

Transforming TurboIMAGE Data for Eloquence, Oracle, and More

By Bob Green, Robelle
bgreen@robelle.com

Transform to Eloquence/UX

- Migrate your data without change
- Use -T option on Schema Processor
- Eloquence handles all IMAGE datatypes, except j (COBOL integer) which is mapped to i
- Suprtool supports Eloquence, other MPE tools to follow

TurboIMAGE to Eloquence

- Install the DBEXPORT utility on HP3000
- Export the database
- Create and import the database on Eloquence

Cleaning Your Data

- Imports can fail due to invisible characters
- Common: Linefeed, Tab, Escape
- Use Suprtool's Clean command

```
set CleanChar "."  
clean "^9", "^10", "."
```

Example of Cleaning

```
>base mydb,1,; get customer  
>clean "^9","^10","^0","^7"  
>set cleanchar " "  
>update  
>ext address(1) = $clean(address(1))  
>ext address(2) = $clean(address(2))  
>ext address(3) = $clean(address(3))  
>xex
```

TurboIMAGE Datatypes

- *Subitemcount Datatype Subitemlength*
- X, U - character data
- Z - zoned numeric bytes, overpunch
- I, J, K - integers
- E - floating point (R is deprecated)
- P - packed decimal

Language Compatibility

- COBOL: i1 i2 i4 x u z p
- FORTRAN: i1-i2 e2 e4 x u
- Powerhouse: i1-i4 e2 e4 x u z p
- j1,j2,j4 are odd, think of them as i's

TurboIMAGE Data to Oracle

- Internal datatypes:
 - Number, Char, Varchar2, Date
- External datatypes - how Oracle delivers the data to a program:
 - Integer, Char, Floating-point, Packed-decimal

Transforming Decimal Data

- Export numbers as char, with decimal
- Define Oracle field as NUMBER (x,y), where x is the total number of digits and y is the scale factor.
- SQL interface for COBOL can extract the NUMERIC field as Packed Dec so you don't have to change your Copylib

STExport for SQL*Loader

```
!RUN STEXPORT . PUB . ROBELLE  
IN DMRTABHM  
ZERO LEADING  
QUOTE NONE  
COLUMNS FIXED  
SIGN TRAILING  
OUTPUT ABHMDATA  
EXIT
```

Oracle Can't Deliver as I4

- COBOL program can retrieve Number values in Integer (i1 and i2), Packed Decimal, or Zone Decimal format
- Retrieve as Packed field for COBOL instead
- Change COBOL PIC to COMP-3

TurboIMAGE to SQL Server

- Tinyint(byte), Smallint(i1), Integer(i2) and Bigint (quad, i4)
- Number (precision,scale)
- Float(n) where N is the number of bits in the mantissa (<25 bits is 4 bytes Real, 25> is 8 byte Long).

What about Compound Items?

- TurboIMAGE has 5x10 for an array of five elements, each with 10 characters.
- This is called a compound item
- Not supported in SQL databases
- Convert each element to a separate column: address1, address2, address3...

Find a COBOL Precompiler

- MS SQL Server has no COBOL precompiler
- But AcuCOBOL has one
- Microfocus Cobol says get precompiler from your database vendor
- New languages have interfaces to most databases: C++, Java, Perl, Php, etc.

TurboIMAGE to MySQL

- MySQL is an open source database
- Commonly used as a web backend
- Simple, fast, but limited
- www.mysql.com
- As an experiment we replicated an IMAGE database in MySQL

Importing into MySQL

```
LOAD DATA 'file_name.txt'  
  INTO TABLE tbl_name  
  [FIELDS  
    [TERMINATED BY '\t']  
    [ [OPTIONALLY] ENCLOSED BY ""]  
    [ESCAPED BY '\\' ] ]  
  [LINES TERMINATED BY '\n']
```


TurboIMAGE to PostgreSQL

- Full-feature SQL database
- Use Copy command to load from file
- Default separator is tab (\t)
- Supports quad integers I4 (int8)

Migrating Dates

- Most databases allow M/D/Y or D/M/Y
04/28/2002 or 28/04/2002
- ISO standard format is yyymmdd
20020428
- Export with this format to avoid import problems, since the month is unambiguous

Export Multi-Line Notes

- Combining multiple Image note records into one large SQL text field
- Use a Perl program
- Full details at:
`http://www.robelle.com/tips/st-export-notes.html`

Export Notes, Tab Delimited

```
Get Notes
```

```
Sort cust-id
```

```
Sort seq-num
```

```
Extract cust-id, ^i, comment  
{tab delimited}
```

```
Out notefile
```

```
Xeq
```

Run the Perl Script

- Run the Perl script against your notefile to produce the CSV file.

```
perl merge.pl <notefile  
>note.csv
```

- You now have one big text record per sequence number

Learn More

- Migration library on our web site:

`suprtool.com/move`

- Email me at `bgreen@robelle.com`

- Primary Robelle site: `www.robelle.com`

- Some useful web links:

`www.robelle.com/books` - "HP 3000 Evolution"

`www.eloquence3000.com` - Eloquence database