



IBM Power Systems™



COMMON Agenda Key: 45MC  
Session Number: 409159

## System i Access for Windows: Data Transfer Tips and Techniques



Advanced  
Technical  
Expert

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IBM Power Systems



## Agenda

- **Data Transfer Overview**
  - What is Data Transfer?
  - What are the Data Transfer interfaces?
- **Examples**
  - Basic Data Transfer
  - V6R1 - What's new?
  - Tips and Techniques with Data Transfer
- **Appendix**
  - More about the ActiveX automation objects
  - Components of a Data Transfer

# Data Transfer Overview

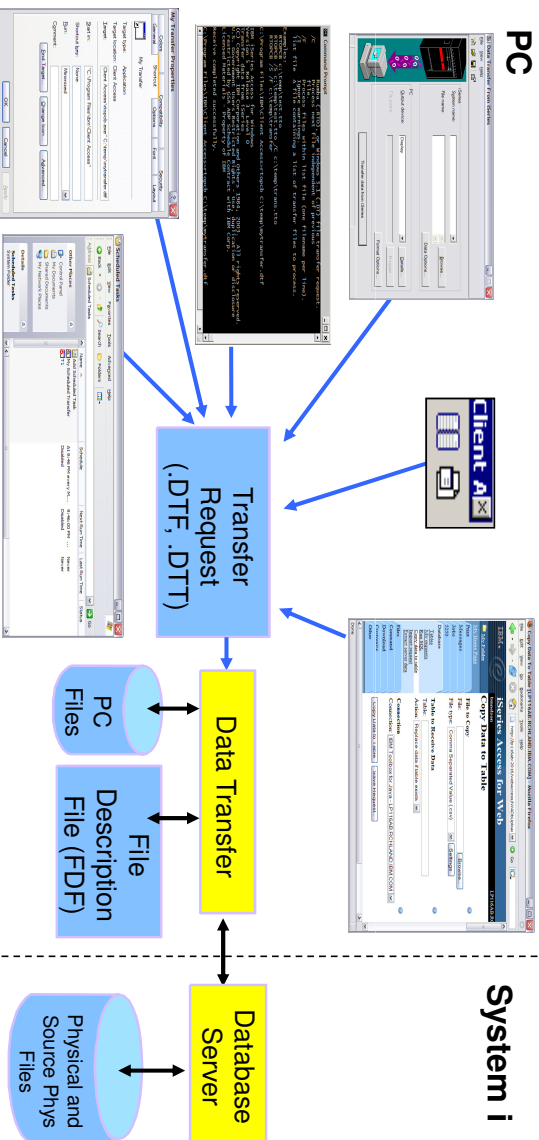
3

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## What is Data Transfer?

A set of applications for transferring data from PC files to System i files and from System i files to any of the following output devices: PC files, HTML, Display or Printer.

PC



System i

4

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## Limitations

Data Transfer is limited to transferring source physical files and data physical files to PC file types and PC file types to the source and data physical files on the System i. Transferring other types of files to and from a PC and the System i requires using other methods. Some other types of files that reside on the System i are stream files or flat files such as those stored in the Root or NetWare portions of the System i Integrated File System. These files may be accessed using the methods listed below.

- System i NetServer through 'shares'
- System i Navigator Integrated File System (IFS) support
- File Transfer Protocol (FTP)
- The IBM Toolbox for Java IFS classes
- System i Access for Web

5

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## What is Data Transfer?

What type of files does Data Transfer work with?

Supported PC files	Supported System i files
Microsoft Excel spreadsheets (BIFF3, BIFF4, BIFF5, BIFF7, BIFF8)	Data Physical files
Microsoft Excel XML spreadsheets	Source Physical files
Lotus 123 spreadsheets (123 and WK4)	
CSV (Comma Separated Variable)	
Tab delimited text	
DIF	
BASIC Random	
BASIC Sequential	
DOS Random	
DOS Random Type 2	
ASCII and UNICODE plain text (space delimited text)	
HTML	

6

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# What is Data Transfer?

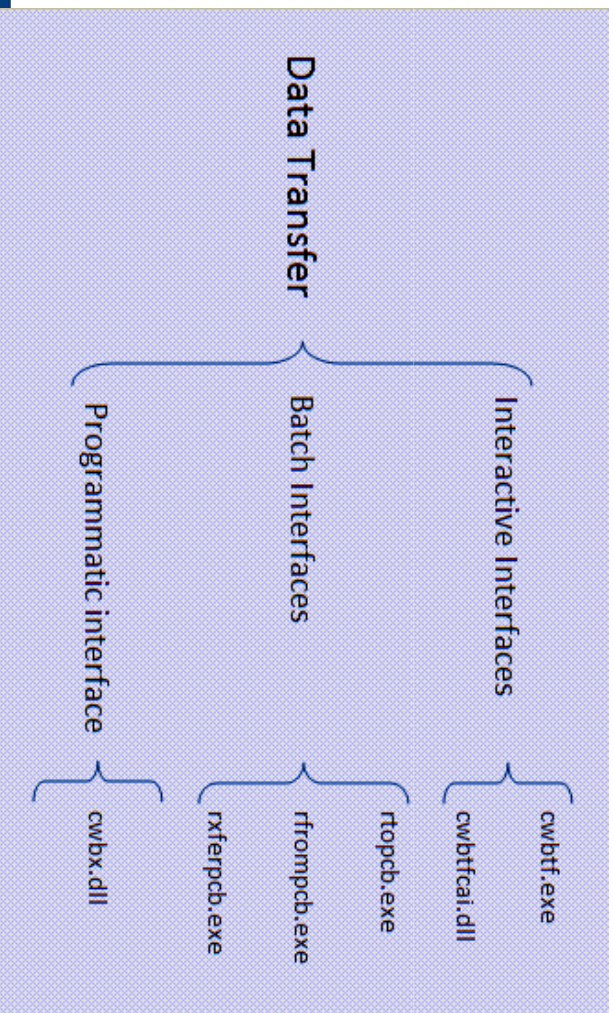
What makes the Data Transfer applications different from an FTP client?

7



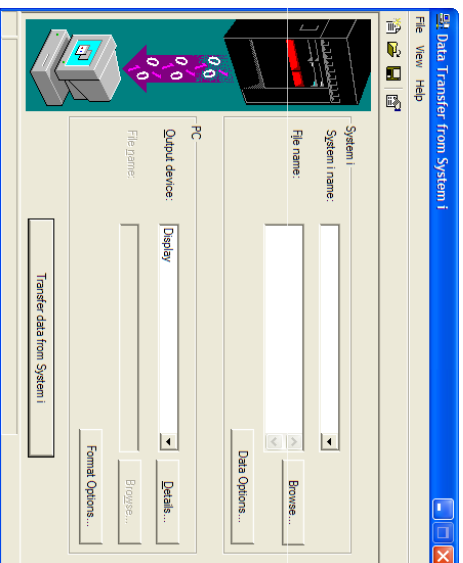
# What are the Data Transfer interfaces?

Data Transfer transfers data interactively, in batch mode, and programmatically

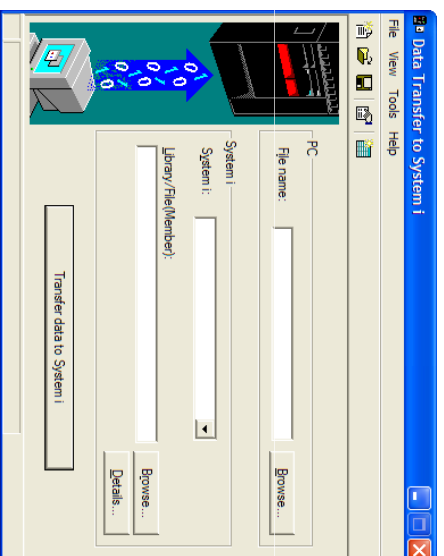


8

**What are the Data Transfer interfaces?**  
 CWBTF.EXE (The GUI) uploads and download data interactively



**Data Transfer from System 1**

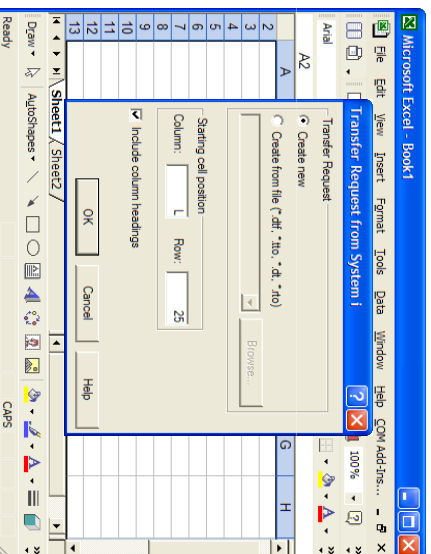


**Data Transfer to System 1**

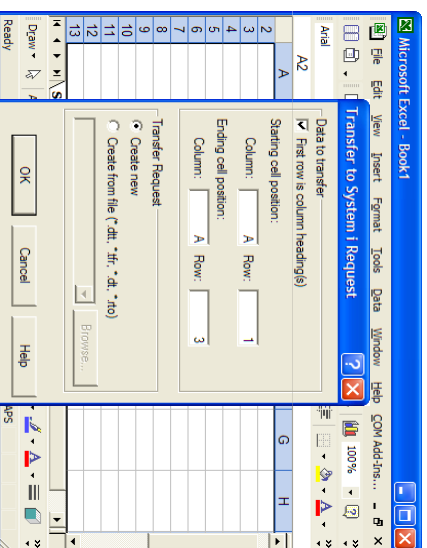
9

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**What are the Data Transfer interfaces?**  
 CWBTFCAI.DLL (The Excel Add-in) moves data between database files and the active worksheet so users can take advantage of the facilities of Microsoft® Excel



**Excel Add-in Download function**



**Excel Add-in Upload function**

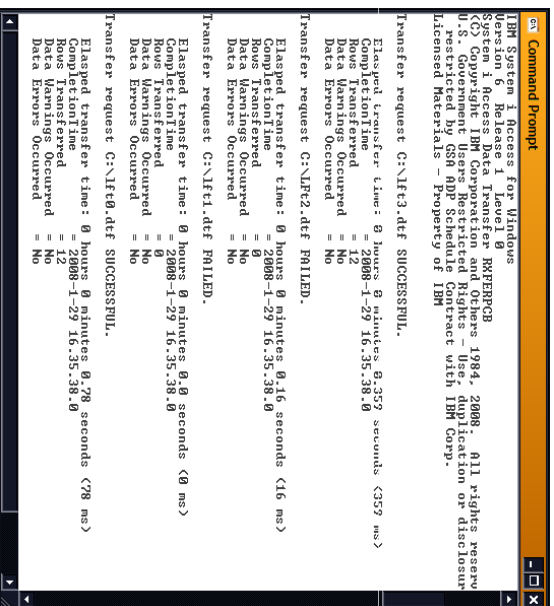
10

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## What are the Data Transfer interfaces?

RTOPCB.EXE, RFROMPCB and RXFERPCB.EXE work with transfer requests. Multiple requests can be processed in batch mode.



```

IBM System i Access for Windows
Version 6 Release 1 Level 0
System i Access Data Transfer RXTFERPCB
System i Access Data Transfer RFROMPCB
System i Access Data Transfer RXFERPCB
IBM Corporation License Restricted Rights - Use, duplication or disclosure
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Transfer request G:\MF3.def SUCCESSFUL.

Elapsed transfer time: 0 hours 0 minutes 0.359 seconds (359 ms)
Command line = 2008-1-29 16:35:38.0
Hours Transferred = 12
Data Warnings Occurred = No
Data Errors Occurred = No

Transfer request G:\MF2.def FAILED.

Elapsed transfer time: 0 hours 0 minutes 0.16 seconds (16 ms)
Command line = 2008-1-29 16:35:38.0
Hours Transferred = 0
Data Warnings Occurred = No
Data Errors Occurred = No

Transfer request G:\MF10.def FAILED.

Elapsed transfer time: 0 hours 0 minutes 0.0 seconds (0 ms)
Command line = 2008-1-29 16:35:38.0
Hours Transferred = 0
Data Warnings Occurred = No
Data Errors Occurred = No

Transfer request G:\MF10.def SUCCESSFUL.

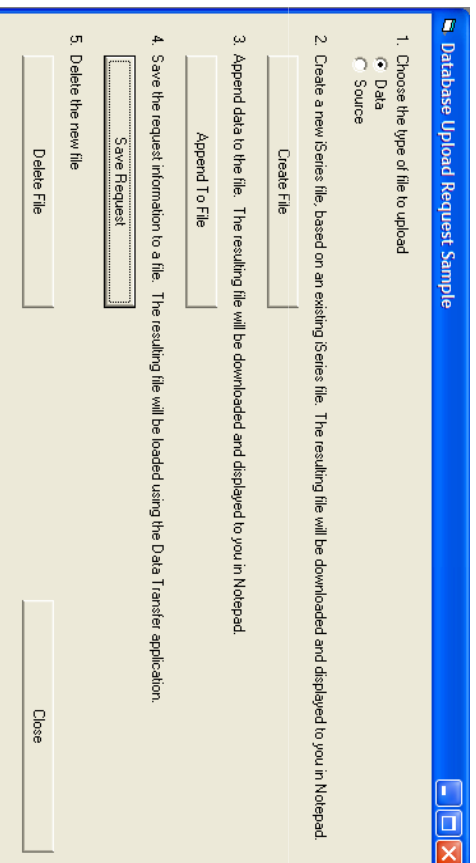
Elapsed transfer time: 0 hours 0 minutes 0.78 seconds (78 ms)
Command line = 2008-1-29 16:35:38.0
Hours Transferred = 0
Data Warnings Occurred = No
Data Errors Occurred = No
  
```

11

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## What are the Data Transfer interfaces?

CWBX.DLL (The Programmatic interface) allows you to do Data Transfer operations programmatically



**Database Upload Request Sample**

1. Choose the type of file to upload
  - Data
  - Source
2. Create a new iSeries file, based on an existing iSeries file. The resulting file will be downloaded and displayed to you in Notepad.
 

Create File
3. Append data to the file. The resulting file will be downloaded and displayed to you in Notepad.
 

Append To File
4. Save the request information to a file. The resulting file will be loaded using the Data Transfer application.
 

Save Request
5. Delete the new file
 

Delete File

Close

### Database upload request Sample

12

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# Examples

13

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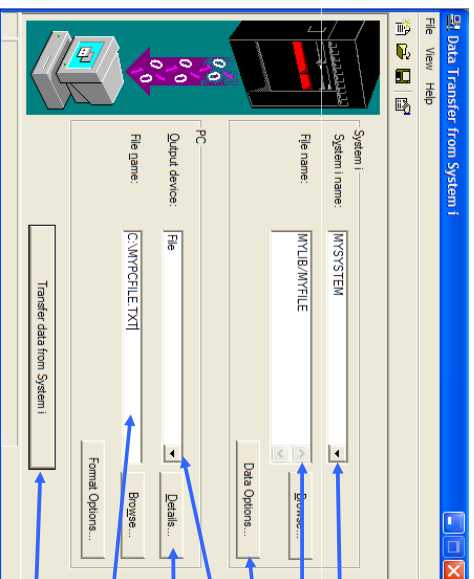
**Download from System i using the  
Data Transfer GUI (cwbtft.exe)**

14

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## Download from System i using cwbtft.exe

Start → Programs → IBM System i Access for Windows → Data Transfer from System i



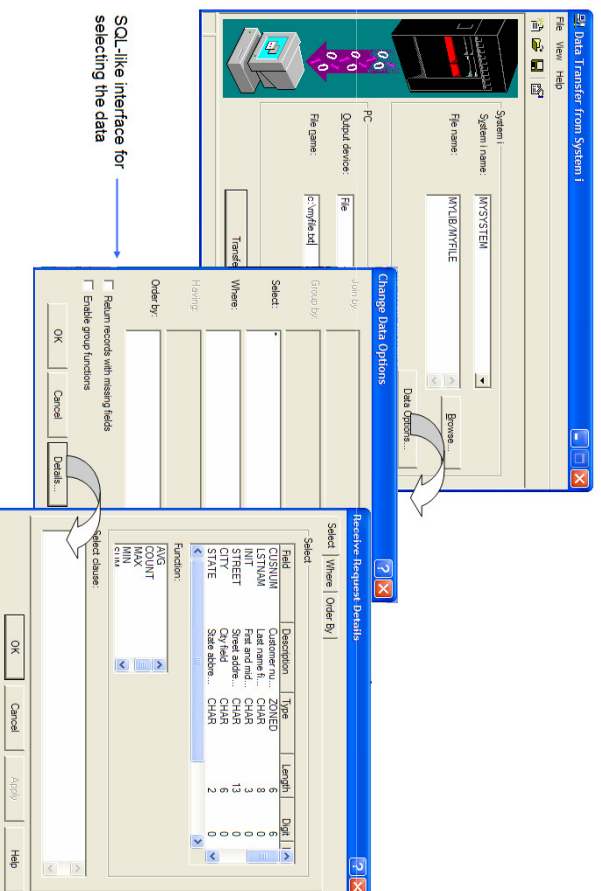
- 1) Specify the system name
- 2) Specify the source database file
- 3) Select your options (next page)
- 4) Select the output device
- 5) Set options that are specific to the output device
- 6) Provide the name for your PC file
- 7) Transfer your data

15

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## Download from System i using cwbtft.exe

Options to select the data to transfer



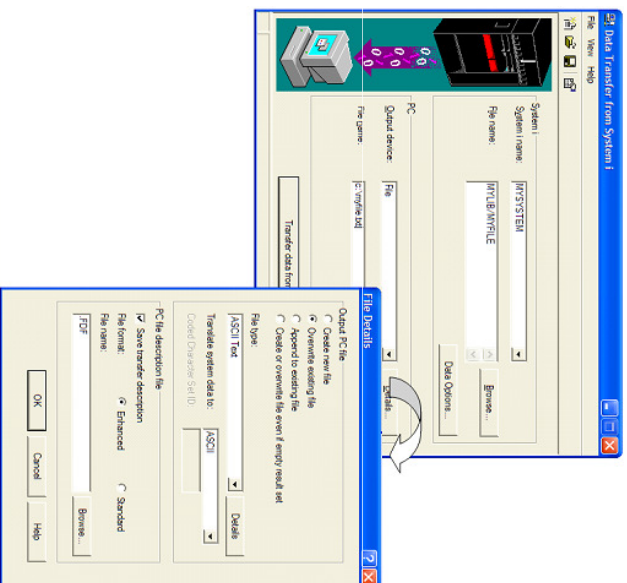
16

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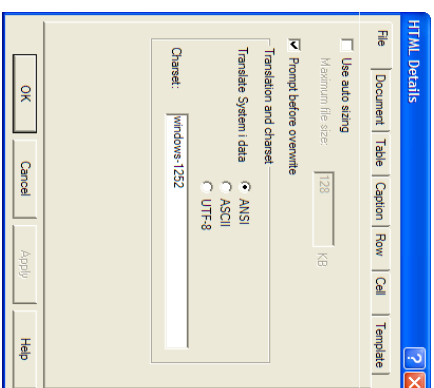


# Download from System i using cwbtft.exe

Details specific to the output device.



Output device=File



Output device=HTML

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17

Upload to System i using the  
Data Transfer GUI (cwbtft.exe)

18

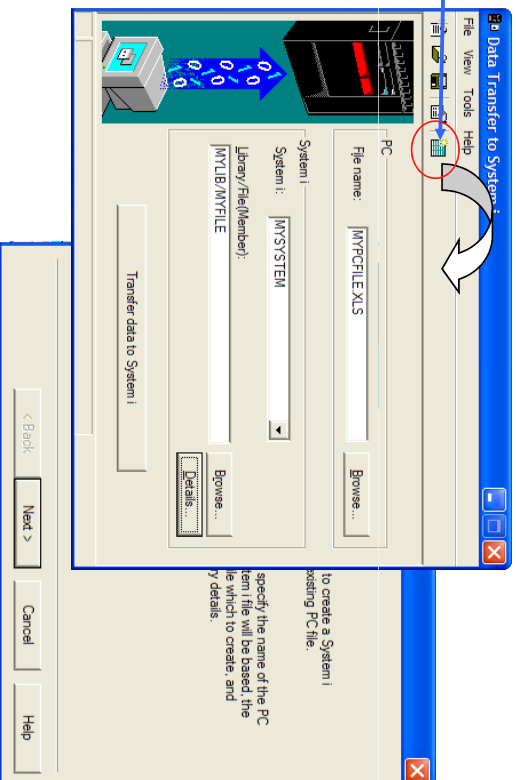
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## Upload to System i using cwbt.exe

Start → Programs → IBM System i Access for Windows → Data Transfer to System i

To transfer the file, we'll first create a System i Database file, then we'll transfer the data to the file.

- 1) Start the Create Database file wizard by selecting it from the Tools menu or by clicking on the icon in the toolbar.



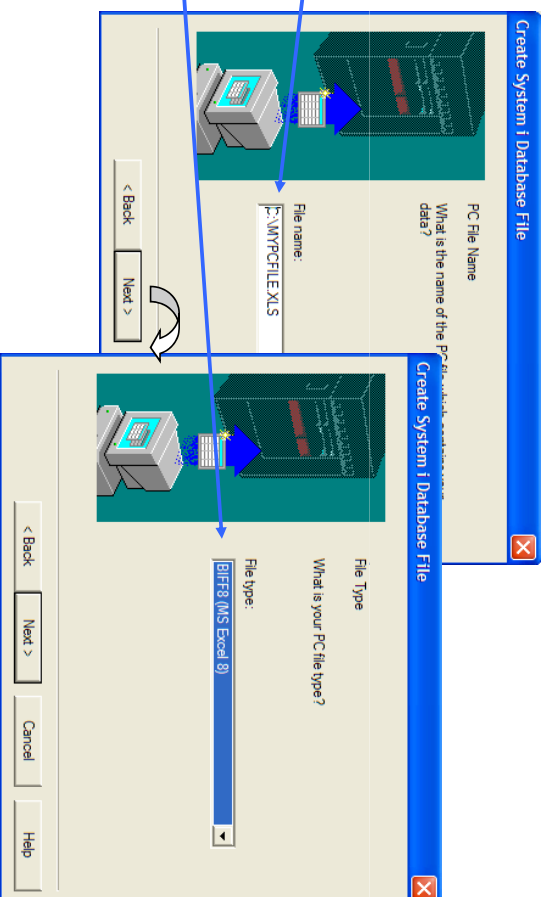
19

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## Upload to System i using cwbt.exe

Create Database File wizard

- 2) Select the PC file
- 3) Select the file type



20

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# Upload to System i using cwbt.exe

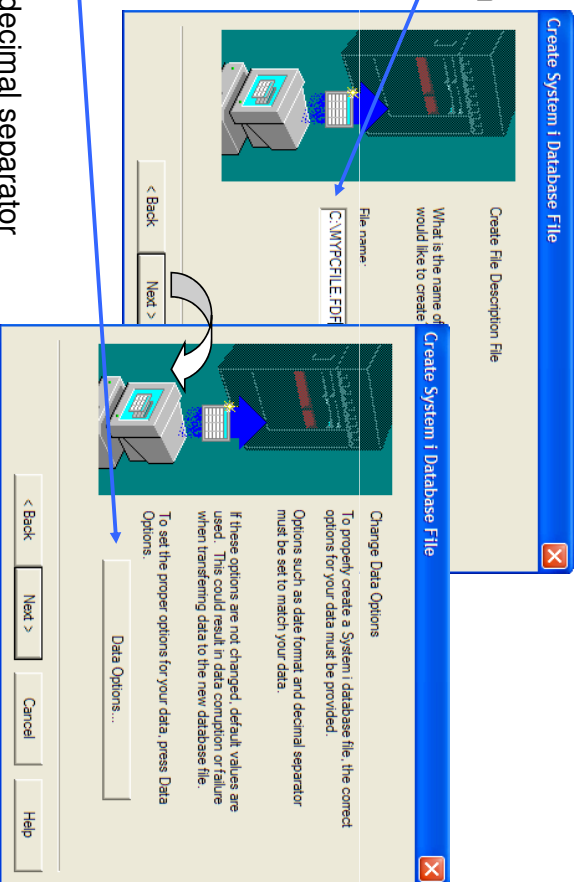
## Create Database File wizard

### 4) Specify the path for the FDF

The .FDF file describes the format of the database file.

### 5) Set the Data options if needed

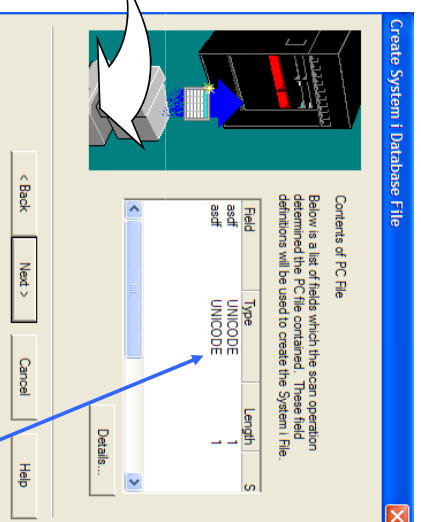
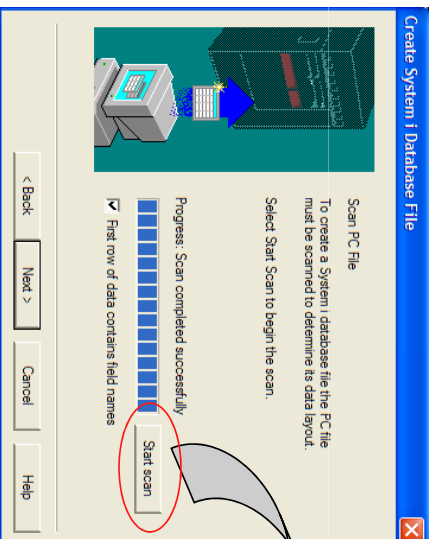
Ex: date format, decimal separator



# Upload to System i using cwbt.exe

## Create Database File wizard

### 6) Scan the PC file



### 7) Review the scan results

Increase these lengths if necessary to plan for future updates

# Upload to System i using cwbtft.exe

## Create Database File wizard

The screenshot shows two windows from the 'Create System i Database File' wizard. The top window, titled 'Create System i Database File', asks 'Where should your database file be created?' and has 'System i:' selected. The 'System i:' field contains 'MYSYSTEM'. The bottom window, also titled 'Create System i Database File', asks 'System i: File and Library: What is the name of the file which will contain your data? For example, TESTLIB/TESTFILE.' and 'The file you specify must not already exist in the specified library and you must have authority to write to the library.' The 'Library/File:' field contains 'MYLIB/MYFILE'. A blue arrow points from the text 'Specify the system name' to the 'System i:' field in the top window. Another blue arrow points from the text 'Specify the database file name' to the 'Library/File:' field in the bottom window. Navigation buttons '< Back', 'Next >', 'Cancel', and 'Help' are visible at the bottom of both windows.

8) Specify the system name

9) Specify the database file name

23

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# Upload to System i using cwbtft.exe

## Create Database File wizard

The screenshot shows two windows from the 'Create System i Database File' wizard. The top window, titled 'Create System i Database File', has a 'File Description Text' field containing 'My datab'. Below the field is the text 'You can associate a line of text with the file which describes the contents of the file.' The bottom window, also titled 'Create System i Database File', is titled 'Confirm: Create Options'. It shows 'System i:' as 'MYSYSTEM', 'Library/File:' as 'MYLIB/MYFILE', and 'PC file description file:' as 'C:\MYPFILE.F01'. Below these fields is the text 'Select Next to create the System i database file and the PC file description file.' Blue arrows point from the text 'Specify the file text if needed' to the 'File text:' field in the top window. Another blue arrow points from the text 'Confirm the create options' to the 'PC file description file:' field in the bottom window. Navigation buttons '< Back', 'Next >', 'Cancel', and 'Help' are visible at the bottom of both windows.

10) Specify the file text if needed

11) Confirm the create options

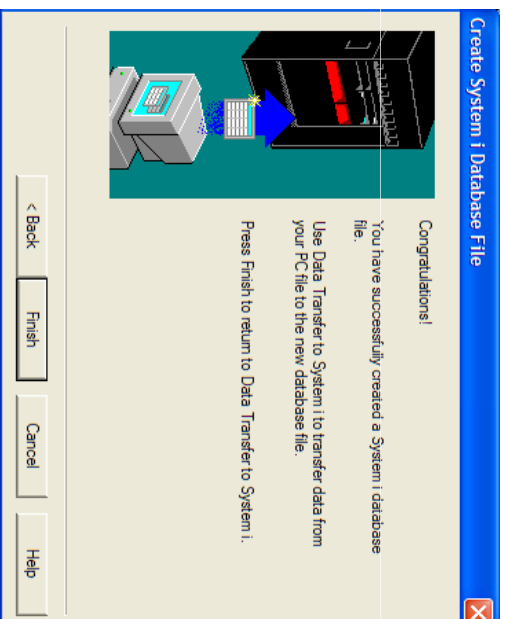
24

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## Upload to System i using cwbtfx.exe

### Create Database File wizard

12) The final panel confirms the database file has been created successfully



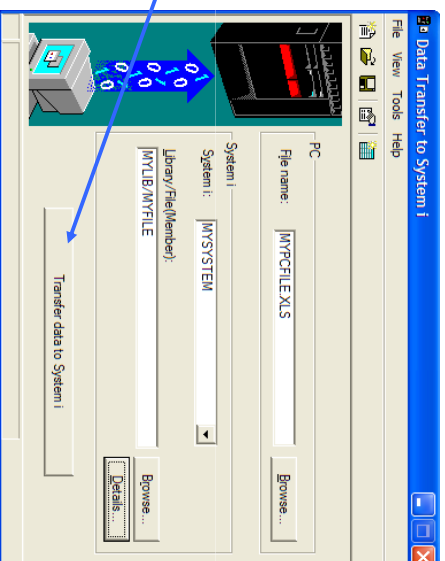
25

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## Upload to System i using cwbtfx.exe

Transfer the data to the newly-created database file

13) Finally, transfer your data



Key point about the System i Database file wizard:

- Creating the table and FDF does not transfer the data
- You have to click the Transfer button

26

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## Download from System i using the Excel Add-in (CWBTFCAI.DLL)

27

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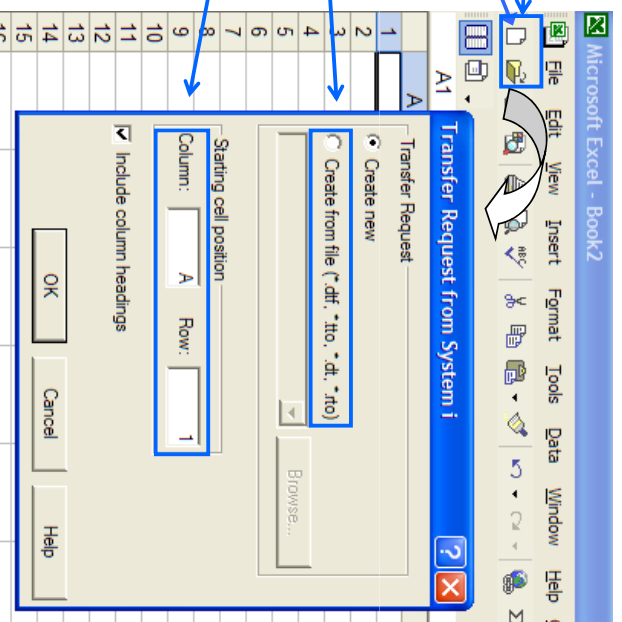
## Download from System i using Excel Add-in

Data Transfer Excel  
Add-in toolbar

1) Start the download  
function

Transfer Requests  
can be used

The location for the  
data in the worksheet  
can be customized



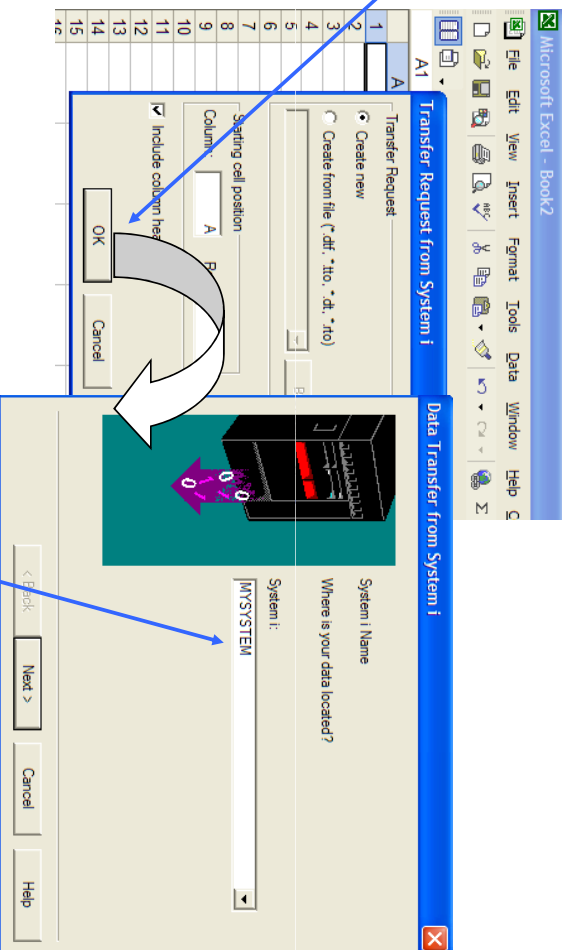
28

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## Download from System i using Excel Add-in

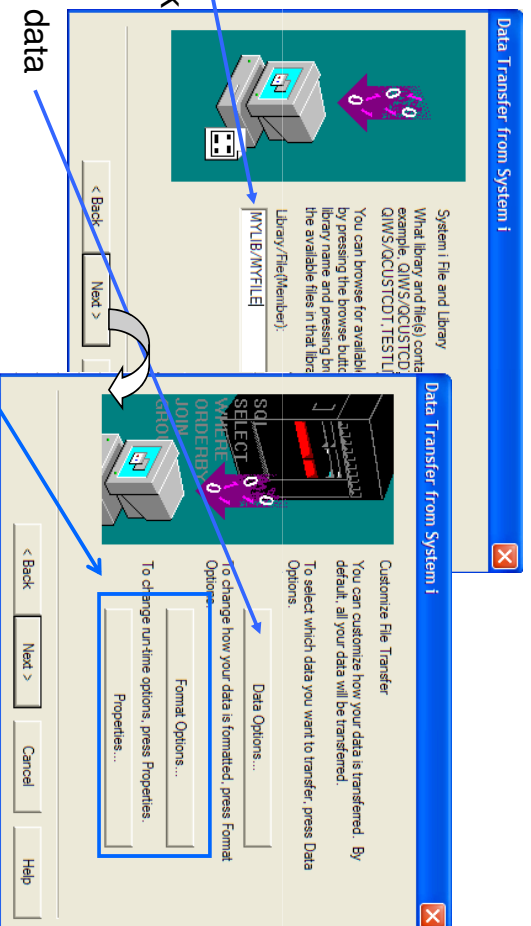
2) Start the download wizard



3) Specify the system name

## Download from System i using Excel Add-in

4) Specify the source database file and click Next



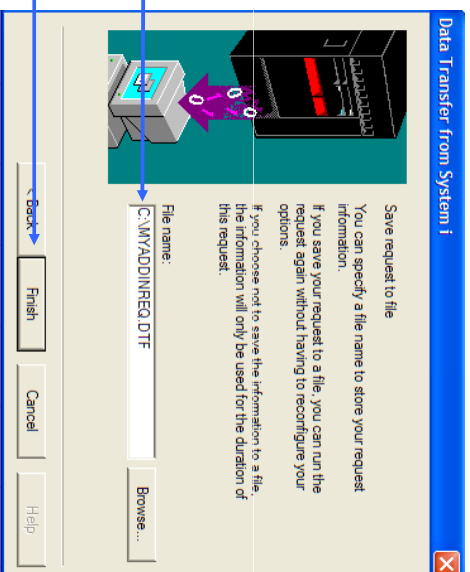
5) Select your data

You can find other download options on this panel

## Download from System i using Excel Add-in

6) Create a download request if needed

7) Transfer your data



31

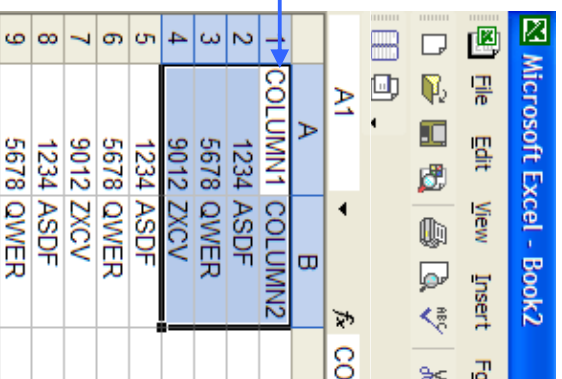
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**Upload to System i using the  
Excel Add-in (CWBTFCAI.DLL)**

32

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## Upload to System i using Excel Add-in

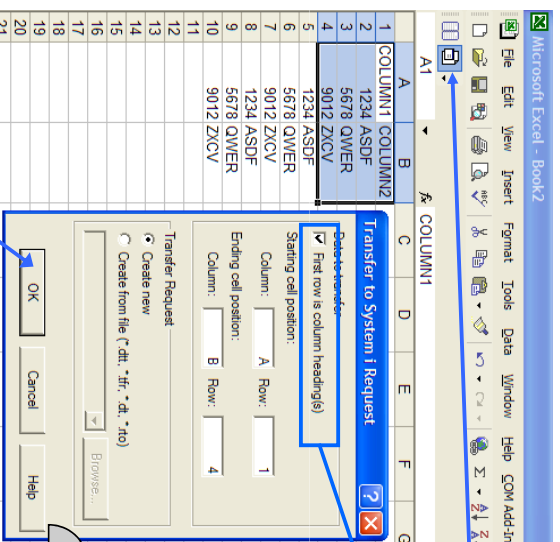


1) Select your data

33

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## Upload to System i using Excel Add-in



3) Start the upload wizard

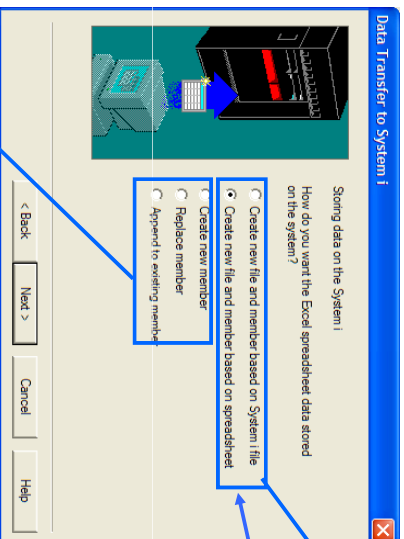


2) Start the upload function  
The first row can be used as column heading, as in this example

34

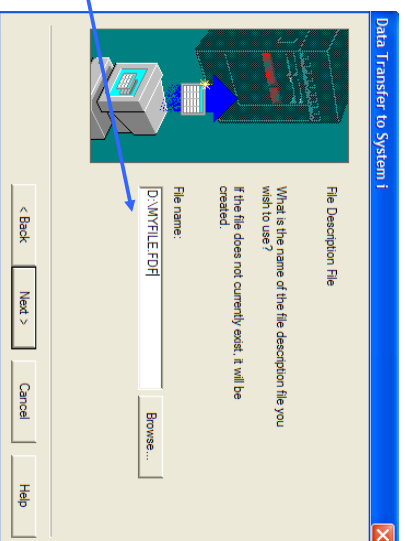
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## Upload to System i using Excel Add-in



These options create a database file and an FDF file  
4) Specify how you want your data stored

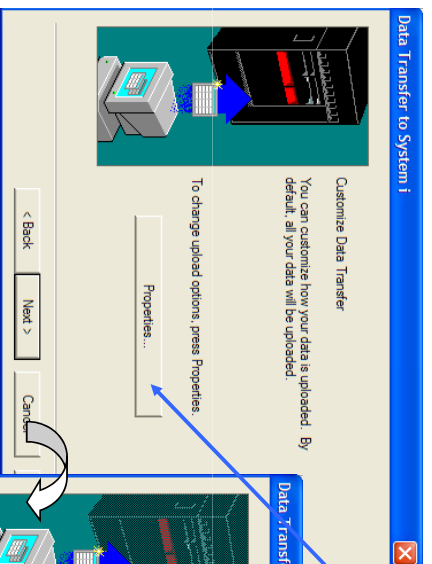
To use these options, a database file and an FDF file must already exist  
5) Specify the path and name for the FDF file



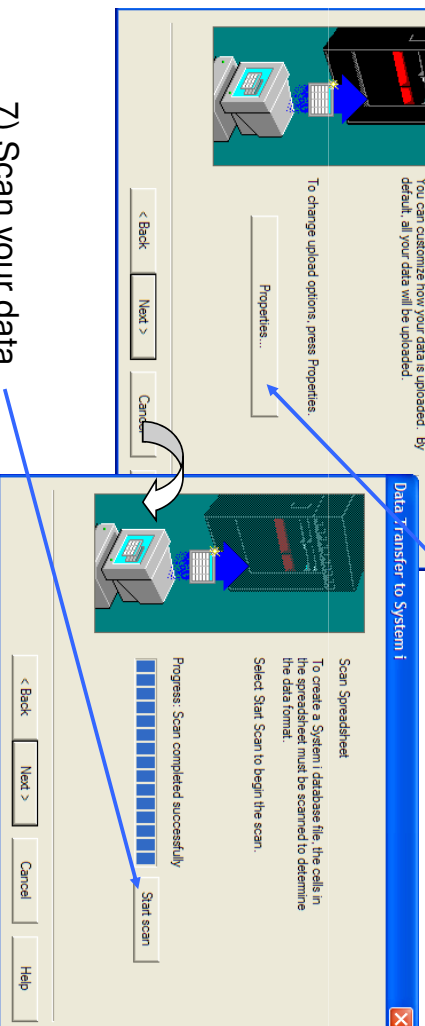
35

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## Upload to System i using Excel Add-in



6) Set the upload options if needed



7) Scan your data

36

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## Upload to System i using Excel Add-in

8) Review the scanning result

9) Specify the system name

Field	Type	Length	S
COLUMN1	NUMERIC	4	
COLUMN2	CHARACTER	4	

Field options like CCSID, length, default value, etc can be set up on the Details panel

37

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## Upload to System i using Excel Add-in

10) Specify the database file name

11) Specify the file description text if needed

System i Library and File  
To what library and file do you want to send your data? For example, QIWS/QCUSTCDT.

Library/File: MYSYSTEM/MYFILE

File Description Text  
You can associate a line of text with the file which describes the contents of the file.

File text: My spreadsheet

38

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## Upload to System i using Excel Add-in

**Data Transfer to System i**

Confirm Create Options

System: MEKGR120

Library/File: MYLIB/MYFILE

PC file description file: D:\calabaza.txt

Select Next to create the System i database file and the PC file description file.

< Back Next > Cancel Help

**Data Transfer to System i**

Save request to file

You can specify a file name to store your request information.

If you save your request to a file, you can run the request again without having to reconfigure your options.

If you choose not to save the information to a file, the information will only be used for the duration of this request.

File name: C:\MYUPREQ.DTT Browse...

< Back Finish Cancel Help

12) Verify and confirm the upload settings

13) Create the upload request if needed

14) Finally, upload your data

39

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## Download from System i using RTOPCB.EXE

40

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# Download from System i using RTOPCB.EXE

- 1) Type this command. →
- Sign on to your system if prompted
- 2) Check the results →

```

C:\> RTOPCB /S C:\MYDOWNREQ.DTF
IBM System i access for Windows
Version 6 Release 1 Level 0
Transfer data from System i
(C) Copyright IBM Corporation and Others 1984, 2008. All rights reserved.
U.S. Government Users Restricted Rights - Use, duplication or disclosure
without IBM permission is prohibited. IBM and the IBM logo are trademarks of
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Transfer file: C:\MYDOWNREQ.DTF
Receive completed successfully.
Files transferred: 12

C:\> RTOPCB

IBM System i access for Windows
Version 6 Release 1 Level 0
Transfer data from System i
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RTOPCB [/S] [/I] [filename [/C] L...J] | [/I] /F [list file] [/P filename]
/S Show transfer statistics.
filename A System i to PC transfer request (.DTF, .ITD),
/C Runba (.RTO), or Windows 3.1 (.DI) file transfer request.
/F Process next file independent of previous
/I Ignore warnings.
/P List file A file containing a list of transfer files to process.
/P List file A file containing the values for parameter markers (one value per
line).

Examples:
RTOPCB c:\temp\test.tto
RTOPCB /S c:\temp\test.tto /C c:\temp\trans.tto
RTOPCB /S /P c:\temp\transfer
RTOPCB /S c:\temp\test.def /I partfile.txt

C:\>

```

All of the parameters →



## Upload to System i using RFROMPCB.EXE



# Upload to System i using RFROMPCB.EXE

- 1) Type this command. → Sign on to your system if prompted.
- 2) Check the results →

```

c:\ Command Prompt
C:\>RFROMPCB /S C:\NWUPREQ.DIT
IBM System i Access for Windows
Version 6 Release 1 Level 0
Transfer data to a System i system
(CS) Enter system IBM Corp.
U.S. Government Users: Restricted Rights - Use, duplication or disclosure
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Transfer file: C:\NWUPREQ.DIT
Send completed successfully.
Files transferred: 3

C:\>RFROMPCB
IBM System i Access for Windows
Version 6 Release 1 Level 0
Transfer data to a System i system
(CS) Enter system IBM Corp.
U.S. Government Users: Restricted Rights - Use, duplication or disclosure
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RFROMPCB /S/I [L/I] filename [C/I] [.../I] /F list file/I]
/S filename
/S filename
/F filename
/C filename
Process next file independent of previous
file.
Process files within list file (one filename per line).
/I ignore warnings.
/I list file R file containing a list of transfer files to process.

Examples:
RFROMPCB c:\temp\test.tfr
RFROMPCB /S c:\temp\test.tfr /C c:\temp\trans.tfr
RFROMPCB /S /F c:\temp\transfer
C:\>_

```

All of the parameters  
are explained here →

43

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# Download from System i using RXFERPCB.EXE

44

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# Download from System i using RXFERPCB.EXE

1) Type this command.  
The userid and password are required parameters.

2) Check the results

```

C:\> Command Prompt
C:\> RXFERPCB C:\NVDOWNREQ.DTF MUSERID MYPASSWD

IBM System i Access for Windows
Version 6 Release 1 Level 0
System i Access Data Transfer RXFERPCB
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Transfer request C:\NVDOWNREQ.DTF SUCCESSFUL.

Elapsed transfer time: 0 hours 0 minutes 0.156 seconds (156 ms)
Completion time      = 2008-2-13 15:54:19.0
Data warnings Occurred = No
Data Errors Occurred  = No

C:\> RXFERPCB

IBM System i Access for Windows
Version 6 Release 1 Level 0
System i Access Data Transfer RXFERPCB
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request Fully qualified file name of any System i access upload
or download request of type .DTF, .DIT, .I10 or .IPR.
If a file name is specified, the file must be in the local file system.
value per line) and only download requests supported.
Process files within listfile (one filename per line).
/T Terminate process if a request fails.
listfile A file containing a list of transfer files to process.
userid A valid System i user profile for the system specified
in the request.
password A valid password for the specified user profile.

RXFERPCB [request userid password [/P filename]] !
request [/P [/T] listfile userid password]
/P Fully qualified file name of any System i access upload
or download request of type .DTF, .DIT, .I10 or .IPR.
If a file name is specified, the file must be in the local file system.
value per line) and only download requests supported.
Process files within listfile (one filename per line).
/T Terminate process if a request fails.
listfile A file containing a list of transfer files to process.
userid A valid System i user profile for the system specified
in the request.
password A valid password for the specified user profile.
  
```

All of the parameters  
are explained here

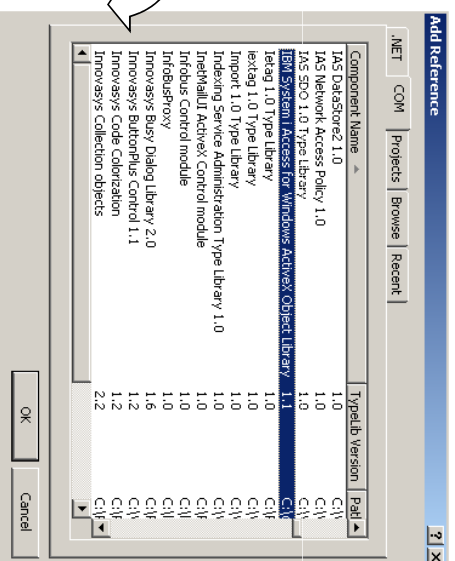
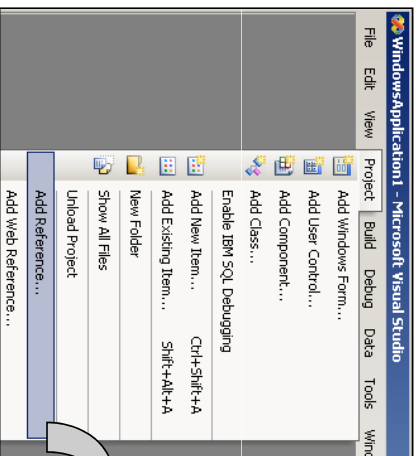


# Download from System i using Activex



## Download from System i using ActiveX

To use the ActiveX objects from Visual Basic 6.0 or from Visual Studio .NET, you must first add a Reference to the ActiveX library



From Visual Studio, select Project -> Add Reference...

Select IBM System i Access for Windows ActiveX Object Library

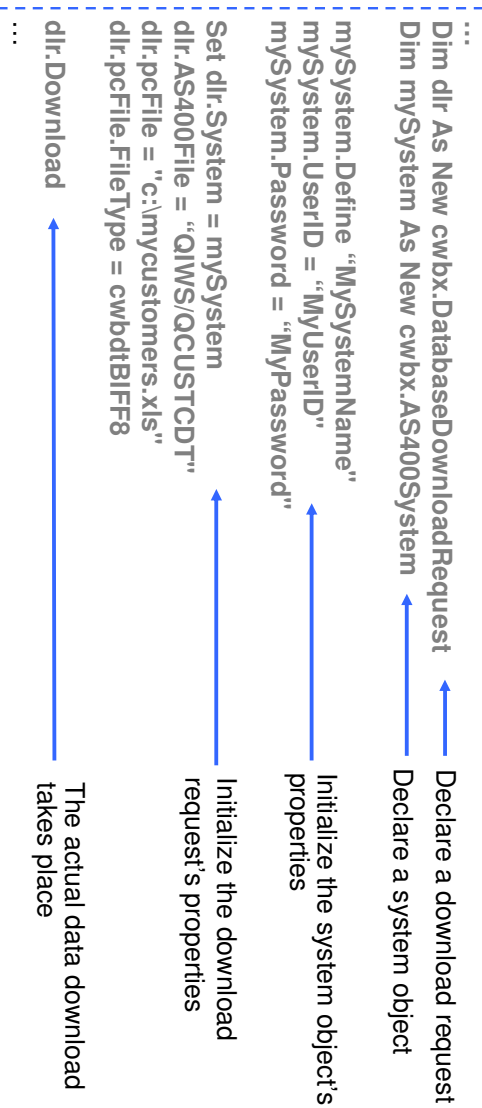
47

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## Download from System i using ActiveX

This Visual Basic example uses the DatabaseDownloadRequest ActiveX automation object



48

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## V6R1 - What's New?

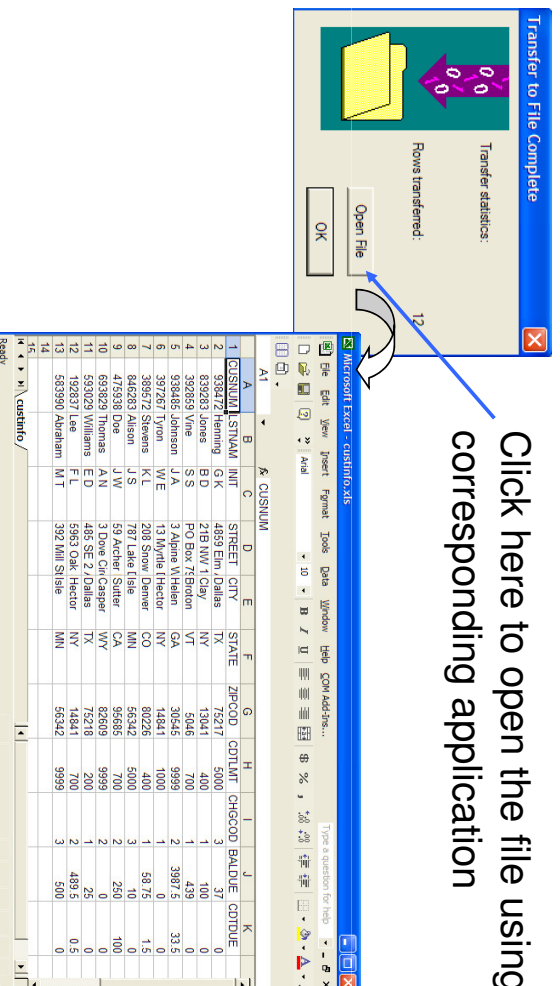
- Ability to open downloaded files by clicking a button
- New COM-based Excel Add-in
- Ability to set default data types
- Support for processing list files in RXFERPCB.EXE
- Support for parameter markers on download operations
- Support for SQL Table Names
- Support for DECFLOAT data type
- Application Name passed to QZDASOINIT server job

49

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## V6R1 - What's New?

Ability to open downloaded files by clicking a button



Transfer to File Complete

Transfer statistics:  
Rows transferred: 12

Open File

Microsoft Excel - custinfo.xls

A1	B	C	D	E	F	G	H	I	J	K	
	CUSTOM	STNAM	INT	STREET	CITY	STATE	ZIPCOD	CDTLMT	CHECOD	BALDUE	CDTDUE
1	358472	Hemming	GK	4839 Elm	Dallas	TX	75217	5000	3	37	0
2	832923	Jones	BD	278 NW 1	Clay	NY	13841	400	1	100	0
3	392829	Krue	SS	70 Eola	Redden	VT	5846	700	1	429	0
4	392829	Krue	SS	70 Eola	Redden	VT	5846	700	1	398	0
5	392829	Krue	SS	70 Eola	Redden	VT	5846	700	1	398	0
6	392787	Tracy	WF	131 Nite	Heater	NY	14841	1000	1	0	33
7	385672	Stevens	KL	208 Snow	Denver	CO	80226	400	1	58	75
8	846233	Alison	J.S	787 Lake	Lisle	IL	60532	5000	3	10	100
9	475938	Doe	J.W	59 Archer	Suiter	CA	95656	700	2	250	0
10	693829	Thomas	A.N	3 Dove	Chick	TX	75218	200	2	0	0
11	593029	Williams	E.D	485 SE 2	Dallas	TX	75218	200	1	25	0
12	192837	Lee	F.L	5965 Oak	Hector	NY	14841	700	2	489	5
13	583990	Abraham	M.T	392 Mill	Shale	MN	55542	9999	3	500	0
14											

Click here to open the file using its corresponding application

50

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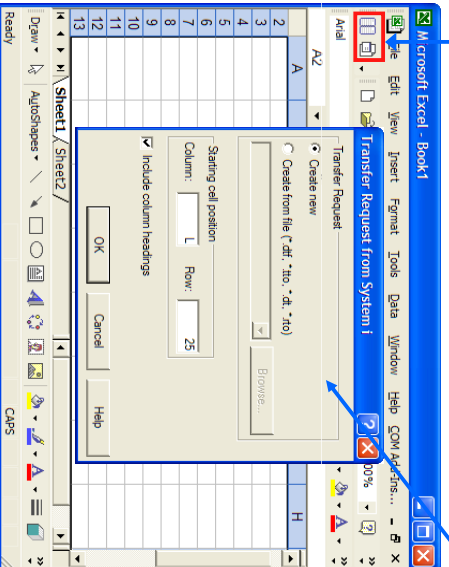


# V6R1 - What's New?

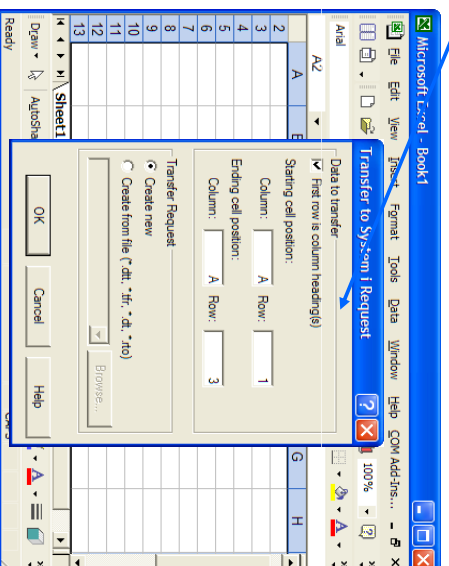
## New COM-based Excel Add-in

Same toolbar

Same appearance, same functionality, but multiple transfers can run concurrently



Excel Add-in Download function



Excel Add-in Upload function

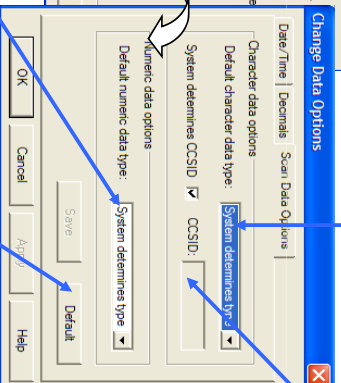
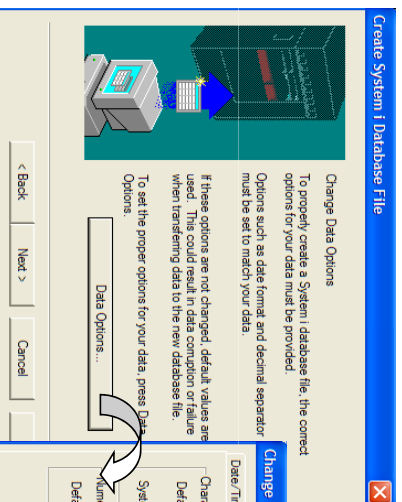


# V6R1 - What's New?

## Ability to set default data types

A default data type for alphabetic data

A default CCSID can be specified



A default data type for numeric data

These customizations can be persistent



## V6R1 - What's New?

Support for processing list files on RXFERPCB.EXE

```

C:\> rxferpcb /f listfile.txt

IBM System 1 Access for Windows
Version 6 Release 1 Level 0
System 1 Access Data Transfer and Others - Use, Duplication or disclosure
(C) Copyright IBM Corporation and Others - 1984, 2008. All rights reserved.
U.S. Government Users Restricted Rights - Use, Duplication or disclosure
Restricted by GSA FPP Schedule Contract with IBM Corp.
Licensed Materials - Property of IBM

Transfer request of \ddt1.dtt SUCCESSFUL.

Elapsed transfer time: 0 hours 0 minutes 2.32 seconds (2032 ms)
Completion time: 2008-1-11 11:25:26.0
Rows transferred: 2
Data warnings occurred: No
Data Errors Occurred: No

Transfer request of \ddt0.dtt SUCCESSFUL.

Elapsed transfer time: 0 hours 0 minutes 0.875 seconds (875 ms)
Completion time: 2008-1-11 11:25:27.0
Rows transferred: No
Data warnings occurred: No
Data Errors Occurred: No

C:\>

```

53

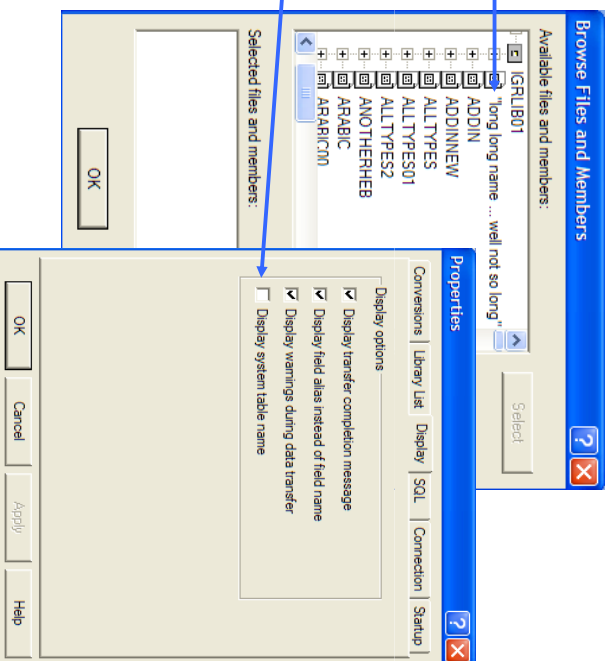
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## V6R1 - What's New?

Support for SQL table names

SQL table names can be longer and more descriptive than System names

The Data Transfer GUI now displays SQL table names by default but System names can be displayed instead



54

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## V6R1 - What's New?

Support for parameter markers on download operations

Receive Request Details

Select Where Order By

Field	Description	Type	Length	Digit
CUSNUM	Customer nu...	ZONED	6	6
LASTNAM	Last name fl...	CHAR	8	0
INIT	First and mid...	CHAR	3	0
STREET	Street addre...	CHAR	13	0
CITY	City field	CHAR	6	0
STATE	State abbre...	CHAR	2	0

Not: Function: Test: Others:

NOT CHAR CURRENT AND  
DATE DATE = <> OR  
DAY DAY = <> AND

Where clause:  
[LASTNAM IN (?) AND SALARY BETWEEN ? AND ?]

OK Cancel Apply Help

Parameter markers can now be inserted into the WHERE clause

55

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## V6R1 - What's New?

Support for parameter markers on download operations

Customized labels can be created for every parameter marker

Input Labels for Parameter Markers

LASTNAME IN ?...  
Lastname is

LASTNAME IN ?...  
or Lastname is

SALARY BETWEEN ?  
and Salary between

SALARY AND ?  
and

OK Cancel

56

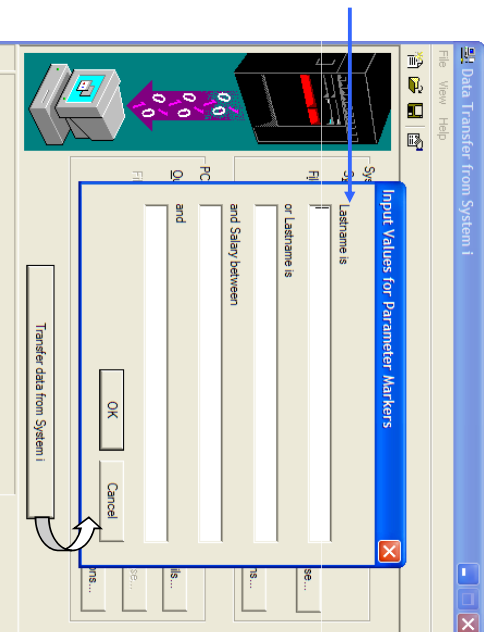
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## V6R1 - What's New?

Support for parameter markers on download operations

Users enter the data that corresponds to every parameter marker

Parameter markers are replaced with the provided values so the download can be performed



57

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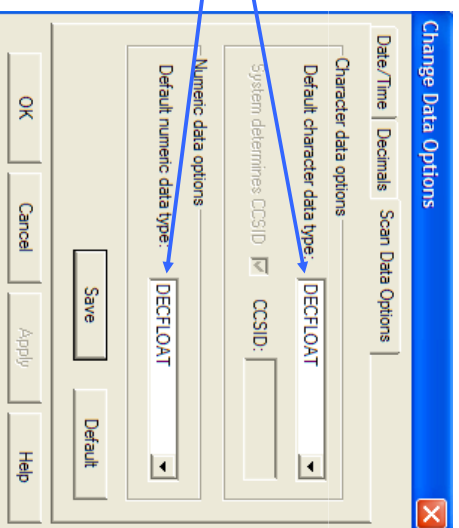
## V6R1 - What's New?

Support DECFLOAT\*\* data type

DECFLOAT is a new data type that Data Transfer supports

Is DECFLOAT an alphabetic or a numeric data type?

\*\*Requires a V6R1M0 or later System i



58

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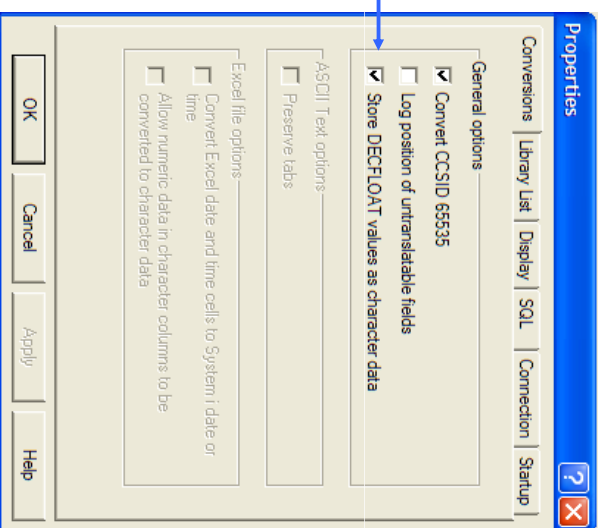


## V6R1 - What's New?

Support DECFLOAT data type

By default, DECFLOAT values are stored as strings.

Users can select to store them as numeric, but conversion errors may result if a value exceeds the capacity of the numeric data type.



61

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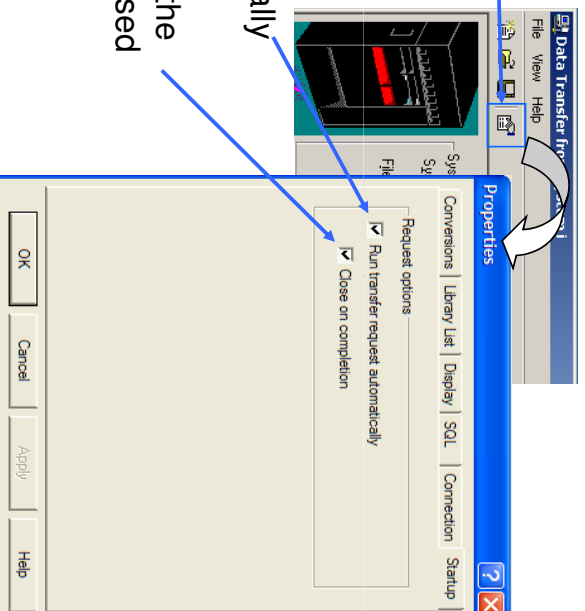
## Tips and Techniques with Data Transfer

Running Data Transfer by clicking an icon

From the Data Transfer GUI, click the Properties icon

Transfer requests can be configured to run automatically

Data Transfer closes when the completion dialog box is closed



62

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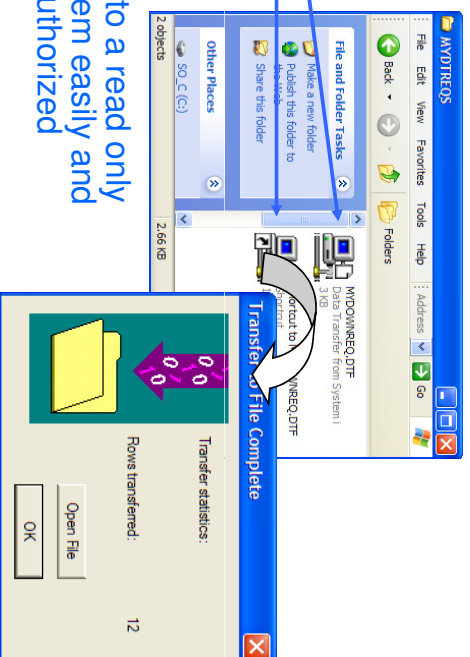
## Tips and Techniques with Data Transfer

Running Data Transfer by clicking an icon

Automatic requests run by double clicking the transfer request file (DTT or DTF) or any shortcut to it.

### Tips:

- IT administrators can put automatic transfer requests into a read only location to let the users run them easily and protect the requests from unauthorized modifications
- The batch applications can be used to create a batch file and process multiple requests by clicking an icon



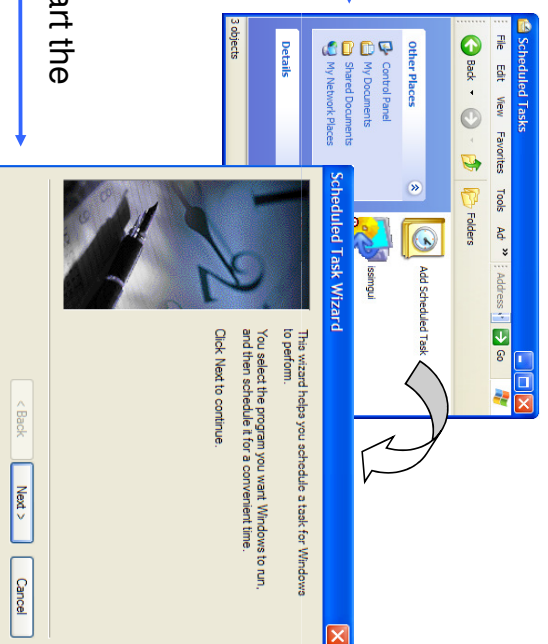
63

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## Tips and Techniques with Data Transfer

Scheduling a transfer request

System i Access for Windows does not provide a scheduler program but the Windows Task Scheduler can be used



1) Go to the control panel and start the Task Scheduler wizard

64

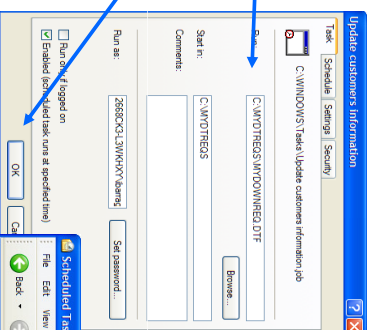
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## Tips and Techniques with Data Transfer

Scheduling a transfer request, continued

2) Specify the path to your transfer request and click OK



3) Verify the task was created

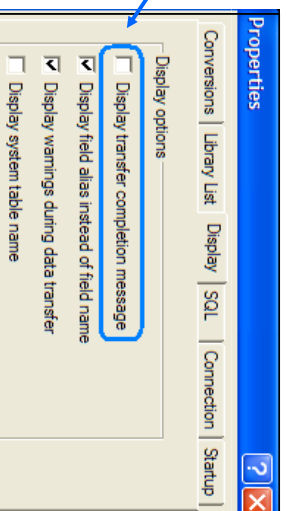


## Tips and Techniques with Data Transfer

Scheduling a transfer request, continued

### Tips:

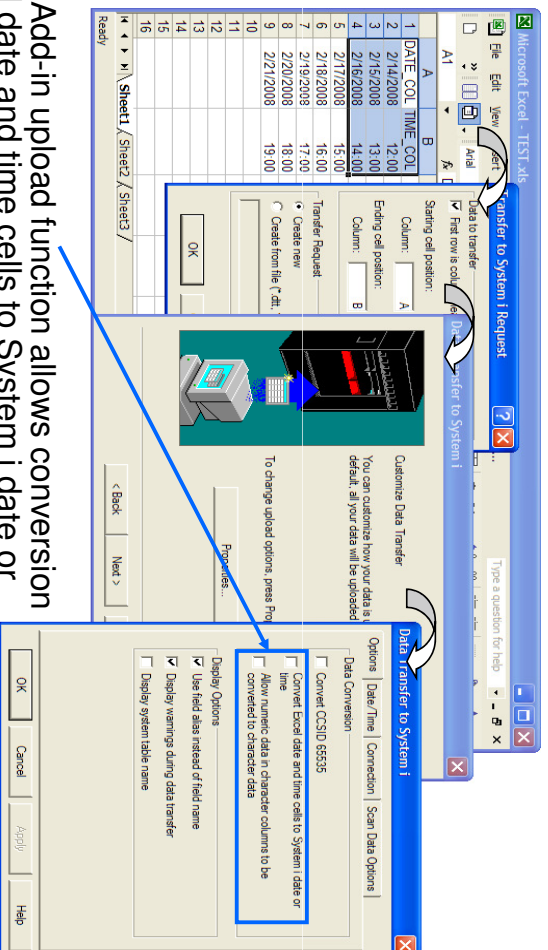
- The completion message can be disabled so the transfer request runs completely behind the scenes



- The batch interface can be used to schedule multi-request transfers

# Tips and Techniques with Data Transfer

## Excel file options



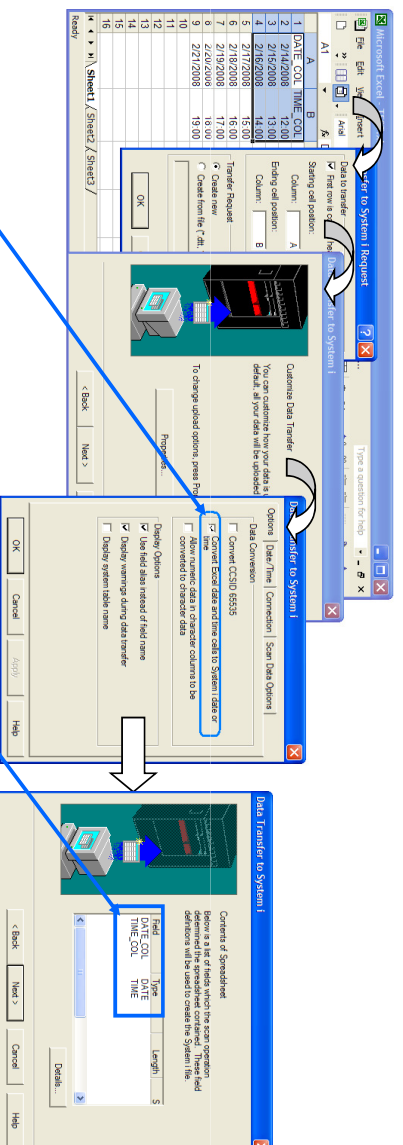
The Excel Add-in upload function allows conversion from Excel date and time cells to System i date or time data types, and allows numeric data in character columns to be converted to character data

67

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# Tips and Techniques with Data Transfer

## Excel file options



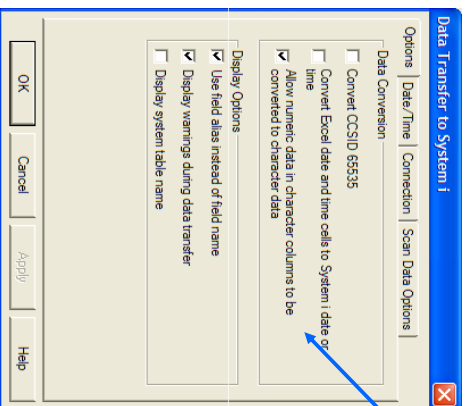
Enable the option for converting date and time cells to System i DATE and TIME data in order to upload this data correctly

68

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## Tips and Techniques with Data Transfer

### Excel file options



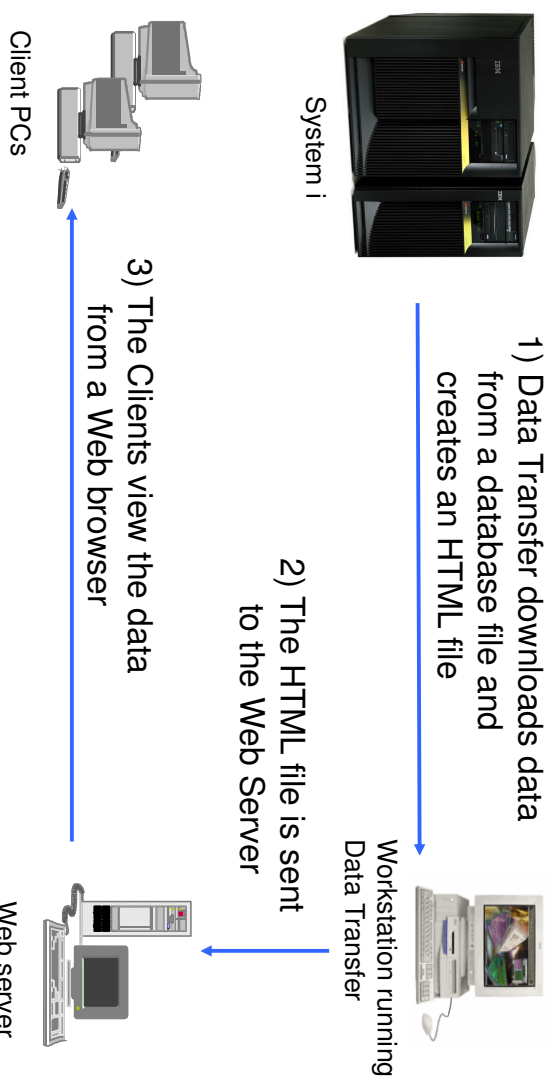
Enable the option for allowing numeric data in character columns to be converted to character data in order to upload this data correctly

	A	B	C
1	CHARACTER_DATA		
2	ASDF		
3	GHJK		
4	QWER		
5		1234	
6		5678	
7			

- Tip:**
- If the format of the cells containing numeric data is changed to “Text”, the Excel Add-in treats the data as character data

## Tips and Techniques with Data Transfer

### Using Data Transfer with a Web server

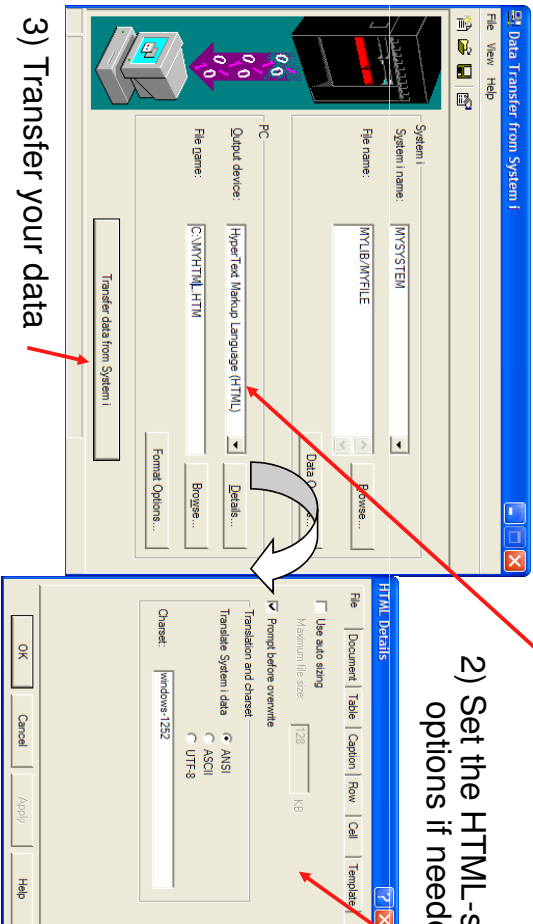




## Tips and Techniques with Data Transfer

### Creating an HTML file using Data Transfer

- 1) Select HTML as the output device
- 2) Set the HTML-specific options if needed
- 3) Transfer your data



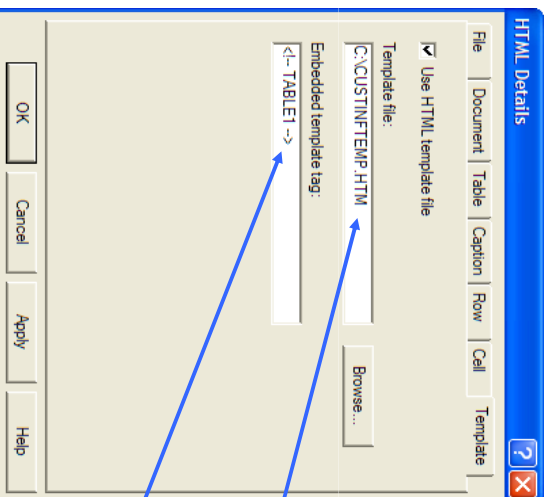
71

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## Tips and Techniques with Data Transfer

### Using customized HTML templates



- Data Transfer can insert tabular data into a pre-formatted HTML document at a specified location. The location is defined by an embedded template tag.
- The template document may contain graphics, links, frames, and any other HTML elements you provide.
- Users must tell Data Transfer the embedded tag to look for and replace with the data

72

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## Tips and Techniques with Data Transfer

Using customized HTML templates, continued

...

```

<HTML>
<HEAD>
<TITLE>Sample HTML Code</TITLE>
</HEAD>
<BODY>
<H1>Customer Data</H1>
<!-- TABLE1 -->
</BODY>
</HTML>
  
```

The HTML template must include the embedded tag

CUSTOMER ID	NAME	STREET	CITY	STATE	ZIP/POD	CREDIT LMT	CHECK/CD	BALANCE	CDTYPE
0318472	Hendrix	6 N. 4839 Elm Ave	Dallas	TX	75217	5000	3	37.00	100
0928283	Jones	812 218 NW 138 St	Clay	NY	13041	1400	1	100.00	100
7024239	Yane	PO Box 79	Brown	VT	5604	700	1	150.00	100
1979272	Proctor	W.E. J. X Maple Dr	Hudson	NY	14841	1000	1	45.50	100
1898712	Strom	K.L. 208 Stone Pass	Denver	CO	80226	1400	1	00	100
846281	Alston	J.S. 787 Lake Dr	Idaho	NN	46312	1500	3	10.00	100
4759318	Doe	J.W. 59 Archer Rd	Saner	CA	92468	700	2	250.00	100.00
6638209	Thomas	A.N. 3 Dover Circle	Casper	WY	82609	19999	2	00	100
9919209	Williams	B.D. 485 SE 2 Ave	Dallas	TX	75218	200	1	25.00	100
1928137	Lee	F.L. 5963 Oak St	Hudson	NY	14841	700	2	489.50	50
8839900	Abraham	M.T. 392 N Elm St	Idaho	NN	46312	19999	3	500.00	100

## Tips and Techniques with Data Transfer

Using customized HTML templates, continued

### Tips:

- Transferring the DB2 for i5/OS DATALINK type to your HTML file will produce active links
- Data Transfer allows you to automatically split up large transfers into linked HTML files that are more manageable by the web browsers:



## Tips and Techniques with Data Transfer

Using the Data Transfer query builder

- Data Transfer relies on the DB2 for i5/OS database server to store or retrieve data from database files
- Data Transfer retrieves and downloads data from database files by having DB2 for i5/OS run SQL queries that users create
- Data Transfer provides a GUI for users to create their SQL queries easily

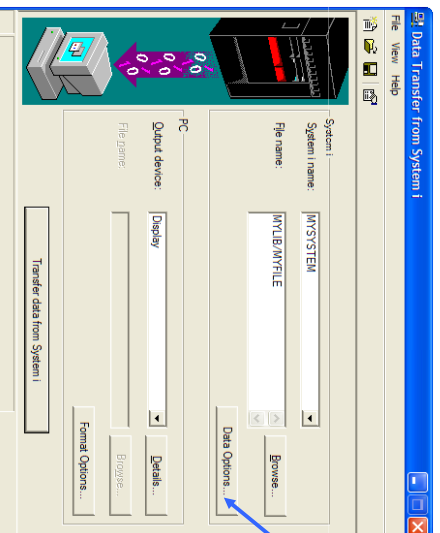
75

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## Tips and Techniques with Data Transfer

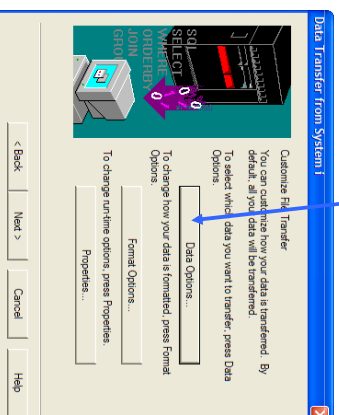
Using the Data Transfer query builder, continued

Data Transfer from System i and the Excel Add-in download function allow you to use the query builder.



Data Transfer from System i

Click the Data Options button to bring up the Change Data Options panel



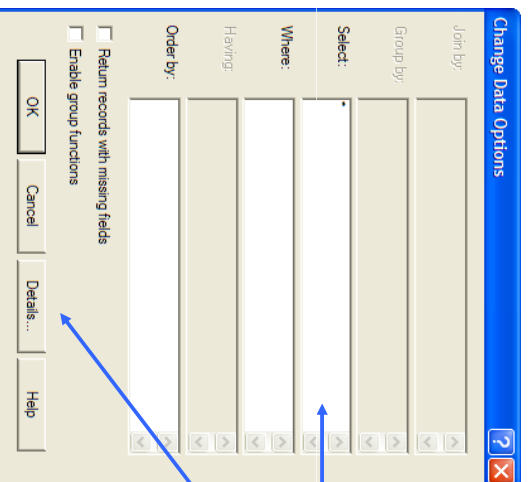
Excel Add-in download function

76

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## Tips and Techniques with Data Transfer

Using the Data Transfer query builder, continued



Enter the SQL statement directly into the edit panels, or click the Details button to bring up the query builder

77

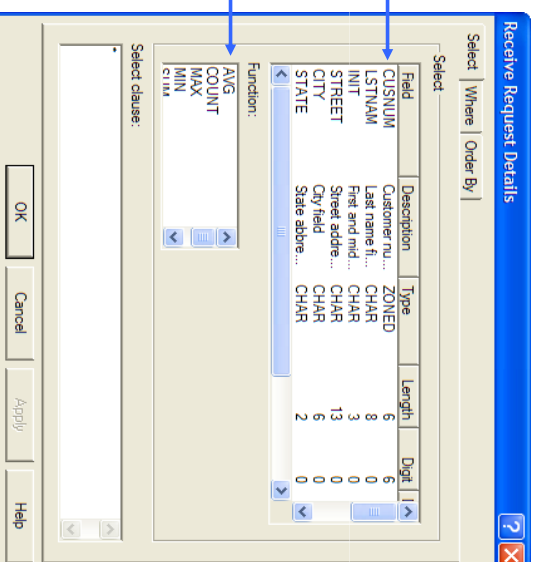
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## Tips and Techniques with Data Transfer

Using the Data Transfer query builder, continued

Double click on field names in the field list to add them to the Select clause

Functions such as SUM may also be used to return functional results



78

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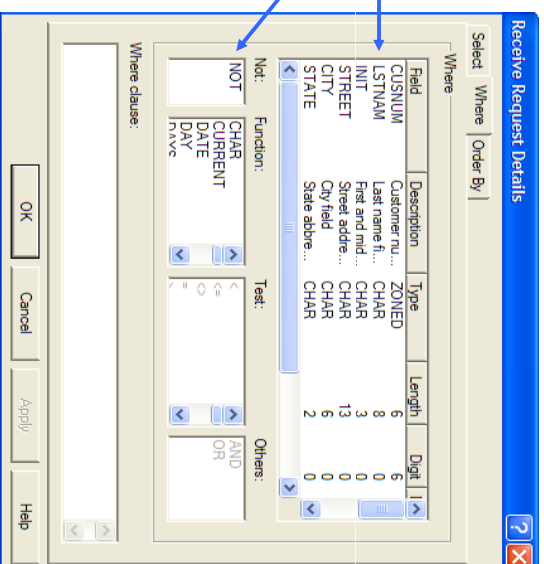
## Tips and Techniques with Data Transfer

Using the Data Transfer query builder, continued

Specify conditions by building a Where clause

Double click on a field name, then specify a test condition by double clicking on a test operator

- Tip:**
- This is the panel where you can insert parameter markers



79

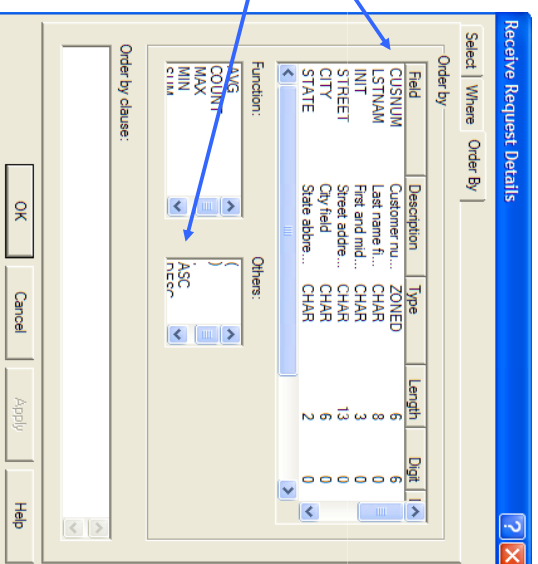
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## Tips and Techniques with Data Transfer

Using the Data Transfer query builder, continued

An Order By clause may be specified to order the data

Double click on a field name and specify the order criterion



80

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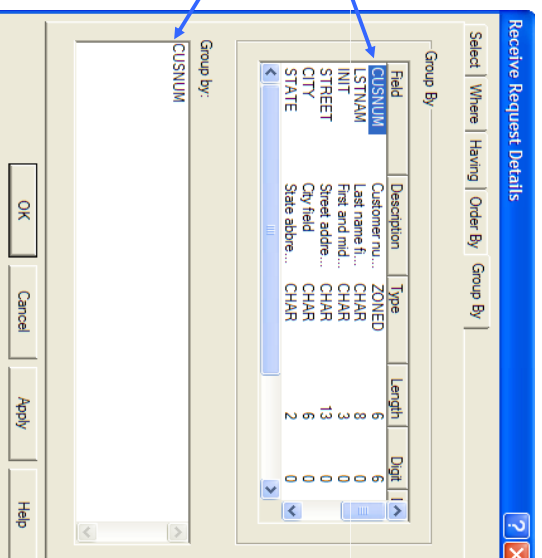


## Tips and Techniques with Data Transfer

Using the Data Transfer query builder, continued

A Group By clause may be specified to group the data

Double click on a field name to specify the field by which the records will be grouped



81

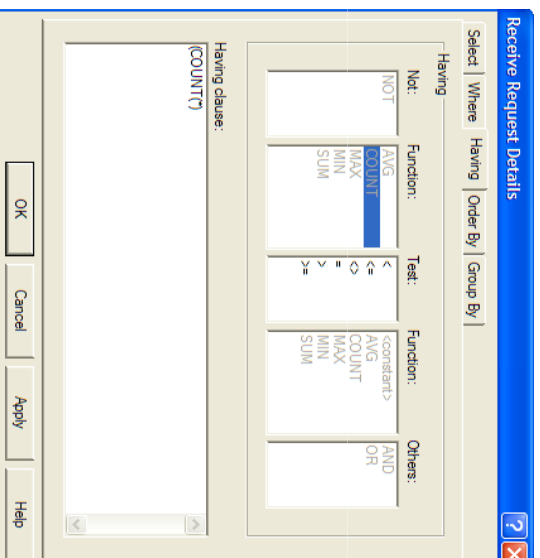
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## Tips and Techniques with Data Transfer

Using the Data Transfer query builder, continued

Conditional record grouping from a Group By operation may be done by specifying a Having clause



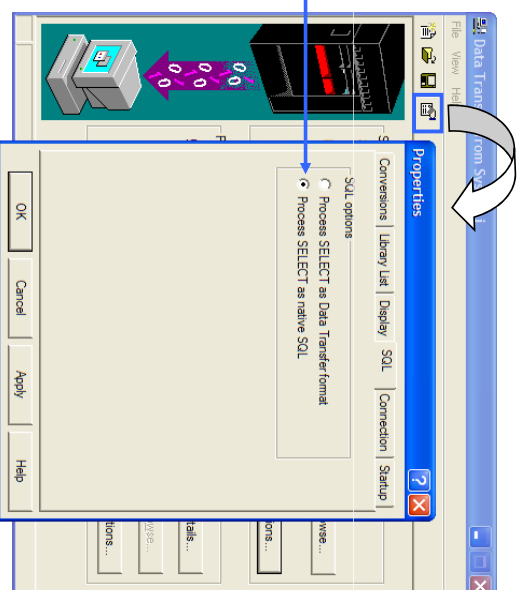
82

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## Tips and Techniques with Data Transfer

Using the Data Transfer query builder, continued

A Native SQL interface is provided for power users or for situations where the Data Transfer format does not provide enough functionality



83

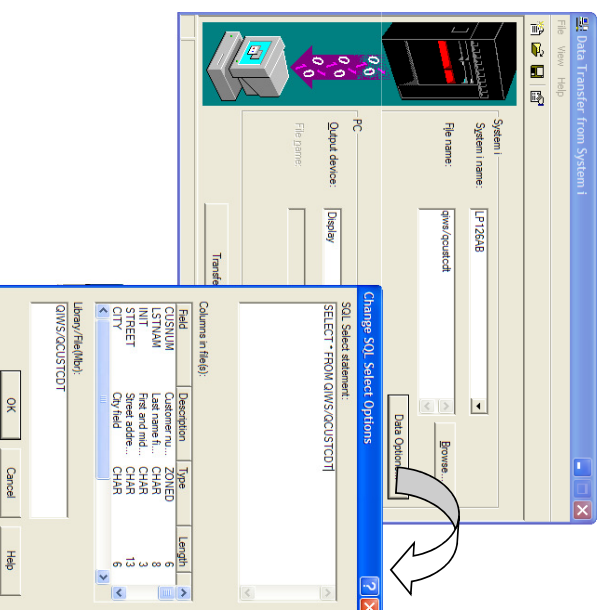
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## Tips and Techniques with Data Transfer

Using the Data Transfer query builder, continued

After choosing to process your statement as Native SQL, the Data Options button activates a Native SQL panel

The Native SQL interface allows you to type in a free-form SELECT statement. A list of files and columns in those files are provided to help you build your statement

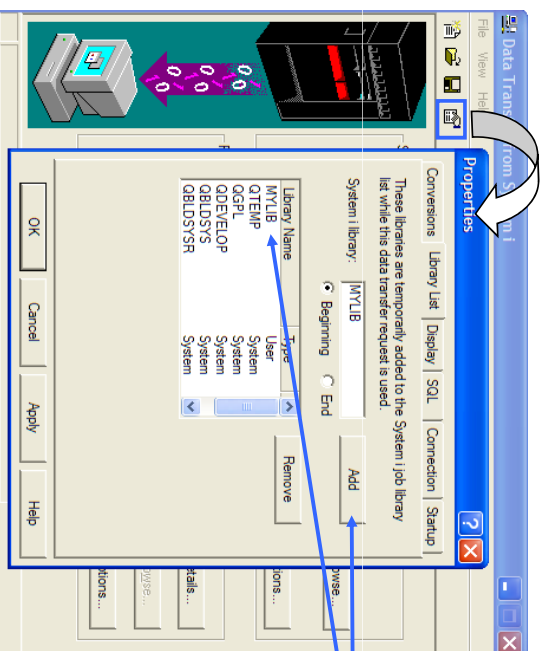


84

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## Tips and Techniques with Data Transfer

### Specifying the library list

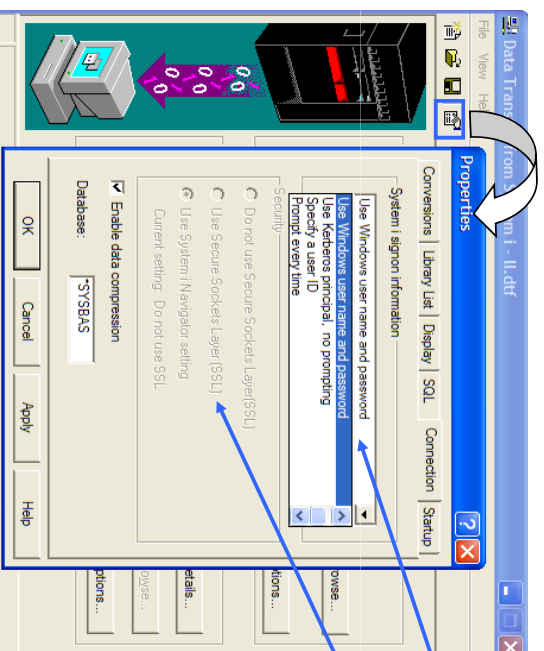


85

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## Tips and Techniques with Data Transfer

### Setting the desired sign on mode and security options



Data Transfer supports several sign on modes and can work over SSL connections

**Tip:**  
• By using the Windows user and password as sign on mode, automatic and scheduled transfer requests sign on behind the scenes so user don't have to do it interactively

86

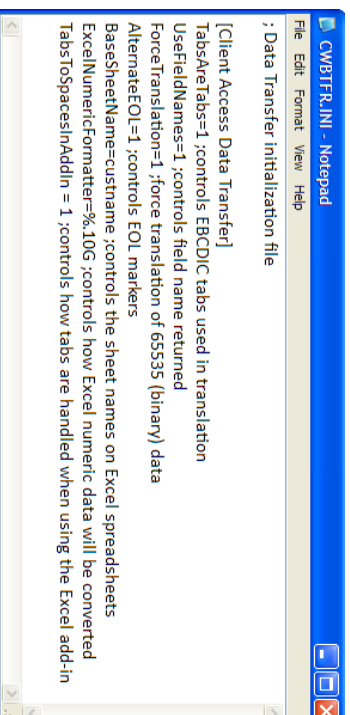
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## Tips and Techniques with Data Transfer

### Undocumented Data Transfer options: CWBTRF.R.INI

- An optional initialization file users can use to control some Data Transfer options that are not controllable through the GUI
- Described at:  
<http://www.ibm.com/support/docview.wss?uid=nas1352f81ff9d0d4c86862565c2007cae44>

#### Example:



```

CWBTRF.INI - Notepad
File Edit Format View Help
: Data Transfer Initialization file

[Client Access Data Transfer]
TabsAreTabs=1 ;controls EBCDIC tabs used in translation
UseFieldName=1 ;controls field name returned
ForceTranslation=1 ;force translation of 65535 (binary) data
AlternateEOL=1 ;controls EOL markers
BaseSheetName=cusname ;controls the sheet names on Excel spreadsheets
ExcelNumericFormatter=%10G ;controls how Excel numeric data will be converted
TabsToSpacesInAddIn = 1 ;controls how tabs are handled when using the Excel add-in
  
```

87

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## System i Access for Windows sessions

- |             |               |   |
|-------------|---------------|---|
| <b>31ME</b> | <b>420219</b> | <b>V6R1 System i Access for Windows:<br/>What's New</b>                   |
| <b>33ME</b> | <b>409159</b> | <b>System i Access for Windows:<br/>Data Transfer Tips and Techniques</b> |
| <b>41ME</b> | <b>401918</b> | <b>Performance Tune System i Access ODBC</b>                              |
| <b>43ME</b> | <b>420219</b> | <b>System i Access in the .NET World</b>                                  |
| <b>46ME</b> | <b>403971</b> | <b>System i Access for Windows:<br/>Security and Communications Tips</b>  |

88

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# Appendix A

## More about ActiveX

89

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### More about the ActiveX automation objects

#### ActiveX? Automation Objects? What are those?

ActiveX Automations are re-usable objects that reside on your Windows PC. Many times they can be used to run an application by "remote" with a program or script

#### What can they do for me?

ActiveX automations can be used to quickly and easily perform many tasks with little or no user intervention. For example, a program may use the Automations for Microsoft Excel to perform various data calculations without ever bringing up the Excel interface.

ActiveX automations can be used to create new custom interfaces over applications that have ActiveX automations. A few examples are Microsoft Office products, Internet Explorer, the PC5250 emulator, and various System i Access for Windows functions.

90

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## More about the ActiveX automation objects

OK, How do I use them?

ActiveX automations are supported by many programming languages:

- Visual Basic
- Visual Basic for Applications (used by Microsoft Office)
- Visual Basic Script (used in web pages and the PC5250 emulator)
- C++
- Many other applications and development environments

You must write program code to use these objects. Or allow some development tool to write the code for you

What Automations are available for Data Transfer?

- High level Automation – See next page
- Low level Automation – Discussed earlier in this presentation

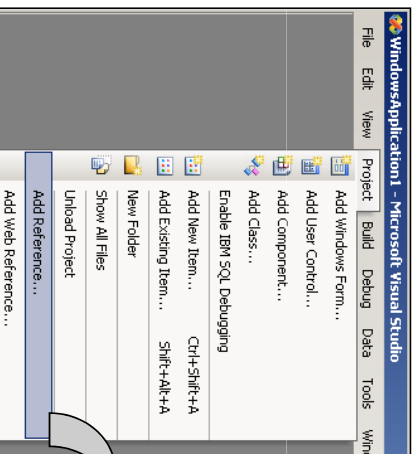
91

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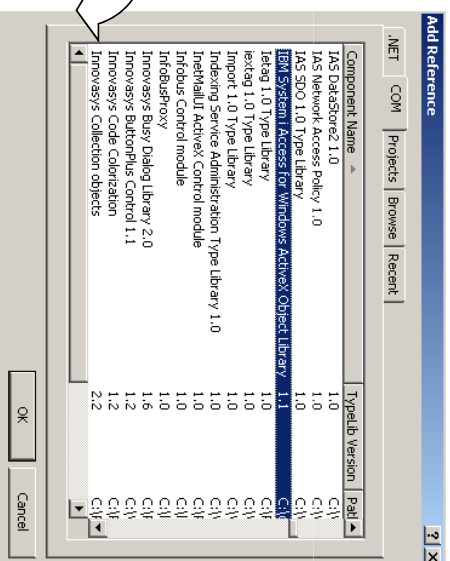
## More about the ActiveX automation objects

Using a high level object: DatabaseTransfer

To use the DatabaseTransfer objects from Visual Basic 6.0 or from Visual Studio .NET, you must first add a Reference to the ActiveX library



From Visual Studio, select Project -> Add Reference...



Select IBM System i Access for Windows ActiveX Object Library

92

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## More about the ActiveX automation objects

Using a high level object: DatabaseTransfer

These two lines of Visual Basic (VB) code can be used to run a download:

```
Dim dt As New cwbx.DatabaseTransfer
dt.Download "mysys", "qiws/qcustcdt", "c:\myfile.xls", cwbdBIFF5
```

To do an upload:

```
dt.Upload "mysys", "cwbxtest/qcustcdt", "c:\qcustcdt.txt", "c:\qcustcdt.fdr"
```

To run a saved request:

```
dt.Transfer "c:\qcustlst.dtt"
```

## More about the ActiveX automation objects

Using a high level object: DatabaseTransfer

The DatabaseTransfer automation object also contains properties you can query or set for the transfer request:

- **Errors** - for query only. A standard collection of error messages. Messages get put into this collection while the request is running
- **Password** - Allows you to set the password for the System i connection necessary for the transfer
- **TransferResults** - Allow you to get the number of rows transferred, return codes, and error and warning locations.
- **UserID** - Allows you to set the user ID to use for this transfer request.



## More about the ActiveX automation objects

Do you need more information?

Additional Information on the System i Access for Windows ActiveX automation objects can be found in the System i Access for Windows Toolkit. This information can be found under the ActiveX section of the Database portion of the Toolkit documentation.

Sample programs are available at:

<http://www.ibm.com/systems/i/software/access/windows/toolkit/database.html>



## Appendix B Components of a Data Transfer

## Components of a Data Transfer

- Data Transfers involve 4 basic components:
  - PC File  
When uploading data to the System i, the format of the data in the System i file must match the format of the data in the PC file
  - An iSeries Database or Source Physical File
  - File Description File (FDF)  
This is required when uploading to a Database file (Table)
  - New or existing transfer request

## Components of a Data Transfer

- Transferring data to or from the System i requires you to specify either a database table(s) or source physical file. Each of these file types may contain multiple members.

### Database File

An System i file in the form of a relational table. It has a specific layout composed of various types of columns with various lengths.

### Source Physical File

An System i file normally contains 3 columns. A SRCSEQ, SRCDAT, and SRCDTA column. The first column is a sequence number. The second column is a date, and the last column contains your data. The first two columns are six bytes each, and the last column may be variable length.



## Components of a Data Transfer

- The File Description File (.FDF)

A file description file (FDF) is a PC file used to describe a PC data file. A file description file is required when transferring data to a database file on the System i.

- Transfer Request

A transfer request is a PC file created by and used with Data Transfer for storing options and settings for the transferring of data to or from the System i.

- .DTF for transferring **F**rom the System i
- .DTT for transferring **T**o the System i



## Contact Information



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101

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IBM System i



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102

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