

# CICS VSAM Transparency For a Low Risk VSAM to DB2 Migration

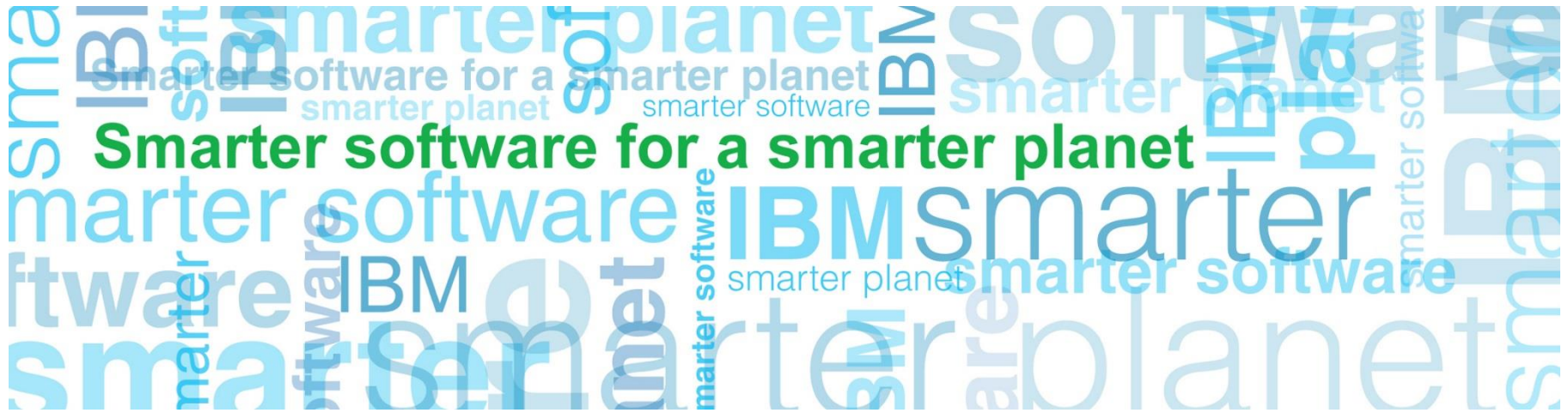
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## VSAM based applications limitations

- VSAM does **not easily** integrate with data from DB2 and other systems
- VSAM is **not easily** accessible from other platforms
- Data encryption **difficult** in VSAM
- VSAM maintenance and reorg tools lack the richness of DBMS
- VSAM is **not designed** to support 24x7 mixed batch and online

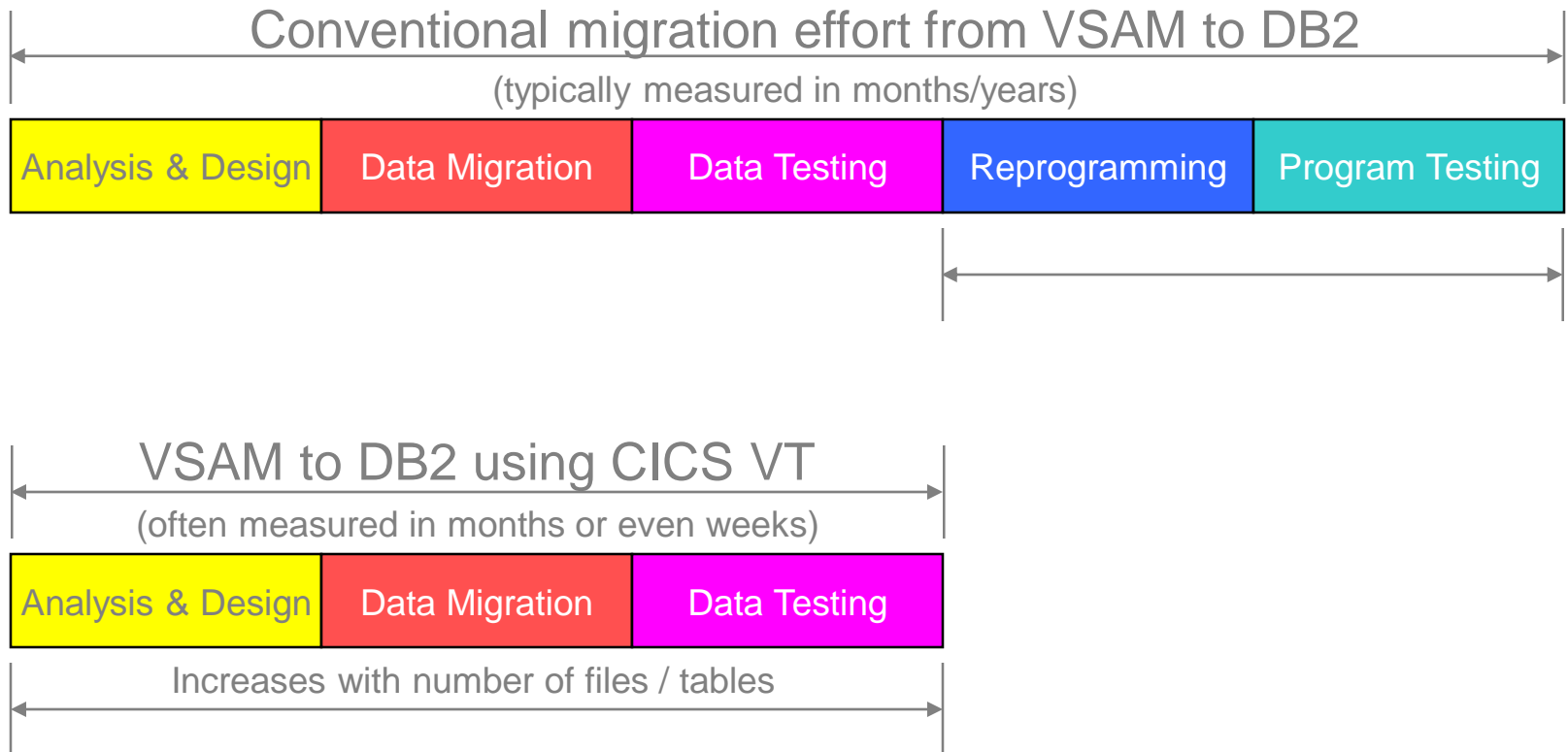
## Typical Reasons to migrate to DB2

- Integration with new applications that already are DB2 based.
  - Web App. Server apps
  - Multi – platform applications
- Ease in running ad-hoc queries (On-Demand)
- Built in Data Integrity
- Adhere to data governance mandates
- Single copy of the truth
- Ease in integrating to visual information, charts, graphs, executive dashboards
- Support 24x7 Applications

## WHAT IS CICS VSAM TRANSPARENCY?

- Tool to migrate VSAM files to DB2 without changing application programs (in most cases)
- Legacy programs access DB2 data using driver modules CICS VT generates for each migrated data set
- **Both CICS *and* batch programs can access data in DB2 under the control of CICS VT**
- Data reengineering facility to create more meaningful in a DB2 environment
- Migrated data can be accessed by SQL in new programs
- Existing programs can be enhanced using SQL
- Low risk migration strategy

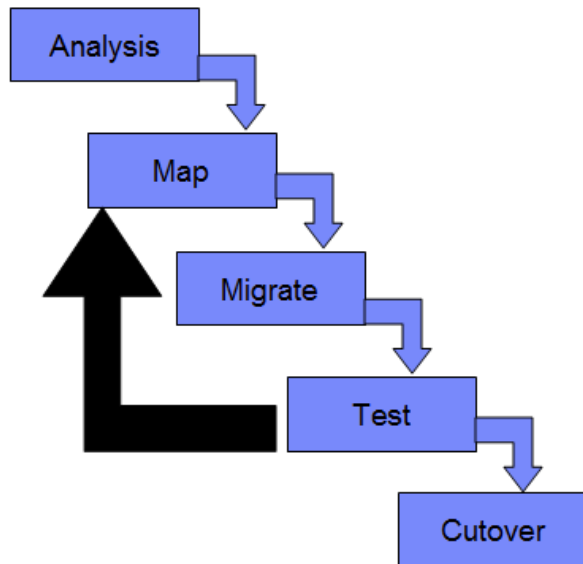
# Data Migration: VT vs. Conventional Method



# CICS VT COMPONENTS

1. **Mapping component** (one time activity per file)  
Establishes relationship between VSAM record layout and DB2 table
2. **Data migration component** (one time activity per file)  
Utilities to migrate data to DB2 and re-engineer if required
3. **Run time component**  
Intercepts imbedded VSAM APIs to VSAM data sets that have been migrated to DB2

## Deployment Steps

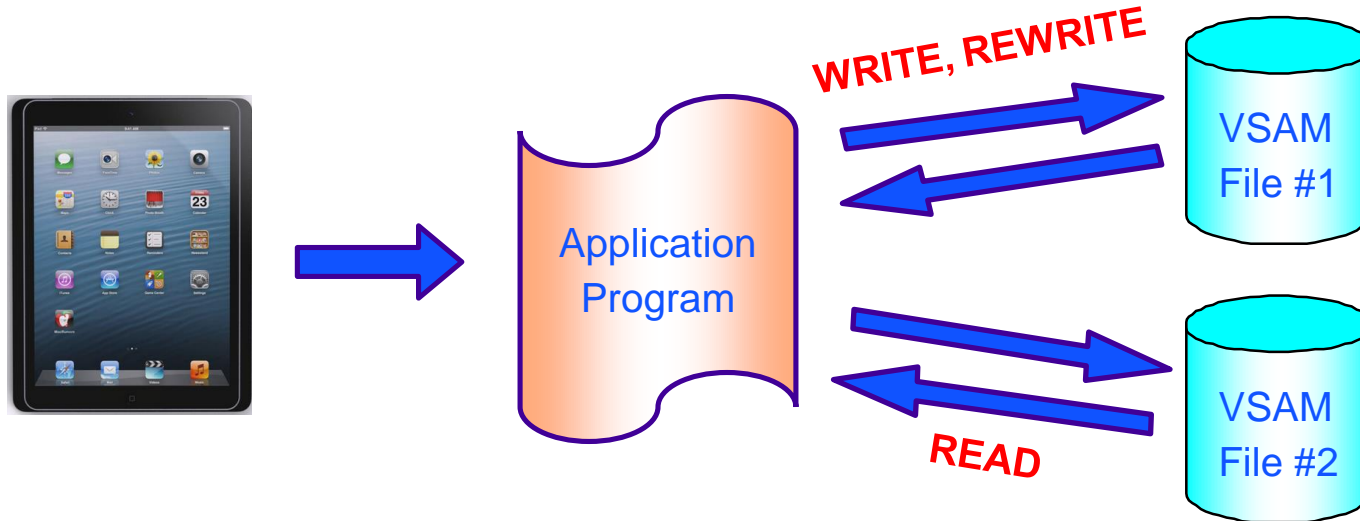


## Skills Required

- DBA and Application Programmer for migration and testing
- Users for Testing
- CICS Support for defining modules
- DB2 Skills: Design and performance

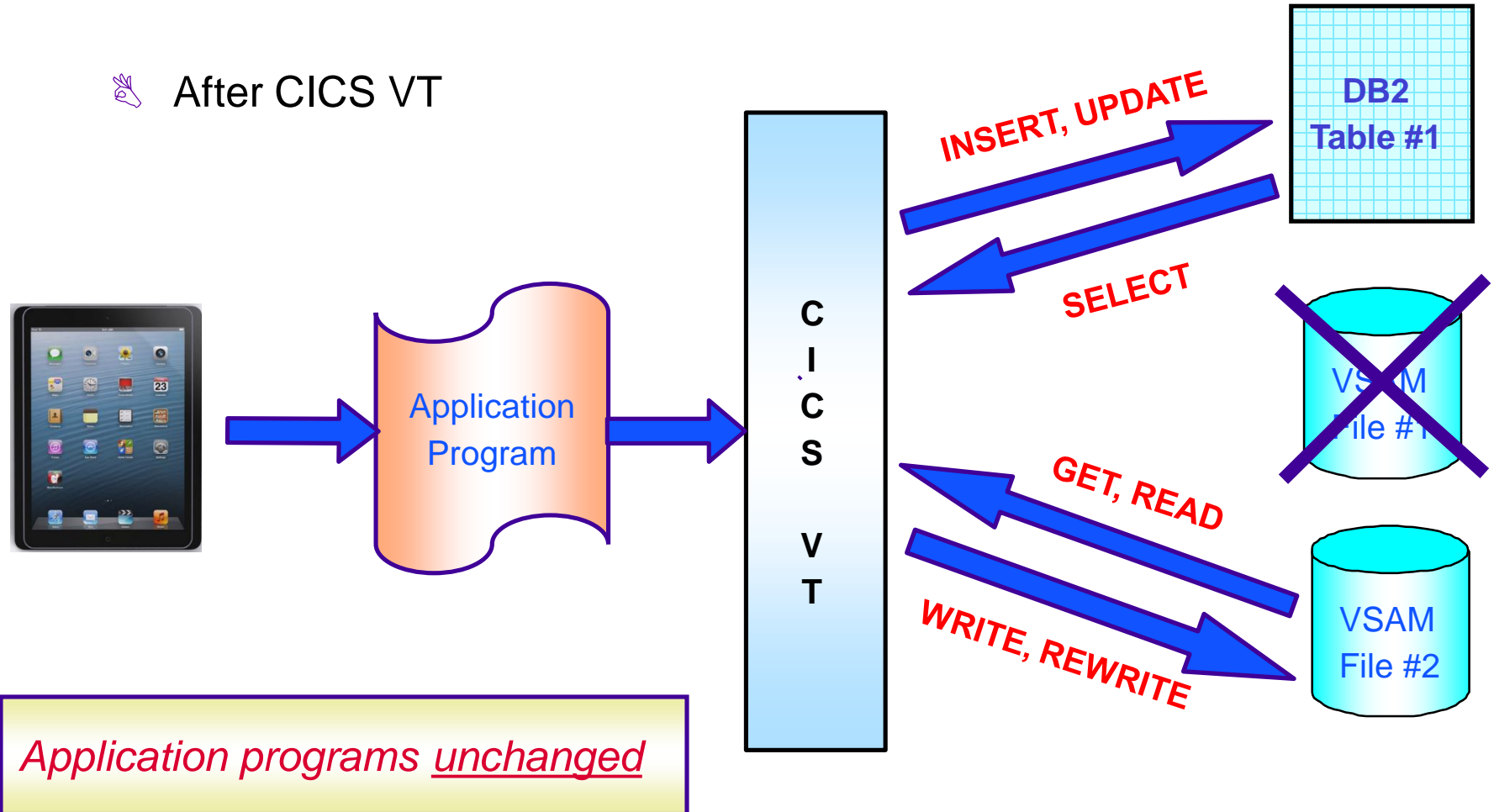
# VSAM Transparency Runtime

 Before CICS VT



# VSAM Transparency Runtime (continued)

✎ After CICS VT



*Application programs unchanged*



## CICS VSAM Transparency

Screen shots from an actual migration of VSAM file ACCTFIL to DB2 using CICS VT

The exercise covers the 3 major components of CICS VT

1. Mapping
2. Data Migration
3. Runtime

## Mapping: Run VIDAUTOJ to obtain VSAM cluster information

```
EDIT          DNET409.VT.LIB(VIDAUTOJ) - 01.21          Columns 00001 00072
Command ==> sub          Scroll ==> CSR
***** Top of Data *****
000001 //DNET409V JOB 1,CLASS=A,MSGCLASS=H,NOTIFY=&SYSUID
000002 //*
000003 //* JOB TO GATHER INFORMATION ABOUT ONE OR MORE VSAM DATASETS THAT
000004 //* ARE TO BE PROCESSED THROUGH THE AUTOMATED MAPPING FACILITY.
000005 //*
000006 //* dim-name -> NAME TO BE GIVEN TO THE DATASET IN CICS VT
000007 //* (IF LESS THAN 8 CHARACTERS PAD WITH SPACES).
000008 //* dataset-name -> DATASET NAME OF THE BASE CLUSTER.
000009 //*
000010 //AUTOMAP EXEC PGM=VIDMAPIN,REGION=0M,PARM='DB1S'
000011 //STEPLIB DD DSN=CICSVT.V2R1.SVIDLODE,
000012 // DISP=SHR
000013 // DD DSN=DB2.V9R1.SDSNLOAD,
000014 // DISP=SHR
000015 //SYSIN DD UNIT=VIO,SPACE=(CYL,(1,1))
000016 //SYSOUT DD SYSOUT=*
000017 //SYSPRINT DD UNIT=VIO,SPACE=(CYL,(1,1))
000018 //SYSABEND DD SYSOUT=*
000019 //REPORT DD SYSOUT=*
000020 //CATIN DD *
000021 EWHTFIL CICSTS.CICSAOR6.ACCTFILE
000022 /*
000023 //
```

## Mapping: Run VIDAUTOJ to obtain VSAM cluster information

```
File Edit Edit_Settings Menu Utilities Compilers Test Help
EDIT          DNET409.VT.LIB(VIDAUTOJ) - 01.21          Columns 00001 00072
Command ==> sub                                     Scroll ==> CSR
***** Top of Data *****
000001 //DNET409V JOB 1,CLASS=A,MSGCLASS=H,NOTIFY=&SYSUID
000002 //*
000003 //* JOB TO GATHER INFORMATION ABOUT ONE OR MORE VSAM DATASETS THAT
000004 //* ARE TO BE PROCESSED THROUGH THE AUTOMATED MAPPING FACILITY.
000005 //*
000006 //* dim-name -> NAME TO BE GIVEN TO THE DATASET IN CICS VT
000007 //* (IF LESS THAN 8 CHARACTERS PAD WITH SPACES).
000008 //* dataset-name -> DATASET NAME OF THE BASE CLUSTER.
000009 //*
000010 //AUTOMAP EXEC PGM=VIDMAPIN,REGION=0M,PARM='DB1S'
000011 //STEPLIB DD DSN=CICSVT.V2R1.SVIDLODE.PM53809,
000012 // DISP=SHR
000013 // DD DSN=DB2.V9R1.SDSNLOAD,
000014 // DISP=SHR
000015 //SYSIN DD UNIT=VIO,SPACE=(CYL,(1,1))
000016 //SYSOUT DD SYSOUT=*
000017 //SYSPRINT DD UNIT=VIO,SPACE=(CYL,(1,1))
000018 //SYSABEND DD SYSOUT=*
000019 //REPORT DD SYSOUT=*
000020 //CATIN DD *
000021 EWHTFIL CICSTS.CICSAOR6.ACCTFILE
000022 /*
IKJ56250I JOB DNET409V(JOB07614) SUBMITTED
***
```

## Mapping: Run VIDAUTOJ to obtain VSAM cluster information

```

Display Filter View Print Options Search Help
-----
SDSF OUTPUT DISPLAY DNET409V JOB07614  DSID   104 LINE 0           COLUMNS 02- 81
COMMAND INPUT ==> █           SCROLL ==> CSR
***** TOP OF DATA *****
+++++ CICS VT: MAPPER INPUT REPORT+++++

+-----+-----+
| DATASET NAME IN ERROR | REASON |
+-----+-----+
| NONE                   | NONE   |
+-----+-----+

CICS VT: INPUT SUMMARY:-
VSAM CLUSTERS SUCCESSFULLY PROCESSED = 00001
VSAM ALTERNATE INDEXES PROCESSED    = 00001
INVALID CLUSTER/DSNAME REJECTED     = 00000
***** BOTTOM OF DATA *****

```

## Mapping: Go to CICS VT's ISPF interface

```

Display Filter View Print Options Search Help
-----
SDSF OUTPUT DISPLAY DNET409V JOB07614  DSID    104 LINE 0          COLUMNS 02- 81
COMMAND INPUT ==> =p.d.vt
***** TOP OF DATA *****
+++++ CICS VT: MAPPER INPUT REPORT+++++

+-----+-----+
| DATASET NAME IN ERROR | REASON |
+-----+-----+
| NONE                  | NONE  |
+-----+-----+

CICS VT: INPUT SUMMARY:-
VSAM CLUSTERS SUCCESSFULLY PROCESSED = 00001
VSAM ALTERNATE INDEXES PROCESSED    = 00001
INVALID CLUSTER/DSNAME REJECTED     = 00000
***** BOTTOM OF DATA *****
    
```

## Mapping: CICS VT main menu

```
----- CICS VT: Main menu -----  
  
Select option ==> █  
  
  1 - Auto mapping facility  
  2 - Manual mapping facility  
  3 - Generate migration jobs for DIM : _____ (Full name only)  
  D - Defaults  
  
Press: Enter to continue   PF3 to exit   PF1 for Help
```

## Mapping: Select auto mapping facility

```
----- CICS VT: Main menu -----  
  
Select option ==> 1█  
  
  1 - Auto mapping facility  
  2 - Manual mapping facility  
  3 - Generate migration jobs for DIM : _____ (Full name only)  
  D - Defaults  
  
Press: Enter to continue   PF3 to exit   PF1 for Help
```

## Mapping – Filter to files starting with EWH

```
----- CICS VT: Auto mapping entry panel -----  
Command ==> _____  
  
Selection of DIM names processed by the VIDMAPIN utility:-  
  
Enter file name pattern ==> EWH%  
(wildcard symbol is %)  
  
Enter job card statement to be used by generated batch jobs:-  
==> //DNET409V JOB 1,CLASS=A,MSGCLASS=H,NOTIFY=&SYSUID,REGION=0M  
==> //MYLIBS1 JCLLIB ORDER=CICSVT.V2R1.SVIDCNFG.CUSTOM  
==> //*  
  
Press: Enter to continue    PF3 to exit    PF1 for help
```



## Mapping – Select file for mapping

```
----- CICS VT: Auto mapping list ----- Row 1 to 1 of 1
Command ==> _____ Scroll ==> CSR

Press: Enter to continue  PF3 to exit  PF1 for help

Commands: ADD Add new data set information (use for the first entry)

Actions:  S - Select for automated mapping  D - Delete data set information
         A - Add new data set information    F - Delete all information for DIM

Act DIM name Data set name                               Status
-----
  EWHTFIL  CICSTS.CICSAOR6.ACCTFILE                       Ready to map
***** Bottom of data *****
```

## Mapping – Select file for mapping

```
----- CICS VT: Auto mapping list ----- Row 1 to 1 of 1
Command ==> _____ Scroll ==> CSR

Press: Enter to continue  PF3 to exit  PF1 for help

Commands: ADD Add new data set information (use for the first entry)

Actions:  S - Select for automated mapping  D - Delete data set information
         A - Add new data set information    F - Delete all information for DIM

Act DIM name Data set name                               Status
-----
s  EWHTFIL  CICSTS.CICSAOR6.ACCTFILE                      Ready to map
***** Bottom of data *****
```

## Mapping – Provide copybook information

```
----- CICS VT: Auto mapping input for EWH          Enter required field
Command ==> _____ Scroll ==> CSR

Mandatory fields:-
Copybook data set ==> _____
Copybook member   ==> _____ (Blank or pattern for member selection list)
Copybook language ==> C         (Assembler or COBOL or PL/I)
Zoned to DECIMAL  ==> N         (Y/N, applies to unsigned zoned only)
Review / edit DDL ==> Y         (Y/N)

Table creator     ==> DMUSERS.....+
Table name        ==> EWHTFIL.....+
Primary index     ==> IX_EWHTFIL.....+
Tablespace name   ==> EWHTFIL_
Database name     ==> CVTDB____

Optional fields:-
Copybook first field => _____
Copybook last field  => _____

DDL output data set => _____
                    (can contain the token &DIM.)
Press: Enter to continue  PF3 to exit  PF1 for help
```

## Mapping – Provide copybook information

```
----- CICS VT: Auto mapping input for EWHTFIL -----  
Command ==> _____ Scroll ==> CSR  
  
Mandatory fields:-  
Copybook data set ==> CICSTS.CICSADP.COBCOPY_____  
Copybook member   ==> EHWHTREC (Blank or pattern for member selection list)  
Copybook language ==> C         (Assembler or COBOL or PL/I)  
Zoned to DECIMAL  ==> N         (Y/N, applies to unsigned zoned only)  
Review / edit DDL ==> Y         (Y/N)  
  
Table creator      ==> DMUSERS.....+  
Table name        ==> EWHTFIL.....+  
Primary index     ==> IX_EWHTFIL.....+  
Tablespace name   ==> EWHTFIL_  
Database name     ==> CVTDB____  
  
Optional fields:-  
Copybook first field => _____  
Copybook last field  => _____  
  
DDL output data set => _____  
                      (can contain the token &DIM.)  
Press: Enter to continue PF3 to exit PF1 for help
```

# Mapping – VT Builds DB2 Columns

```

----- CICS VT: Edit columns in EWHTF No fields need attention
Command ==> _____ Scroll ==> CSR

Commands: MAP SAVE PREVIEW SUSPEND/RESUME CHANGE/UNDO SHOW
Actions: S Display, U Update, D Delete, I Insert Status message /
A Pos Copybook field name / DB2 column name Type Len Exit Pic Par
-----+-----1-----+-----2-----+-----3-----+-----
1 DO-ACCT-ID + 5
DO_ACCT_ID..... + CHAR 5
6 DO-SURE-NAME + 18
DO_SURE_NAME..... + CHAR 18
24 DO-FIRST-NAME + 12
DO_FIRST_NAME..... + CHAR 12
36 DO-MIDDLE-INIT + 1
DO_MIDDLE_INIT..... + CHAR 1
37 DO-TITLE + 4
DO_TITLE..... + CHAR 4
41 DO-PHONE-NO + 10
DO_PHONE_NO..... + CHAR 10
51 DO-ADDR-LINE1 + 24
DO_ADDR_LINE1..... + CHAR 24
75 DO-ADDR-LINE2 + 24
DO_ADDR_LINE2..... + CHAR 24
99 DO-ADDR-LINE3 + 24
DO_ADDR_LINE3..... + CHAR 24
123 DO-AUTH1 + 32
DO_AUTH1..... + CHAR 32
155 DO-AUTH2 + 32
DO_AUTH2..... + CHAR 32
187 DO-AUTH3 + 32
DO_AUTH3..... + CHAR 32

```

## Mapping – VT Builds DB2 Columns (note occurs fields)

```

----- CICS VT: Edit columns in EWHTFIL ----- Row 26 from 52
Command ==>  Scroll ==> CSR

Commands: MAP SAVE PREVIEW SUSPEND/RESUME CHANGE/UNDO SHOW
Actions: S Display, U Update, D Delete, I Insert Status message /
A Pos Copybook field name / DB2 column name Type Len Exit Pic Par
-----+-----1-----+-----2-----+-----3-----+-----
- 276 BALANCE + 8
      BALANCE_1..... + CHAR 8
- 284 B-MONTH + 2
      B_MONTH_1..... + CHAR 2
- 286 B-DAY + 2
      B_DAY_1..... + CHAR 2
- 288 B-YEAR + 2
      B_YEAR_1..... + CHAR 2
- 290 B-AMOUNT + 8
      B_AMOUNT_1..... + CHAR 8
- 298 P-MONTH + 2
      P_MONTH_1..... + CHAR 2
- 300 P-DAY + 2
      P_DAY_1..... + CHAR 2
- 302 P-YEAR + 2
      P_YEAR_1..... + CHAR 2
- 304 P-AMOUNT + 8
      P_AMOUNT_1..... + CHAR 8
- 312 BALANCE + 8
      BALANCE_2..... + CHAR 8
- 320 B-MONTH + 2
      B_MONTH_2..... + CHAR 2
- 322 B-DAY + 2
      B_DAY_2..... + CHAR 2

```

## Mapping – Issue MAP command

```

----- CICS VT: Edit columns in EWHTFIL ----- Row 40 from 52
Command ==> MAP
Scroll ==> CSR

Commands: MAP SAVE PREVIEW SUSPEND/RESUME CHANGE/UNDO SHOW
Actions: S Display, U Update, D Delete, I Insert
Status message /
A Pos Copybook field name / DB2 column name Type Len Exit Pic Par
-----+-----1-----+-----2-----+-----3-----+-----
_ 334 P-MONTH + 2
P_MONTH_2..... + CHAR 2
_ 336 P-DAY + 2
P_DAY_2..... + CHAR 2
_ 338 P-YEAR + 2
P_YEAR_2..... + CHAR 2
_ 340 P-AMOUNT + 8
P_AMOUNT_2..... + CHAR 8
_ 348 BALANCE + 8
BALANCE_3..... + CHAR 8
_ 356 B-MONTH + 2
B_MONTH_3..... + CHAR 2
_ 358 B-DAY + 2
B_DAY_3..... + CHAR 2
_ 360 B-YEAR + 2
B_YEAR_3..... + CHAR 2
_ 362 B-AMOUNT + 8
B_AMOUNT_3..... + CHAR 8
_ 370 P-MONTH + 2
P_MONTH_3..... + CHAR 2
_ 372 P-DAY + 2
P_DAY_3..... + CHAR 2
_ 374 P-YEAR + 2
P_YEAR_3..... + CHAR 2
    
```

## Mapping – VT generates DDL

```

File Edit Edit_Settings Menu Utilities Compilers Test Help
EDIT          DNET409.VID.ISPDDL          Columns 00001 00072
Command ==>           Scroll ==> CSR
***** Top of Data *****
==MSG> -Warning- The UNDO command is not available until you change
==MSG>          your edit profile using the command RECOVERY ON.
000001 SET CURRENT SQLID = 'DMUSERS';
000002 CREATE TABLESPACE EWHTFIL
000003         IN CVTDB
000004         USING STOGROUP CVTSG
000005         PRIQTY 56
000006         SECQTY 0
000007         SEGSIZE 4
000008         BUFFERPOOL BPO
000009         ;
000010         COMMIT;
000011 CREATE TABLE DMUSERS.EWHTFIL
000012 (
000013     DO_ACCT_ID          CHAR(5)          NOT NULL,
000014     DO_SURE_NAME       CHAR(18)         NOT NULL,
000015     DO_FIRST_NAME      CHAR(12)         NOT NULL,
000016     DO_MIDDLE_INIT     CHAR(1)          NOT NULL,
000017     DO_TITLE            CHAR(4)          NOT NULL,
000018     DO_PHONE_NO        CHAR(10)         NOT NULL,
000019     DO_ADDR_LINE1      CHAR(24)         NOT NULL,
000020     DO_ADDR_LINE2      CHAR(24)         NOT NULL,
000021     DO_ADDR_LINE3      CHAR(24)         NOT NULL,
00
00
00
000025     DO_AUTH4          CHAR(32)         NOT NULL,

```

If you change a column name, make the same change in manual mapping



## Mapping – VT generates DDL, including index definitions

```

File Edit Edit_Settings Menu Utilities Compilers Test Help
EDIT          DNET409.VID.ISPDDL          Columns 00001 00072
Command ==> end
000064      P_AMOUNT_3          CHAR(8)          NOT NULL,
000065      VID_PATH_DUPKEY      TIMESTAMP       NOT NULL,
000066          PRIMARY KEY (
000067              DO_ACCT_ID
000068          )
000069      )
000070          IN CVTDB.EWHTFIL;
000071      COMMIT;
000072
000073  CREATE UNIQUE INDEX DMUSERS.IX_EWHTFIL
000074      ON DMUSERS.EWHTFIL
000075      (
000076          DO_ACCT_ID          ASC
000077      )
000078      USING STOGROUP CVTSG
000079      PRIQTY 1
000080      CLUSTER
000081      BUFFERPOOL BP0
000082      ;
000083      COMMIT;
000084  CREATE INDEX DMUSERS.EWHTX01
000085      ON DMUSERS.EWHTFIL
000086      (
000087          DO_SURE_NAME          ASC
000088          ,VID_PATH_DUPKEY      ASC
000089      )
000090      USING STOGROUP CVTSG
000091      BUFFERPOOL BP0
    
```

## Mapping – Job to build DB2 table and runtime modules

```
IKJ56250I JOB DNET409V (JOB09497) SUBMITTED  
***
```

## Mapping – Job to build DB2 table and runtime modules

```
07.21.39 JOB09497 $HASP165 DNET409V ENDED AT DEMOMVS MAXCC=0000 CN(INTERNAL)
07.21.46 JOB09498 $HASP165 DNET409V ENDED AT DEMOMVS MAXCC=0004 CN(INTERNAL)
07.21.50 JOB09500 $HASP165 DNET409V ENDED AT DEMOMVS MAXCC=0004 CN(INTERNAL)
***
```

## Mapping – Job to build DB2 table and runtime modules

```
----- CICS VT: Auto mapping list ----- Row 1 to 1 of 1
Command ==> =13.14 Scroll ==> CSR
Press: Enter to continue PF3 to exit PF1 for help
Commands: ADD Add new data set information (use for the first entry)
Actions:  S - Select for automated mapping  D - Delete data set information
         A - Add new data set information    F - Delete all information for DIM
Act DIM name Data set name Status
-----
_ EWHTFIL CICSTS.CICSAOR6.ACCTFILE DIM being mapped
***** Bottom of data *****

*** Please check jobs submitted for "EWHTFIL" ***
```

## Mapping – Job to build DB2 table and runtime modules

```

Display  Filter  View  Print  Options  Search  Help
-----
SDSF HELD OUTPUT DISPLAY ALL CLASSES LINES 160,080          LINE 1-4 (4)
COMMAND INPUT ==>          SCROLL ==>  CSR
NP   JOBNAME  JobID    Owner    Prty C ODisp  Dest          Tot-Rec  Tot-
   DNET409V  JOB07614 DNET409    144 H HOLD   LOCAL          79
?   DNET409V  JOB09497 DNET409    128 H HOLD   LOCAL        3,540
?   DNET409V  JOB09498 DNET409     96 H HOLD   LOCAL       76,965
?   DNET409V  JOB09500 DNET409     96 H HOLD   LOCAL      79,496
  
```

## Mapping – Job to build DB2 table and DIM

```

Display Filter View Print Options Search Help
-----
SDSF JOB DATA SET DISPLAY - JOB DNET409V (JOB09497)          LINE 1-14 (14)
COMMAND INPUT ==> █                                         SCROLL ==> CSR
NP  DDNAME      StepName ProcStep DSID  Owner      C Dest          Rec-Cnt Page
   JESMSGLG    JES2          2  DNET409    H LOCAL          35
   JESJCL      JES2          3  DNET409    H LOCAL         205
   JESYSMSG    JES2          4  DNET409    H LOCAL         259
   SYSPRINT    STEP1        PATHMAP    104 DNET409    H LOCAL          1
   SYSTSPRT    STEP2        DDLSUB     106 DNET409    H LOCAL          6
   SYSPRINT    STEP2        DDLSUB     107 DNET409    H LOCAL         176
   SYSPRINT    STEP3        GEN        110 DNET409    H LOCAL          2
   SYSPRINT    STEP3        ASM        111 DNET409    H LOCAL        1,268
   SYSPRINT    STEP3        LKED      112 DNET409    H LOCAL         143
   SYSPRINT    STEP4        GEN        115 DNET409    H LOCAL          2
   SYSPRINT    STEP4        ASM        116 DNET409    H LOCAL        1,290
   SYSPRINT    STEP4        LKED      117 DNET409    H LOCAL         143
   SYSPRINT    STEP5        VIDDDMG    121 DNET409    H LOCAL          4
   SYSTSPRT    STEP6        122 DNET409    H LOCAL          6
  
```

## Mapping – Job built DDM

SDSF JOB DATA SET DISPLAY - JOB DNET409V (JOB09498) LINE 2-28 (28)									
COMMAND INPUT ==> █									
NP	DDNAME	StepName	ProcStep	DSID	Owner	C	Dest	Rec-Cnt	Page
	JESJCL	JES2		3	DNET409	H	LOCAL	531	
	JESYSMSG	JES2		4	DNET409	H	LOCAL	985	
	SYSPRINT	PRECOMP	PC	107	DNET409	H	LOCAL	18,320	
	SYSTEM	PRECOMP	PC	108	DNET409	H	LOCAL	70	
	SYSPRINT	ASMB001	ASM	112	DNET409	H	LOCAL	2,298	
	SYSPRINT	ASMB002	ASM	113	DNET409	H	LOCAL	2,712	
	SYSPRINT	ASMB003	ASM	114	DNET409	H	LOCAL	2,712	
	SYSPRINT	ASMB004	ASM	115	DNET409	H	LOCAL	2,712	
	SYSPRINT	ASMB005	ASM	116	DNET409	H	LOCAL	2,712	
	SYSPRINT	ASMB006	ASM	117	DNET409	H	LOCAL	2,712	
	SYSPRINT	ASMB007	ASM	118	DNET409	H	LOCAL	2,712	
	SYSPRINT	ASMB008	ASM	119	DNET409	H	LOCAL	2,712	
	SYSPRINT	ASMB009	ASM	120	DNET409	H	LOCAL	2,712	
	SYSPRINT	ASMB010	ASM	121	DNET409	H	LOCAL	2,712	
	SYSPRINT	ASMB011	ASM	122	DNET409	H	LOCAL	2,712	
	SYSPRINT	ASMB012	ASM	123	DNET409	H	LOCAL	2,712	
	SYSPRINT	ASMB013	ASM	124	DNET409	H	LOCAL	2,712	
	SYSPRINT	ASMB014	ASM	125	DNET409	H	LOCAL	2,712	
	SYSPRINT	ASMB015	ASM	126	DNET409	H	LOCAL	2,712	
	SYSPRINT	ASMB016	ASM	127	DNET409	H	LOCAL	2,712	
	SYSPRINT	ASMB017	ASM	128	DNET409	H	LOCAL	2,712	
	SYSPRINT	ASMB018	ASM	129	DNET409	H	LOCAL	2,712	
	SYSPRINT	ASMB019	ASM	130	DNET409	H	LOCAL	2,712	
	SYSPRINT	ASMB020	ASM	131	DNET409	H	LOCAL	2,712	
	SYSPRINT	ASMB021	ASM	132	DNET409	H	LOCAL	2,713	
	SYSPRINT	EWHTFIL#	LKED	133	DNET409	H	LOCAL	409	
	SYSTSPRT	EWHTFIL#	BIND	134	DNET409	H	LOCAL	66	

## Mapping – Job to build DDM for alt index

```

Display  Filter  View  Print  Options  Search  Help
-----
SDSF JOB DATA SET DISPLAY - JOB DNET409V (JOB09500) LINE 2-28 (28)
COMMAND INPUT ==> =p.d.vt
SCROLL ==> CSR
NP  DDNAME  StepName ProcStep DSID  Owner  C Dest  Rec-Cnt Page
   JESJCL  JES2      3 DNET409 H LOCAL 531
   JESYSMSG JES2      4 DNET409 H LOCAL 985
   SYSPRINT PRECOMP  PC    107 DNET409 H LOCAL 18,340
   SYSTEM  PRECOMP  PC    108 DNET409 H LOCAL 70
   SYSPRINT ASMB001  ASM   112 DNET409 H LOCAL 2,298
   SYSPRINT ASMB002  ASM   113 DNET409 H LOCAL 2,836
   SYSPRINT ASMB003  ASM   114 DNET409 H LOCAL 2,836
   SYSPRINT ASMB004  ASM   115 DNET409 H LOCAL 2,836
   SYSPRINT ASMB005  ASM   116 DNET409 H LOCAL 2,836
   SYSPRINT ASMB006  ASM   117 DNET409 H LOCAL 2,836
   SYSPRINT ASMB007  ASM   118 DNET409 H LOCAL 2,836
   SYSPRINT ASMB008  ASM   119 DNET409 H LOCAL 2,836
   SYSPRINT ASMB009  ASM   120 DNET409 H LOCAL 2,836
   SYSPRINT ASMB010  ASM   121 DNET409 H LOCAL 2,836
   SYSPRINT ASMB011  ASM   122 DNET409 H LOCAL 2,836
   SYSPRINT ASMB012  ASM   123 DNET409 H LOCAL 2,836
   SYSPRINT ASMB013  ASM   124 DNET409 H LOCAL 2,836
   SYSPRINT ASMB014  ASM   125 DNET409 H LOCAL 2,836
   SYSPRINT ASMB015  ASM   126 DNET409 H LOCAL 2,836
   SYSPRINT ASMB016  ASM   127 DNET409 H LOCAL 2,836
   SYSPRINT ASMB017  ASM   128 DNET409 H LOCAL 2,836
   SYSPRINT ASMB018  ASM   129 DNET409 H LOCAL 2,836
   SYSPRINT ASMB019  ASM   130 DNET409 H LOCAL 2,836
   SYSPRINT ASMB020  ASM   131 DNET409 H LOCAL 2,836
   SYSPRINT ASMB021  ASM   132 DNET409 H LOCAL 2,837
   SYSPRINT EWHTX01# LKED  133 DNET409 H LOCAL 440
   SYSTSPRT EWHTX01# BIND  134 DNET409 H LOCAL 66
    
```



## Data Migration: Generate migration jobs

```
----- CICS VI: Main menu -----  
  
Select option ==> 3_____
```

- 1 - Auto mapping facility
- 2 - Manual mapping facility
- 3 - Generate migration jobs for DIM : EWHTFIL (Full name only)
- D - Defaults

```
  
  
Press: Enter to continue    PF3 to exit    PF1 for Help
```

## Data Migration: Generate migration jobs

```
----- CICS VT create migration jobs -----  
Command ==> _____  
DIM name           : EWHTFIL  
VSAM data set cluster : CICSTS.CICSAOR6.ACCTFILE_____  
Migration JCL library   : DNET409.VT.MIGR.LIB_____  
Migration data sets prefix : DNET409_____  
Migration DB2 load cards : DNET409.VT.EWHTFIL.LOAD_____  
SUBMIT or EDIT JCL     : sub  _____  
  
Job card statement:  
//DNET409V JOB 1,CLASS=A,MSGCLASS=H,NOTIFY=&SYSUID,REGION=0M_____  
//MYLIBS1 JCLLIB ORDER=CICSVT.V2R1.SVIDCNFG.CUSTOM_____  
//*_____  
_____  
  
Press Enter to continue, PF3 to Exit or PF1 for Help
```

## Data Migration: Submit customization job

```
09.01.40 JOB09630 $HASP165 DNET409V ENDED AT DEMOMVS MAXCC=0000 CN(INTERNAL)
***
```

## Data Migration: Generate migration Jobs

```
Display Filter View Print Options Search Help
-----
SDSF OUTPUT DISPLAY DNET409V JOB09630 DSID 102 LINE 0 COLUMNS 02- 81
COMMAND INPUT ==> =3.4 SCROLL ==> CSR
***** TOP OF DATA *****
CICS VT: MIGRATION JOB GENERATION

** VIDMG001 :- Migration jobs successfully generated for DIM EWHTFIL **

***** BOTTOM OF DATA *****
```

# Data Migration – Unload VSAM file

```
Menu  Functions  Confirm  Utilities  Help
-----
EDIT          DNET409.VT.MIGR.LIB          Row 00001 of 00007
Command ==>          Scroll ==> CSR
-----
Name          Prompt          Size  Created          Changed          ID
e|_____  VID1UNLD
|_____  VID2LOAD
|_____  VID3DB2L
|_____  VID4DUMM
|_____  VID5DMF
|_____  VID9CSD
|_____  VID9DST
|_____  **End**
```

# Data Migration – Unload VSAM file

```
File Edit Edit_Settings Menu Utilities Compilers Test Help
EDIT          DNET409.VT.MIGR.LIB(VID1UNLD) - 01.00          Columns 00001 00072
Command ==> sub                                Scroll ==> CSR
***** Top of Data *****
000001 //DNET409V JOB 1,CLASS=A,MSGCLASS=H,NOTIFY=&SYSUID,REGION=0M
000002 //MYLIBS1 JCLLIB ORDER=CICSVT.V2R1.SVIDCNFG.CUSTOM
000003 //*
000004 //          EXEC VIDUNLP,
000005 //          DIM=EWHTFIL,
000006 //          VSAMNAME=CICSTS.CICSAOR6.ACCTFILE,
000007 //          PREFIX=DNET409,
000008 //          UNLDLEN=391
***** Bottom of Data *****
```

## Data Migration – Format Data for DB2

```
Menu  Functions  Confirm  Utilities  Help
-----
EDIT          DNET409.VT.MIGR.LIB          Row 00001 of 00007
Command ==>  _____ Scroll ==>  CSR
Name         Prompt          Size    Created          Changed          ID
-----
sub          VID1UNLD
            VID2LOAD
            VID3DB2L
            VID4DUMM
            VID5DMF
            VID9CSD
            VID9DST
            **End**
```

# Data Migration – Load data into DB2

```
Menu  Functions  Confirm  Utilities  Help
-----
EDIT          DNET409.VT.MIGR.LIB          Row 00002 of 00007
Command ==>  _____          Scroll ==>  CSR
          Name      Prompt      Size  Created      Changed      ID
-----
sub  VID2LOAD  *RC=0
      VID3DB2L
      VID4DUMM
      VID5DMF
      VID9CSD
      VID9DST
      **End**
```



## Data Migration – Create dummy for file for dual-mode facility (optional)

```
Menu  Functions  Confirm  Utilities  Help
-----
EDIT          DNET409.VT.MIGR.LIB          Row 00001 of 00007
Command ==>  Scroll ==> CSR
-----
Name          Prompt          Size  Created          Changed          ID
-----
VID1UNLD
VID2LOAD      *RC=0
VID3DB2L      *RC=0
sub  VID4DUMM
VID5DMF
VID9CSD
VID9DST
**End**
```

# Data Migration – Run dual-mode facility job to verify mapping is valid (optional)

```
Menu Functions Confirm Utilities Help
EDIT          DNET409.VT.MIGR.LIB          Row 00001 of 00007
Command ==>          Scroll ==> CSR
Name          Prompt          Size  Created          Changed          ID
VID1UNLD
VID2LOAD *RC=0
VID3DB2L *RC=0
VID4DUMM *RC=0
sub VID5DMF
VID9CSD
VID9DST
**End**
```

# Data Migration – CICS resource definitions for DDMs

```
File Edit Edit_Settings Menu Utilities Compilers Test Help
EDIT          DNET409.VT.MIGR.LIB(VID9CSD) - 01.00          Columns 00001 00072
Command ==>                                Scroll ==> CSR
*****
==MSG> -CAUTION- Profile is set to STATS ON. Statistics did not exist for
==MSG>          this member, but will be generated if data is saved.
000001  DEFINE PROGRAM(EWHTFIL)
000002      GROUP(????????)
000003      LANGUAGE(ASSEMBLER)
000004      DATALOCATION(ANY)
000005      CONCURRENCY(THREADSAFE)
000006  DEFINE PROGRAM(EWHTFIL#)
000007      GROUP(????????)
000008      LANGUAGE(ASSEMBLER)
000009      DATALOCATION(ANY)
000010      CONCURRENCY(THREADSAFE)
*****
***** Bottom of Data *****
```

# Data Migration – Update VT dataset macro for new file

```
File Edit Edit_Settings Menu Utilities Compilers Test Help
EDIT          DNET409.VT.MIGR.LIB(VID9DST) - 01.00          Columns 00001 00072
Command ==>                                Scroll ==> CSR
***** Top of Data *****
==MSG> -CAUTION- Profile is set to STATS ON. Statistics did not exist for
==MSG>         this member, but will be generated if data is saved.
000001          VIDTAB TYPE=ENTRY,                               +
000002          FILE=FILENAME,                                   +
000003          DIM=EWHTFIL,                                     +
000004          STATUS=ENA,                                     +
000005          OPEN=S,                                         +
000006          ADD=YES,                                       +
000007          BRO=YES,                                       +
000008          DEL=YES,                                       +
000009          REA=YES,                                       +
000010          UPD=YES,                                       +
000011          RECORDF=FIX
***** Bottom of Data *****
```

## Data Migration – Assemble and link VT dataset module

```

File Edit Edit_Settings Menu Utilities Compilers Test Help
EDIT          DNET409.VT.LIB(VIDGDTAB) - 01.03          Columns 00001 00072
Command ==> sub                                     Scroll ==> CSR
***** Top of Data *****
000001 //DNET409C JOB 1,CLASS=A,MSGCLASS=H,NOTIFY=&SYSUID
000002 //*
000003 //* VIDGDTAB - ASSEMBLE VIDCDTAB TO IDENTIFY TO CICS THE VSAM FILES
000004 //*          THAT WILL BE PROCESSED
000005 //*
000006 //ASM          EXEC  PGM=ASMA90,REGION=1024K,COND=(4,LT),
000007 //              PARM='NODECK,OBJECT'
000008 //SYSLIB        DD   DSN=SYS1.MACLIB,DISP=SHR
000009 //              DD   DSN=CICSVT.V2R1.SVIDSAMP.CUSTOM,
000010 //              DISP=SHR
000011 //              DD   DSN=SYS1.MODGEN,DISP=SHR
000012 //SYSUT1        DD   UNIT=SYSDA,SPACE=(CYL,(5,1)),DSN=&&SYSUT1
000013 //SYSUT2        DD   UNIT=SYSDA,SPACE=(CYL,(5,1)),DSN=&&SYSUT2
000014 //SYSUT3        DD   UNIT=SYSDA,SPACE=(CYL,(5,1)),DSN=&&SYSUT3
000015 //SYSPRINT     DD   SYSOUT=*
000016 //SYSLIN        DD   DSN=&&LOADSET,UNIT=SYSDA,DISP=(MOD,PASS),
000017 //              SPACE=(CYL,(5,1))
000018 //SYSIN          DD   DSN=DNET409.VT.LIB(VIDCDTAB),DISP=SHR
000019 //*
000020 //LKED          EXEC  PGM=IEWL,REGION=256K,COND=(0,NE),
000021 //              PARM='XREF,LIST,REUS'
000022 //SYSPRINT     DD   SYSOUT=*
000023 //*YSLMOD        DD   DSN=CICSTS.CICSVT.DRIVERS,
000024 //SYSLMOD        DD   DSN=CICSVT.V2R1.SVIDLODE,
000025 //              DISP=SHR
000026 //SYSLIN        DD   DSN=&&LOADSET,DISP=(OLD,DELETE)

```

## Runtime – Activate VT in CICS region

```
vtmi start
```

## Runtime – Activate VT in CICS region

```
V IDCINIT - CICS VT successfully initialised.
```

## Runtime – Display list of file in dataset table

VTMD



## Runtime – Display list of file in dataset table

03/22/12

==> CICS VT File Definitions <==

09:54:22

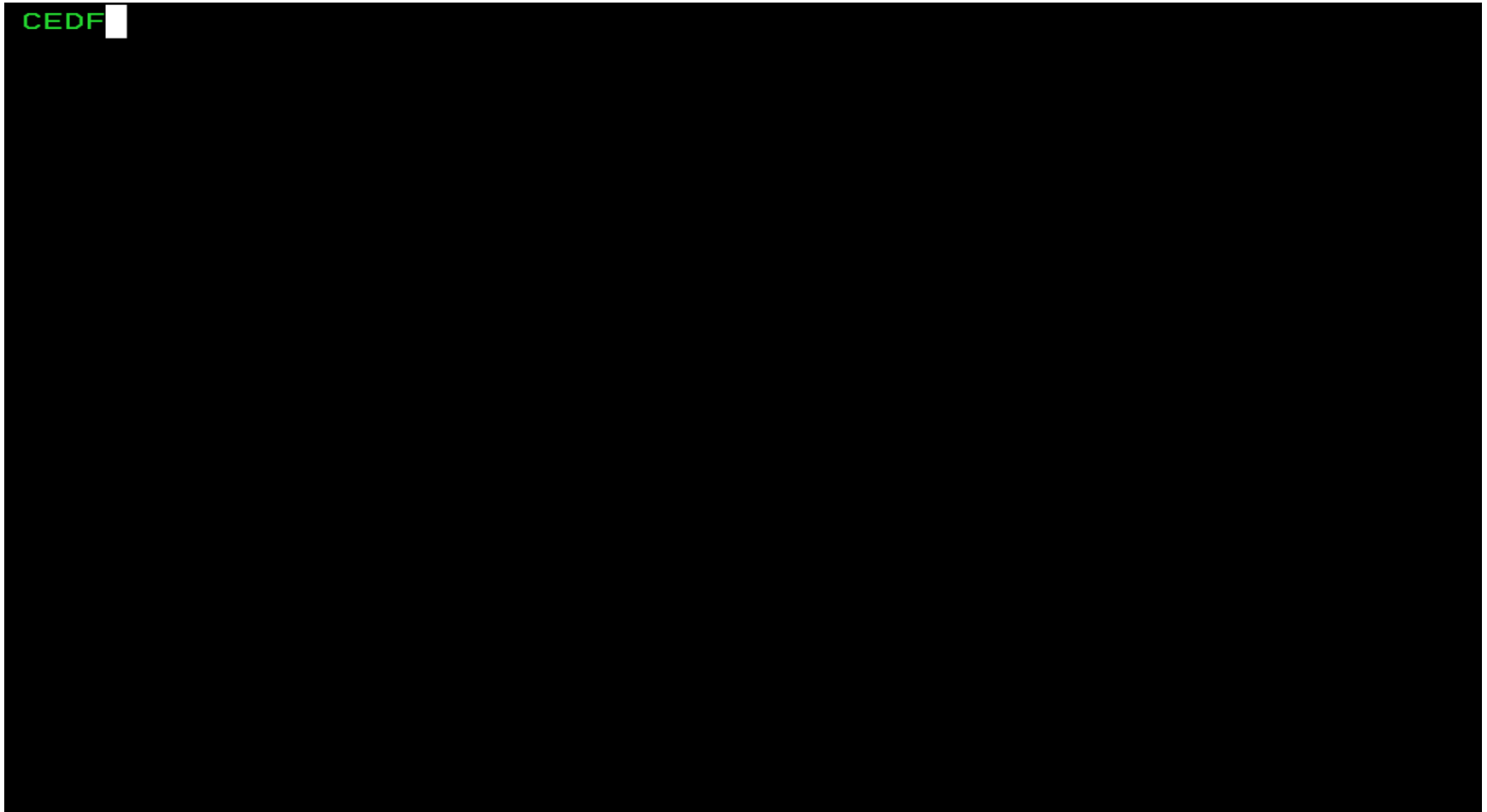
Filename	DIM name	Org	Status	MStatus	Operations	Compare
ACCTFIL	EWHTFIL		ENA INI	ACT	R U A D	ABEND N
KSDS01	KSDS01		ENA INI	ACT	R U A B D	ABEND N
RRDS01	RRDS01		ENA INI	ACT	R U A B D	ABEND N
VIDKSDS	VIDKSDS		ENA INI	ACT	R U A B D	ABEND N

End of File table

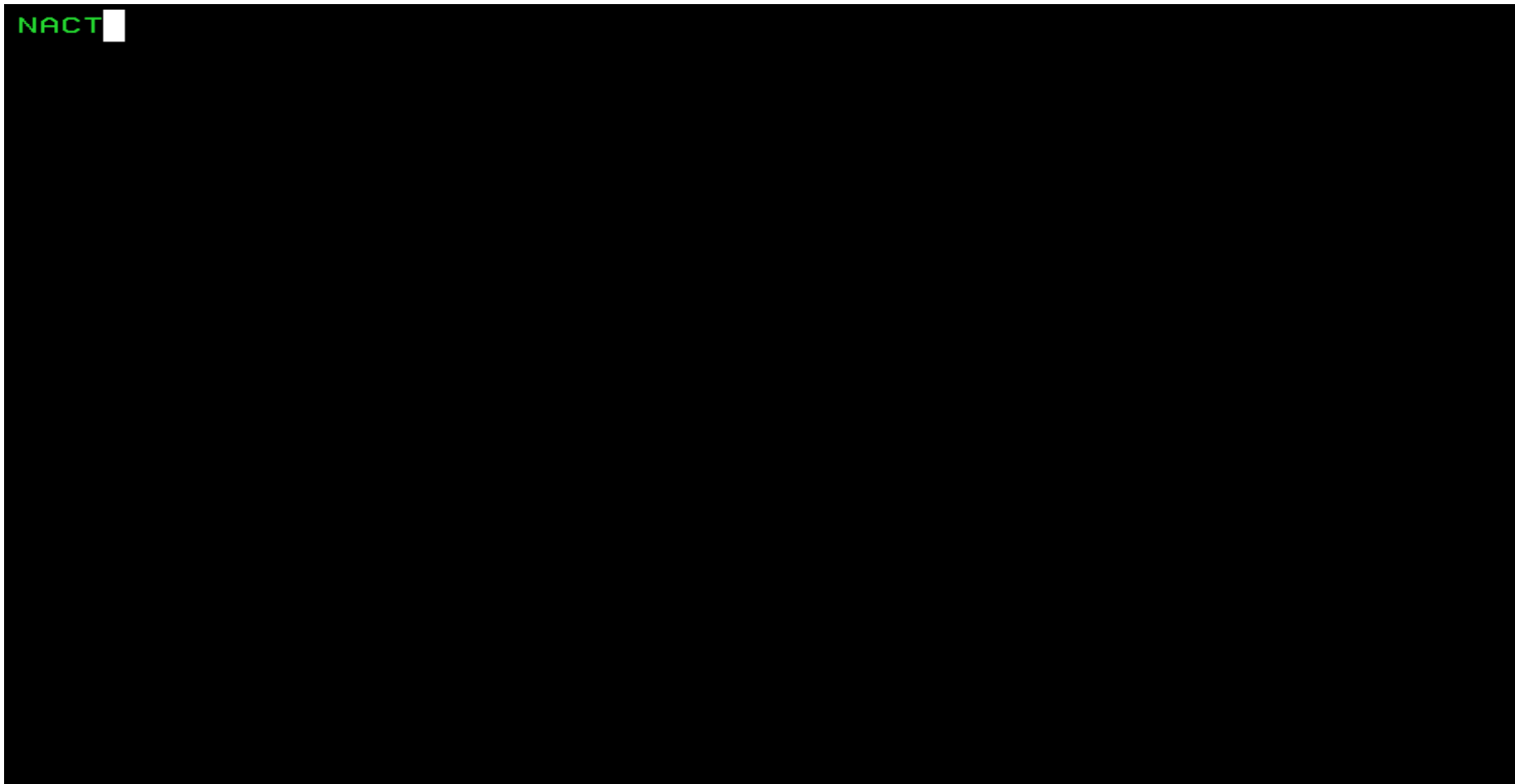
PF3=end

SYSID=C22F APPLID=CICSACB6

## Runtime – Using CEDF (just to so we can see what happens under the covers)



## Runtime – Invoke application transaction



# Runtime – Application transaction – Enter input data

```
ACCOUNTS MENU

TO SEARCH BY NAME, ENTER SURNAME AND IF REQUIRED, FIRST NAME

SURNAME      :          (1 TO 18 ALPHABETIC CHRS)
FIRST NAME   :          (1 TO 12 ALPHABETIC CHRS OPTIONAL)

TO PROCESS AN ACCOUNT, ENTER REQUEST TYPE AND ACCOUNT NUMBER

REQUEST TYPE: d          (D-DISPLAY, A-ADD, M-MODIFY, X-DELETE, P-PRINT)
ACCOUNT      : 10001     (10000 TO 79999)
PRINTER ID   :  (1 TO 4 CHARACTERS (REQUIRED FOR PRINT REQUEST))

ENTER DATA AND PRESS ENTER FOR SEARCH OR ACCOUNT REQUEST OR PRESS CLEAR TO EXIT
```

# Runtime – program issues VSAM read request

```
TRANSACTION: NACT PROGRAM: NACT02 TASK: 0000772 APPLID: CICSACB6 DISPLAY: 00
STATUS: ABOUT TO EXECUTE COMMAND
EXEC CICS READ
  FILE ('ACCTFIL ')
  INTO ('10001.....')
  LENGTH (383)
  RIDFLD ('10001')
  EQUAL
  NOHANDLE

OFFSET: X'000E60' LINE: 00419 EIBFN=X'0602'

ENTER: CONTINUE
PF1 : UNDEFINED PF2 : SWITCH HEX/CHAR PF3 : UNDEFINED
PF4 : SUPPRESS DISPLAYS PF5 : WORKING STORAGE PF6 : USER DISPLAY
PF7 : SCROLL BACK PF8 : SCROLL FORWARD PF9 : STOP CONDITIONS
PF10: PREVIOUS DISPLAY PF11: EIB DISPLAY PF12: ABEND USER TASK
```

## Runtime – VT intercepts VSAM request via a GLUE

```
TRANSACTION: NACT PROGRAM: VIDCGLUE TASK: 0000772 APPLID: CICSACB6 DISPLAY: 00
STATUS: ABOUT TO EXECUTE COMMAND
EXEC CICS ADDRESS
EIB (X'00000000') AT X'2474FFF8'

OFFSET: X'00013A' LINE: EIBFN=X'0202'

ENTER: CONTINUE
PF1 : UNDEFINED PF2 : SWITCH HEX/CHAR PF3 : UNDEFINED
PF4 : SUPPRESS DISPLAYS PF5 : WORKING STORAGE PF6 : USER DISPLAY
PF7 : SCROLL BACK PF8 : SCROLL FORWARD PF9 : STOP CONDITIONS
PF10: PREVIOUS DISPLAY PF11: EIB DISPLAY PF12: ABEND USER TASK
```

# Runtime – VT invokes the TRUE

```
TRANSACTION: NACT PROGRAM: VIDTRUE TASK: 0000772 APPLID: CICSACB6 DISPLAY: 00
STATUS: ABOUT TO EXECUTE COMMAND
EXEC CICS ENQ
RESOURCE ('.....')

OFFSET: X'000178' LINE: EIBFN=X'1204'

ENTER: CONTINUE
PF1 : UNDEFINED PF2 : SWITCH HEX/CHAR PF3 : UNDEFINED
PF4 : SUPPRESS DISPLAYS PF5 : WORKING STORAGE PF6 : USER DISPLAY
PF7 : SCROLL BACK PF8 : SCROLL FORWARD PF9 : STOP CONDITIONS
PF10: PREVIOUS DISPLAY PF11: EIB DISPLAY PF12: ABEND USER TASK
```

## Runtime – Load of the DIM

```
TRANSACTION: NACT PROGRAM: VIDCTRUE TASK: 0000772 APPLID: CICSACB6 DISPLAY: 00
STATUS: ABOUT TO EXECUTE COMMAND
EXEC CICS LOAD
PROGRAM ('EWHTFIL ')
ENTRY (X'001400D0') AT X'247541A8'

LINE: EIBFN=X'0E06'

ENTER: CONTINUE
PF1 : UNDEFINED PF2 : SWITCH HEX/CHAR PF3 : UNDEFINED
PF4 : SUPPRESS DISPLAYS PF5 : WORKING STORAGE PF6 : USER DISPLAY
PF7 : SCROLL BACK PF8 : SCROLL FORWARD PF9 : STOP CONDITIONS
PF10: PREVIOUS DISPLAY PF11: EIB DISPLAY PF12: ABEND USER TASK
```



## Runtime – Load of the DDM

```
TRANSACTION: NACT PROGRAM: VIDCTRUE TASK: 0000772 APPLID: CICSACB6 DISPLAY: 00
STATUS: ABOUT TO EXECUTE COMMAND
EXEC CICS LOAD
PROGRAM ('EWHTFIL#')
ENTRY (X'001400D0') AT X'247541A8'

LINE: EIBFN=X'0E06'

ENTER: CONTINUE
PF1 : UNDEFINED PF2 : SWITCH HEX/CHAR PF3 : UNDEFINED
PF4 : SUPPRESS DISPLAYS PF5 : WORKING STORAGE PF6 : USER DISPLAY
PF7 : SCROLL BACK PF8 : SCROLL FORWARD PF9 : STOP CONDITIONS
PF10: PREVIOUS DISPLAY PF11: EIB DISPLAY PF12: ABEND USER TASK
```

## Runtime – Call to DB2

```
TRANSACTION: NACT PROGRAM: VIDCTRUE TASK: 0000772 APPLID: CICSACB6 DISPLAY: 00
STATUS: ABOUT TO EXECUTE COMMAND
CALL TO RESOURCE MANAGER DSNCSQL
EXEC SQL OPEN
  DBRM=EWHTFIL, STMT=02013, SECT=00001
  IVAR 001: TYPE=CHAR, LEN=00005 AT X'2475D6A8'
           DATA=X'F1F0F0F0F1'

OFFSET: X'370E6C' LINE: UNKNOWN EIBFN=X'0000'

ENTER: CONTINUE
PF1 : UNDEFINED PF2 : UNDEFINED PF3 : UNDEFINED
PF4 : SUPPRESS DISPLAYS PF5 : WORKING STORAGE PF6 : USER DISPLAY
PF7 : SCROLL BACK PF8 : SCROLL FORWARD PF9 : STOP CONDITIONS
PF10: PREVIOUS DISPLAY PF11: EIB DISPLAY PF12: ABEND USER TASK
```

## Runtime – Call to DB2

```
TRANSACTION: NACT PROGRAM: VIDCTRUE TASK: 0000772 APPLID: CICSACB6 DISPLAY: 00
STATUS: COMMAND EXECUTION COMPLETE
CALL TO RESOURCE MANAGER DSNCSQL
EXEC SQL OPEN                                P.AUTH=DNET409 , S.AUTH=
PLAN=EWHTFIL, DBRM=EWHTFIL, STMT=02013, SECT=00001
SQL COMMUNICATION AREA:
SQLCABC      = 136                                AT X'2475BEF4'
SQLCODE      = 000                                AT X'2475BEF8'
SQLERRML     = 000                                AT X'2475BEFC'
SQLERRMC     = ' '                                AT X'2475BEFE'
SQLERRP      = 'DSN'                              AT X'2475BF44'
SQLERRD(1-6) = 000, 000, 00000, -1, 00000, 000  AT X'2475BF4C'
SQLWARN(0-A) = '_ N _ _ _ 1 _ _ _ _ _ _ _ _ _ ' AT X'2475BF64'
SQLSTATE     = 00000                              AT X'2475BF6F'

OFFSET: X'370E6C'      LINE: UNKNOWN      EIBFN=X'0000'

ENTER: CONTINUE
PF1 : UNDEFINED      PF2 : UNDEFINED      PF3 : END EDF SESSION
PF4 : SUPPRESS DISPLAYS  PF5 : WORKING STORAGE  PF6 : USER DISPLAY
PF7 : SCROLL BACK      PF8 : SCROLL FORWARD   PF9 : STOP CONDITIONS
PF10: PREVIOUS DISPLAY  PF11: EIB DISPLAY      PF12: ABEND USER TASK
```

01/0001

## Runtime – Call to DB2

```
TRANSACTION: NACT PROGRAM: VIDCTRUE TASK: 0000772 APPLID: CICSACB6 DISPLAY: 00
STATUS: ABOUT TO EXECUTE COMMAND
CALL TO RESOURCE MANAGER DSNCSQL
EXEC SQL FETCH
    DBRM=EWHTFIL, STMT=02052, SECT=00001

OFFSET: X'371006' LINE: UNKNOWN EIBFN=X'0000'

ENTER: CONTINUE
PF1 : UNDEFINED PF2 : UNDEFINED PF3 : UNDEFINED
PF4 : SUPPRESS DISPLAYS PF5 : WORKING STORAGE PF6 : USER DISPLAY
PF7 : SCROLL BACK PF8 : SCROLL FORWARD PF9 : STOP CONDITIONS
PF10: PREVIOUS DISPLAY PF11: EIB DISPLAY PF12: ABEND USER TASK
```

Runtime – Back to application program  
(DB2 data formatted to VSAM layout, DB2 return codes converted to VSAM response codes)

```
TRANSACTION: NACT PROGRAM: NACT02 TASK: 0000772 APPLID: CICSACB6 DISPLAY: 00
STATUS: COMMAND EXECUTION COMPLETE
EXEC CICS READ
FILE ('ACCTFIL ')
INTO ('10001JONES JACOB JMAST11222233332 PARTRY CLOSE'...)
LENGTH (383)
RIDFLD ('10001')
EQUAL
NOHANDLE

OFFSET:X'000E60' LINE:00419 EIBFN=X'0602'
RESPONSE: NORMAL EIBRESP=0

ENTER: CONTINUE
PF1 : UNDEFINED PF2 : SWITCH HEX/CHAR PF3 : END EDF SESSION
PF4 : SUPPRESS DISPLAYS PF5 : WORKING STORAGE PF6 : USER DISPLAY
PF7 : SCROLL BACK PF8 : SCROLL FORWARD PF9 : STOP CONDITIONS
PF10: PREVIOUS DISPLAY PF11: EIB DISPLAY PF12: ABEND USER TASK
```

## Runtime – Application displays data (application has no knowledge that data came from DB2 vs. VSAM)

```
ACCOUNTS                DETAILS OF ACCOUNT NUMBER 10001

SURNAME      : JONES                (18 CHRS) TITLE      : MAST (4 CHRS OPTIONAL)
FIRST NAME   : JACOB                (12 CHRS) MIDDLE INIT: J   (1 CHR  OPTIONAL)
TELEPHONE    : 1122223333          (10 DIGS)
ADDRESS LINE1: 2 PARTRY CLOSE        (24 CHRS)
              LINE2: CHANDLERS FORD  (24 CHRS)
              LINE3: SA99 4SS        (24 CHRS OPTIONAL)

CARDS ISSUED : 2                    (1 TO 9)          CARD CODE : G   (1 CHR)
DATE ISSUED  : 02 02 99             (MM DD YY)        REASON CODE: L   (N, L, S, R)
APPROVED BY  : JJO                  (3 CHRS)

UPTO 4 OTHERS WHO MAY CHARGE (EACH 32 CHRS OPTIONAL)
  01: JERRY                        02: JOE
  03:                               04:

SPECIAL CODE1: CODE2: CODE3:      (EACH 1 CHR OPTIONAL)
NO HISTORY AVAILABLE AT THIS TIME   CHARGE LIMIT 1000.00          STATUS N

NOTE: - DETAILS IN BRACKETS SHOW MAXIMUM NO. CHARACTERS ALLOWED AND IF OPTIONAL
PRESS "CLEAR" OR "ENTER" TO RETURN TO THE MENU WHEN FINISHED
```

# Why Customers Choose VSAM Transparency

- **Reduce Business Risk**
  - Applications can access DB2 without making changes to the source code.
  - Business logic errors are eliminated and test time requirements are reduced or eliminated.
  - Other business allocations can access the DB2 table with the assurance that the correct data will be returned to the application program
- **Faster Path to Market**
  - Prioritize the files to migrated first
  - Since there are no application code changes, migration is faster because only the data changes need to be tested. The time and effort associated with application testing and implementation is eliminated.
  - Migration in weeks instead of months or years
- **Control Scope of the Migration Project**
  - VSAM Files can be migrated to DB2 file by file.
  - Do not need to rewrite all the programs that access the file being migrated
  - Removes the need for large all at once migrations.

Reduces Cost for DB2 Migration!

# Sample Customers Migration Strategies

- **Use VT as a migration bridge**
  - Allowed for fast migration to DB2 with much lower migration risks
  - As the make other changes to application programs they will replace the VSAM access with SQL
  - Eventually the need for the VT runtime component will go away.
- **Legacy application will sunset**
  - Legacy application and new application used same data.
  - New application exploits DB2.
  - VT allowed for the migration of the VSAM data to DB2, and for the legacy application to continue to run unchanged.
  - Once the legacy application sunsets, the need for VT goes away.
- **Improve availability of vendor based application**
  - Customer uses a vendor supplied system that is written in VSAM. Batch cycles with VSAM created down times for the on-line systems, reducing the level of customer service
  - CICS VT allowed them to move the data into DB2 so they could have 24x7 availability without having to customize vendor application code.
- **Run with VT indefinitely**
  - Some customers used VT to migrate data to DB2, and they continue to run their applications as is with VSAM calls. They have no plans to modify the existing application programs. New code is written with SQL.



## Conclusions

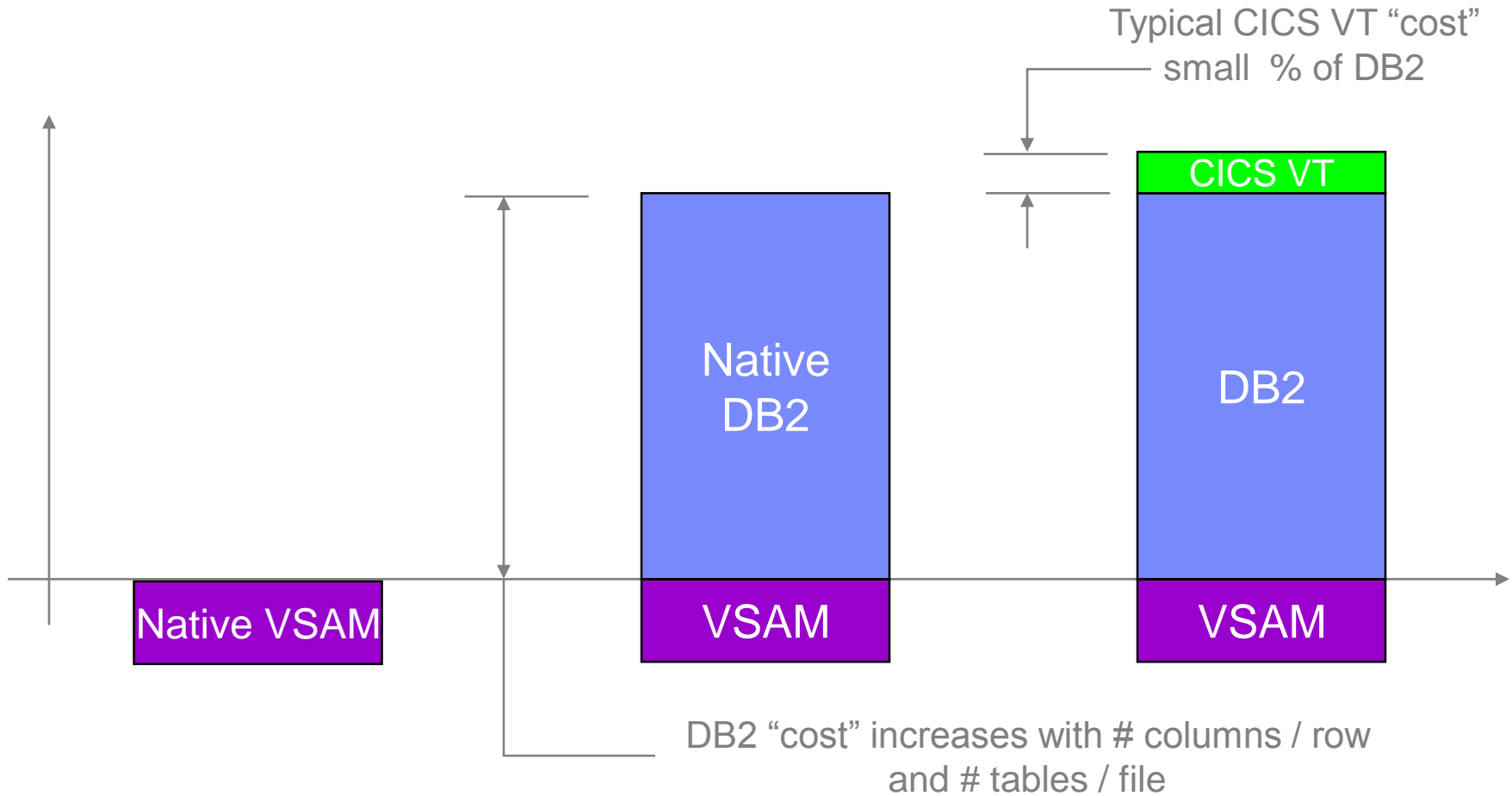
- VSAM Transparency will quickly position you to exploit DB2
- You *really* have migrated your VSAM data to DB2, future applications can exploit the power of Relational Data via DB2
- Don't spend time recoding old applications, rather spend time preparing your data for future multi-platform, web-enabled applications

### More Information

- <http://www-306.ibm.com/software/htp/cics/vt/>

# Supplemental Slides

# Performance Cost – Incremental View



## VT Migration Considerations

- A key feature of CICS VT is that your application programs are unchanged although your VSAM data is migrated to DB2. In practice there may be situations when some minor program changes are needed in consideration of operational or performance reasons.
  
- Typical situations that may benefit from minor application changes are:
  - Long running CICS transactions that do not issue SYNC Points a regular basis
    - [Modify programs to issue explicit SYNCPOINTS at appropriate intervals](#)
  - Batch jobs that use REPRO, SORT, and SYNCSORT work with CICS VT, but it may make more sense to use equivalent DB2 utilities to achieve optimal performance
    - [Modify batch job streams to use appropriate DB2 utility](#)
  - Batch programs that issue many UPDATE commands may cause contention issues with other DB2 tasks, and may exceed NUMLKTS and MUMLKUS limits.
    - [Add SQL COMMIT calls to your application programs.](#)
    - [If you do this also consider adding restart logic.](#)

# VT Migration Considerations

- Application changes prior to conversion may be required if the application architecture performs:
  - Job scheduling
  - Data compression
  - Application VSAM recovery for data errors
  - Application VSAM logging and recovery
  - Non-standard VSAM physical data access and/or index maintenance
  - Uses a workbench that generates a shell
- A transitional data model may be required. Significant re-engineering may increase the conversion effort.

# VT Migration Considerations

- CICS VT gives options.
  - Example: 500 programs use a VT migrated file, but 10 of the programs do not run at desired performance levels. Then change those 10 programs to use native SQL instead of VT. The other 490 programs can continue to use VT. You still avoided having to rewrite 490 programs.
- Don't view VT as a “all” or “nothing” solution. Use VT where it best fits the need.
- Remember the main value of CICS VT comes from not having to rewrite all the programs the use a VSAM file that is being migrated to DB2.