Run IBM i Access Client Solutions Data Transfers on the IBM i

Craig Pelkie craig@web400.com

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v1.01 2012-09-06 Initial version

v1.02 2012-11-12 Update for Oct. 2012 IBM release. Move VNC section to end of document (no longer needed for initial configuration on IBM i), update several figures to match Oct. 2012 version.

v1.03 2012-11-15 Update for Oct. 2012 IBM release. Move VNC section to end of document (no longer needed for initial configuration on IBM i), update several figures to match Oct. 2012 version. Revised the XFRDTAC program, XFRDTA command to include the CLDOWNLOAD plugin option. Several updates to figures.

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About this document

This document describes how to run the IBM i Access Client Solutions Java–based data transfer program on the IBM i.

Your IBM i server must be at OS/400 V5R4 or above to use the steps shown in this document.

The IBM i Access Client Solutions (ACS) product is a new offering from IBM. It provides some of the features of the traditional IBM i Access for Windows (5250 emulation, data transfer) in a Java environment. Any client computer that has the Java 6 or Java 7 runtime environment can use the ACS programs. For example, the program can be installed on a Macintosh computer or on a PC running Linux.

Because the product is entirely Java–based, it is also possible to run the Data Transfer features (file download / file upload) on the IBM i. It is important to understand that installing and running the IBM i Access Client Solutions product on the IBM i is **not supported** by IBM.

Installing and using the ACS data transfer components on the IBM i may be useful for some scenarios where you need to extract data from the IBM i database into PC file formats, or where you need to upload data from PC file formats to the IBM i database. By moving the data transfer components to the IBM i, you can take advantage of the IBM i batch processes to run the data transfer programs. This may lessen the need for creating and maintaining cumbersome PC-based data transfer mechanisms, which traditionally use remote command features.

The PC format files that are produced (file download) or consumed (file upload) are located in the IBM i IFS

After installing and configuring the ACS components on the IBM i, you can use a workstation-based version of ACS to develop the data transfer applications. The outputs of the workstation development are PC files that describe the data transfers. After creating and saving the description files on the workstation, you copy the description files to the IBM i IFS. When you run the data transfer programs on the IBM i, you reference the description files.

IMPORTANT

USE THE STEPS DESCRIBED IN THIS DOCUMENT **AT YOUR OWN RISK**.

IBM WILL NOT PROVIDE SUPPORT FOR THE STEPS DESCRIBED IN THIS DOCUMENT.

IF YOU ARE UNSURE ABOUT WHAT YOU ARE DOING, DO NOT CONTINUE. SEEK QUALIFIED HELP IF NECESSARY.

BEFORE RUNNING THE PROGRAMS DESCRIBED IN THIS DOCUMENT, BE SURE YOU HAVE ADEQUATE BACKUPS OF ALL IMPORTANT DATA THAT YOU ARE WORKING WITH.

IMPORTANT

Why

At each major section of this document, you will see a heading labeled **Why**. Within that heading, there is a brief description of why you need to perform the steps in the section.

Although it looks like performing all of the steps in this document will be a laborious task, you should be able to complete all of the steps and have Data Transfer running on your IBM i within a few hours. By explaining why you need to perform the steps shown in a section, you should have a better understanding of what you are trying to accomplish within that section and how the steps fit in with the rest of the procedures described in this document.

PC Prerequisites

Why: To run the ACS code on your PC, you need the Java 6 or higher runtime on your workstation. You will run the ACS code on your PC to test the programs, and also to develop the Data Transfer description files.

_____ Open the Command Prompt program.

_____ Enter the following command:

java -version

_____ If Java is installed on your workstation, you will see output similar to what is shown in Figure 1.



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Figure 1: Use the java -version command to verify that Java is installed on your workstation.

If you do not get the expected output from the java -version command, or if the version is lower than 1.6, you need to download and install the current version of Java.

Go to <u>http://www.java.com</u> and download the version for your workstation's operating system.

IBM i Prerequisites

Why: To run the ACS code on the IBM i, you need the Java 6 or higher runtime on the IBM i. You need to verify that you have the correct feature of the IBM Developer Kit for Java (Licensed Program Product [LPP] 57xx-JV1) installed on the IBM i.

- For OS/400 V5R4, the LPP is 5722-JV1
- For IBM i V6R1 and IBM i V7R1, the LPP is 5761-JV1
- _____On a 5250 command entry display, enter the command:

GO LICPGM

On the Work with Licensed Programs menu, enter option 10, Display installed licensed programs.

_____ Scroll through the list of installed licensed programs until you locate the **57xxJV1 IBM Developer Kit for Java.**

Verify that LPP 57xx-JV1 option 11 (Java SE 6 32 bit) is installed (Figure 2) and/or LPP 57xx-JV1 option 12 (Java SE 6 64 bit) (Figure 3) is installed.

If neither of the Java SE 6 options are installed, you need to install the LPP product options and install the current PTFs before continuing.

-		Display Installed Licensed Programs	
		System:	
Licensed		Bii	
Program	Option	•	
5769FN1	1	AFP DBCS Fonts - Japanese	
5769FN1	2	AFP DBCS Fonts - Korean	
5769FN1	3	AFP DBCS Fonts - Traditional Chinese	
5769FN1	4	AFP DBCS Fonts - Simplified Chinese	
5769FN1	5	AFP DBCS Fonts - Thai	
5770HAS	*BASE		
5770HAS	1	PowerHA for i Enterprise Edition	
5722IP1	*BASE		
5722IP1	1	PS to AFP Transform	
5770JS1	*BASE		
5761JV1	*BASE		
5761JV1	8	J2SE 5.0 32 bit	
5761 IV1	-	J2CE 5.0 64 bit	
5761JV1	11	Java SE 6 32 bit	
			More
Press Ent	er to cor	itinue.	
FORENER	E11-D:	Jau status - E10-Cases] - E10-Disalau taademarka	
F3=EXIT	LIT=DI2b	olay status F12=Cancel F19=Display trademarks	

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Figure 2: Use the Display Installed Licensed Programs program to verify that the Java SE 6 product is installed on the IBM i.

		Display Installed Licensed Programs	
Licensed	Draduat	System:	
Program	Option	Description	
5761JV1	12		
5761JV1	13	J20E 1.4 04 bit	
5770MG1		IBM Managed System Services for i	
5770NAE		IBM Network Authentication Enablement for i	
57330AR	*BASE	IBM Rational Open Access: RPG Edition	
57330MF	*BASE	OmniFind Text Search Server for DB2 for i	
5799PTL	*BASE	IBM Tools for Developers for i5/0S	
5770PT1	*BASE	IBM Performance Tools for i	
5770PT1	1	Performance Tools - Manager Feature	
5770PT1	2	Performance Tools - Agent Feature	
5770PT1	3		
		IBM Query for i	
5733QU2	*BASE	The second	
5733QU2	1	IBM DB2 Web Query for i Option 1	
Press Ent	on to co		More.
Fress Ent	ei 10 001	itilide.	
E3=Exit	F11=Dis	olay status F12=Cancel F19=Display trademarks	
U LAIT		stag status (12-bandet (11-bispitag trademarks	

iac092

Figure 3: This is a continuation of the Display Installed Licensed Programs output, showing that the 64 bit Java SE 6 runtime is installed on the IBM i.

Download and install IBM i Access Client Solutions

Why: You need to get the IBM i Access Client Solutions code to complete the steps shown in this document.

At the time this document was prepared, the IBM i Access Client Solutions licensed program product (5733-XJ1) was available for download from IBM's web site. The download that was available was a "beta" version of the product.

Download the software

_____ Go to the following URL:

http://www-03.ibm.com/systems/power/software/i/access/solutions.html

On the web page, click the **Download the technology preview** link as shown in Figure 4.



iac001v2

Figure 4: Download the IBM i Access Client Solutions product from the IBM site (screen grab: 2012-11-14).

You are prompted to enter your IBM ID and password (Figure 5). If you do not have an IBM ID, you can register and create an ID on this page.

Note: do not enter your IBM i user ID and password. The IBM ID and password is an ID that is used to access IBM web pages.

Software Services Products Service My IBM+* Software Forducts Services Not registered? Products Services IDBM 2: (susually e-mail address)' Hy IBM 2: (susually e-mail address)' Products Services Services Not registered? Bownikads ILibrary Ford court IBM ID: (susually e-mail address)' Products e-registered? Heves - Ecropt your IBM ID? Imail address)' Products e-registered? Commandies: - Get an IBM ID Imail address)' - Forgot your password? - Style Sign in - Forgot your password? Sign in	ites IBM i Access Client Solu	rtions 2012/08/31 04:05:53		
Products Services Returning visitors Downkads BM D: (usually e-mail address)* Library I Library I Training and certification ÷ Ergot your IBM ID2 •• Grd an IBM ID Password* Support • Frogot your password? • Bit business Patheres • Sign in	Home Solutions + Serv	ices • Products • Support & downloads		Search
Downloads IBM D: (usually e-mail address)* Library Image: Stread type - mail address)* News ← Exection - Execti	Products			
Communities: •BM Eusines Partners •SVs	Library News Training and certification Events	IBM D: (usually e-mail address)* I → Ecropt your IBM ID2 → Get an IBM ID	If you do not have a universal IBM user ID, please (register here) then return to sign in for this offering. To find out more abcut the benefits of having an IBM Registration D, visit the (<u>BMID Help</u>)	-
	IBM Eusiness Partners ISVs			

iac002

Figure 5: You need to enter your IBM ID and password to access the software download page.

_____After entering your ID and password, you are asked to confirm personal information and accept the license agreement (Figure 6).

IBM i Access Client Solutions 2012/08/31 0	40629 - Windows Internet Explorer m.com/webapp/ivm/web/reg/pick.do?source=swg-is⟨=en_US 🔹 🔒 🕂 🗙 🛚 🖸 Bing	<u>× م</u>
File Edit View Favorites Tools H		
🔆 Favorites 🛛 🎟 IBM i Access Client Solut		
		•
	Privacy	
	IBM and its affiliates may use the information you have provided to keep you informed about IBM products, services and offerings.	
	📝 b/ e-mail.	
	by telephone.	
	V by postal mail.	
	By submitting this form I agree that IBM may process my data in the manner indicated above and as described in I <u>BM's Privacy statement</u> .	
	Licerse	
	To view the license, click the "View license" link below. If this displays in a second browser windw, please use the "Back" button on your browser to return to the previous page, or close the window or browser session that is displaying this page.	
	→ View license	
	By checking "I agree" box below you agree that (1) you have had the opportunity to review the license and (2) you agree to be bound by its terms. If you disagree, click "I cancel" below.	
	lagree"	E
	By clicking the "1 confirm" button below. I confirm my Privacy selection and acceptance of the license. By clicking the "1 cancel" button, I cancel my Privacy selection and acceptance of the license.	
	🔁 I configm 🛞 I cancel	
About IBM Privacy Cont	tact Terms of use Accessibility IBM Feeds Jobs	
/webapp/iwm/web/reg/acceptSignup.do?sour	ce=swg-ia&S_PKG=dl⟨=en_US&cp=UTF-8 🕒 😝 Internet Protected Mode: On 🍕 🕶	€ 100% ·

iac003

Figure 6: You are asked to confirm your selections and agree to the license before downloading the software.

The IBM i Access Client Solutions download page shown in Figure 7 is displayed.

There are two techniques you can use to download the software:

 Download Director — this launches a Java application on your PC. You can select both files for download. The IBM Download Director is typically used when you are downloading very large files (several hundred MB and up), as it may be faster than the HTTP download. When downloading the ACS file, there is probably no performance advantage using the Download Directory.

The Download Director requires that you have Java installed on your workstation.

• **HTTP** — this uses the traditional browser–based download process.

_ If you want to use the Download Director, use the steps shown in the next section.

If you want to use HTTP, use the steps shown starting on page 12.

Download using the Download Director

Select both files for download and click the **Download now** link, as shown in Figure 7.



iac004v2

Figure 7: You can use the Download Director to download the files.

The confirmation dialog shown in Figure 8 is displayed. Click the **Run** button to continue.



iac005

Figure 8: You are asked if you want the Download Director (a Java application) to run.

If the Intial Setup dialog is displayed (Figure 9), enter the directory on your PC where you want the files downloaded to, then click the **OK** button.

Initial Setup	×
Default download location:	
C:\IAC	Browse
Always ask for download location	
OK	

iac006

Figure 9: The Download Director prompts for the directory on your PC where you want the software downloaded to.

_____ The Download Director progress dialog is displayed while the download is in progress (Figure 10).



iac007v2

Figure 10: The Download Director displays a progress dialog during the download.

Go to **Extract the downloaded files** on page 13 to continue installing ACS on the workstation.

Download using HTTP

If you do not want to use the Download Director, click the **Download using http** tab as shown in Figure 11.

_Click the **Download now** link for both of the files.



iac011v2

Figure 11: You can download using HTTP if you do not want to use the Download Director.

_In the File Download dialog (Figure 12), click the **Save** button. Save the ACS files to a directory on your PC.



iac012

Figure 12: You are prompted to open or save the file that is downloaded.

Extract the downloaded files

Why: The code that you download is in a ZIP file. You need to extract the files from the ZIP.

Go to the directory where you download the ACS code. Figure 13 shows the .txt and the .zip file that were downloaded. (The dlmgr.pro file is only present if you used the Download Director. If you used the HTTP download, the file will not be present. It is not needed and may be deleted.)



iac021v2

Figure 13: Go to the directory where you downloaded the ACS code.

Extract all of the files from the IBMiAccess_v1r1.zip file. You can extract the files to the same directory that you downloaded the files to, or to another directory on your workstation. Figure 14 shows all of the files in the zip, extracted to the same directory where the files were downloaded.

File Edit View Tools Help					
Organize 🔻 늵 Open 🛛 Include i	n library	-	Share with 👻 New folder	8== -	- 🗌 🔞
🛛 📗 dataxfer	^	Na	ame	Date modified	Туре
Documents and Settings Documents and Settings			Documentation	11/11/2012 10:26	File folder
Downloads Downloads Develoads			License	11/11/2012 10:26	File folder
	_		Notices	11/11/2012 10:26	File folder
Documentation	_		OpenOffice_ext	11/11/2012 10:26	File folder
			Start_Programs	11/11/2012 10:26	File folder
License			Start_Scripts	11/11/2012 10:26	File folder
Notices			acsbundle.jar	11/11/2012 10:05	Executable Jar
OpenOffice_ext Start_Programs			AcsConfig.properties	11/11/2012 10:05	PROPERTIES F
Start_Scripts	-	•			

iac022

Figure 14: The directory will look like this after extracting all of the files from the .zip file.Run an ACS Data Transfer Download on your workstation

Why: You need to run a Data Transfer download on your workstation to verify that the code works.

Before installing the ACS code on the IBM i, you should test it on your workstation. For this test, you will start ACS and perform a Data Transfer download (data will be transferred from an IBM i database file to a file on your workstation).

By running the test, you will verify hat the ACS code works, and you will see how it works. When done with the transfer, you will save the transfer description to a file on your workstation. The transfer description will be used when you run the ACS code on your IBM i.

Start the ACS program

You can start the ACS program using either a startup program provided by IBM, or by running a startup script provided by IBM.

Start using a startup program

_____ Go to the directory where you extracted the downloaded file.

In the start_programs directory, open the subdirectory for the workstation operating system that you are using, as shown in Figure 15.

_____ In the subdirectory, run the executable program to start the ACS program.



iac031

Figure 15: You can start the ACS client from the Start_Programs directory.

Start using a startup script

_____ Go to the directory where you extracted the downloaded file.

- In the start_scripts directory, open the subdirectory for the workstation operating system that you are using, as shown in Figure 16.
- In the subdirectory, run the script to start the ACS program.



iac032

Figure 16: You can start the ACS client from the Start_Scripts directory.

Startup (startup program or startup script)

The ACS program starts. While starting, you will see the **Working** panel shown in Figure 17. The message displayed in the panel changes as the program is loaded.

S Working	
Analyzing jar file jar:file:/C:/IAC/acsbundle.jar!/plugins/emulator/acshodmri.jar	~~

iac035

Figure 17: The Working panel shown here is displayed when you start the ACS program.

Run the Data Transfer with Display output

Why: For your first test, you will run a Data Transfer download to a display. This is the simplest and quickest way to verify that the download works.

_____ The **IBM i Access Client Solutions** dialog is displayed, as shown in Figure 18.

_____ In the **General** section, click the **Data Transfer** item.

IBM i Access Client Solutions	
IBM i Access Client Solutions	I ibm.
<u>File Edit Actions Tools Help</u>	
Welcome System: <select a="" system=""> General Solution Solutio</select>	Data Transfer provides an interface to help you transfer data between your client system and your IBM i. Data Transfer supports many common file formats, such as: • OpenDocument Spreadsheet (*.ods) • Excel Workbook (*.xlsx) • Excel 97-2003 Workbook (*.xls) • CSV (Comma delimited) (*.csv) To add or change a system configuration, select System Configurations from the Management tasks.
 Virtual Control Panel Hardware Management Interface Management 5250 Session Manager System Configurations 	

iac041v2

- Figure 18: Click the Data Transfer item in the IBM i Access Client Solutions dialog.
 - The Data Transfer dialog shown in Figure 19 is displayed. Verify that the From IBM i 2 tab is the selected tab.



iac042

Figure 19: Enter the System name, File name and output device on the Data Transfer dialog.

Enter the following items in the Data Transfer dialog:

System	(enter your IBM i TCP/IP host name or IP address)
File name	qiws/qcustcdt
Output device	Display

___Click the **Start Transfer** button.

_____ The **Signon to IBM i** dialog shown in Figure 20 is displayed. Enter your IBM i user ID and password, then click the **OK** button.

 Signon to II 	Signon inform	nation
	System:	ibmi71
	User:	your_userid
-20	Password:	•••••
		OK Cancel

iac043

Figure 20: Enter your user ID and password when prompted.

The data transfer runs. It displays the output shown in Figure 21. When done viewing the output, close the output display panel.

CUSNUM	LSTNAM	INIT	STREET	CITY	STATE	ZIPCOD	CDTLMT	CHGCOD	BALDUE	CDTDUE
938472	Henning	G K	4859 Elm	Dallas	TX	75217	5000	3	37.00	0.00
339283	Jones	B D	21B NW 1	Clay	NY	13041	400	1	100.00	0.00
892859	Vine	SS	PO Box 79	Broton	VT	5046	700	1	439.00	0.00
38485	Johnson	JA	3 Alpine	Helen	GA	30545	9999	2	3987.50	33.50
397267	Tyron	W E	13 Myrtle	Hector	NY	14841	1000	1	0.00	0.00
389572	Stevens	KL	208 Snow	Denver	CO	80226	400	1	58.75	1.50
846283	Alison	JS	787 Lake	Isle	MN	56342	5000	3	10.00	0.00
475938	Doe	JW	59 Archer	Sutter	CA	95685	700	2	250.00	100.00
693829	Thomas	AN	3 Dove Cir	Casper	WY	82609	9999	2	0.00	0.00
593029	Williams	E D	485 SE 2	Dallas	TX	75218	200	1	25.00	0.00
192837	Lee	FL	5963 Oak	Hector	NY	14841	700	2	489.50	0.50
583990	Abraham	MT	392 Mill St	Isle	MN	56342	9999	3	500.00	0.00

Figure 21: The results of the data transfer are displayed.

iac044v2

Run the Data Transfer with File output

Why: You need to test the Data Transfer download with output to a CSV file. This step shows you how to use the Data Transfer program to configure a download request.

_____ When you close the output display panel you are returned to the **Data Transfer** dialog.

_____Change the **Output device** selection to **File** and click the **Details** button, as shown in Figure 22.

1 Data Transfer
File View Actions Help
🚰 🗏 Fi 🎝 🕼 🛛 📀
IBM i System: ibmi71 File name: qiws/qcustcdt Data Options File File
Cutput device: File
Format Options Start Transfer Properties Rows transfered: 12 12

iac051

Figure 22: Select the File output device and click the Details button.

The **File Details** dialog shown in Figure 23 is displayed. Select **Comma Separated Values (.csv)** as the file type.

File Details	×
Output dient file	
File type:	
Comma Separated Values (.csv)	
Comma Separated Values (.csv)	
Tab Delimited Text (.txt)	
Text (.txt)	•
Microsoft Excel 2007-2010 (.xlsx) Microsoft Excel 97-2003 (.xls)	
OpenOffice (.ods)	
Windows-1252	
Advanced	
Client file description	
Save client file description	
File name:	
	Browse
QK <u>C</u> ancel	0

iac052v2

Figure 23: Select the Comma Separated Values file type.

In the **File Details** dialog, check the **Save client file description** checkbox and enter the path and file name for the **Client file description file**, as shown in Figure 24.

Note: a directory named IACXFER is used to contain the file description file and transfer description file (which will be created later). You can create and use that directory name or you can use another directory name on your workstation.

____Click the **OK** button to close the **File Details** dialog.

ſ	😨 File Details
	Output client file
	File type:
	Comma Separated Values (.csv)
	File action:
	Overwrite existing file
	Translate system data to:
	windows-1252
	Advanced
	Client file description
	Save dient file description
	File name:
	c:\jacxfer\qcustcdt.fdfx Browse
	OK Cancel

iac053v2

Figure 24: Specify the file description file name.

On the **Data Transfer** dialog, enter the path and file name for the **File name**, as shown in Figure 25.

Note: a directory named IACOUT is used to contain the file description file and transfer description file (which will be created later). You can create and use that directory name or another directory on your workstation.

_____ Click the **Start Transfer** button to run the data transfer.

🕕 Data Transfer	
File View Actions Help	
🔛 🔜 🔁 🖓	0
🕭 To IBM i - 1 📓 🕭 From IBM i	- 2 📓
	BM i
s	ystem: ibmi71 👻
Final Provide	le name: qiws/qcustcdt Browse
	Data Options
PO11	ile
1101 O	utput device: File
10	le name: c:\jacout\questedt.esv Browse
	Format Options
	Start Transfer Stop Transfer Properties
Rows transferred: 12	

iac054

Figure 25: Specify the file name for the CSV file, click the Start Transfer button.

_____ The transfer runs. When it is done, the **Inquiry Message** shown in Figure 26 is displayed.

_____ Click the **OK** button to close the **Inquiry Message**.

🗊 Data Transfer		3
File View Actions Help		
🚰 📕 🖻 🖣 🕵		
🟦 To IBM i - 1 📓 💆 From IBM	i - 2 📓	
	IBM i System: bmi71 Message Transfer request is complete. Transfer statistics: 00:00:00 Rows transferred: 12 OK Open File Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Browse Bro	
	Format Options	
Rows transferred: 12	Start Transfer Stop Transfer Properties	

iac055

Figure 26: The completion message is displayed when the transfer is done.

On your workstation, go to the directory where the output file (the .csv file) was created. Figure 27 shows the qcustcdt.csv file in the c:\IACOUT directory.

						X
Computer • W7_C	(C:) ▶ IA	ACOUT	•	Search IACOUT		م
File Edit View Tools Help						
Organize 🔻 🔀 Open 🔹 Pr	int Ne	ew folder		0== 0== 0==	•	0
📜 IAC	^ Na	ame	Date modified	Туре	Size	
 Documentation License Notices OpenOffice_ext Start_Programs Start_Scripts IAC_OLD_VERSION IACOUT IACXFER 		<u>gcustcdtcsv</u> ि	<u>11/14/2012 6:28 PM</u>	Microsoft Excel Co	<u>1 K</u>	3
qcustcdt.csv Microsoft Excel Comma S	eparated		dified: 11/14/2012 6:28 Size: 855 bytes	PM		

iac056v2

Figure 27: Verify that the CSV file is in the output directory.

Open the qcustcdt.csv file. Figure 28 shows the file opened in Microsoft Excel. If you do not have Excel installed on your workstation, open the .csv file in a text editor.

	1 1 1 1	u 3] ↓			qu	cstcdt.csv -	Microsoft Ex	cel				. Ο - Σ	×
Fi		I) – N		P	Formulas	Data A	R	iew Add	<	Team Y		3 - Ø	23
	5	Čalibri	· 11 ·			General		ditional Form		∃*ª Insert ▼	Σ	A 1	
Pas	te	B I U			≣ <u>a</u> r	\$ ~ %		nat as Table *	,	Polete 🔻		& Find &	
Clint	board 🗔	Fon	_		&>≁ ent ⊡	4.0 .00 .00 →.0 Number	🖳 🗐 Cell	Styles *		Cells		r * Select * ting	
Capi	A1		-	<i>f</i> × 9384				51,105		Centr	2.01	g	~
	A	В	С	D	E	F	G	Н	1	J	K	I.	Ē
1		Henning	GK	4859 Elm /	-	тх	75217	5000		3 37	0	-	- 1
2	839283		BD	21B NW 1	Clay	NY	13041	400		1 100	0		
3	392859	Vine	SS	PO Box 79	Broton	VT	5046	700		1 439	0		
4	938485	Johnson	JA	3 Alpine V	Helen	GA	30545	9999		2 3987.5	33.5		
5	397267	Tyron	WE	13 Myrtle	Hector	NY	14841	1000		1 0	0		_
6	389572	Stevens	KL	208 Snow	Denver	СО	80226	400		1 58.75	1.5		
7	846283	Alison	JS	787 Lake 🛛	Isle	MN	56342	5000		3 10	0		
8	475938	Doe	JW	59 Archer	Sutter	CA	95685	700		2 250	100		
9	693829	Thomas	AN	3 Dove Cir	Casper	WY	82609	9999		2 0	0		
10	593029	Williams	E D	485 SE 2 A	Dallas	ТХ	75218	200		1 25	0		
11	192837	Lee	FL	5963 Oak	Hector	NY	14841	700		2 489.5	0.5		
12	583990	Abraham	MT	392 Mill S	Isle	MN	56342	9999		3 500	0		4
13								_					
		cstcdt 🧷	2/										<u> </u>
Rea	dy				_	_				100% (Э () .::

When done reviewing the .csv file, close the program that you used to view it.

Figure 28: The CSV file is open in Microsoft Excel.

Run IBM i Access Client Solutions Data Transfers on the IBM i Copyright © 2012, Craig Pelkie, ALL RIGHTS RESERVED iac057

Save the Data Transfer download request

Why: You need to save the Data Transfer request so that you can copy the saved request file to your IBM i.

Go back to the **Data Transfer** dialog (it should still be open, with the values set to download to the .csv file).



Select the File, Save As menu item, as shown in Figure 29.

Figure 29: Select the File, Save As menu item.

In the **Save** dialog (Figure 30), navigate to the c:\IACXFER directory.

_____ Save the transfer description file as qcustcdt.dtfx.



Figure 30: Save the transfer description as qcustcdt.dtfx.

_____You are returned to the **Data Transfer** dialog.

_____ Close the **Data Transfer** dialog.

__Close the **IBM i Access Client Solutions** dialog.

iac061

iac062

Run the Data Transfer from a command line

Why: These steps use the saved data transfer request with a Java command line. This is the technique that you will use when you run the Data Transfer on the IBM i.

At this point, you have installed the IBM i Access Client Solutions program on your workstation. You have tested the Data Transfer download feature to download a .csv file to the workstation. You have also saved the data transfer description file (.dtfx).

In this section, you will run the Data Transfer from a Java command line, you will not use the Data Transfer GUI. The Data Transfer uses the .dtfx file that you saved in the previous section.

The steps shown in this section are what you will do on the IBM i. When you run the Data Transfer program on the IBM i, you will not use the Data Transfer GUI. You will use the Java features of the IBM i to run the saved data transfer description.

_____ Open a Command Prompt program on your workstation.

_Enter the following command in the Command Prompt window, as shown in Figure 31.

- **Note:** the values that you enter (other than drive letter and directory names) are case-sensitive. Be sure that you enter the values as shown here.
- **Note:** if you created different directory names (IAC, IACXFER) substitute the directory names that you created.
- **Note:** enter the java command line on the same line, as shown in the figure. The command is wrapped in this document.

java -jar c:\IAC\acsbundle.jar /PLUGIN=download

/file=c:\IACXFER\qcustcdt.dtfx



iac071v2

Figure 31: Enter the java command line to run the data transfer.

The first time you run the java command line Data Transfer, you will be prompted to enter your IBM i user ID and password, as shown in Figure 32. **Note:** you may be prompted twice for your user ID and password.



iac072v2

Figure 32: You will be prompted to enter your IBM i user ID and password the first time you run the java command line data transfer.

_____ The Data Transfer program runs. The output of the program is shown in Figure 33.

Command Prompt	- 0 X
Command Prompt :\>java -jar c:\IAC\acsbundle.jar /PLUGIN=download /file=c:\IACXFER\qcus X ********************* Signon to IBM i ser: craigp assword: ************************************	

iac073v2

Figure 33: The output of the Data Transfer program shows that it is done.

Install the IBM i Access Client Solutions program on the IBM i

Why: You need to install the code that you download onto your IBM i to run the Data Transfer.

In this section, you will install the IBM i Access Client Solutions program on the IBM i. You will copy files from your workstation to directories in the IFS.

The steps shown in this section use the System i Navigator to work with the IFS. If you prefer another technique to access and work with the IFS, you do not have to use the System i Navigator.

Create directories in the Root file system

In the System i Navigator program, expand the **File Systems** item, then **Integrated File System**, then **Root**.

_____ Right-click the **Root** item and select the **New Folder** item in the pop-up menu, as shown in Figure 34.



iac101

Figure 34: Right-click the Root item, select the New Folder item in the pop-up menu.

Create the following three directories in the Root file system:

Directory	Used For
IAC	Contains the ACS program, copied from your workstation (instructions shown below).
IACOUT	Directory where the output from a Data Transfer (download) is written to.
IACXFER	Directory where the data transfer description files that you create on your workstation will be located.

_ When done, verify that the Root file system directory contains the three subdirectories, as shown in Figure 35.



iac102

Figure 35: When done, verify that the three directories are in the Root file system.

Copy the ACS code from your workstation to the /IAC directory

On your workstation, navigate to the \IAC directory (the directory where the ACS code is installed).

_____Select the acsbundle.jar file and the AcsConfig.properties file.

Note: you can select and copy the files one at a time if you prefer.

_____ Right-click and select the **Copy** item from the pop-up menu, as shown in Figure 36.

File Edit View Tools Help	C;) ▶ IAC ▶	✓ ⁴ → Search IAC	<u>م</u> ا
Organize 👻 🎒 Open New fol	der A Name	8≡ Date modified Type	▼ □ 0
IAC License Notices OpenOffice_ext Start_Programs Start_Scripts IAC_OLD_VERSION	Documentation License Notices OpenOffice_ext Start_Programs Start_Scripts acsbundle.jar	11/11/2012 10:26 File folder	60,156 KB
IACOUT IACXFER inetpub JavaTests 2 items selected Date mod		11/11/2012 10:05 PROPERTIES File Scan with Microsoft Security Essentials Upload using WS_FTP Upload Wizard Send to Image: Comparison of	3 KB

iac111

Figure 36: Select the two files shown here and select the Copy option.

Go back to the System i Navigator. Right-click the IAC directory in the Root file system, then select the **Paste** item from the pop-up menu as shown in Figure 37.



iac112

Figure 37: Right-click the IAC directory, select the Paste item from the pop-up menu.

Wait for the file copy to complete.

Verify that the two files are in the IAC directory, as shown in Figure 38. If you do not see the files, repeat the steps shown above.



iac113

Figure 38: Verify that the two files are in the IAC directory.

Change the directories in the saved transfer description file

Why: The saved transfer description file on your workstation points to directories on the workstation. To use the transfer description on the IBM i, you need to change the directories to directories that are in the IBM i IFS.



Select the **Open** item from the pop-up menu, as shown in Figure 39.



iac121

Figure 39: Right-click the qcustcdt.dtfx file and select the Open option.

The file should open in Notepad. If the **Open with** dialog is displayed as shown in Figure 40, select **Notepad** as the program to be used to open the file.

Open with
Chouse the program you want to use to open this file: File: qcustcdt.dtfx
Recommended Programs
Notesad Microsoft Corporation
Other Programs 🗸
Always use the selected program to open this kind of file Browse
If the program you want is not in the list or on your computer, you can look for the appropriate program on the Web.
OK he Cancel

iac122

Figure 40: If the Open with dialog is displayed, select Notepad as the program to open the .dtfx file type.

The qucstcdt.dtfx file is opened in Notepad (Figure 41).



Figure 41: The qcustcdt.dtfx file, opened in Notepad.

iac123

Before making any changes, use the **File, Save As** menu item to save the file as xqcustcdt.dtfx. By saving the file with a new name, you retain the original file on your workstation.

Note: when you use the File, Save As item in Notepad, change the **Save as type** to **All Files** (*.*). If you do set the **Save as type** to that option, the file is saved with a .txt extension.

____Make the following changes to the values shown in the file:

Identifier	New Value
ClientFile	/IACOUT/qcustcdt.csv
FDFFile	/IACXFER/qcustcdt.fdfx

_____ When done, verify that the values that are in the file are as shown in Figure 42.

Note: blank separator lines were added between each section. You do not have to add the blank separator lines.



iac124

Figure 42: Change the ClientFile and FDFFile values, save the file as xqcustcdt.dtfx.

_____ Save the file after making the changes.

_____ Close Notepad.

Copy the Data Transfer description files to the IBM i IFS

Why: When you run the Data Transfer program on the IBM i, it will use the Data Transfer description file that you modified.

- _____On your workstation, navigate to the \IACXFER directory.
- _____ Select the qcustcdt.fdfx and xqcustcdt.dtfx files, right-click, and select the **Copy** item from the pop-up menu, as shown in Figure 43.



iac131

Figure 43: Select the two files in the IACXFER directory on your workstation.

_____ Go go the System i Navigator.

_____ Right-click the IACXFER directory and select the **Paste** item from the pop-up menu.

_____ When the copy is done, verify that the two files are in the directory, as shown in Figure 44.

🖉 System i Navigator							
File Edit View Help							
👔 🐰 🛍 🛍 🗙 🗊 🛇 🗊 🛇					0 minutes old		
Environment: My Connections		Ibmi71: IACXFER Path: /IACXFER					
File Systems	*	Name	Size	Туре	Changed		
- P Integrated File System - P Root - P - bin - bin - dev - dev - etc - home - home - ACCUT - IACOUT - Ibb - Ib	4 M	qcustcdt.fdfx xqcustcdt.dtfx		FDFX File DTFX File	8/31/12 1:40:22 PM 9/3/12 12:19:05 AM		
My Tasks - Ibmi71 Section Add a connection Add a connection							
1 - 2 of 2 objects					11		

Figure 44: Verify that the files are in the IACXFER directory in the IFS.

iac132

Start the Data Transfer program

Why: You can now run the Data Transfer program. For the first test, you will run the java command in the QSHELL environment.

_____On a 5250 command line, enter the qsн (Start QSHELL) command.

_____ The QSH Command Entry panel is displayed.

_____ Enter the following command on the QSH Command Entry line.

Note: the data transfer runs with the authority of the user profile of the interactive session.

Note: the command is case-sensitive, enter it as shown.

Note: the value for the os400.class.path.security.check parameter is zero, not the letter "O".

Note: enter the entire command on one line in the QSH Command Entry panel. The line will "wrap" on the Command Entry panel as you type it in. The command text shown in this example is wrapped on this page.

java -jar /IAC/acsbundle.jar -Dos400.class.path.security.check=0

/PLUGIN=download /file=/IACXFER/xqcustcdt.dtfx

The Data Transfer program runs. The messages shown in Figure 45 are displayed when the program ends. **It may more than a minute** or longer before you see any output. **Let the program run** before doing anything else on the QSH Command Entry panel.

_Press the **F3** (Exit) function key to close the QSH Command Entry panel.

30 Session A - [24 x 80]	
File Edit View Communication Actions Window Help	
QSH Command Entry	
\$	
<pre>> java -jar /IAC/acsbundle.jar -Dos400.class.path.security.check=0</pre>	
wnload /file=/IACXFER/xqcustcdt.dtfx	/rEourn-do
Transfer request is complete.	
Transfer statistics: 00:00:07	
Rows transferred: 12	
\$	
===>	
F3=Exit F6=Print F9=Retrieve F12=Disconnect	
F13=Clear F17=Top F18=Bottom F21=CL command entry	
FIS-CLEAR FIT-TOP FIS-BOLLOM FZI-CE COMMAND ENLIG	
	18/007
3 102 - Session successfully started	11.

iac235v2

Figure 45: The Data Transfer program runs and displays the messages shown here.

In the System i Navigator, go to the output directory that you specified (see the clientFile item in Figure 42 on page 30). In this example, the output directory is IFS directory /IACOUT.

- _____ The qcustcdt.csv file is the output from the Data Transfer program.
- Copy the qcustcdt.csv file to your workstation and open it. You should see the same output as you saw when you ran the Data Transfer on your workstation, as shown in Figure 28 on page 21.



iac236

Figure 46: The qcustcdt.csv file is in the output directory used by the Data Transfer program.

Discussion

Part of the reason why the program takes so long to respond is because it incurs the overhead of starting the Java runtime environment. For small data transfers, such as shown in this example, the time to transfer the records is excessive.

After you have worked through the steps in this document, run the data transfer for a file with a greater number of records. You should see that the transfer program performs much better, when considered as the number of records transferred per second.

On a test system, a file containing 6483 rows, with 53 fields and a record length of 290, was downloaded to a .csv file in 70 seconds, for a rate of 92.6 records per second.

Run the Data Transfer program from a 5250 command line

Why: Although you can go into the QSH Command Entry panel and run the java command to invoke the Data Transfer, it is more likely that you will want to run Data Transfers using IBM i commands. When you use commands, you can embed Data Transfer within CL programs or you can submit the Data Transfer request to batch. You can use either the QSH command or the RUNJVA command to invoke the Data Transfer program.

Use the QSH command to invoke the Data Transfer

Why: In the previous section, you went into the QSH Command Entry panel to run the java command. You can pass the java command as a parameter to the QSH command.

On a 5250 command line, enter the QSH command and press **F4** to prompt for its parameters.

For the CMD parameter value, enter the complete java command string that you previously entered on the QSH Command Entry panel, as shown in Figure 47.



iac261v2

Figure 47: Enter the java command with all of the parameters as the CMD value on the QSH command.

__Press **Enter** after you enter the complete java command string.
A shell environment panel opens to display the messages sent from the Data Transfer program, as shown in Figure 48.

Press **Enter** to close the shell environment panel.



iac262v2

Figure 48: This panel is displayed when you run the java command from the QSH command. Some of the messages from the previous use of the shell are shown, in addition to the messages for the Data Transfer.

Use the RUNJVA command to invoke the Data Transfer

Why: You can use the RUNJVA command as an alternative to the QSH command. The RUNJVA command uses the traditional IBM i command parameter style. You may find it easier to work with the RUNJVA command instead of the QSH command.

On a 5250 command line, enter the RUNJVA command and press **F4** to prompt for its parameters.

_____ On the **Run Java Program** command prompt panel, enter the following values for the parameters, as shown in Figure 49:

Parameter Name	Value
CLASS	'/IAC/acsbundle.jar'
PARM (parameter 1)	'/PLUGIN=download'
PARM (parameter 2)	'/file=/IACXFER/xqcustcdt.dtfx'

B1 Session B - [24 x 80]	
File Edit View Communication Actions Window Help	
	JVA)
Type choices, press Enter.	
Class file or JAR file CLASS	/IAC/acsbundle.jar
Parameters PARM	/PLUGIN=download
+ for more values	/file=/IACXFER/xqcustcdt.dtfx
Classpath CLASSPATH	*ENVVAR
F3=Exit F4=Prompt F5=Refresh F10=Additiona F13=How to use this display F24=More keys	
B 30 1902 - Session successfully started	11/079

iac271v2

Figure 49: Enter the CLASS and PARM values, press F10 to display additional parameters.

Press the **F10** key to display additional parameters for the RUNJVA command.

On the second parameter panel, enter the value *IGNORE for the CHKPATH parameter, as shown in Figure 50.

>] Session B - [24 x 80]	- 0 - X -
File Edit View Communication Actions Window Help	
Run Java Program (RUNJVA)	
Type choices, press Enter.	
Class file or JAR file CLASS > <u>'/IAC/acsbundle.jar'</u>	
Parameters PARM > '/PLUGIN=download'	
+ for more values > <u>'/file=/IACXFER/xqcustor</u>	<u>dt.dtfx'</u>
Classpath CLASSPATH <u>*ENVVAR</u>	
Additional Parameters	
Classpath security check level CHKPATH <u>*ignore</u>	
F3=Exit F4=Prompt F5=Refresh F12=Cancel F13=How to use this dis F24=More keys	More play
YE B 59 1902 - Session successfully started	05/050

iac272v2

Figure 50: Enter the CHKPATH value.

Press **Enter** to run the RUNJVA command with the parameter values that you entered.

The Java Shell Display panel shown in Figure 51 is displayed. It displays the messages when the Data Transfer program runs.

Press the **Enter** key to close the Java Shell Display and return to the 5250 command display.



iac273v2

Figure 51: The Java Shell Display shows these messages when you run the Data Transfer.

Review additional options for the RUNJVA command

Why: The OUTPUT parameter for the RUNJVA command may be of interest to you.

- Enter the RUNJVA command from a 5250 command prompt and enter the parameter values that you previously entered.
- Press the **F10** key to display all parameters for the command.

_____ Roll forward in the command prompter to the 4th prompt panel, shown in Figure 52.

The values that you can enter for the OUTPUT parameter are:

	* — output is displayed in the Java Shell Display		
Destination	*PRINT — output is sent to a spool file		
	*NONE — output is not displayed or spooled		
Program end action	*PAUSE — the Java Shell Display remains open until you close it		
	*CONTINUE — the Java Shell Display closes automatically		

B1 Session A - [24 x 80]	
File Edit View Communication Actions Window Help	
	a Program (RUNJVA)
Type choices, press Enter.	
Option 0P1	PTION *NONE
+ for more	re values
Job name	DB QJVACMDSRV
Agent program AG	STPGM <u>*NONE</u>
Library	
Agent options AG	GTOPTIONS <u>*NONE</u>
	JTPUT
Destination	* *PAUSE
Program end action	Bottom
F3=Exit E4=Prompt E5=Refresh F	F12=Cancel F13=How to use this display
F24=More keys	. 12 concert . 10 new to use this display
M <u>A</u> A	05/050
1902 - Session successfully started	

iac274

Figure 52: The OUTPUT parameter is the last parameter on the RUNJVA command prompt.

Submit a Data Transfer request to batch

Why: You can run a Data Transfer request as a batch job. By moving the request to batch, you make it easier to create automated Data Transfer requests.

Use the QSH command to invoke the Data Transfer

Why: You can run the QSH command that invokes the java command to run the Data Transfer in batch.

____On a 5250 command line, enter the following SBMJOB command:

Note: the JOB, LOG and LOGCLPGM parameter values are optional, you do not need to enter values for those parameters.

Use the RUNJVA command to invoke the Data Transfer

Why: You can run the RUNJVA command to run the Data Transfer in batch.

__On a 5250 command line, enter the following sвмзов command:

Note: the JOB, LOG and LOGCLPGM parameter values are optional, you do not need to enter values for those parameters.

The Command Line Download option

Why: If you want to download all of the records and all fields in a database file to a stream file, you can use the Command Line Download plugin. You do not have to specify a .dtfx file (data transfer description file) with this plugin.

In addition to the **download** and **upload** plugin types, IBM provides the **cldownload** plugin. The cldownload plugin provides a simplified way to download data from an IBM i database file to a stream file. Because the cldownload plugin downloads all of the rows and fields that are in the database file, there is no need to specify a data transfer description file (.dtfx).

The syntax of the command is:

```
java -jar acsbundle.jar
-Dos400.class.path.security.check=0
/PLUGIN=cldownload
/system=<system>
/hostfile=<library>/<file>(<member>)
/clientfile=<path><filename>.<extension>
```

The /system parameter value is set to the name of the IBM i system where the database file is located. When you run the cldownload plugin on the IBM i, you can specify the system name LOCALHOST to download a database file from the system where the plugin is running.

The /hostfile parameter is used to specify the qualified name (system format) of the database file to download from. If you need to specify a member name, enclose the name in parentheses.

The /clientfile parameter specifies the complete path, file name and extension of the stream file that is created as a result of the download. The file extension is used to determine the type of transfer to perform. For example, if the file extension .xlsx is specified, an Excel 2007/2010 file is created.

Create and work with the XFRDTA command

Why: The Transfer Data (XFRDTA) command provides a simplified way to invoke the Data Transfer program.

Review and compile the XFRDTAC CL program

Why: The XFRDTAC CL program is the Command Processing Program for the XFRDTA command.

The source code for this program can be downloaded at:

http://www.web400.com/downloads/ACS/xfrdta.clp.txt

Use the following CL command to compile this program:

CRTCLPGM PGM(your_lib/XFRDTAC) SRCFILE(your_lib/QCLSRC)

******	*****	*****	******	*****	*/
/* Run 1 /*****	ram XFRDTAC the IBM i Acc *****	ess Client Solut	tions Data Transf	er program ******	*/ */ **/
	right 2012, C g@web400.com	raig Pelkie, ALI	. RIGHTS RESERVED		*/ */ */
/* v1.01 /* v1.03 /*	3 - 2012-11-1		. 2012 ACSBUNDLE		*/ */ */
/* You r	may freely ma develop, as l	ke use of this p	program in any ap n the copyright	plication that	**/ */ */ */
/* This	program is p arranty is ex	rovided for inst pressed or impli	ructional purpos ed.	es only.	*/ */ */
/* Craid /* use d /* resu /* use d	of the progra lts or unfore	m, and will not seen consequence am or any of the	all responsibil be held liable f es that result fr e techniques that	or any om your	/ */ */ */
∕* B∨ us	sing this pro	gram, you acknow	ledge that:		*/
/* 1. /* 1. /* /* /*	tested, docu IBM. You sho	mented, approved	program have no l, or recommended ny IBM support f program.	bv	*/ */ */ */
/* 2. /* /* /* /* /* /* /*	on your syst data transfe possibly one responsibili program, and	em. The expected r output file in or more job log ty to verify the to ascertain th hanges occur on	sult in changes t d outputs include n your IBM i IFS, g files. It is yo outputs of runn at no other unwa your IBM i as a	the and ur ing the nted_or	********
· · · · ·		sion of this pro	e is expressed or ogram and its acc		*/ */ */
/* 4.	If you do no the potentia	t understand how l consequences o ******	to use this pro f running it, DO	gram and NOT RUN IT. *****	*/ */ */ **/
XFRDTAG	C: PGM	PARM(&jardin &plugin &xfrdsc &file &mbr &client	1 + 2 + + +		

(continues)

```
*'/
/* The path, file name and extension of the stream
/*
 file to transfer data to.
                                  */
/*
                                  *
/*
                                  *'/
 This is only used with &direction CLDOWNLOAD
/*
                                  *
 (Command Line Download)
/*
                                  *'
/*
                                  *',
 Supported extensions:
/*
    .csv - Comma Separated Variable
    .ods - Open Document Spreadsheet
.xls - Microsoft Excel 97 - 2003
.xlsx - Microsoft Excel 2007, 2010
.
/*
′ *
/*
                                  *
/*
 If an unsupported extension is specified, the
/* default extension .csv is used.
/**********
dc1
      &clientFile *char 256
dc1
      &file *char 20
*/
/* The IFS directory where the acsbundle jar file
/* is located
&jardir *char 256
dc1
*/
/* The member in the IBM i database file to
dc1
      &mbr *char 10
/* The plugin to use for the transfer.
                                  *
/*
   *DOWNLOAD - transfer data from an IBM i database
file to a stream file
/*
/*
   *CLDOWNLOAD - transfer the entire IBM i database file to a stream file
/*
/*
      &plugin *char 11
dc1
dc1
      &valCLASS *char 270
*'/
/* Variable used to set the value of the /file parm
*'/
   &valfile *char 262
dc1
*'/
/* Variable used to set the value of the client file.
/* clientfile=<filename>
                                  * 1
dc1
      &valcfile *char 268
'/* Variable used to set the value of the host file/lib *'/
/* hostfile=<library>/<file>
                                  *'
/* hostifle=<library>/<file>(<member>) *
/******
dc1
      &valHfile *char 43
```

(continues)

```
/* Variable used to set the value of the /PLUGIN parm */
,
dc1
       &valPLUGIN *char 18
&valSystem *char 17 + value('/system=LOCALHOST')
dc1
/* The path (directory) and file name of the transfer
                                        */
/* description file
                                         *******
/*
 Example: file for upload
.dttx = "transfer to IBM i"
/*
/*
/*
/*
    /path/upload_description.dttx
/*
.
/*
  Example: file for download
   .dtfx = "transfer from IBM i"
/*
/*
/*
    /path/download_description.dtfx
/*
dc1
        &xfrdsc *char 256
var(&valCLASS) +
chgvar
        value(&jardir *tcat '/acsbundle.jar')
*'/
/* Set values for cldownload (Command Line Download)
if (&plugin *eq '*CLDOWNLOAD') then(do)
        (&plugin *eq '*CLDOWNLOAD') then(do)
  chgvar
          var(&valPLUGIN) +
          value('/PLUGIN=cldownload')
          var(&valHfile) +
value('/hostfile=' *tcat +
    %sst(&file 11 10) *tcat +
  chgvar
                            *tcat +
              %sst(&file 1 10))
    (&mbr *ne '*FIRST') then(do)
chgvar var(&valHfile) +
  if
           value(&valHfile *tcat +
'(' *tcat +
                       *tcat +
                       *tcat +
               &mbr
                ') ')
  enddo
          chgvar
enddo
(&plugin *eg '*DOWNLOAD') then(do)
if
          var(&valPLUGIN) +
  chgvar
          value('/PLUGIN=download')
enddo
        (&plugin *eq '*UPLOAD') then(do)
          var(&valPLUGIN) +
  chgvar
          value('/PLUGIN=upload')
enddo
        ((&plugin *eq '*DOWNLOAD') *or +
(&plugin *eq '*UPLOAD ')) then(do)
if
          var(&valfile) +
value('/file=' *tcat &xfrdsc)
  chavar
enddo
```

(continues)

Review and create the XFRDTA command

Why: The XFRDTA command can be used to run the Data Transfer program (XFRDTAC).

The source code for this command can be downloaded at:

http://www.web400.com/downloads/ACS/xfrdta.cmd.txt

Use the following CL command to compile this program:

CRTCMD	CMD(your_1	ib/XFRDTA)	PGM(your_lib/XFRDTAC)	SRCFILE(your_lib/QCMDSRC)
			a using download/upload	************/ */ */
	nt 2012, Cra CMD		ALL RIGHTS RESERVED	
	PARM	KWD(JARD) VARY(*N	R) TYPE(*PNAME) LEN(25 0) CASE(*MIXED) PROMPT bundle.jar')	
	PARM	RSTD(*)	EN) TYPE(*CHAR) LEN(11) YES) VALUES(*DOWNLOAD * NLOAD) MIN(1) PROMPT('P)	UPLOAD +
	PARM	MIN(0)	C) TYPE(*PNAME) LEN(25 CASE(*MIXED) + (NOTCLD) PROMPT('Path to ile')	
	PARM	KWD(FILE) PROMPT(TYPE(QUAL1) MIN(0) PM ['Database file library	TCTL(ISCLD) + to xfer')
	PARM		TYPE(*NAME) LEN(10) DF ((*FIRST)) PMTCTL(ISCLD	
	PARM	SPCVAL(CASE(*N	NTFILE) TYPE(*PNAME) LE ((*NONE)) MIN(0) + MIXED) PMTCTL(ISCLD) + ('Client file path/name	
QUAL1:	QUAL QUAL		IE) LEN(10) IE) LEN(10) PROMPT('Dat	abase file name')
ISCLD:	PMTCTL	CTL(PLUGI	IN) COND((*EQ *CLDOWNLO	AD))
NOTCLD:	PMTCTL	CTL(PLUGI	IN) COND((*NE *CLDOWNLO	AD))

The XFRDTA command in operation

Figure 53 shows the Transfer Data (XFRDTA) command in the command prompter. This is the command prompter display for when the PLUGIN parameter value is *DOWNLOAD or *UPLOAD.



iac281v2

Figure 53: The Transfer Data (XFRDTA) command, when displayed in the command prompter.

Figure 54 shows the Transfer Data command in the command prompter when the PLUGIN parameter value is *CLDOWNLOAD.

1 Session A - [24 x 80]	×
File Edit View Communication Actions Window Help	
〕 ÈÈ 《 · · · · · · · · · · · · · · · · ·	(4500.50)
Transfer Data	a (XFRD A)
Turne sheilere serere Febru	
Type choices, press Enter.	
Directory for acsbundle.jar JARDIR	> '/IAC'
Sirectory for acabanate. Jan Shabin	/ <u>//nc</u>
Plugin to use PLUGIN	> *CLDOWNLOAD
Database file library to xfer . FILE	gcustcdt
Database file name	giws
MEMBER MBR	*FIRST
Client file path/name to write CLIENTE:	ILE /IACOUT/qcustcdt.xlsx
	_
	Betto
F24=More keys	ancet 110-now to use this display
24-More Kegs	
A A	11/07
^a 1902 - Session successfully started	11707

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Figure 54: The Transfer Data command string.

Parameters used with the XFRDTA command

The parameters used with the Transfer Data command are described below.

Parameter	Value	Usage
JARDIR	/path_name	The path in the IFS where the acsbundle.jar file is located. Do not enter the name of the .jar file.
PLUGIN	*DOWNLOAD *UPLOAD *CLDOWNLOAD	The type of transfer to perform.
The following *UPLOAD.	parameter is used when the value of t	the PLUGIN parameter is *DOWNLOAD or
XFRDSC	/path_name/file_name.dtfx /path_name/file_name.dttx	The path in the IFS where the .dtfx (download) or .dttx (upload) description file is located.
The following	parameters are used when the value	of the PLUGIN parameter is *CLDOWNLOAD.
FILE	Qualified name of an IBM i database file	This is the name of the database file that is to be downloaded. The entire content of the file is download (all rows, all fields).
MBR	*FIRST member_name	The name of the member in the file specified in the FILE parameter to download.
CLIENTFILE	/path_name/file_name.extension	The complete path and file name of the file that is to be created as a result of the download.
		The extension must be a valid extension for the data transfer download (.x1s, .x1sx, .csv, .ods, .txt).
		If an invalid extension is specified, the default extension value .csv is used.

Check for, install the IBM Tools for Developers for i5/OS LPP (OBSOLETE)

Note: the steps shown starting in this section through the end of this document are not needed if you are using the updated version of the IBM i Access Client Solutions from October 2012 (or later). You only need to use these steps if you are using the original version of the IBM i Access Client Solutions product.

Why: To run the Data Transfer programs using Java on the IBM i, you need to use tools provided by IBM in the **IBM Tools for Developers for i5/OS** Licensed Program Product.

Use the Display Installed Licensed Programs program to check for the LPP

Why: You can check to see if the LPP is already installed on your system.

_____On a 5250 command line, enter the following command:

GO LICPGM

On the Work with Licensed Programs menu, enter option 10, Display installed licensed programs.

When the **Display Installed Licensed Programs** panel is displayed, scroll through the list of installed programs. Look for Licensed Program **5799PTL IBM Tools for Developers for i5/OS** as shown in Figure 55.

Note: the 5799PTL LPP is not distributed with the operating system, so if you did not have a previous reason to work with the tools, it is unlikely that the LPP will be on your system.

	B Session A - [24 x 80]		X
	File Edit View Communication Act	ion: Window Help	
		▶ • • • • • • • • • • • • • • • • • • •	
		Display Installed Licensed Programs	
		System:	
	Licensed Product		
	Program Option	Description	
	5761JV1 12	Java SE 6 64 bit	
	5761JV1 13	J2SE 1.4 64 bit	
	5770MG1 *BASE	IBM Managed System Services for i	
	5770NAE *BASE	IBM Network Authentication Enablement for i	
	57330AR *BASE	IBM Rational Open Access: RPG Edition	
	57330MF *BASE	CmniFind Text Search Server for DB2 for i	
$\boldsymbol{<}$	5799PTL *BASE	IBM Tools for Developers for i5/0S	
	5770PT1 *BASE	IBM Performance Tools for i	
	5770711 1	Ferformance Tools Manager Feature	
	5770PT1 2	Ferformance Tools - Agent Feature	
	5770PT1 3	Ferformance Tools - Job Watcher	
	5770QU1 *BASE	IBM Query for i	
	5733QU2 *BASE 57330U2 1	IBM DB2 Web Query for i Option Base	
	5733002 1	IBM DB2 Web Query for i Option 1	More
	Press Enter to con	tipue	more
	Fress Enter to con	tinde.	
	E3=Exit E11=Disp	lay status F12=Cancel F19=Display trademarks	
		teg status (12 bandet (12 brisptag trademarks	
	MA A		01/001
	3 1902 - Session successfully started		01/001
			114

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Figure 55: Look for the Licensed Program Product 5799PTL.

____ If the LPP is not installed on your IBM i, continue with the steps in the section **Download the IBM Tools for Developers for i5/OS LPP** on page 51.

If the LPP is installed on your IBM i, continue with the steps in the next section to verify that you have the current version of the tools.

Check for the vncserver_java file (5799PTL already installed)

Why: If you already have the 5799PTL LPP installed on your system, you need to verify that the version that is installed includes the Virtual Network Computing (VNC) server, which is used when you run the Java-based Data Transfer on your IBM i.

_____ Navigate to the following directory in your IBM i IFS:

/QOpenSys/QIBM/ProdData/DeveloperTools/vnc

_ In that directory, look for the vncserver_java file, as shown in Figure 56.

🖉 System i Navigator					
File Edit View Help					
`` X 🖻 🛍 🗙 🖆 🎯 🗊 🛇					0 minutes ol
Environment: My Connections		Ibmi71: vnc Path: /QOpenSys/QIBM/ProdDa	ta/Developer	Tools/vnc	
E-B File Systems	*	Name	Size	Туре	Changed
🖃 😥 Integrated File System		Xvnc	4.06MB	File	8/31/07 8:26:25 AM
⊕ 🔁 Root		Classes		File Folder	8/30/12 1:41:26 AM
🖯 🔁 QOpenSys		🔳 rgb.dir	4KB	DIR File	8/31/07 8:26:22 AM
e 🖾 QIBM		🖻 rgb.pag	29KB	PAG File	8/31/07 8:26:21 AM
🖨 🖳 ProdData		📓 rgb.txt	17KB	Text Document	8/31/07 8:26:21 AN
⊕ 💼 C++Compiler	-	vncconfig	21001110		8/31/07 8:26:23 AM
🖃 💼 DeveloperTools		🔳 vncpasswd	1.28MB	File	8/31/07 8:26:23 AM
		vncserver			8/31/07 8:26:21 AM
⊕ 🔁 fonts		B vncserver_java	15KB	File	8/31/07 8:26:21 AN
⊕ <u></u> perl					
	Ψ.				
4		·			
₩y Tasks - Ibmi71 😂 File Systems tasks					
Add a connection		▶ 9 Help for related tasks			
1 - 9 of 9 objects					

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Figure 56: Look for the vncserver_java file.

- If the file is not in the directory, you need to download the current version of the **IBM Tools for Developers for i5/OS** LPP. Use the steps in the next section to download and install the current version.
- If the file is in the directory, go to the section **Work with the VNC Server** on page 57 and continue with the steps in that section.

Download the IBM Tools for Developers for i5/OS LPP

Why: The **IBM Tools for Developers for i5/OS** LPP is distributed via an IBM website. The code that you will download is a save file image that you will subsequently upload to your IBM i to complete the installation of the tools.

_ The **IBM Tools for Developers for i5/OS** LPP is distributed as a ZIP file that contains a save file image and a readme.txt file of instructions. To obtain the ZIP file, navigate to the following URL:

http://www14.software.ibm.com/webapp/download/search.jsp?rs=iseriest

You should a web page similar to what is shown in Figure 57 (screen capture taken on 2012-09-03).

If you do not see a web page that includes a link to download the **Tools for Developers**, go to the main IBM web site (<u>http://www.ibm.com</u>) and enter the search term 5799PTL. From the results page, navigate to the download page.

_____ Click the link (on the page, it is labeled **iSeries Tools for Developers**).

Note: the Version shown on the page is V5R4M0. This download is also used for later releases (V6R1M0 and V7R1M0 when this document was prepared).



Figure 57: This is the landing page to download the Tools for Developers.

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The next page that is displayed is shown in Figure 58. Click the **Continue** link.

Released product download: i5/OS		
http://www14.softv	vare.ibm.com/webapp/download/preconfig.jsp?id=2007-11-30+08%3A38%3/ 🔹 🐓 🗙 🔀 Bing	• ۵
File Edit View Favorites To	ols Help	
🔶 Favorites 🔤 Released produc	t download: i5/OS V5R4M0	
	United States [change]	
		Search
Home Solutions - Servi	ces * Products * Support & downloads * My IBM * Welcome	Mr. Craig Pelkie [Not you?] [IBM Sign in]
IBM Software Products	®M Software ≻ Released product download: i5/OS V5R4M0	
Services Downloads	This download is available for no fee, but does require registration. If you do not have an userid, please Register now.	Software download FAQ's
Trials and demos No-charge products and tools Updates, drivers, and fixes	ISeries Tools for Developers ISeries Tools for Developers - 5799PTL - is a PRPQ product that contains various tools that aid in development. building, northing and deployment of OS/400 and (5/OS applications.	Can't find what you are looking for?
Library	Product overview i5/OS	→ View our FAQ's
News		Related resources
Training and certification	Operating system I5/OS V5 OS/400 V5 Version V5R4M0	→ Software Evaluation Kit (SEK)
Events Support	Language English U.S.	→ IBM software early programs
Copport	Media type download	
Communites: • BM Busiess Partners • Siva • Developers About IBM Privacy Cont	Continue	
prepkgsel.jsp	😜 hternet Protected Mode: C	On 🦓 ▾ ୡ 100% ▾

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Figure 58: Click the Continue button to start the download process.

You are prompted to enter your IBM User ID and Password, as shown in Figure 59. If you do not have an IBM User ID, you can click the **register here** link on this page to create an ID. There is no charge to create and use your ID for the purposes of this download.

BM iSeries Tools for Developers 2	2012/09/03 04:49:40 - Windows Internet Explore	er	
CO v https://www14.so	ftware. ibm.com /webapp/iwm/web/preLogin.do	o?pkgid=&S_SRCID=iserie: 💌 🔒 🐓 🗙 🔀 Bing	• م
File Edit View Favorites T	ools Help		
👷 Favorites 🛛 🔤 IBM iSeries Too	ols for Developers 2012/09/03 04:49		
		United States [change]	· · · · · · · · · · · · · · · · · · ·
			Search
Home Solutions - Serv	rices - Products - Support & download	is * My IBM *	
iSeries Tools for Developers	iSeries Tools for De	evelopers	
Related links	Returning visitors	Not registered?	
Warranties and maintenance	IBM ID:(usually e-mail address)*	Please register here, then return to sign in for	
	your_IBM_ID	this offering.	
	→ Forgot your IBM ID?	To find out more about the benefits of having an IBM Registration ID, visit the IBM ID Help	
	→ Getan IBM ID Password*	and FAQ.	
	Password"		
	→ Forgot your password?		
	Sign in		
About IBM Privacy Co	ntact Terms of use Accessibility ID	M Feeds Jobs	
http://www.ibm.com/planetwide/sele	ect/selector.Html	😜 hternet Protected Mode: On	🖓 🔻 🍕 100% 👻

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Figure 59: You are asked to sign in with your IBM ID. If you do not have an IBM ID, you can create an ID (register) on this page.

After entering your IBM user ID and password, you are taken to a page that asks you for some information, shown in Figure 60.

You are required to click the **I agree** checkbox on this page to continue, then click the **I confirm** link.

Contraction (Contraction) (Con	• ×
🚱 💭 🗢 🏧 https://www14.software.ibm.com/webapp/iwm/web/reg/pick.do?source=iseriest&S_PKG= 💌 🔒 🐓 🗙 💽 Bing	ب م
File Edit View Favorites Tools Help	
☆ Favorites IBM iSeries Tools for Developers 2012/(9/03 04:50	
Computer Services 🗸	*
Privacy	
IBM and its affiliates may use the information you have provided to keep you informed about IBM products, services and offerings.	
🗹 by e-mail.	
 □ by telephone. ☑ by postal mail. 	
By submitting this form I agree that IBM may process my data in the manner indicated above and as described in <u>IBM's Privacy statement</u> .	
License	
To view the license, click the "View license" link below. If this displays in a second browser window, please use the "Back" button on your browser to return to the previous page, or close the window or browser session that is displaying this page.	
→ View license	
By checking "I agree" box below you agree that (1) you have had the opportunity to review the licenses and (2) you agree to be bound by its terms. If you disagree, click "I cancel" below.	
I agree* ☑ I agree	
By clicking the "I confirm" button below, I confirm my Privacy selection and acceptance of the license. By clicking the I cancel" button, I cancel my Privacy selection and acceptance of the license.	Е
Confirm X I cancel	
About IBM Privacy Contact Terms of use Accessibility IBM Feeds Jobs	
/webapp/iwm/web/reg/acceptSignup.do?source=iseriest&S_PKG=dl2⟨=en_l 😜 Internet Protected Mode: On 🖓 🔻 🍕 1	

Figure 60: You need to click the "I agree" checkbox to download the software.

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You are taken to the download page, shown in Figure 61. You can use either the Download Director or Download using HTTP to download the ZIP files.

See the previous description for the download options:

Download using the Download Director on page 10

Download using HTTP on page 12

Download the ZIP file to a directory on your workstation.

BM iSeries Tools for Developers 2012	2/09/03 04:51:19 - Windows Internet Explorer	
← ← https://www14.softwa	are.ibm.com/webapp/iwm/web/reg/download.do?source=iseriest&&_ 👻 🔒 😽 🗙 🚺 Bing	ۍ م
File Edit View Favorites Tools	s Help	
🚖 Favorites 🔤 🏧 IBM iSeries Tools fo	or Developers 2012/(9/03 04:51	
TUM	United States [change]	^
≝≝≠≡₹≧⊗		Search
Home Solutions • Service	s * Products * Support & downloads * My IBM *	
iSeries Tools for Developers	iSeries Tools for Developers	
Related links	Downloads	Need help?
Warranties and maintenance	iSeries Tools for Developers IBM Tools for Developers for i5/OS To download using Download Director, select the files you want below and click on 'Download now'. Learn more You can also download the files <u>using http</u> .	 → Sign up support (English only) → Sign up and Software Download FAQ → Software download support (English only)
	Download using Download Director Download using http	
	5799PTL installation save file q5799ptl_v5r4m0.zip (50.6MB)	
About IBM Privacy Contac	ct Terms of use Accessibility IBM Feeds Jobs	
#	S Internet Protected Mode: Or	n 🖓 👻 🔍 100% 👻 🔬

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Figure 61: You can use the Download Directory or Download using HTTP options.

Install the IBM Tools for Developers for i5/OS LPP

Why: The ZIP file that you downloaded from the IBM web site contains a save file image and a readme.txt file. You need to extract those files from the ZIP and work the files to install the tools on your IBM.



Extract all of the files from the ZIP into a directory. You can extract the files into the same directory where the ZIP file is located.

_Verify that the list of extracted files looks like the list shown in Figure 62.

Note: the dlmgr.pro file is present only if you used the Download Director. The file is not needed and may be delete.



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Figure 62: This shows what the contents of the q5799ptl_v5r4m0.zip file contains after you extract all of the files.

Open the readme.txt file. The contents of the file are shown in Figure 63.

__Follow the steps that are described in the readme.txt file to perform the following:

- Create save file QGPL/Q5799PTL on your IBM i
- FTP the save file image (q5799pt1_v5r4m0.savf) to the save file
- Install the 5799PTL LPP from the save file



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Figure 63: The readme.txt file contains instructions on uploading the save file image to a save file on your IBM i, and restoring the LPP from the save file.

After you complete the RSTLICPGM step, use the steps shown in the section **Use the Display Installed Licensed Programs program to check for the LPP** on page 49. Verify that the 5799PTL LPP is installed, as shown in Figure 55 on page 49.

Work with the VNC Server

Why:

The IBM i Access Client Solutions product is designed to be used in a workstation environment, which provides a graphical user interface (GUI). When you run the ACS programs, the Java code in the product displays status messages and dialogs using Java GUI features.

When you run the ACS Data Transfer program on the IBM i, there is no support for the Java GUI. If you simply try to run the Data Transfer program on the IBM i, it ends in error.

In some cases, you can run Java code on the IBM i and indicate that you do not want to use the GUI. That is referred to as running in *headless mode*. You can find a description of that mode in the **IBM Developer Kit for Java** documentation at this link:

http://publib.boulder.ibm.com/infocenter/iseries/v7r1m0/index.jsp?topic=%2Frzaha%2Fnawtsupport.htm

It would be ideal if the ACS programs could use headless mode, as using it is as easy as adding a command line parameter to the java command (java.awt.headless=true). Unfortunately, even if you add that parameter value to the java command, the program ends in error.

The alternative is to use what IBM calls the **Native Abstract Windowing Toolkit** (NAWT) that is also described in the **IBM Developer Kit for Java** documentation at this link:

http://publib.boulder.ibm.com/infocenter/iseries/v7r1m0/index.jsp?topic=%2Frzaha%2Fguiintro.htm

The ACS programs will run on your IBM i when you configure NAWT. The NAWT support is provided by using the Virtual Network Computing (VNC) server that is part of the IBM Tools for Developers LPP. The VNC server runs in the IBM i Portable Application Solutions Environment (PASE), which provides support for running AIX applications in the IBM i environment.

After installing and configuring the VNC server on your IBM i, you will work with a VNC viewer on your workstation. When you use the ACS programs, the output of the programs is directed through the VNC server to the VNC viewer.

Although it may sound very complicated to work with the tools, there are only a few steps that you need to do to get everything installed and configured. The steps are shown in the following sections. Once you have the VNC server and VNC viewer configured, you can use the ACS Data Transfer programs directly on your IBM i.

Check to see if the VNC server is already running

Why: If the **IBM Tools for Developers** LPP was already installed on your IBM i, the VNC server might already be configured and running. If the server is already running, you need to work with the existing server environment.

If you just installed the **IBM Tools for Developers**, you will not have any VNC servers running, so you can skip ahead to the section **Create the VNC password file** on page 62. You can also work through the steps in this section if you want to.

On a 5250 command line, enter the following CALL command to start the PASE shell (the PASE shell is where you will enter the commands to work with the VNC server):

CALL QP2TERM

____ The PASE shell is displayed. It provides a command entry display that is similar to the command line display used to enter IBM i commands.

__Enter the following PASE command to display any currently active VNC servers.

Note: all commands that are used in the PASE environment are case-sensitive.

ps gaxuw | grep Xvnc

If there are no active VNC servers, you will see the output shown in Figure 64.



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Figure 64: This is what the output of the ps command looks like when there are no active VNC servers.

If there is at least one active VNC server, you will see output similar to what is shown in Figure 65.

If any VNC servers are active, make a note of the highest server instance number. The server instance number is preceded by a colon (:) character. You need to know the highest server instance number so that you can start another VNC server using the next higher number.

Note: some of the data that is shown in the figure has been obscured. You will see more data following the -desktop text, the data that is obscured is not relevant here.



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Figure 65: This is what the output of the ps command looks like when at least one VNC server is running. The VNC server instance number is 1.

What is the ps command and what do the gaxuw options mean?

The ps command, used in the PASE environment, displays the status of processes. It is similar to the IBM i wrkactjob command.

The gaxuw options that are used on the command are a set of five individual options. The options are described in the following IBM document, in the section titled **Options**:

http://publib.boulder.ibm.com/infocenter/pseries/v5r3/index.jsp?topic=/com.ibm.aix.cmds/doc/aixcmds4/ ps.htm

The options are used as follows. The descriptions of the options are from the IBM document linked to above:

 ${\bf g}$ — displays all processes

 \mathbf{a} — displays information about all processes with terminals (ordinarily only the own processes of the user are displayed)

 \mathbf{x} — displays processes without a controlling terminal in addition to processes with a controlling terminal

u — displays user-oriented output. This includes the **USER**, **PID**, **%CPY**, **%MEM**, **SZ**, **RSS**, **TTY**, **STAT**, **STIME**, **TIME** and **COMMAND** fields.

w — specifies a wide–column format for output (132 columns rather than 80).

What does the grep command do?

The grep command searches for a pattern in a file.

The output of the ps command is *piped* to the grep command, using the vertical bar (|) character. In other words, the output of the ps command is the input to the grep command.

In the command that you entered, the pattern to search for was xvnc. That pattern is used to identify the VNC servers.

If you run the ps gaxuw command and do not pipe the output to grep, the resulting output might look like what is shown in Figure 66.

31 S	ession A - [24 x 80]
File	Edit View Communication Actions Window Help
	/QOpenSys/usr/bin/-sh
	craigp 2073 0.0 0.0 58356 0 - A Aug 30 0:56 /QOpenSys/QIBM/
	ProdData/JavaVM/jdk60/32bit/jre/lib/ppc/jvmStartPase 27
	qlwisvr 599 0.0 0.0 554752 0 - A May 19 21:51 /QOpenSys/QIBM
	/ProdData/JavaVM/jdk60/32bit/jre/lib/ppc/jvmStartPase 28
•	qlwisvr 376 0.0 0.0 365964 0 - A May 19 20:22 /QOpenSys/QIBM
	/ProdData/JavaVM/jdk60/32bit/jre/lib/ppc/jvmStartPase 29
	qlwisvr 382 0.0 0.0 362076 0 - A May 19 20:16 /QOpenSys/QIBM
	/ProdData/JavaVM/jdk60/32bit/jre/lib/ppc/jvmStartPase 28
	qsecofr 9 0.0 0.0 311328 0 - A May 19 13:22 /QOpenSys/QIBM
	/ProdData/JavaVM/jdk60/32bit/jre/lib/ppc/jvmStartPase 16
	qtmhhttp 1006 0.0 0.0 10764 0 - A May 28 7:20 /usr/local/zend
	<pre>svr/bin/MonitorNode /usr/local/zendsvr/etc/monitor_node</pre>
	qsecofr520.00.0635680- AMay 192:43[cimserve]qtmhhttp9850.00.0113040- AMay 280:35/Q0penSys/QIBM/
	qtmhhttp 985 0.0 0.0 11304 0 - A May 28 0:35 /QOpenSys/QIBM/
	==>
-	
E .	3=Exit F6=Print F9=Retrieve F11=Truncate/Wrap
	13=Clear F17=Top F18=Bottom F21=CL command entry
	To-orean Pitt-rop Pito-borrow Pizt-or commente entrig
мΑ	A 18/007
	187 007 1902 - Session successfully started
1 <u>0</u> .	1992 - Session successiony stated

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Figure 66: This shows the output of the ps gaxuw command when the grep command is not used.

Create the VNC password file

Why: To use the Native Abstract Windowing Toolkit (NAWT) support, you must start a VNC server. The VNC server that you start requires a VNC password so that the VNC viewer can connect to the server. In this section, you will create the directory that will contain the VNC password.

In the System i Navigator, go to the /home directory in the Root file system.

In the /home directory, identify the user profile name that you will use to start the VNC server.

In Figure 67, the user profile name is CRAIGP.

On your IBM i, the list of subdirectories in the /home directory will obviously be different from what is shown in the figure.

🖉 System i Navigator			
File Edit View Help			
🔞 🐇 🛍 🛍 🗙 🖼 🎯 🗊 🛇 🛛 0 minutes old			
Environment: My Connections Ibmi71: CRAIGP Path: /home/CRAIGP			
File Systems	Name	Size	Туре
🖻 💮 Integrated File System	🔳 .atkinit	1KB	ATKINIT File
E Root	eclipse .		File Folder
i in the second	.ezinit	2KB	EZINIT File
i dev	icewm		File Folder
ter etc 👘			
home			
CRAIGP			
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icewm ⊡.			
te © QUSER			
UWEBQRYADM -	< III		1
My Tasks - Ibmi71			
Add a connection			
1 - 4 of 4 objects			1.

iac181

Figure 67: Identify the user profile name in the /home directory.

In the System i Navigator, right-click the user profile that will be used to start the VNC server. Select the **New Folder** item from the pop-up menu, as shown in Figure 68.

Ø System i Navigator					
File Edit View Help					
1 🕹 🛍 🖀 🗙 😭 🗐 🗐	9				4 minutes old
Environment: My Connections Ibmi71: CRAIGP Path: /home/CRAIGP					
File Systems	*	Name		Size	Туре
🖃 📴 Integrated File System		📓 .atkinit		1KB	ATKINIT File
🖻 🔁 Root		eclipse .			File Folder
i ⊕ in	_	.ezinit		2KB	EZINIT File
ti ⊡ dev	E	icewm			File Folder
⊕ <u>e</u> tc					
	Explore				
⊕ <mark>⊡</mark> .ecli ⊕ <mark>⊡</mark> .ice	Open				
	Create Shorte	ut			
	Customize th	is view			,
My Tasks - Ibmi71 New Folder				ems tasks	<u>^</u>
Add a connection	Delete			for related to	•
Create a new folder.	Rename				<i>[i</i>]

iac182

Figure 68: Right-click the user profile to use for the VNC, select New Folder from the pop-up menu.

The **New Folder** dialog (shown in Figure 69) is displayed. Enter the new folder name as:

.vnc

(note the leading period character)

_Click the **OK** button to create the folder.



Figure 69: Enter the new folder name value as .vnc.

iac183

Create the VNC password

Why: You need to enter the VNC password before you can connect to the VNC server.

_Enter the following command on a 5250 command line:

```
QAPTL/VNCPASSWD PASSWORD(your_vnc_password)
VERIFY(your_vnc_password)
USEHOME(*NO)
PWDFILE('/home/your_user_profile_name/.vnc/passwd')
```

Where:

your_vnc_password is the case-sensitive 6 to 8 character password to assign.

your_user_profile_name is the name of your subdirectory in the /home directory

Note: the QAPTL library is the library where the **IBM Tools for Developers** LPP is installed.

Note: do not use your IBM i user profile password as the VNC server password.

When done, verify that the passwd file is in the .vnc subdirectory, as shown in Figure 70.



vnc184

Figure 70: Verify that the passwd file is contained in the .vnc subdirectory.

Notes

- The password that you enter on the VNCPASSWD command is encrypted within the passwd file.
- If you forget the password value, delete the passwd file, then run the VNCPASSWD command again.

Start the VNC sever — Initial Start

Why: If you are working with a new VNC server (that is, you did not previously have a VNC server configuration on your IBM i), you need to start the VNC server so that it can build some files that it needs. Starting the VNC server also lets you verify that the server can be started.

_____ Enter the following command on a 5250 command line:

QAPTL/STRVNCSVR NAME(ACS)

_____A terminal session display opens. You will see messages similar to those shown in Figure 71.

Note: some of the text that is displayed in the terminal session is omitted from the figure. Text that identifies the IBM i that the command was run on is omitted in the line that begins **New 'ACS' desktop is** and the line that begins **Log file is**.

____ Press the **Enter** key to end the terminal session and return to the 5250 command line.

Note: ending the terminal session does not end the VNC server.



iac191

Figure 71: Theses status messages are displayed when you use the STRVNCSVR command.

Verify that the VNC server is running

Why: This step will prove that the VNC server that you started in the previous step is active.

_____On a 5250 command line, enter the following CALL command to start the PASE shell:

CALL QP2TERM

_____ Enter the following PASE command to display any currently active VNC servers.

ps gaxuw | grep Xvnc

____You should see that the VNC server is active, as shown in Figure 72.

The instance number is the number on the third line of text that is preceded by the colon (:) character. You will use the instance number with the ENDVNCSVR command, described in the next section.

_____ When done, press the **F3** key to return to the 5250 command line.



iac192

Figure 72: Use the ps command to verify that the VNC server is running.

Stop the VNC server

Why: You will learn how to stop the VNC server.

_Enter the following command on a 5250 command line:

QAPTL/ENDVNCSVR INSTANCE(1)

Where the value that you enter for the INSTANCE parameter is the instance number of the active VNC server (see Figure 72).

____A terminal session display opens. You will see messages similar to those shown in Figure 73.

Note: the messages that are shown in Figure 73 include the messages from the STRVNCSVR command that you entered earlier. The message for the ENDVNCSVR command starts with the line that begins **Killing Xvnc**.

Note: some of the text that is displayed in the terminal session is omitted from the figure. Text that identifies the IBM i that the command was run on is omitted in the line that begins **New 'ACS' desktop is** and the line that begins **Log file is**.

Press the **Enter** key to end the terminal session and return to the 5250 command line.



iac193

Figure 73: You will see the "Killing Xvnc" message when you use the ENDVNCSVR command.

Use the steps shown in the section **Verify that the VNC server is running** on page 66 to verify that the VNC server is ended (you should not see it in the process list).

Review files that were created by starting the VNC server

Why: When you start the VNC server the first time, it creates files in your /home directory and in the .vnc subdirectory. If you decide to not use the VNC server for a user profile, you may want to remove the files from the user /home directory and the .vnc subdirectory.

In the System i Navigator, go to your user directory in the /home subdirectory.

When you start the VNC server the first time, two files are added to your user directory, as shown in Figure 74:

.sh_history

.Xauthority



iac194

Figure 74: The .sh_history and .Xauthority files are added to the user directory when you start the VNC server.

Click the .vnc subdirectory to display its contents.

When you start the VNC server the first time, two files are added to the .vnc subdirectory, as shown in Figure 75:

.log (a file that ends with the .log extension, name is based on your IBM i TCP/IP host name)

xstartup

Note: some of the text that is displayed in Figure 75 is omitted. Text that identifies the IBM i that was used to get the screen capture is omitted in the name of the .log file.



Figure 75: The .log file and the xstartup file are added to the .vnc subdirectory.

iac195

Start the VNC Server – Production Start

Why: Now that you've installed, started, ended and verified the VNC server, you can start it for production use.

_____ Enter the following command on a 5250 command line:

QAPTL/STRVNCSVR NAME(ACS)

_____ The VNC server starts, as described in the section **Start the VNC sever — Initial Start** on page 65.

Working with the VNC sever in a production environment

If you plan to use the ACS Data Transfer programs on the IBM i on a regular basis, you will probably find it to be most convenient to start the VNC server and leave it running.

The STRVNCSVR and ENDVNCSVR commands can be run in a batch environment.

Figure 76 shows the spool file output that is created when you run the STRVNCSVR command in batch.

Note: some of the text that is displayed in the spool file is omitted from Figure 76. Text that identifies the IBM i that the command was run on is omitted in the line that begins **New 'ACS' desktop is** and the line that begins **Log file is**.



iac198

Figure 76: This is the spool file output when the STRVNCSVR command is run in batch.
Figure 77 shows the spool file output that is created when you run the ENDVNCSVR command in batch.

Note: the process ID shown in the figure (2360) may be different when you run the command on your IBM i.



iac199

Figure 77: This is the spool file output when the ENDVNCSVR command is run in batch.

Open firewall ports used by the VNC server

Why: If your IBM i is behind a firewall, you may need to open one or more ports in the firewall so that you can access the VNC server from the VNC viewer program (described in the next section).

- _____ If your workstation is not in the same network as your IBM i (for example, if you are accessing your IBM i remotely via an Internet connection), or if your IBM i is protected by an internal firewall, you will need to open one or more ports.
- _____ The port(s) that you need to open are in the 580x range, where "x" is a digit from 1 to 9.
- The value of "x'' that you specify is based on the VNC server instance number. See Figure 72 on page 66 for an example of how to find the VNC server instance number.
- Using Figure 72 as an example, you would need to open port 5801 in your firewall to access the VNC server.

Work with the VNC Viewer

Why: To work with the VNC server, you need a VNC viewer program on your workstation. You can use any VNC viewer program that you want. The steps shown in this section describe how to use the browser-based VNC viewer that is provided with the VNC server.

Before starting, identify the VNC server instance number that you will be working with. See Figure 72 on page 66 for an example of how to find the VNC server instance number.

____Open your browser and enter a URL in the following format:

http://ibm_i_host_name:580x

or

http://ibm_i_tcp_ip_address:580x

Where:

ibm_i_host_name is the TCP/IP host name of your IBM i

ibm_i_tcp_ip_address it the TCP/IP address of your IBM i

580x is the port number of the VNC server. The "x" value is a digit from 1 to 9 that corresponds to the VNC server instance number.

In Figure 78, the port number specified is 5801.

The browser displays the **Security Information** message shown in Figure 78. Click the **Run** button to continue.



vnc241

Figure 78: Open your browser to the VNC port on your IBM i, allow the application to run.

You may see the **Warning – Security** message shown in Figure 79. If you get this message, click the **No** button to allow the application to run (the **Yes** button blocks the application).

🟉 VNC viewer for Java - Windows Internet Explorer		- 0	X
O ♥ Image: State Sta	 ✓ 4₇ × Bing 	\$	<mark>۰</mark> م
File Edit View Favorites Tools Help			
😭 Favorites 🏾 🏈 VNC viewer for Java			
			-
	Warning - Security	×	
	Java has discovered application components that could 🧊	1	
	indicate a security concern.		
	Name: vncviewer/NNCViewer		
	Bock potentially unsafe components from being run? (recommended)		
	More Information		
	Yes	No	
	The application contains both signed and unsigned code.		
	Contact the application vendor to ensure that it has not been tampered with.		
Done	😪 Local intranet Protected Mode: Off 🛛 🖓 🔻	100%	*
Done	🔩 Local intranet Protected Mode: Off 🦷 👻	€ 100%	•

iac242

Figure 79: If you get this Security message, click the No button to continue.

- The **VNC Viewer Connection Details** panel shown in Figure 80 is displayed. The **Server** value may already be filled in; if it is, click **OK** to accept the value.
- If the **Server** value is not filled in, enter it in the format

vnc_server_name:instance

Where vnc_server_name is the name of your IBM i and instance is the VNC server instance number.



iac243

Figure 80: If necessary, specify the VNC server and instance number to connect to.

Enter the VNC server password that you created earlier (see the section **Create the VNC password** on page 64).

____ Press **Enter** after you enter the password.

File Edit View Favorites Tools Help	🖉 VNC viewer for Java - Windows Internet Explorer		- 0	23
Favorites WINC viewer for Java KEAL VINC Viewer Free Edition 4.1 Copyright (C) 2002-2004 Real/VINC Ltd. See http://www.real/vinc.com for information or VINC. Wince the set of the	O <	🗝 🐓 🗙 🔀 Bing		• ۹
VIC Viewer Free Edition 4.1 Copyright (c) 2002-2004 Real/NIC Ltd. See http://www.realvnc.com for information on VNC.	File Edit View Favorites Tools Help			
VIC Viewer Free Edition 4.1 Copyright (C) 2002-2004 Real/VIC Ltd. See http://www.reawnc.com for information on VNC.	👷 Favorites 🌈 VNC viewer for Java			
	VNC Viewer Free Edition 4.1 Copyright (c) 2002-2004 Real/VNC Ltd.	Password:		*
Local intranet Protected Mode: UTT Value Values	Done	💊 Local intranet Protected Mode: Off 🛛 🖓 🕶	• 🔍 100%	•

iac244

Figure 81: Enter the password that you assigned to the VNC server.

_____ The VNC viewer panel shown in Figure 82 is displayed. Leave the panel open on your workstation desktop.



iac245

Figure 82: The VNC viewer window is displayed.

Start the Data Transfer program on the IBM i

Why: You now have everything configured to work with the Data Transfer program on the IBM i. In this section, you will start the Data Transfer program on your IBM i for the first time, and handle some of the tasks that need to be done the first time you run the program.

Check for environment variables

Why: There are two environment variables that are needed to run the ACS Data Transfer program. When you start the Java application for the Data Transfer, the values assigned to the environment variables are used in the Java environment. If the environment variables are already defined, you need to remove the environment variable or change its value to the value required by the Data Transfer program.

On a 5250 command line, enter the following command:

WRKENVVAR

_The **Work with Environment Vars** display (Figure 83) show the environment variables associated with the interactive job.



iac221

Figure 83: The Work with Environment Vars display shows the environment variables for your interactive job.

Remove environment variable(s)

Why: If the environment variable(s) that are needed by the Data Transfer program are already in use, you can remove the variable(s) or change its value. This section shows how to remove the environment variable(s).

On the Work with Environment Vars display (Figure 83), look for an environment variable
named DISPLAY and an environment variable named XAUTHORITY.

- If the DISPLAY and XAUTHORITY environment variables are not defined, go to the section **Add** environment variables on page 78.
- Make a note of the current value of the DISPLAY OF XAUTHORITY environment variables.
- You can either remove and add the environment variables, or you can change the value of the existing DISPLAY and XAUTHORITY environment variables.

If you want to change the existing value of the existing environment variables, go to the section **Change environment variable(s)** on page 77.

_____ Use either of the following steps to remove the existing environment variables.

Note: use the steps shown here to remove the DISPLAY and XAUTHORITY environment variables only. Do not remove any other environment variables that are shown in the WRKENVVAR display.

Use **option 4 (Remove)** on the WRKENVVAR panel to remove the environment variable.

Enter the command RMVENVVAR ENVVAR(DISPLAY) OF RMVENVVAR ENVVAR(XAUTHORITY) on a 5250 command line.

____ Continue with the steps in the section **Add environment variables** on page 78.

Change environment variable(s)

Why: If the environment variables DISPLAY or XAUTHORITY are already defined, you can use the Change Environment Variable (CHGENVVAR) command to set the value that is required by the ACS Data Transfer program.

Use either of the following steps to change the existing environment variables DISPLAY and XAUTHORITY.

_____ Use **option 2 (Change)** on the WRKENVVAR panel to change the value.

Use the **Change Environment Variable** (CHGENVVAR) command on a 5250 command line.

____ Set the values of the environment variables as follows.

Environment Variable	Value
DISPLAY	ibm_i_host_name:vnc_instance_number
	or
	ibm_i_tcp_ip_address:vnc_instance_number
	Where vnc_instance_number is the instance number assigned when you started the VNC server (see Figure 72 on page 66 for an example of determining the instance number).
	/home/your_user_profile_name/.Xauthority
XAUTHORITY	For your_user_profile_name, enter the name of the user profile where the .xauthority file is located (see Figure 74 on page 68).

Add environment variables

Why: The ACS Data Transfer program uses two environment variables named DISPLAY and XAUTHORITY. The values of the environment variable point to the VNC server and its configuration.

____ Enter the following commands on a 5250 command line:

ADDENVVAR ENVVAR(DISPLAY) VALUE('ibm_i_host_name:vnc_instance_number')

or

ADDENVVAR ENVVAR(DISPLAY) VALUE('ibm_i_tcp_ip_address:vnc_instance_number')

ADDENVVAR ENVVAR(XAUTHORITY) VALUE('/home/user_profile_name/.Xauthority')

Notes

- Enter the environment variable names in upper-case, as shown in the commands above.
- The vnc_instance_number is the instance number assigned when you started the VNC server (see Figure 72 on page 66 for an example of determining the instance number).
- For your_user_profile_name, enter the name of the user profile where the .xauthority file is located (see Figure 74 on page 68).

IMPORTANT!

The values that you enter for the environment variables in your 5250 session are **not persistent**. When you sign-off from your 5250 session, the values for the environment variables **are not kept**.

The next time you sign on to a 5250 session, you need to add the environment variables.

If you will be running Data Transfers frequently from your 5250 session, you may want to consider adding the ADDENVVAR commands to your start up program.

IMPORTANT!

Start the Data Transfer program

Why: You can now run the Data Transfer program. For the first test, you will run the java command in the QSHELL environment.

- Verify that the VNC viewer application is still running on your workstation. If it is not running, start it and connect to the VNC server running on your IBM i. (See the section **Work with the VNC Viewer** on page 72.)
- On a 5250 command line, enter the qsн (Start QSHELL) command.

_____ The QSH Command Entry panel is displayed.

_____ Enter the following command on the QSH Command Entry line.

Note: the command is **case-sensitive**, enter it as shown.

Note: the value for the os400.class.path.security.check parameter is zero, not the letter "O".

Note: for the /userid parameter, enter the name of your user profile. This must be the same user profile name that you used to start the VNC server.

Note: enter the entire command on one line in the QSH Command Entry panel. The line will "wrap" on the Command Entry panel as you type it in. The command text shown in this example is wrapped on this page.

java -jar /IAC/acsbundle.jar -Dos400.class.path.security.check=0

/PLUGIN=download /file=/IACXFER/xqcustcdt.dtfx

/userid=your_user_profile_name

The java command might take a few seconds to start. You should see the **End User License Agreement** displayed in the VNC viewer, as shown in **Error! Reference source not found.**



iac231

Figure 84: When you run the java command to start the Data Transfer, the End User License Agreement is displayed in the VNC viewer.

_Use the scroll bar on the right side of the **License Agreement** window to scroll to the end of the License Agreement. When you get to the end of the agreement, the **Yes** button is enabled.

_Click the **Yes** button to accept the agreement. If you do not accept the agreement, the Data Transfer program will not run.

____ After you accept the agreement, you can close the VNC viewer window and the browser window that you used to open the viewer.

VNC: IACS	
) License Agreement	
End User License Agreement	
The Programs listed below are licensed under the following terms and conditions in addition to those of the IBM International License Agreement for Early Release of Programs (IBM form number Z125– 5544–05). Program Name: IBM i Access Client Solutions Program Number: Beta Test Period	
The tes: period begins on the date that Licensee agrees to the terms of this Agreement and ends on 2013-04-30. L/N: L-LHIH-8QGMJ6 D/N: L-LHIH-8QGMJ6 P/N: L-LHIH-8QGMJ6	
Do you accept the terms of this agreement?	
1 License Agreement	

Figure 85: Scroll to the end of the License Agreement, click the Yes button to accept the agreement.

iac232

After you accept the agreement, the Data Transfer program that is running in the QSH Command Entry panel prompts for your IBM i user ID, as shown in **Error! Reference source not found.**

_Enter your IBM i user ID and press **Enter**.

3 Session A - [24 x 80]	
File Edit View Communication Action; Window Help	
QSH Command Entry	
\$	
> java -jar /IAC/acsbundle.jar -Dos400.class.path.security.check=0 /Pl load /file=/IACXFER/xqcustcdt.dtfx /userid=CRAIGP	LUGIN=døwn

User (CRAIGP):	
===> craigp	
F3=Exit F6=Print F9=Retrieve F12=Disconnect	
F13=Clear F17=Top F18=Bottom F21=CL command entry	
MA A	18/013
3 [B02 - Session successfully started	11.

iac233

Figure 86: Enter your IBM i user ID when prompted.

You are prompted to enter your IBM i password, as shown in **Error! Reference source not found.**.

_____ Enter your IBM i password and press **Enter**.

B ¹ Session A - [24 x 80]	
File Edit View Communication Action: Window Help	
QSH Command Entry	
\$	
> java -jar /IAC/acsbundle.jar -Dos400.class.path.security.check=0 /PL	UGIN=døwn
load /file=/IACXFER/xqcustcdt.dtfx /userid=CRAIGP	

User (CRAIGP):	
> craigp	
Password:	
===>	
F3=Exit F6=Print F9=Retrieve F12=Disconnect	
F13=Clear F17=Top F18=Bottom F21=CL command entry	
	10/015
	18/015
ල් ¹⁰ 1902 - Session successfully started	

iac234

Figure 87: Enter your IBM i password when prompted.

_____ The Data Transfer program runs. The messages shown in Figure 45 are displayed when the program ends.

Press the **F3** (Exit) function key to close the QSH Command Entry panel.



iac235v2

Figure 88: The Data Transfer program runs and displays the messages shown here.

- In the System i Navigator, go to the output directory that you specified (see the clientFile item in Figure 42 on page 30). In this example, the output directory is IFS directory /IACOUT.
- _____ The qcustcdt.csv file is the output from the Data Transfer program.
- Copy the qcustcdt.csv file to your workstation and open it. You should see the same output as you saw when you ran the Data Transfer on your workstation, as shown in Figure 28 on page 21.



iac236 83 *Figure 89: The qcustcdt.csv file is in the output directory used by the Data Transfer program.Run the Data Transfer program — Pass 2*

Why: The first time you ran the Data Transfer program, you were prompted to accept the License Agreement. You also had to enter your IBM i user ID and password. When you run the Data Transfer again, you will not need to do either of those tasks.

- _____ Delete the /IACOUT/qcustcdt.csv file from the IFS. You can use the System i Navigator to delete the file.
- Verify that the VNC viewer application is still running on your workstation. If it is not running, start it and connect to the VNC server running on your IBM i. (See the section **Work with the VNC Viewer** on page 72.)
- _____On a 5250 command line, enter the qsн (Start QSHELL) command.
- _____ The QSH Command Entry panel is displayed.
- Enter the following command on the QSH Command Entry line.
 - Note: the command is **case-sensitive**, enter it as shown.
 - java -jar /IAC/acsbundle.jar -Dos400.class.path.security.check=0

/PLUGIN=download /file=/IACXFER/xqcustcdt.dtfx

/userid=your_user_profile_name



iac237

Figure 90: The Data Transfer program displays the messages shown here when you run it the second time.

_____ The **License Agreement** panel is not displayed in the VNC viewer.

_Use the System i Navigator to verify that file /IACOUT/qcustcdt.csv has been created.

END OF DOCUMENT