

Migrating HP3000 Applications to Microsoft .NET using ASP.NET

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Agenda

- Options
- Code Compatibility
- Data Files
- User Interfaces (Before and After)
- Non-COBOL Code
- Batch Jobs
- Developer Training
- End-User Training
- Summary and Conclusions

HP e3000 Migration Options

- 2006 end of life for HPe3000
- Options
 - Stay on HPe3000 after support ends
 - Migrate to Unix / Linux / Windows
 - Migrate to Microsoft .NET

Why .NET

- Design
 - Well thought-out internet connectivity
 - Scalable solution
 - Extensive framework giving access to the latest technologies
- Feature Rich
 - Frameworks
 - Winforms
 - Web Forms
 - Web Services
 - ADO.NET
- Visual Studio Integration

Enhance Your Appearance!

The image compares two versions of a phone number directory interface. On the left is a text-based terminal-style interface, and on the right is a modern web browser interface.

Text-based Interface (Left):

```

+-----+
|               PHONE NUMBER DIRECTORY               |
+-----+
| Function: c                                         |
| Phone Number: 740/397-9229x                         |
| Company Name: DB-NET, INC.                         |
| Contact: RICK HARDMAN                             |
| Address: 23 RIDGEWAY CO                            |
| Address 2:                                         |
| City, State Zip: HOWARD                            |
| Sort By: DB-NET                                    |
| Remarks: |                                         |
| FAX      : / - x                                   |
| MODEM    : / - x                                   |
| HOME     : / - -                                   |
| AUTO     : / - -                                   |
| PAGER    : / - -                                   |
| WORK     : / - x                                   |
| Spouse: LAURA                                     |
| E-Mail:                                           |
+-----+
| Enter Remarks                                     |
+-----+
  
```

Web-based Interface (Right):

WebForm1 - Microsoft Internet Explorer
Address: http://localhost/sweet3000/Pn.aspx

PHONE NUMBER DIRECTORY

Function:

Phone Number: / - x [] Customer:

Company Name:

Contact:

Address:

Address 2:

City, State Zip: , -

Sort By:

Remarks:

: / - x

: / - x

: / - -

: / - -

: / - x

Spouse:

E-Mail:

Enter A-add C-change D-delete I-inquiry Q-quit R-renumber S-scan M-modem

COBOL Code Compatibility

- Converter + Sweet3000 run-time routines provide close to 100% compatibility
- Main Areas:
 - HP Intrinsic
 - Image Databases
 - COBOL File I/O
 - VPLUS Screens
 - Minor Syntax Details

COBOL Code Compatibility

HP Intrinsic

| | | | | |
|--|---|---|--|---|
| .LEN. .LOC. ACTIVATE BINARY COMMAND CREATE CREATEPROCES S CTRANSLATE DATELINE DBBEGIN DBCLOSE DBCONTROL DBDELETE DBEND DBERROR DBEXPLAIN DBFIND DBGET DBINFO | DBLOCK DBOPEN DBPUT DBUNLOCK DBUPDATE DMOVIN DMOVOUT FCHECK FCLOSE FCONTROL FERRMSG FFILEINFO FGETINFO FINDJCW FLABELINFO FOPEN FPOINT FREAD FREADBYKEY | FREADDIR FREADLABEL FREEDSEG FSETMODE FSPACE FWRITE FWRITEDIR FWRITELABEL GETDSEG GETINFO HPCICOMMAND HPCIGETVAR HPCIPUTVAR JOBINFO KILL MAIL PAUSE PRINT PRINTFILEINFO | PROCINFO PROCTIME PUTJCW QUIT RECEIVEMAIL SENDMAIL SORTEND SORTERRORMESS SORTINIT SORTINPUT SORTOUTPUT SUSPEND TIMER VCLOSEFORMF VCLOSETERM VERRMSG VFIELDEDITS VFINISHFORM VGETBUFFER | VGETKEYLABELS VGETNEXTFORM VINITFORM VOPENFORMF VOPENTERM VPRINTFORM VPUTBUFFER VPUTFIELD VPUTWINDOW VREADFIELDS VSETERROR VSETKEYLABEL VSETKEYLABELS VSHOWFORM WHO |
|--|---|---|--|---|

COBOL Code Compatibility

- Image, COBOL File I/O, VPLUS
 - Syntax changed by converter
 - Matches changes to screens and data
 - Ties into run-time support
- Minor Syntax Details
 - Handled by converter

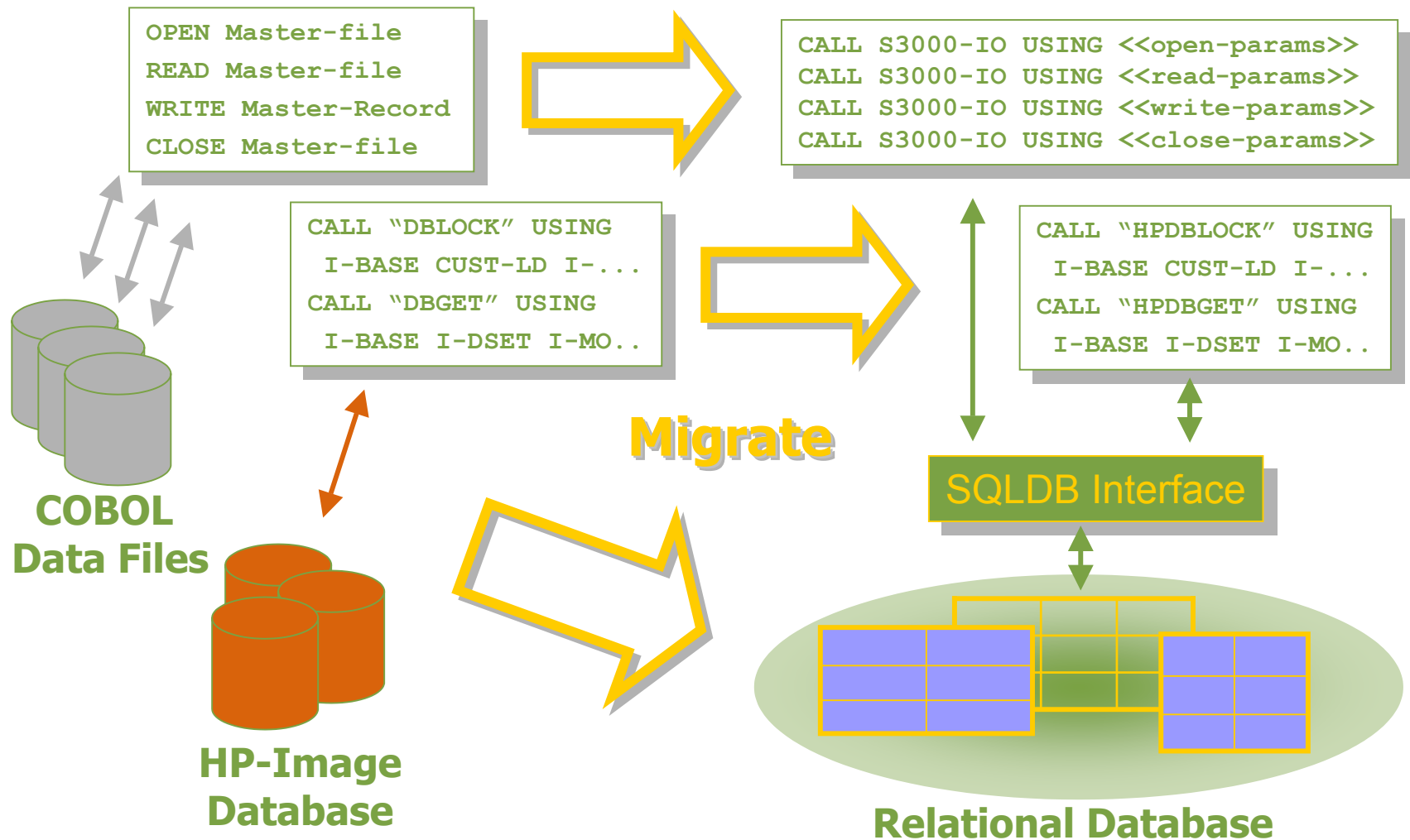
Data Files

Image and COBOL Data Files



- COBOL Data Files
 - KSAM and relative files converted to SQL tables
 - File I/O statements converted to CALLs
 - Sequential files remain unchanged
- Image Database
 - Image data moved to SQL tables
 - Equivalent routines provided to support Image I/O calls

Data Files



Data Files

- Benefits
 - Data consolidated into a single database
 - SQL Queries available for all data
 - Choice of databases
 - SQL Server
 - Oracle
 - DB2
 - Informix

User Interfaces

- Formspec used to dump binaries to text files
- Files processed to produce ASP.NET page definitions
- COBOL Code stays the same
- Subroutines interface the VPLUS calls to ASP.NET pages

User Interface

VPLUS Screen (Before)

```
+-----+
|               P H O N E   N U M B E R   D I R E C T O R Y               |
+-----+
|               Function: c                                               |
|   Phone Number: 740/397-9229x      [  ] Customer: 00000                |
|   Company Name: DB-NET, INC.                                             |
|     Contact: RICK HARDMAN                                               |
|           Address: 23 RIDGEWAY COURT                                     |
|     Address 2:                                                           |
| City, State Zip: HOWARD ,OH 43028-                                     |
|     Sort By: DB-NET                                                     |
|     Remarks: [ ]                                                       |
|   FAX          : / - x                                               |
|   MODEM        : / - x                                               |
|   HOME         : / -                                                 |
|   AUTO         : / -                                                 |
|   PAGER        : / -                                                 |
|   WORK         : / - x                                               |
|           Spouse: LAURA                                               |
|           E-Mail:                                                       |
|           09/11/52                                                     |
+-----+
|   Enter Remarks                                                         |
+-----+
```

After: .NET Web Form

WebForm1 - Microsoft Internet Explorer

Address: http://localhost/sweet3000/Pn.aspx

PHONE NUMBER DIRECTORY

Function:

Phone Number: / - x [] Customer:

Company Name:

Contact:

Address:

Address 2:

City, State Zip: , -

Sort By:

Remarks:

: / - x

: / - x

: / -

: / -

: / - x

Spouse:

E-Mail:

Enter A-add C-change D-delete I-inquiry Q-quit R-renumber S-scan M-modem

Done Local intranet

After: Windows / Unix

DB-Term - local mode (click connect for remote hosts)

Connect Settings... Transfers... Icons... Commands... Tasks... Special Buttons... About

P H O N E N U M B E R D I R E C T O R Y

Function:

Phone Number: Customer:

Company Name:

Contact:

Address:

Address 2:

City, State Zip:

Sort By:

Remarks:

| | | | | | |
|-------|---|--------------------------|--------------------------|-------------------------------------|--------------------------|
| FAX | : | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| MODEM | : | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| HOME | : | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| AUTO | : | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| PAGER | : | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| WORK | : | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Spouse:

E-Mail:

Enter the name that you will most likely enter to find this person. (ie. nick name, first name or last name)

Enter Name to Sort by

User Interfaces

- Benefits
 - User Interfaces given a facelift
 - Maintain screens using Visual Studio Webforms Designer
 - Ability to enhance further, unconstrained by proprietary technology

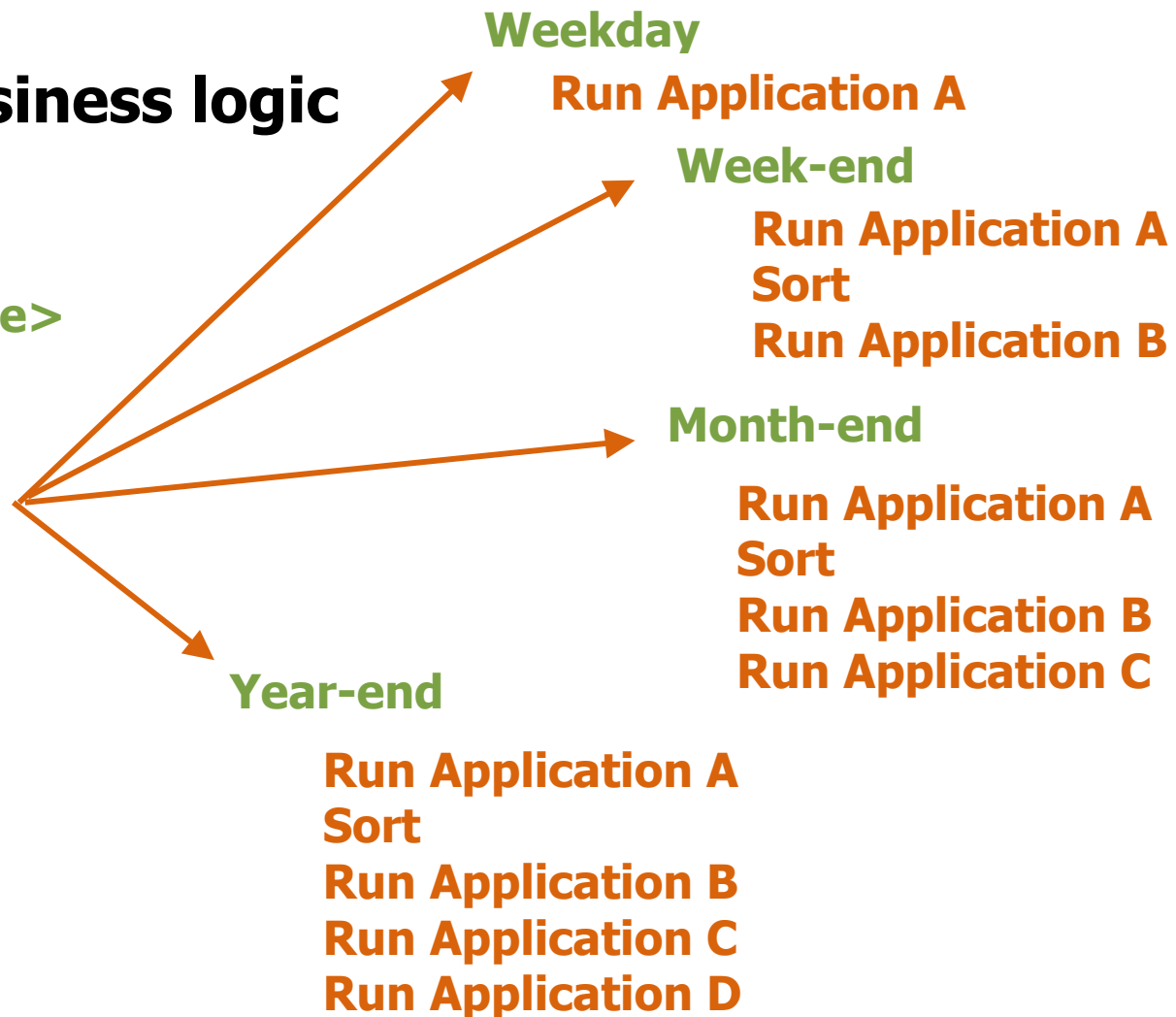
Non-COBOL Code

- SPL
 - Needs to be rewritten
 - Quite likely using NetCOBOL
- C
 - NetCOBOL has good run-time integration with C programs
- Fortran
 - Use with Lahey/Fujitsu Fortran for .NET that integrates well with NetCOBOL for .NET

Batch Jobs

- **Contain business logic**

Batch-job <date>



Batch Jobs

Supported Commands

| | | | | | |
|------------|-----------|------------|---------|-----------|-----------|
| AUI | CMBTOUX | CPYFILALL | DUI | HELP | LISTF |
| AUTOUPDATE | COB74XL | CPYLOW | ECHO | HLDFIL | LISTFDL |
| BACKUP | COB85XL | CSPLIT | ED | HPBIN2UX | LM |
| BU | COBERR | CWF | EDIT | HPCMB2UX | LMC |
| CALALL | COBERRL | DAILYBU | EDITOR | HPCOBVRT | LOCAL |
| CALC | COBOLII | DBCHECK | ELSE | HPSORT | LOGOFF |
| CALEN | COBSPLIT | DBCHECKALL | ENDIF | HPSPLITL | LPAL |
| CB | COBSTRIP | DBCHECKDO | EOD | IF | LSPRO |
| CBF | COBTOUX | DBCLEARALL | EOJ | ILDFIL | LSTDDL |
| CBU | COBTOUXL | DBMSSERV | EXIT | ILDFILALL | LTS |
| CC | COBVERT | DBMSSERVD | EXP | ILDIMA | MAKECTSO |
| CEF | COBVRTERR | DCOPYU | EXTFIL | ILDKIF | MAKEPROSO |
| CHDIR | COMMENT | DDL | FCOPY | INFO | MAKESO |
| CHGROUP | CONVERT | DDLALL | FCU | JOB | MAPLIB |
| CHK | COPY | DF | FCUFIL | KILLLM | MF |
| CHMODALL | CPD | DIFFALL | FILE | KT | MFK |
| CHMODSH | CPDESK | DOWN | FS | KU | MKDDLDIR |
| CLEANUP | CPSEQ | DOWN30 | HD | LBC | MN00 |
| CLEAR | CPTOFD | DOWNLOAD | HEADOFF | LD | MN01 |
| CLRMAIL | CPYFIL | DSPLIT | HEADON | LISTEQ | MODE |

Batch Jobs

Supported Commands

| | | | | | |
|----------|-------------|-----------|----------|-----------|----------|
| MONTHBU | RD | SCONTROL | SNS | SVSALL | UPFD |
| MONTHEND | REBOOT | SD | SORTIT | SYN | UR |
| MOUNTCD | RECVMAIL | SDT | SOS | SYNCSERV | USECURTY |
| MOUNTFD | RECVMAILNO | SECURITY | SPLTOUX | SYNCSERVD | VERIFY |
| MVDOTS | RECVMAILORG | SET | SPS | SYSTAT | VERSION |
| MVUPPER | RECVMAILYES | SET132 | SRP | TARUPDATE | VIALL |
| NADB | REDO | SET80 | SRPL | TCTDF | VIREM |
| NETRC | RELOAD | SETPAGE33 | STARTDB2 | TDO | VISOME |
| OFF | RENAME | SETPAGE66 | STARTORA | TFTPC | VPLUS |
| ON | REPRINT | SETVAR | STARTSQL | TICOBVRTL | WEEKLYBU |
| PAUSE | REPRINTA | SF | STARTSYB | TIMES | XCC |
| PF | RESET | SF132 | STI | TOP | XCCXLE |
| PKZIP | RESETUCI | SFILD | STOPDB2 | TRACEON | XE |
| PN | RGPRINT | SHOWC | STOPORA | TRACEOFF | XEC |
| PREP | RMXFDLC | SHOWDEV | STOPSQL | TS | XEL |
| PRINTS | RUN | SHOWME | STOSYB | UCI | XEO |
| PROCMail | S | SHOWTIME | STREAM | UF | XFDLC |
| PROGCHK | SANE | SHOWVAR | STS | UFM | XFDLCALL |
| PSF | SAT | SLR | STSG | UMOUNTCD | XLE |
| PURGE | SBU | SLST | SUS | UMOUNTFD | |
| Q | SCHEDULE | SMM | SV | UPCD | |
| QUERY | SCHEMCNV | SMS | SVS | UPDATE | |

Developer Training

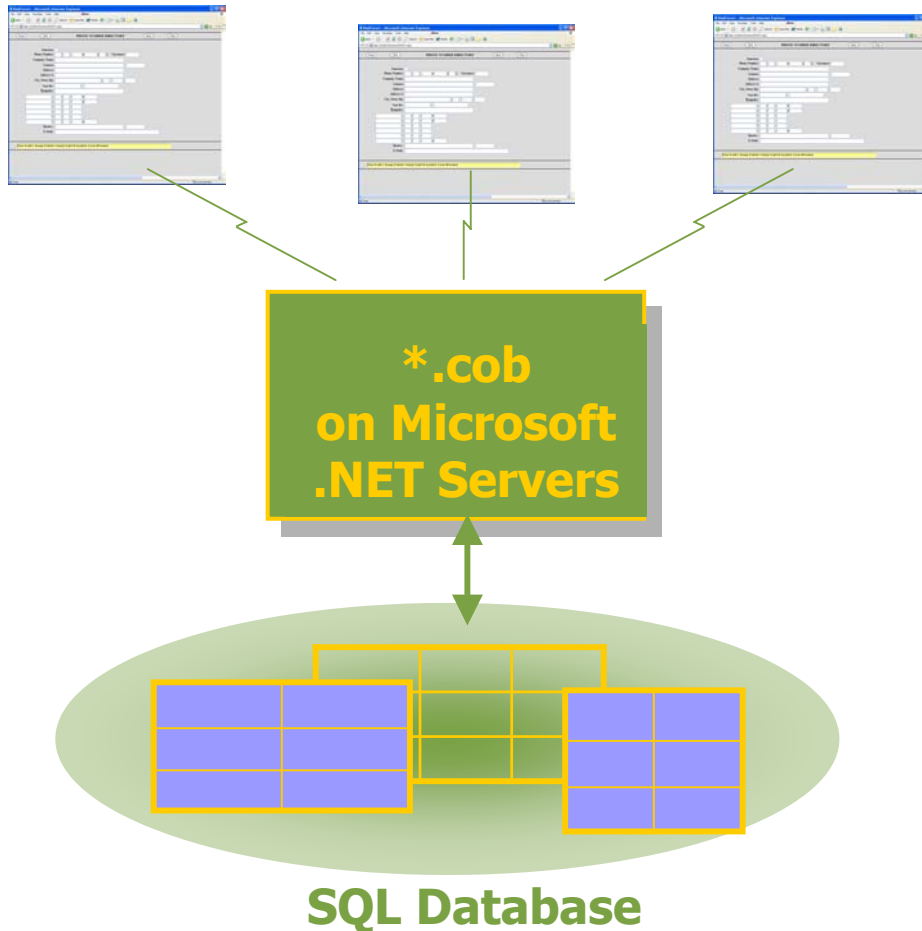
- Migration Preparation
 - Right questions / Analyze / Add DB Keys
- Migration Execution
 - Transferring Code, Data & Batch Jobs
 - Extracting & converting Screens
- Execution and maintenance in new environment
 - Testing
 - Learning .NET / ASP.NET / VS.NET
 - Maintaining applications in new environment

End-User Training

- Minimize By:
 - Preserving interface layouts
 - Using Web browsers

Sweet3000 for .NET

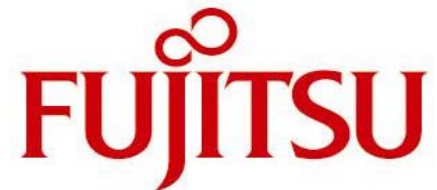
ASP.NET – Internet browser enabled interfaces



- Microsoft's migration to .NET provides an easy choice of Internet connectivity
- SQL database solution
 - Easier maintenance
 - Internet enabled work
 - all around
- Visual Studio .NET
 - COBOL code
 - leading edge IDE
 - preserved query
 - RAD designers

Conclusions

- Turn challenge into opportunity
- Retain the value of your HP e3000 COBOL applications
- Migrate using Sweet3000 for .NET
- Gain benefits of .NET / NetCOBOL
 - Internet enabled
 - SQL database
 - Rich framework
 - Leading-edge IDE
- Fujitsu Software has the tools and expertise
- You make the decision and reap the benefits



The possibilities are infinite...

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