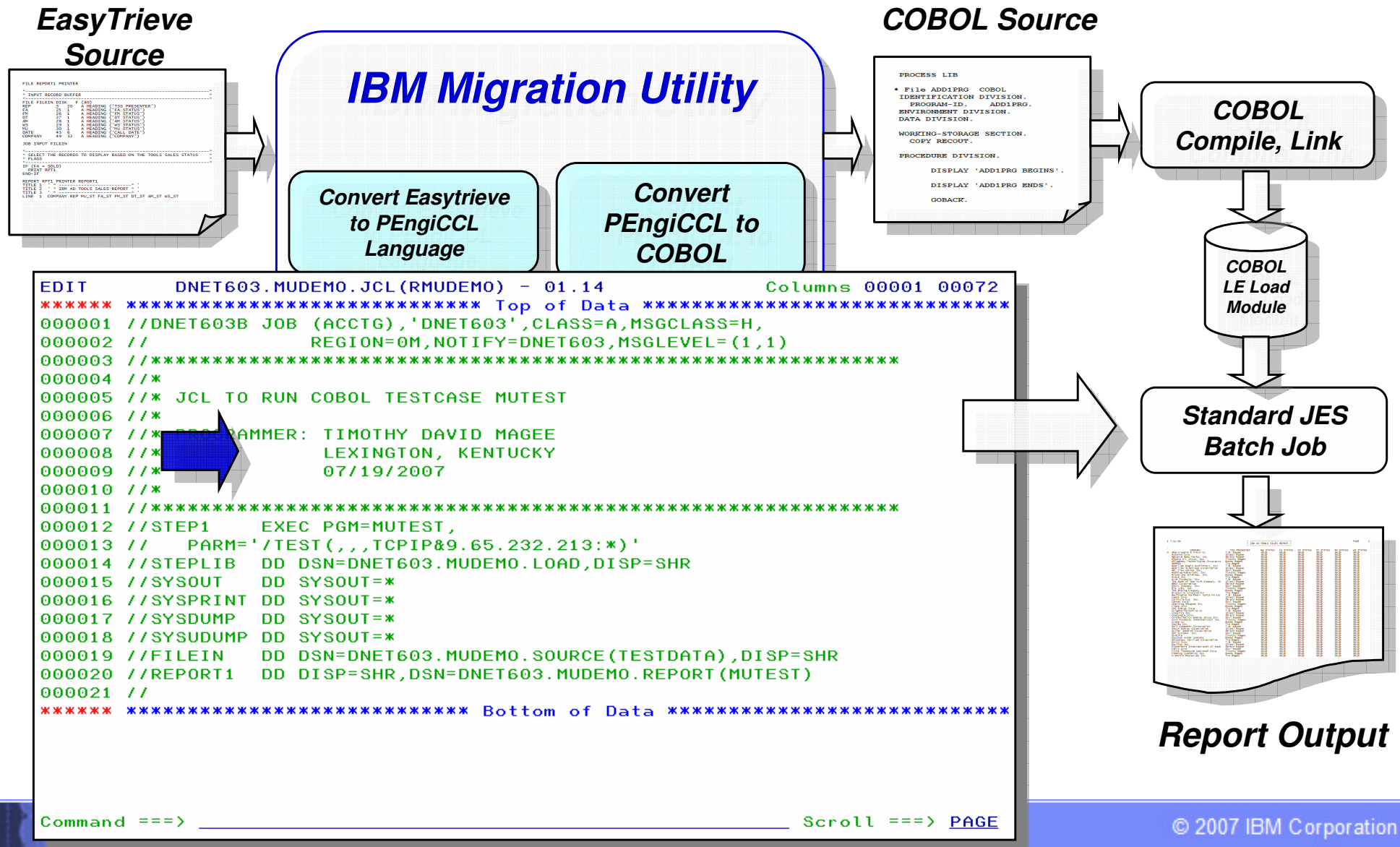
Migration Utility Translation Process:

- ***Internal Migration Utility Conversion Process:***
 - ***Stage One:***
 - *Easytrieve* Programs are converted to a Pseudo Language
 - ***Stage Two:***
 - Pseudo Language is converted to COBOL
- ***MU Can Run as Single “EasyTrieve” Job Run:***
 - *MU* will in the background convert the *Easytrieve* program to COBOL, and “*compile, link and go*”
 - *Easytrieve* Program is read from:
 - Inline SYSIN
 - Any PDS/PDSE
- ***MU Can Convert the Easytrive to COBOL to be saved and maintained***

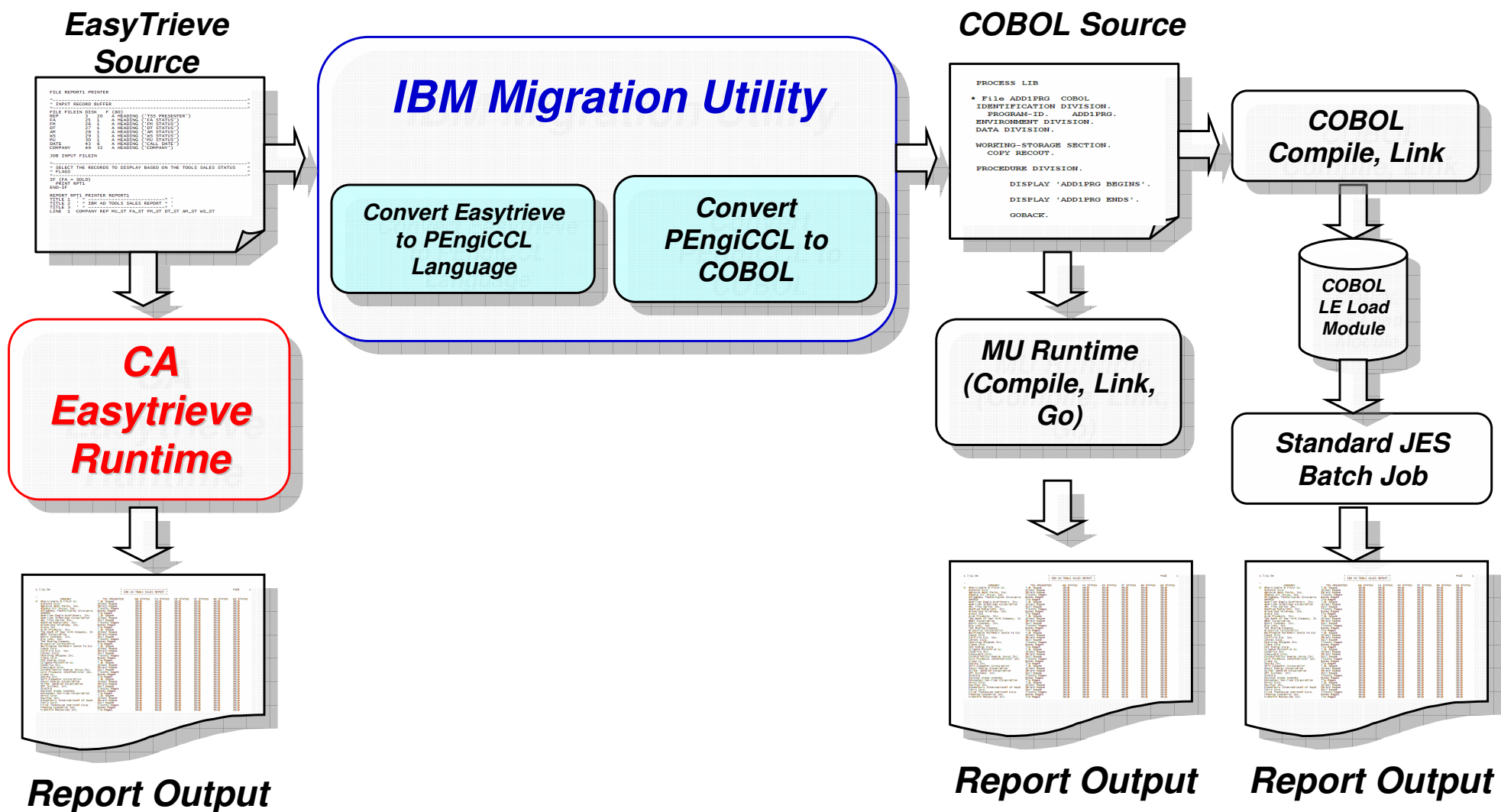
Migration Utility Functional Process:



Migration Utility Functional Process:



Migration Utility Functional Process:



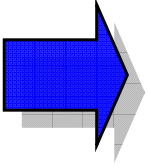
Batch JCL Change to Convert to MU:

- **Change the called module from “EZTPA00” to “FSYTPA00”**

- **Add the following JOBLIB (if not in system LINKLIST):**
 - // JOBLIB DD DSN=highlevel.SFSYLOAD,DISP=SHR
 - DD DSN=highlevel.SIGYCOMP,DISP=SHR

- **For DB2:**
 - add a DD for site specific PLAN and subsystem ID

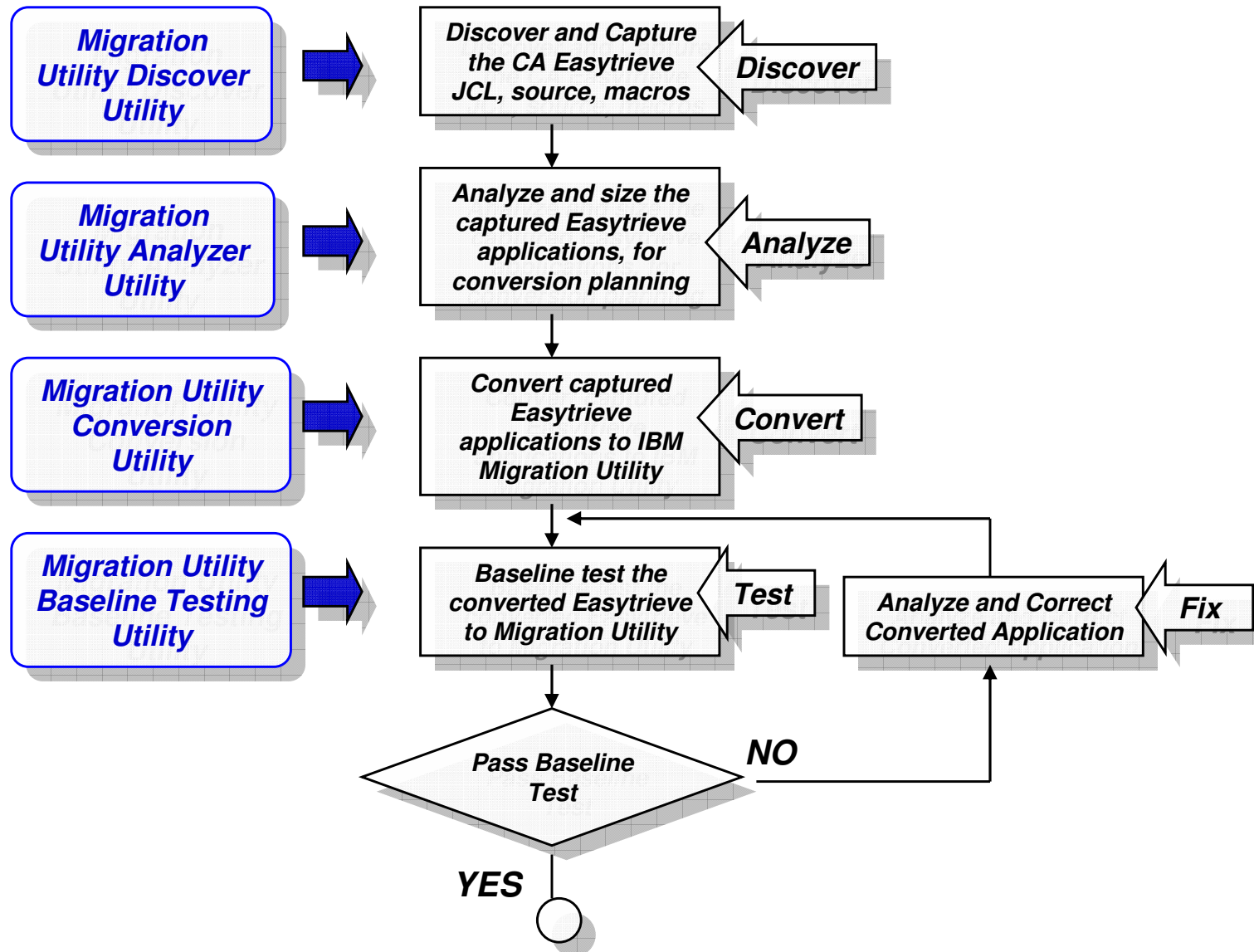
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Migration Utility Conversion Utilities:

- **Migration Utility includes a number of utilities to facilitate the conversion and testing from the CA Easytrieve runtime to the Migration Utility and/or COBOL runtime**
- **The Migration Utility conversion utilities can be executed from batch JCL**
- **The conversion utilities are:**
 - **Migration Utility Discovery Utility:**
 - Scans libraries to discover Easytrieve Plus® programs, runtime JCL, and macros
 - Creates copies of the Easytrieve
 - **Migration Utility Analysis Utility:**
 - Reviews captured Easytrieve JCL, source, and macros
 - Reports complexity, types, sorts, etc for planning
 - **Migration Utility Conversion Utility:**
 - Performs a mass JCL conversion from Easytrieve runtime to MU runtime
 - **Migration Utility Testing Utility:**
 - Generates baseline test case JCL for converted Easytrieve JCL batch jobs
 - Generated test JCL will run Easytrieve job with Easytrieve runtime and MU runtime, saving both outputs for compare and reporting differences

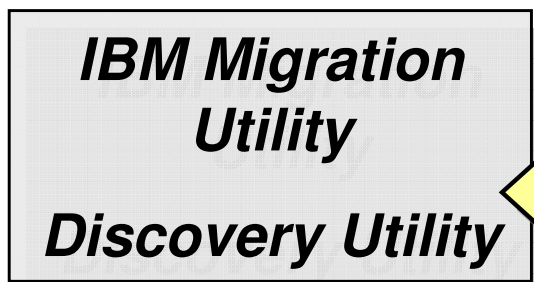
IBM Migration Utility Conversion Process and Tools:



IBM Migration Utility Discovery Utility:

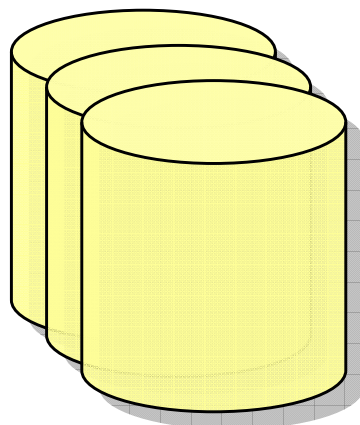
Production:

- JCL
- Source
- Macros



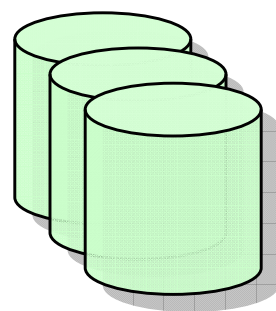
Captured *EasyTrieve* Copies of Production:

- JCL
- Source
- Macros



```

-----
* PROGRAMMER:TIMOTHY DAVID MAGEE
* LEXINGTON, KENTUCKY
*
* DSN NAMES FOR LIBRARIES TO BE SCANNED BY FSYCNV50 PROGRAM.
*
* LAYOUT:
* 'X' IN POSITION 1 ARE COMMENTS
* COL 1-44 DATA SET NAME TO SCAN (MUST BE A PDS OR PDSE LIBRARY)
* COL 46-53 OPTIONALLY, A MEMBER NAME OR A WILD CARD FOR SELECTION
* BLANK OR '*' WILL SELECT ALL MEMBERS FOR ANALYSIS
-----
*.....1.....2.....3.....4.....5.....6.....7*
DNET603.MUTEST.JCL
DNET603.CODE.JCL
*DNET603.WDZ.JCL
    
```



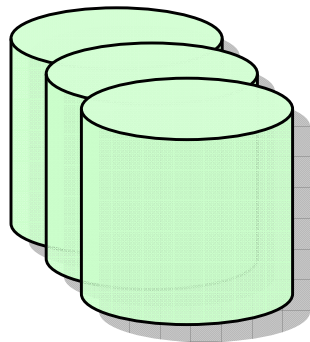
MU Discovery Control Cards:

- JCL PDS Libraries to search

IBM Migration Utility Analysis Utility:

Captured *Easytrieve* Copies of Production:

- JCL
- Source
- Macros



Read →

IBM Migration Utility Analysis Utility

Write →

Submit ←

```

-----x-----
* PROGRAMMER: TIMOTHY DAVID MAGEE                               x
* LEXINGTON, KENTUCKY                                         x
* EXCLUDE TABLE TO BE USED BY PSYCNV50 ANALYSIS UTILITY PROGRAM. x
* LAYOUT:                                                       x
* '+' IN POSITION 1 ARE COMMENTS                                x
* COL 1-6 MEMBER NAME TO EXCLUDE FROM PROCESS                 x
* COL 10-71 DESCRIPTION (OPTIONAL)                             x
*-----x-----
* 1.....2.....3.....4.....5.....6.....7x
EZGENPOS      SAMPLE STATEMENT 1
EZGENUPD      SAMPLE STATEMENT 2
    
```

PROGRAM	#RECORDS	SOL	BYTES	SORTS	JOB	SOCS	DLI	IMS	IMACS	TALLY
0	0	152	30	1	1	1	1	1	1	1
0	0	152	30	1	1	1	1	1	1	1
PSOL TOTAL	EZJ10001	204	2	2	2	2	2	2	2	2
0	0	152	30	1	1	1	1	1	1	1
1	2	08-07	EZJ10001	204	2	2	2	2	2	2
0	0	152	30	1	1	1	1	1	1	1
FINAL TOTAL	EZJ10001	204	2	2	2	2	2	2	2	2

TOTAL NUMBER OF JOB PROGRAMS: 2
 TOTAL NUMBER OF OTHER PROGRAMS: 1
 TOTAL NUMBER OF ALL PROGRAMS: 3

RELEVANT COUNTERS
 NUMBER OF PRTS:
 NUMBER OF REFILES:
 NUMBER OF REFILES:
 NUMBER OF REFILES: 2
 NUMBER OF SORTS:
 NUMBER OF JOBS:
 NO OF SOL TABLES:
 NO OF SOL TABLES:
 NO OF JOB STEPS:
 NO OF JOB STEPS:
 NUMBER IN THE BACKLOG:

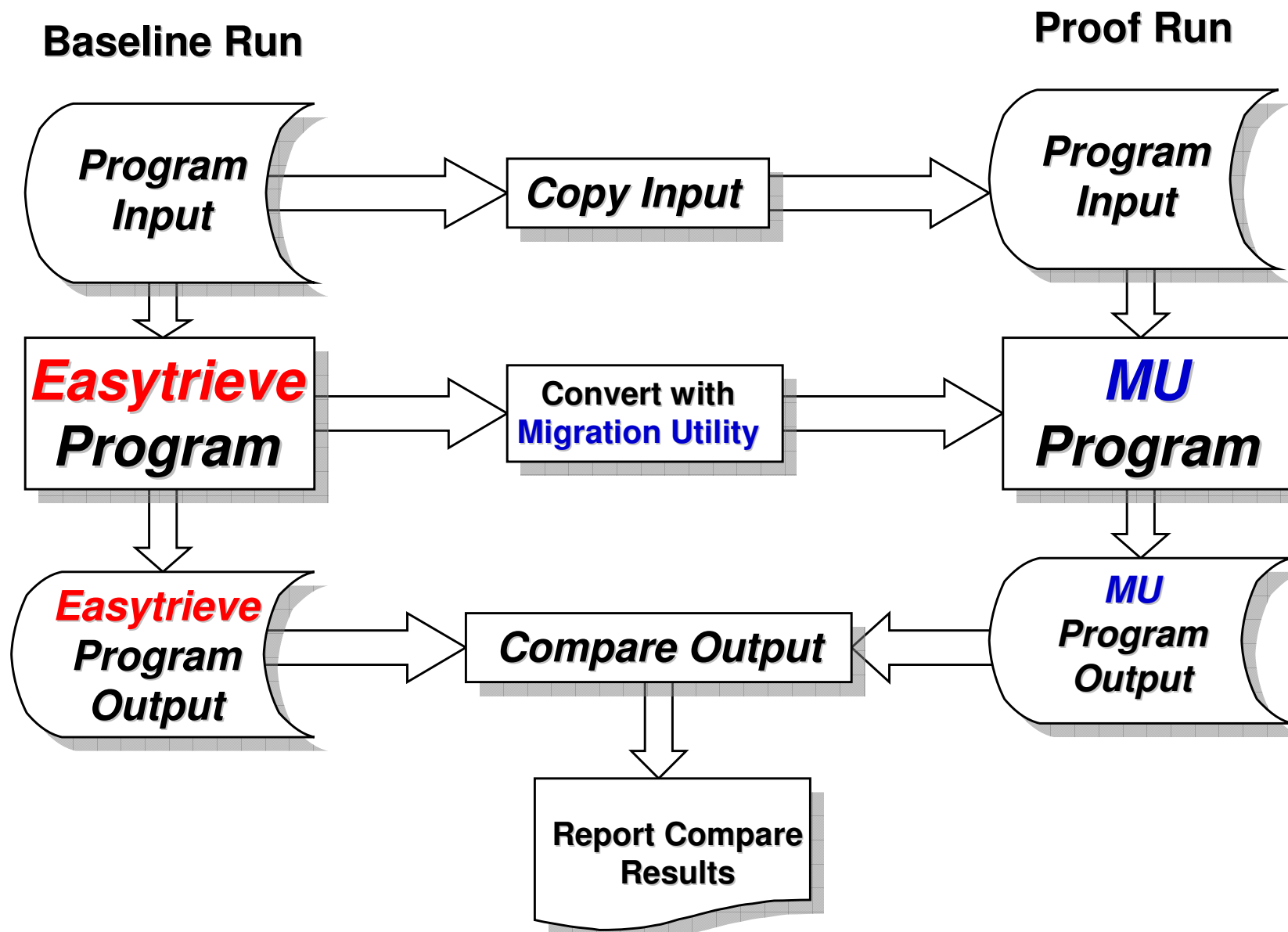
Analysis Reports:

- Program Type
- Line of code
- Number of Sorts
- Etc.

MU Analysis Control Cards:

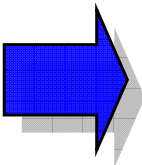
- Exclude Members

Migration Utility Baseline Testing Utility:



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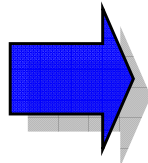


Migration Utility Service Offerings:

- ***Migration Utility Education***
- ***Migration Utility Assessment***
- ***Migration Utility Conversion***
- ***Migration Utility On-Call Support***

Agenda:

- ***IBM Problem Determination Tools Overview***
- ***Migration Utility Introduction***
- ***Easytrieve & Easytrieve Plus® Overview***
- ***Migration Utility Process Overview***
- ***Migration Utility “conversion” Utilities***
- ***Migration Utility Live Demo***
- ***Migration Utility Services***
- ***Summary***



Summary of IBM Migration Utility:

- **Migration Utility** replaces the CA Easytrieve runtime, compiler, and development tools licenses
- **Migration Utility** will allow the continued development and support of Easytrieve programs using the Easytrieve syntax and/or conversion to IBM COBOL
- **Migration Utility** will enhance the IS shop Easytrieve application development environment:
 - *Application development and support “Flexibility”:*
 - *Enable the on-going use of Easytrieve programming and/or convert one or more of the Easytrieve applications to COBOL for on-going development/support*
 - *Reduced runtime CPU cycle consumption:*
 - *Running Easytrieve applications as native “OPTIMIZED” z/OS LE load modules that run “above the line”*
 - *Enhanced Report Formatting:*
 - *Generating output reports in basic 1403 print and/or HTML browser viewable and/or CSV for spreadsheet import*

Additional Migration Utility Information:

- ***IBM Migration Utility for z/OS and OS/390***

Program Number 5697-N44

- ***Website for IBM Migration Utility for z/OS and OS/390:***

<http://www-306.ibm.com/software/awdtools/migration/>

Information for All PD Tools:

- ***z/OS Problem Determination and Deployment Tools***

www.ibm.com/software/awdtools/deployment

- *Details about the z/OS Problem Determination Tools Can Be Acquired From Your IBM zSeries Sales Representative*

Polling Questions

1. **Please evaluate your level of satisfaction with today's teleconference**
If it was High, press STAR ONE
If it was Medium, press STAR TWO
If it was low, press STAR THREE

2. **Was the level of technical information presented in this teleconference**
If it was At the right level, press STAR ONE
If it was Not technical enough press STAR TWO
If it was More technical than I needed to hear, press STAR THREE

3. **Are you currently running CA EasyTrieve Plus or Classic?**
If Yes press STAR ONE
If NO press STAR TWO

4. **How many EasyTrieve Programmers do you have?**
If zero press STAR ONE
If 1 – 20 press STAR TWO
If 21 – 50 press STAR THREE
IF 51 – 100 press STAR FOUR
IF over 100 press STAR FIVE

5. **Would you like more information on IBM's Migration Utility?**
If Yes press STAR ONE
If NO press STAR TWO

Question and Answer Session

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