Getting to Know IBM i Access Client Solutions

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Agenda

- IBM i Access Family
- Product Positioning
- Configuration
- 5250 Emulation
- Data Transfer
- Console
- Printer Output
- Shell Commands
- Break
- Deployment
- Database Enhancements
- Demonstration and Questions

Power Systems

IBM

IBM i Access Family

Power Systems

IBM i Access Family

IBM

- The r7.2 / r7.1 IBM i Access Family of Products

- IBM i Access for Windows (5770XE1)
  - Client Access
  - Most Mature and Widely used Product
    - System i Navigator
    - 5250 Display & Printer Emulator
    - Data Transfer
    - Operations Console & Virtual Control Panel
    - Data Access Providers
    - Remote Command
    - Print Drivers

- IBM i Access for Web / IBM i Mobile Access (5770XH2)
  - IBM i System Hosted HTML based Mobile Web Product
  - Robust Capability that has been Well Received
    - 5250 Interfaces
    - Print Access
    - Database Access
    - Integrated File System
    - Commands
    - Jobs

- IBM i Access for Linux (5770XL1)
  - Lightly Embraced Product specifically for Linux RPM Operating Systems
    - ODBC Provider
    - 5250 Display Emulator
    - Remote Command

IBM i Access Family – Newest Product

Key features from legacy desktop products were included with the IBM i Access Client Solutions core offering

- **Access for Windows – Desktop**
  - **5250 display and printer emulator**
  - **Data transfer**
  - **Printer Output**
  - **Operations Console**
  - System i Navigator
  - Data drivers (ODBC, OLEDB, .Net)
  - Printer drivers

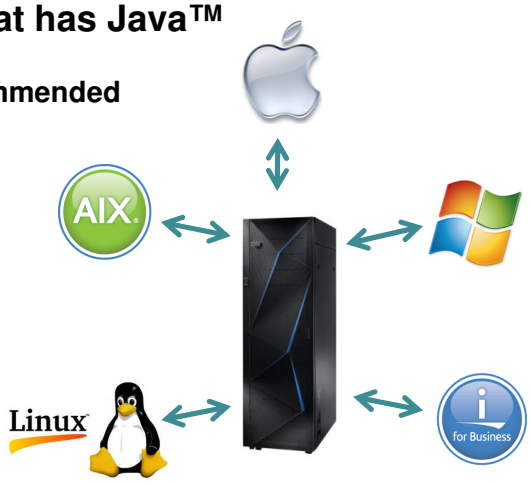
Access Client Solutions

- **Access for Linux – Desktop**
  - **5250 emulator**
  - ODBC driver
  - A small subset of the IBM i Access components

Access Client Solutions

IBM i ACS – Platform Independent

- **Runs anywhere that has Java™**
  - **Java 1.6 or later**
    - **Java 1.8 Recommended**
- **This includes:**
  - **Windows**
  - **Mac**
  - **Linux**
  - **AIX**
  - **IBM i**



Application Packages

- **Core offering (platform independent)**
  - **5250 display and printer emulator**
  - **Data transfer**
  - **Printer Output**
  - **Console consolidation**
  - **Other misc features**

- **Windows Application Package (Available at G.A.)**
  - Windows Installer MSI Package
  - Data drivers (ODBC, OLEDB, .Net)
  - Printer drivers

- **Linux Application Package (Available at G.A.)**
  - RPM and Debian Install Packages
  - ODBC driver

Product Availability

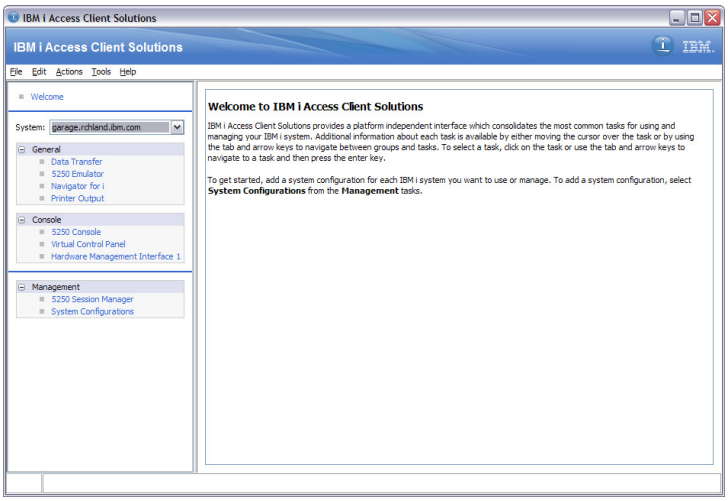
- IBM i Access Client Solutions is identified as LPP 5733-XJ1
  - Not an IBM i OS installable LPP
- The GA version of the product is available to customers with valid SWMA and IBM i OS r6.1, r7.1 or r7.2 and is downloaded from the IBM i Access Client Solutions or IBM Entitled Software Support (ESS) websites
  - Technote with example instructions
    - http://www-01.ibm.com/support/docview.wss?uid=nas8N1010355
- Product distributed in zip files
  - Platform Independent Core Java product
    - From IBM i ACS website: IBMiAccess_v1r1.zip
    - On ESS: IBM_i_Access_Client_Solutions_LCD#_*.zip
    - Contains product jar and other supporting files
  - Windows Application Package
    - IBM_i_Access_Client_Solutions_-_Win_AP_LCD#_*.zip
    - Contains 32bit and 64bit Windows installers
  - Linux Application Package
    - IBM_i_Access_Client_Solutions_-_Linux_AP_LCD#_*.zip
    - Contains Linux RPM and Debian installers

Product Details

- Supported connecting to IBM i OS r7.2, r7.1 and r6.1
- IBM i OS supports IBM i Access Client Solutions exactly the same as IBM i Access for Windows
  - Checks out the same 57xxXW1 Licenses for 5250 and Data Transfer
  - Connects to the same IBM i Access Host Servers on the same ports in the same way
    - Exit programs will continue to have the same impact
    - Application Administration local policies will still be applied

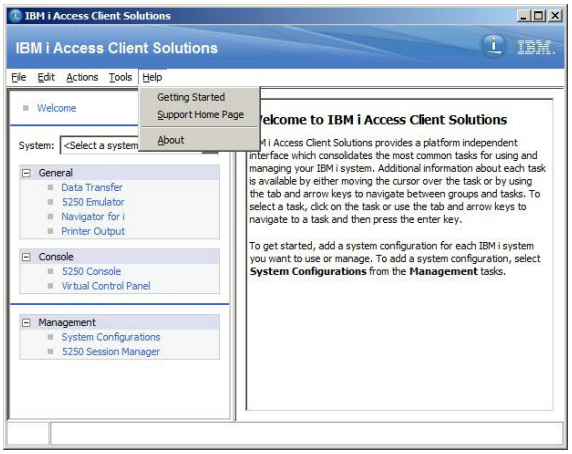
Main User Interface

- Provide an easy to use launch point for features



Getting Started

- Product contains Documentation folder containing "QuickStartGuide" and "GettingStarted" documents
- "GettingStarted" can also be launched from Main User Interface



Product Positioning

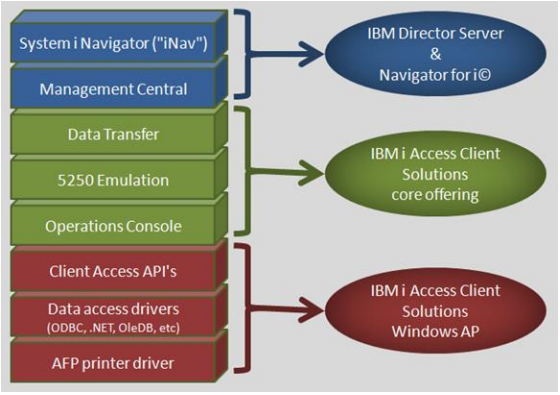
Three Products in One

- IBM i Access Client Solutions is comprised of 3 separate packages

- Instead of updating (Linux) or creating (Mac OS) platform specific products a strategic decision was made to instead take the core functions of IBM i Access for Windows and bring them into a new platform independent product
  - Significantly reduces administration costs by elimination platform specific installer and supporting simple network drive deployment for most users
  - The need to still address functions that are platform specific are addressed with the Windows and Linux Application Packages

Decoupling Access for Windows

- IBM i Access for Windows or Client Access has been the platform for nearly everything needed to interact with your IBM i OS for a long time. From end users just needing a 5250 session, to a System Administrator, the same product and maintenance overhead is needed
- Many of these functions are now available in different ways depending on the needs of the user or application environment.
- Access for Windows major functions and where those functions are provided



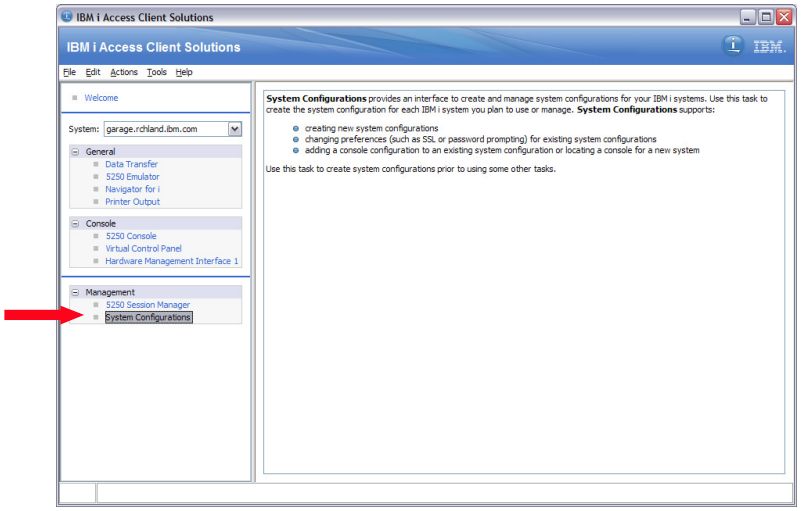
Dependencies

- IBM i Access Client Solutions Application Packages are built using the exact same infrastructure as the IBM i Access for Windows and IBM i Access for Linux products. Therefore they are mutually exclusive.
- The IBM i Access Client Solutions core platform independent product has no conflicts with either of the Linux or Windows packages.
- IBM i Access Client Solutions does not provide any Navigator interface instead relying on the IBM Navigator for i web based infrastructure that was introduced with IBM i OS r6.1 and has continually been enhanced since
  - Name change from IBM Systems Director Navigator to IBM Navigator for i indicates a very large investment into improving the performance and usability of this interface
  - Key IBM i OS solutions like Performance Data Investigator and HAS tools are only available in Navigator for i
  - r7.2 GA timeframe introduces monitors and PTF interaction
  - A few things have/had reliance System i Navigator
    - Run SQL Scripts (NOT Anymore, Delivered in December 2015)
    - Database Visual Explain (Expected around July 2016)

Configuration

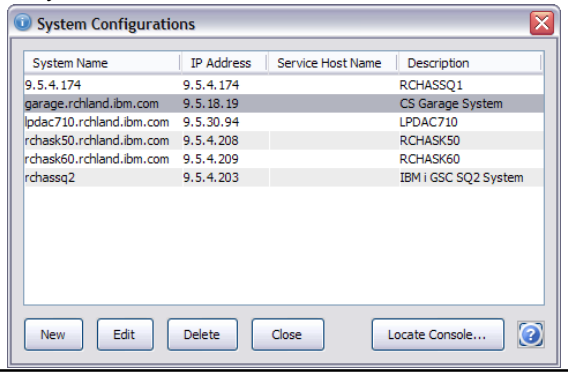
System Configurations

- Use the System Configurations panel to store connection information on the IBM i Systems that will be used

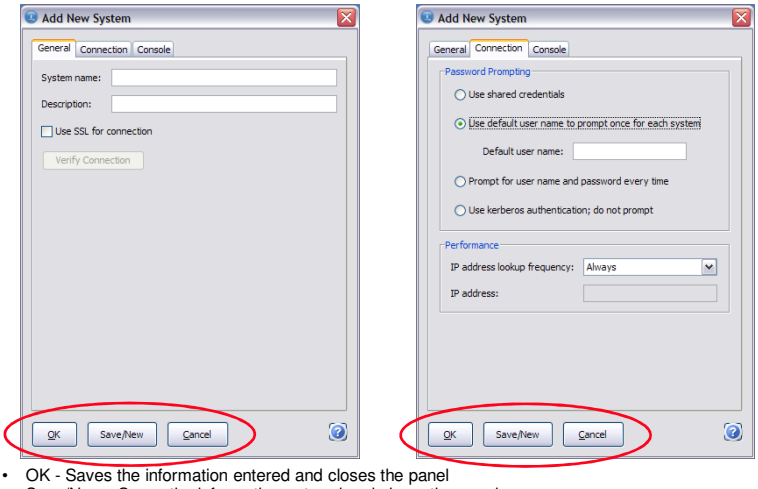


System Configurations

- Create, Edit or Delete connection information for IBM i Systems that are used.
  - System Name: What is entered by the user to connect to this host
  - IP Address: What the PC's DNS environment last returned when connecting to the System Name
  - Service Host Name: The System's Console host name or IP address as configured
  - Description: Defined by the user when created

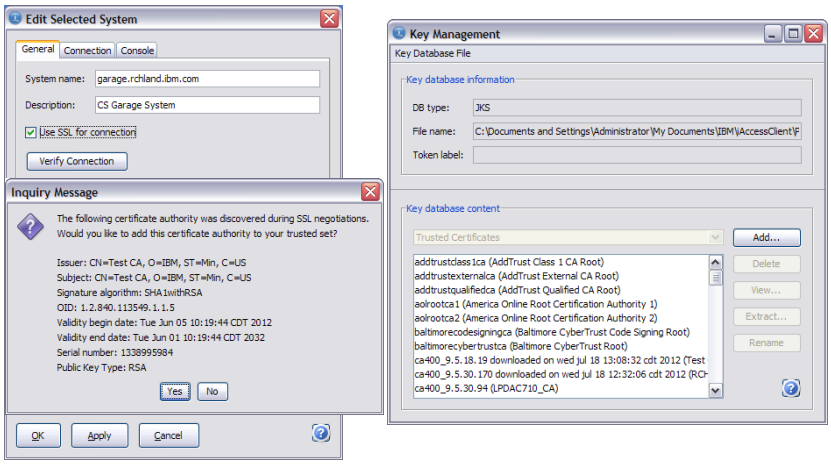


New System Configuration



- OK - Saves the information entered and closes the panel
- Save/New - Saves the information entered and clears the panel
- Cancel - Closes the panel without saving anything

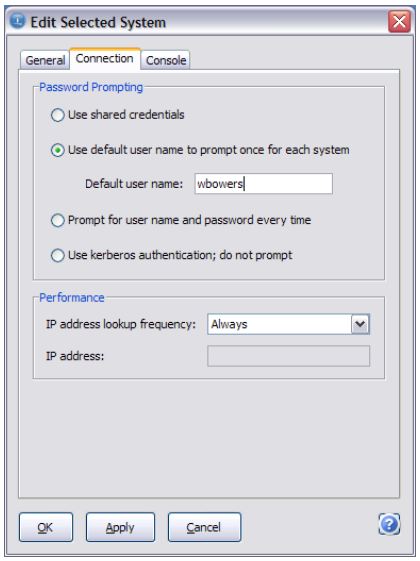
Use SSL



- Use SSL specifies that the connection will be secured
- If the Certificate Authority negotiated is not trusted, the user will be prompted to add to trusted list
- There still is a Key Management utility if needed

Password Prompting

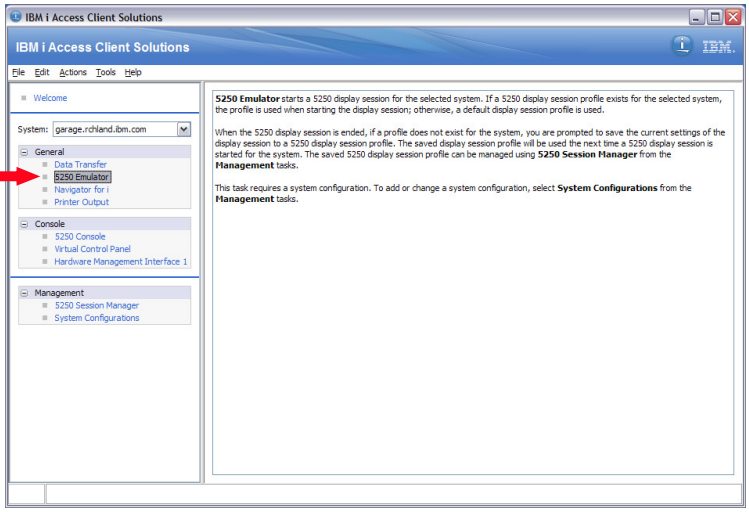
- Use default user name to prompt once for each system
  - Caches credentials for duration of desktop session
- Prompt for user name and password every time
- Use Shared credentials
  - First time for desktop session that a connection is made to a System configuration using this option the user will be prompted to provide User name & Password
  - These credentials will be cached for use by all System configurations set to this option
- Use kerberos authentication; do not prompt
  - No further IBM i Access Client Solutions configuration needed



5250 Emulation

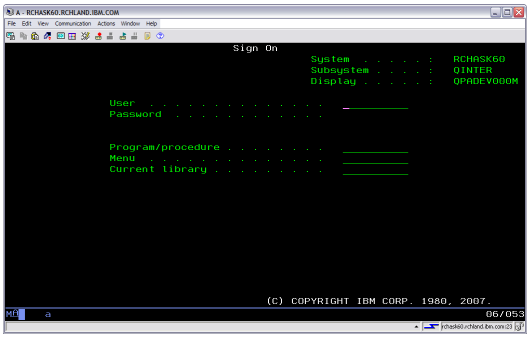
5250 Emulation

- Opens an IBM Rational Host On Demand 5250 Telnet session to the current System



5250 Emulation

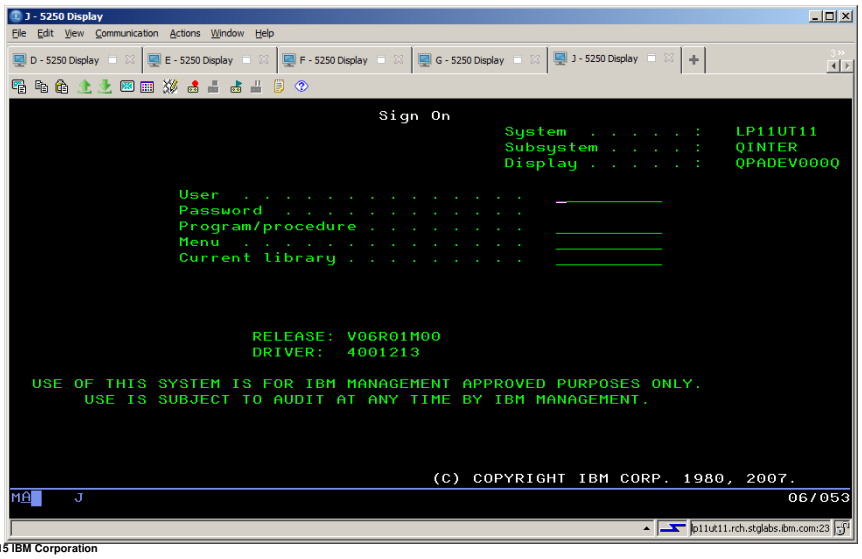
- Provides nearly identical interaction, look and feel to the Access for Windows PC5250 emulator
  - Keyboard Mapping
  - Keystroke Macros
  - Edit Colors
  - Toolbar Customization
  - Pop-Up keypad
  - Window Setup
  - Hotspots
  - Printer Emulation
- Also some New features
  - Tabbed Sessions
  - Mouse Wheel
  - Simplified Codepage
  - Screen History
  - Watermarks
  - Default Session



- Immediately Following - Session “My Emulator is Better than Yours”

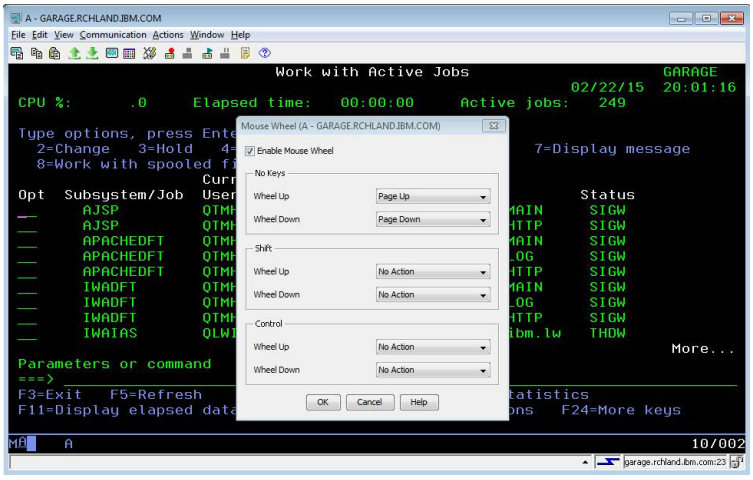
Tabbed Sessions

- **Tabbed Session support added in V1R1M4**

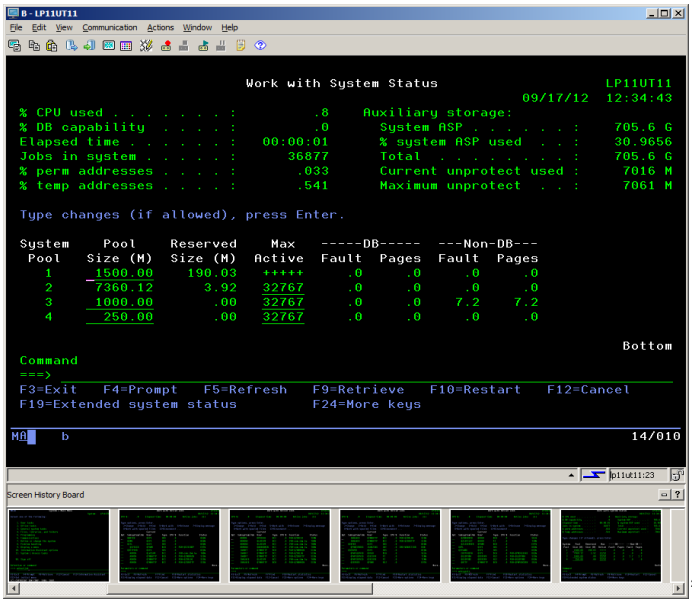


Mouse Wheel

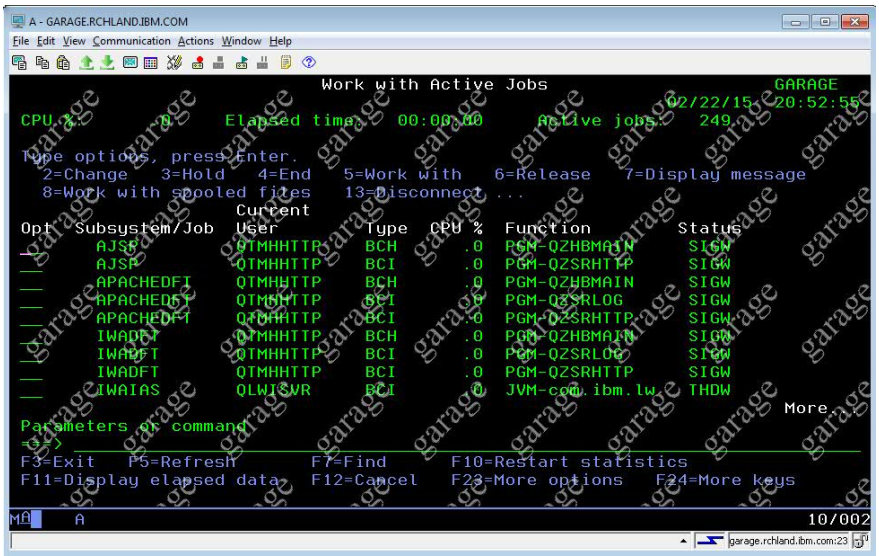
- Allows the use of the Mouse Wheel to perform 5250 Aid Key Functions - Defaults to Page Up/Down
  - Shift and Control options added in V1R1M4 and default to 'No Action'



Screen History



Watermark



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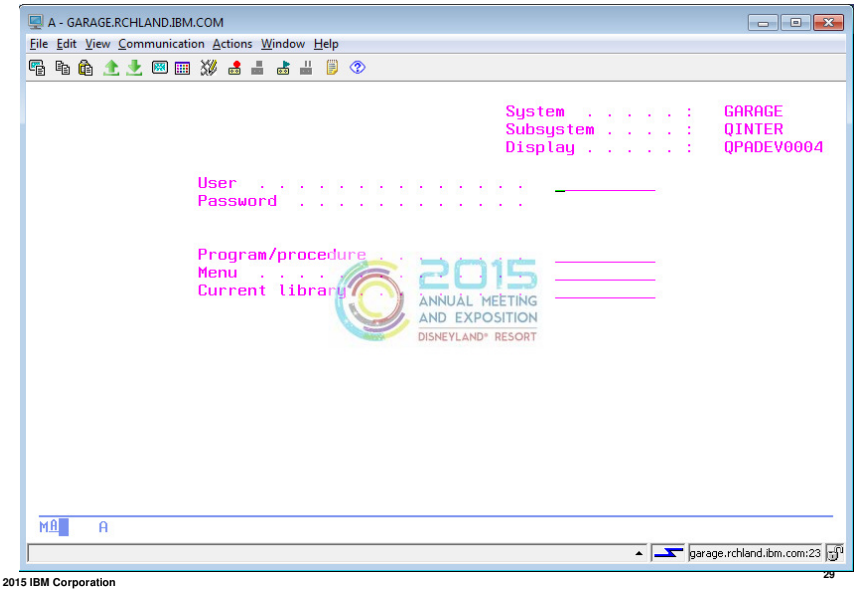
Watermark

IBM



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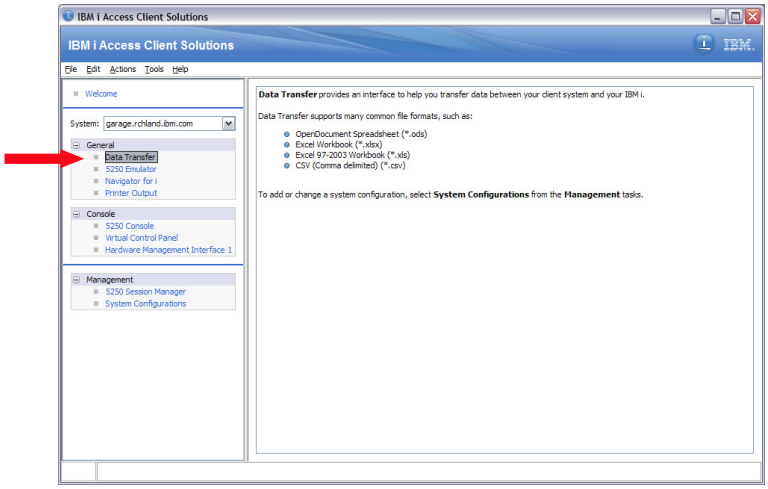
Data Transfer

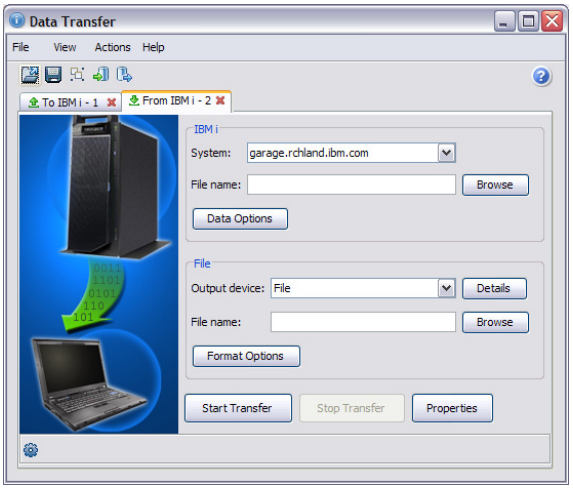
Data Transfer

- Select the Data Transfer option
  - Will default to the current System



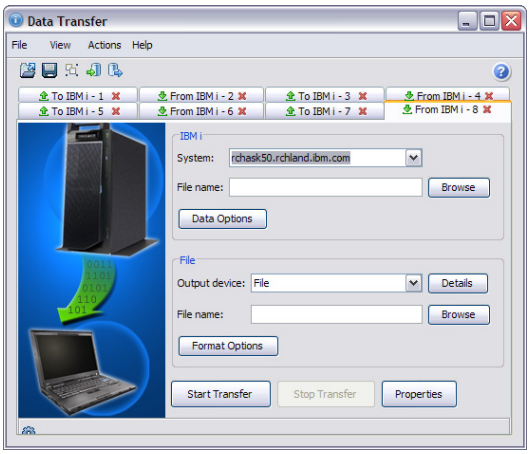
Data Transfer

- Displays the Data Transfer interaction panel
  - Starts out with a Data Transfer to IBM i and Data Transfer from IBM i tab to the current System on the main panel



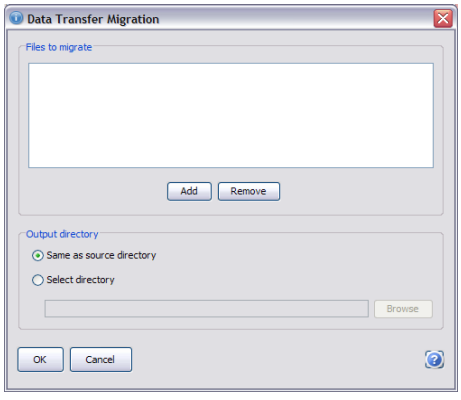
Data Transfer

- Data Transfer interaction panel
  - All active Data Transfer requests are displayed in a tab on this panel
  - Open Saved Requests
  - Save Requests
  - Create IBM i Files
  - Data Transfer Migration



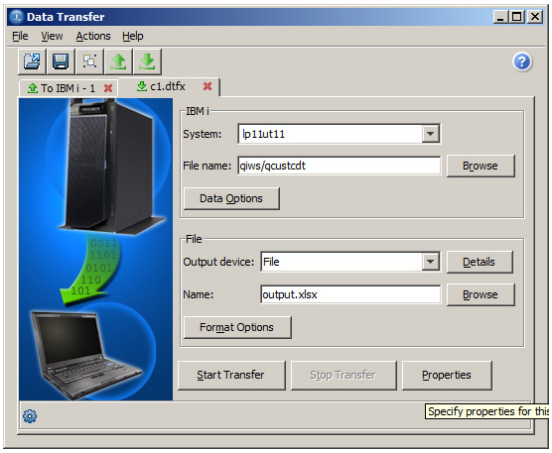
Data Transfer Migration

- Access for Windows Data Transfer saved request migration
  - Migrate saved .dtt and .dtf files to IBM i Access Client Solutions .dttx and .dtfx files



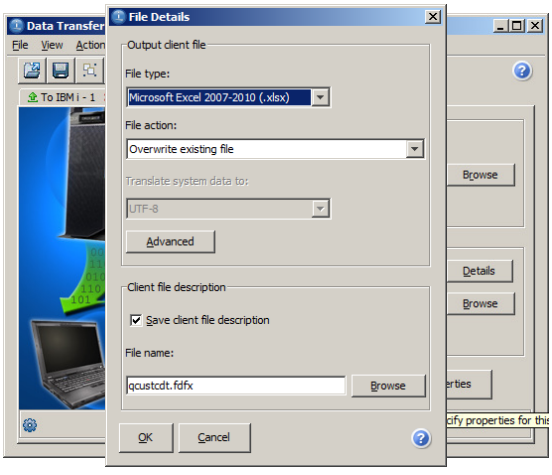
Power Systems IBM

Creating a request to run on the i



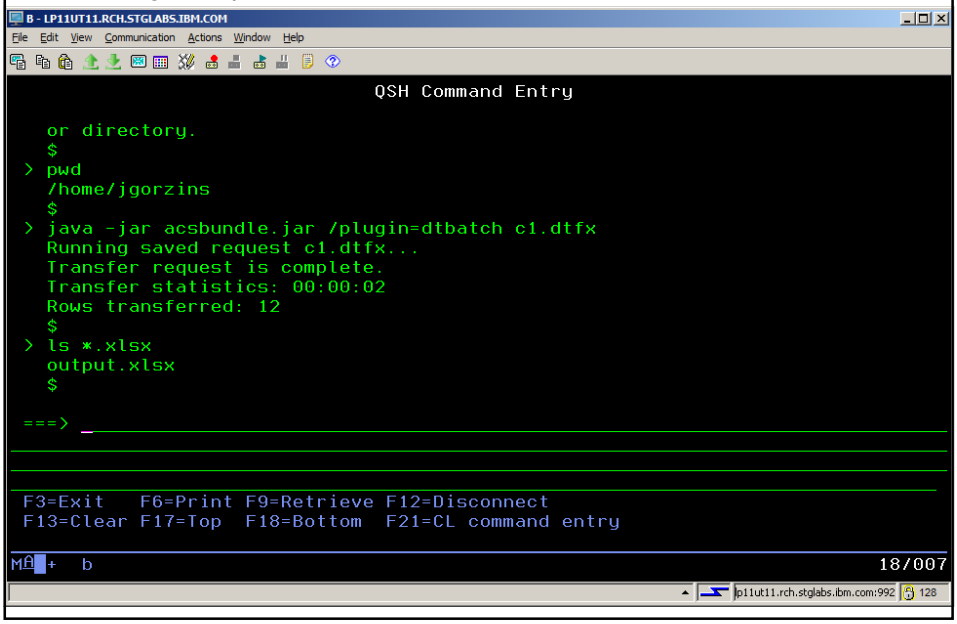
Power Systems IBM

Creating a request to run on the i



Power Systems IBM

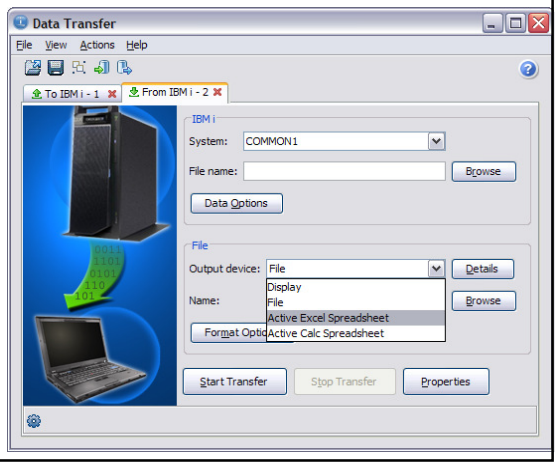
Creating a request to run on the i



Power Systems IBM

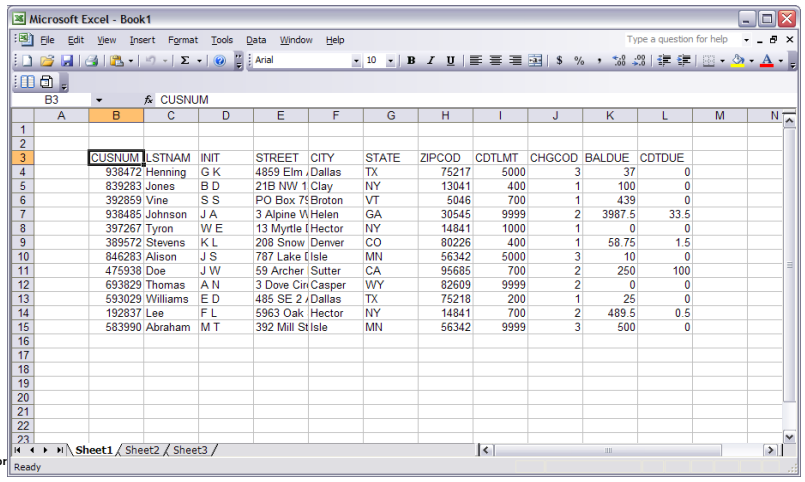
Data Transfer to Active Spreadsheet

- Data Transfer mechanism to interact directly with spreadsheet
  - On a Data Transfer From IBM i Select “Active Excel Spreadsheet” for the output device.
  - Data Options can be used to modify query



Data Transfer to Active Spreadsheet

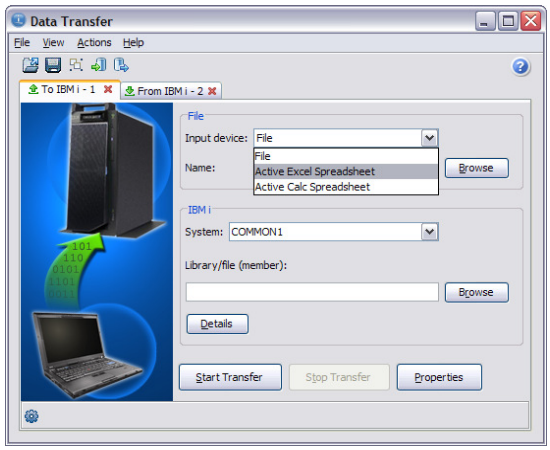
- Data Transfer mechanism to interact directly with spreadsheet
  - The results of the data transfer are placed into the active Excel spreadsheet book at the currently selected cell.



CUSNUM	LSTNAM	INIT	STREET	CITY	STATE	ZIPCOD	CDTLMT	CHGCOD	BALDUE	CDTDUE
938472	Henning	G K	4859 Elm	Dallas	TX	75217	5000	3	37	0
839283	Jones	B D	21B NW 1	Clay	NY	13041	400	1	100	0
392859	Vine	S S	PO Box 79	Broton	VT	5046	700	1	439	0
938485	Johnson	J A	3 Alpine W	Helen	GA	30545	9999	2	3987.5	33.5
397267	Tyron	W E	13 Myrtle	Hector	NY	14841	1000	1	0	0
389572	Stevens	K L	208 Snow	Denver	CO	80226	400	1	58.75	1.5
846283	Alison	J S	787 Lake	Isle	MN	56342	5000	3	10	0
475938	Doe	J W	59 Archer	Sutter	CA	95685	700	2	250	100
693829	Thomas	A N	3 Dove Cir	Casper	WY	82609	9999	2	0	0
593029	Williams	E D	485 SE 2 /	Dallas	TX	75218	200	1	25	0
192837	Lee	F L	5963 Oak	Hector	NY	14841	700	2	489.5	0.5
583990	Abraham	M T	392 Mill St	Isle	MN	56342	9999	3	500	0

Data Transfer from Active Spreadsheet

- Data Transfer mechanism to interact directly with spreadsheet
  - On a Data Transfer to IBM i Select “Active Excel Spreadsheet” for the Input device.
  - The selection from the Excel Spreadsheet will be uploaded to the file on the IBM i



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Data Transfer with Active Spreadsheet

- Support:
  - Microsoft Excel
    - Windows
  - OpenOffice Calc
    - Windows
    - Linux

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Data Transfer with Active Spreadsheet -- Usage tips

- Bitness must match!!! (32bit vs. 64bit)
- ACS will "activate" the connection and attach at the moment the dropdown item is selected!
- Select target/source location in spreadsheet before activation (for upload, select the range)

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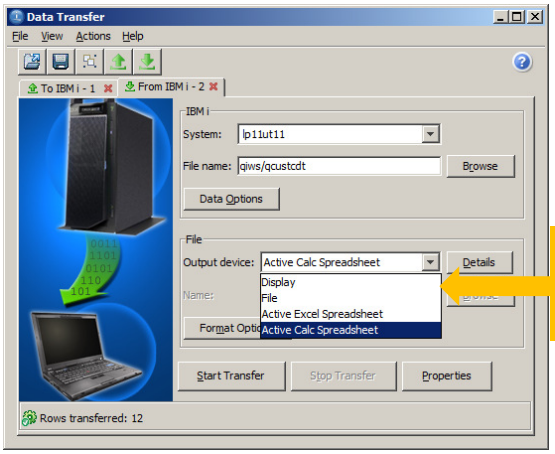
Data Transfer with Active Spreadsheet -- Usage tips



At the moment this is selected, the connection is activated.

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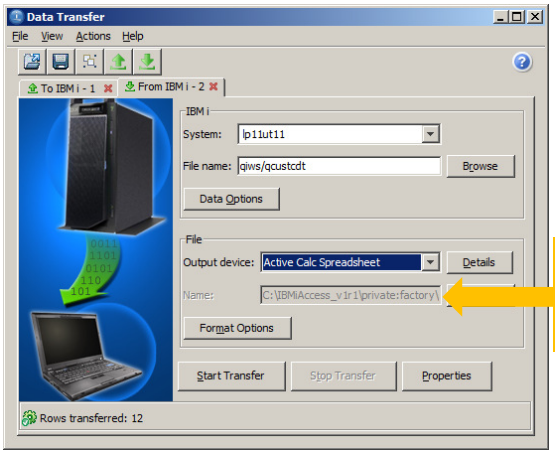
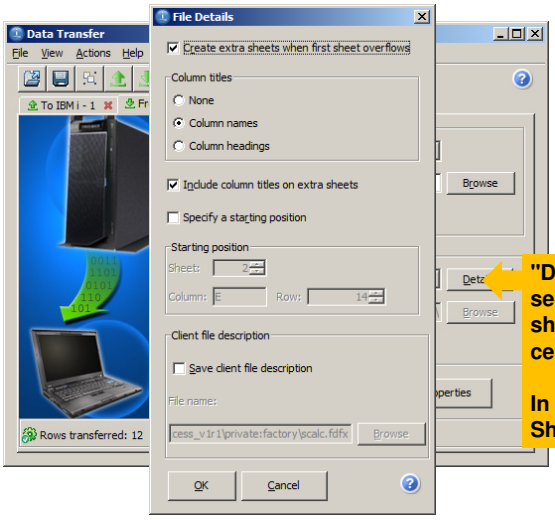
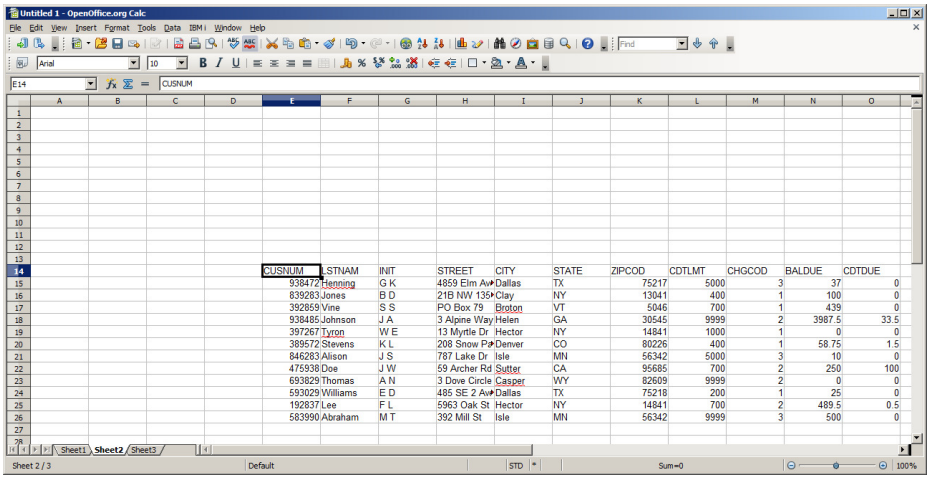
Data Transfer with Active Spreadsheet -- Usage tips



"Name" field shows the workbook it attached to

Data Transfer with Active Spreadsheet -- Usage tips





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Console

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Console

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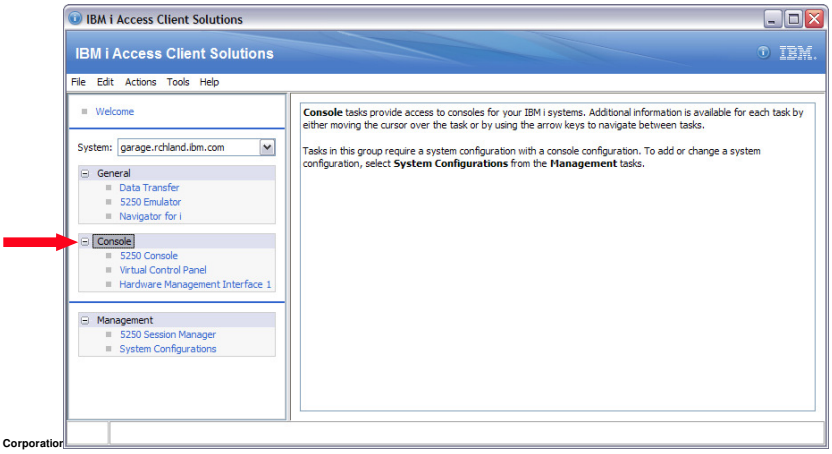
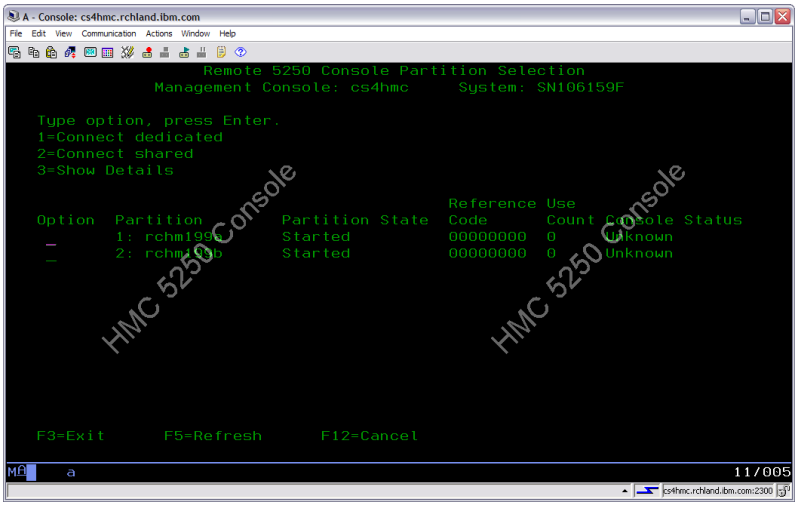
- 5250 Console – Opens a interactive console to the current System
- Virtual Control Panel – Opens a Virtual Control Panel
- Hardware Management Interface 1 – Opens a web browser to the management console specified for the current System



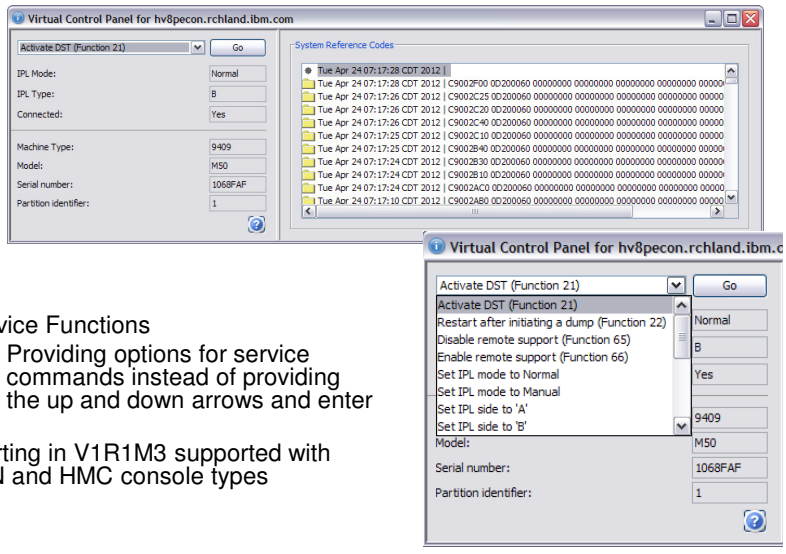
5250 Console

- 5250 HMC Console



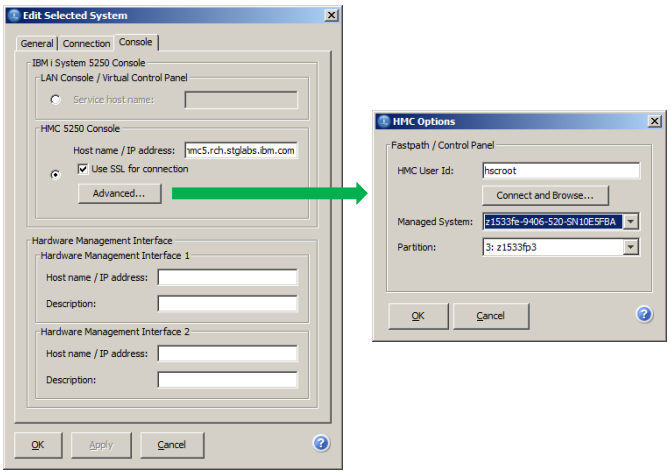
Virtual Control Panel

- Virtual Control Panel



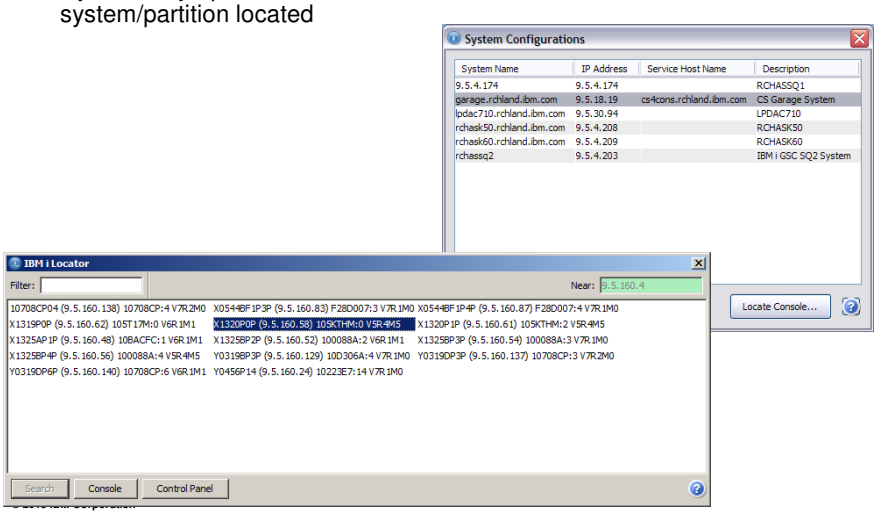
- Service Functions
  - Providing options for service commands instead of providing the up and down arrows and enter
- Starting in V1R1M3 supported with LAN and HMC console types

Console Configuration



Locate Console

- Listens on your LAN for discovery data packets from systems with LAN Console configured
- Dynamically open a 5250 Console or Virtual Control Panel to the system/partition located



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HMC Probe Utility

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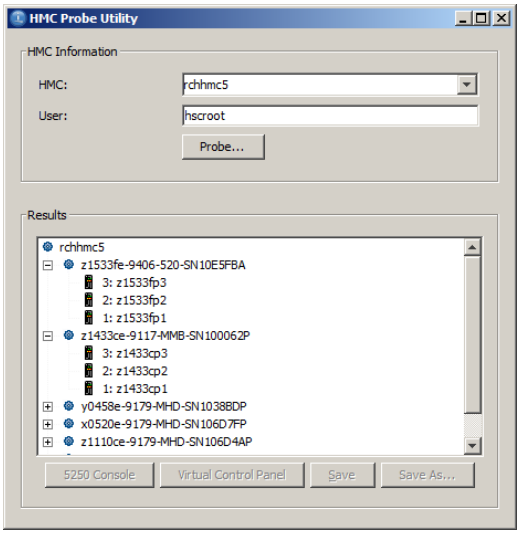
- Probes an HMC for managed systems & partitions



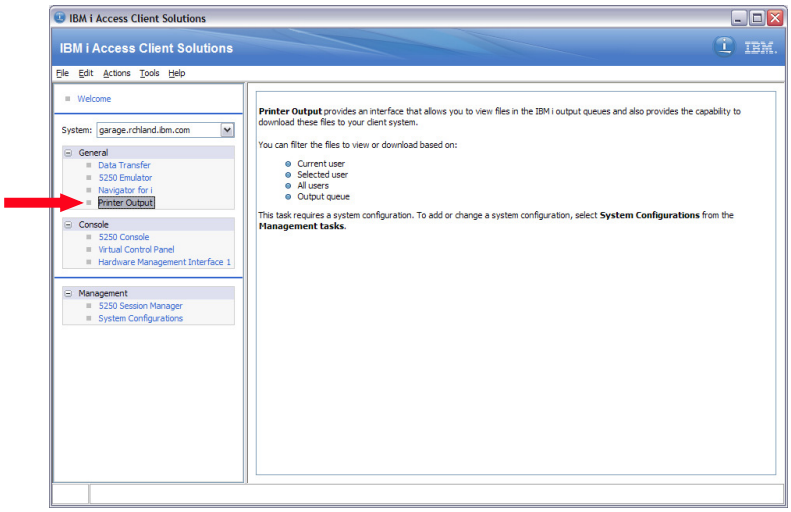
Power Systems

IBM

Printer Output

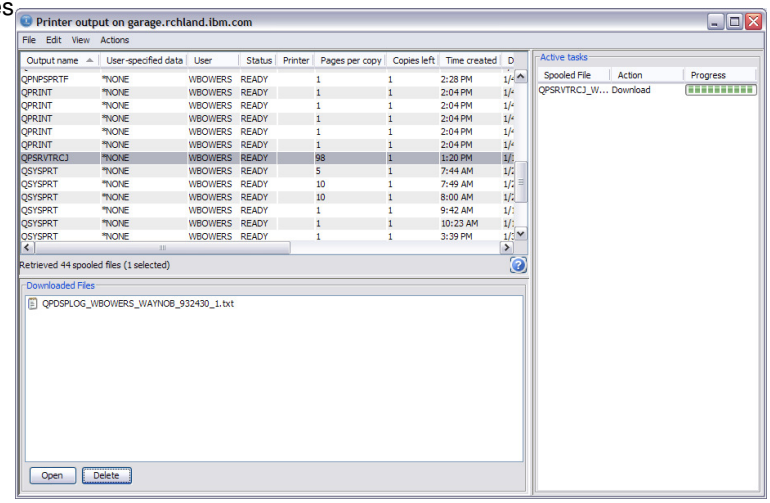
Printer Output

- Lists and allows interaction with the printer output on the IBM i OS System



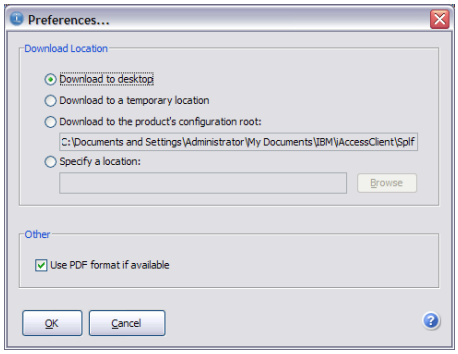
Printer Output

- Printer Output user interface
  - Allows the user to view, and download spooled files



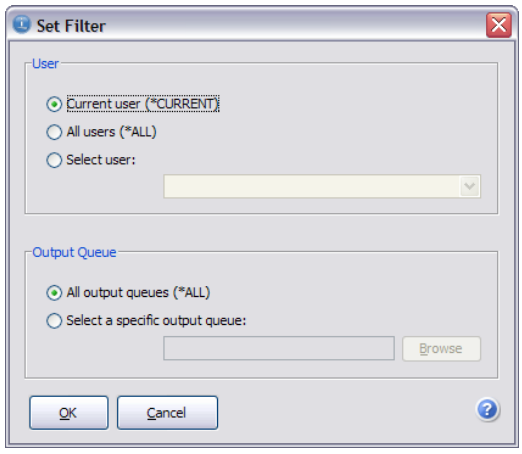
Printer Output

- Edit -> Preferences
  - Download location
    - Where the downloaded file will be stored on the local workstation
  - Other
    - Determines if the printed output should be downloaded in PDF format if available
      - Requires IBM i OS r7.1 or later with the IBM Transform Services for i (5770TS1) product installed
      - If this is unchecked a .txt file will be generated



Printer Output

- View -> Set Filter
  - Allows the user to specify how the list of printed output is generated.
  - Either the User, Output Queue or both filters may be modified.



Power Systems

IBM

Shell Commands

Power Systems

Shell Commands

IBM

- IBM i Access Client Solutions provides several shell or command line utilities that can be used outside of the graphical user interfaces
- Basic syntax is (all on the same line)

```
acslaunch_win-32.exe /plugin=<name>
  [/system=<system>] [/options]
```

  - Or

```
java -jar acsbundle.jar /plugin=<name>
      [/system=<system>] [/options]
```

- The "/system" parm is only valid for commands pointed at a specific system

Shell Commands

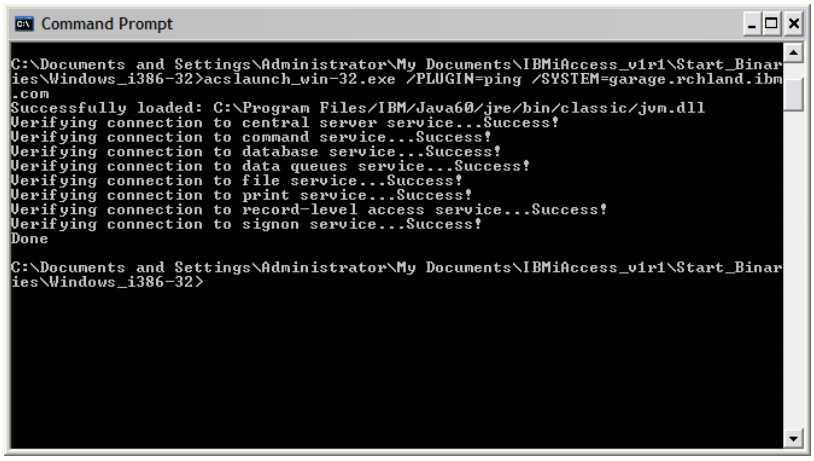
- Examples include:
  - –Backup
    - Saves the client configuration to file
  - –Restore
    - Restores the client configuration from file
  - –Cfg
    - Creates system configuration
  - –Dump
    - Requests all running client processes to write service information
  - –Medic
    - Packages the existing logs and dumps
  - –Log
    - Sets the client logging level

Shell Commands

- And…
  - –Logon
    - Manages user id and password caching
  - –Props
    - Opens the Edit -> Preferences panel
  - –Maint
    - Maintenance options
  - –Ping
    - IBM i Access Client Solutions connection verification
  - –Sm
    - Opens 5250 session manager
  - –5250
    - Opens 5250 display session
  - –DTGui
    - Opens Data Transfer interaction panel

Shell Commands

- Shell Command Ping example



Break

Power Systems

IBM

Deployment

Power Systems

Deployment

IBM

- IBM i Access Client Solutions is not installed to the client operating system, it is deployed.
  - There is no Windows Based Installer (setup.exe) installation program for the core of the product.
- Access Client Solutions Deployment
  - The deployment involves the client bundle being placed wherever it is desired to be executed from, and determining where the product settings are going to be stored.
- Client Bundle
  - Contains the Java executable Jar, properties file, platform specific start executables and javascript start samples, product documentation, and licensing notices.
  - All that is required to be deployed is the Java executable Jar
  - The rest is optional
- No JRE distributed
  - IBM i Access Client Solutions does not deploy a specific JRE
  - Relies on a Java 1.6 or higher JRE to be accessible on the client OS

Deployment: initial questions

- When thinking about deployment, ask yourself where you want to put:

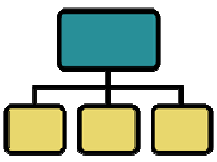
1. the product image? (jar file)

2. the user's settings? (system configurations, 5250 sessions, etc.)

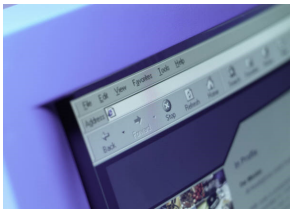
Deployment: What might be our options?

Computer (local)

USB Thumb Drive



Network Share



Intranet (http:// URL)

Where can I put the image (jar file)?

Any filesystem (local, USB drive, network)
or
Intranet link (http:// or https://)

NOTE: A Java Runtime Environment (JRE) will also need to be accessible

Where can I put the user's settings?

Any filesystem (local, USB drive, network)

How do I place the product image?

- For filesystem locations, simply copy the file(s) and give users access
- For http:// or https://, you have two options:
  - Static-serving the file from your web server

    Simply have your web server “serve” the file via a static link or some similar mechanism

    (requires the user to have file association for .jar, and for that association to launch a Java 6 JRE)
  - Using Java WebStart technology

    Only requires the user to have some Java installed (does not have to be Java 6)

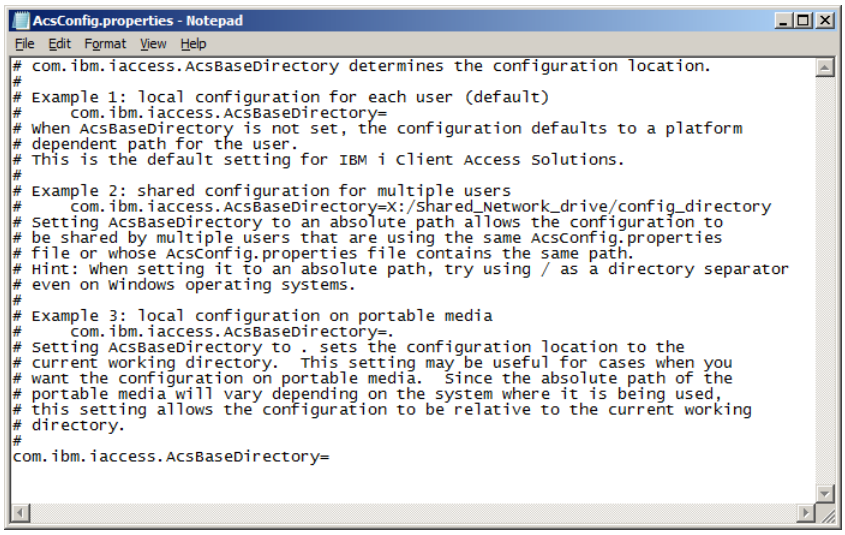
How do I control the User Settings?

AcsConfig.properties

- This can be configured in the product configuration file, named “AcsConfig.properties”
- AcsConfig.properties is simply a list of configuration properties and values.
- These properties may also be specified on the command line
  -D<property>=<value>
- One such property is

  com.ibm.iaccess.AcsBaseDirectory

AcsConfig.properties (cont.)



AcsConfig.properties (cont.)

- The following locations are searched for the AcsConfig.properties file:
  1. In the classpath (that is, inside acsbundle.jar)

     Sample, default version included with the product
  2. In the same directory as acsbundle.jar

     Sample, default version included with the product
  3. By interrogating the “ibmi.acs.configuration” Java System property (the property’s value is assumed to be the properties file). One would set this property on the command line. Example:

     ```
     acslaunch_win-32.exe –
     Dibmi.acs.configuration=M:\AcsConfig.properties
     ```

     – IMPORTANT NOTE!! When the configuration file exists in multiple locations, the last one wins

com.ibm.iaccess.AcsBaseDirectory

- The value of this property determines:
  - The location of user settings
  - The location of service logs/dumps/etc
  - The default directory used by the 5250 session manager (this can be configured separately if desired)
- The value is expected, therefore, to be a directory name on a filesystem. It can be
  - Left blank (which leaves behavior at the default location)
  - The path of a hardcoded directory name (fully-qualified is highly recommended)
  - A constructed path using special keywords (next slide)

AcsBaseDirectory : Special keywords

- {USER} : would be the current username (valid anywhere in the path)
- {PRODUCTDIR} : would mean the product's location in the file system (valid only at the beginning)
- {TEMPDIR} : would be the temporary directory (valid only at the beginning)
- {ROOT} : the root of the file system where the product is located (valid only at the beginning)
- {CWD} : the current working directory (valid only at the beginning)
- {HOME} : the user's home directory (valid only at the beginning)
- {DEFAULT} : the default place the product normally puts its settings (valid only at the beginning)

Power Systems IBM

POP QUIZ

You have deployed the ACS jar file on a network share. Most users map this share as "M:" (Linux users have mounted it as /mnt/shr1).

You want user settings to also be stored on the network share. You also want each user's settings to be saved in its own location.

Is this even possible?

a) Yes
b) No

Power Systems IBM

POP QUIZ

You have deployed the ACS jar file on a network share. Most users map this share as "M:" (Linux users have mounted it as /mnt/shr1).

You want user settings to also be stored on the network share. You also want each user's settings to be saved in its own location.

Is this even possible?

a) Yes

POP QUIZ

You have deployed the ACS jar file on a network share. Most users map this share as "M:" (Linux users have mounted it as /mnt/shr1).

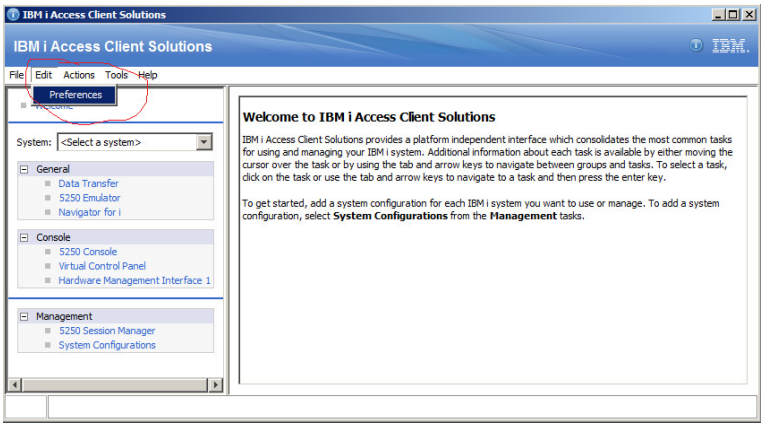
You want user settings to also be stored on the network share. You also want each user's settings to be saved in its own location.

What would be an acceptable value for com.ibm.iaccess.AcsBaseDirectory?

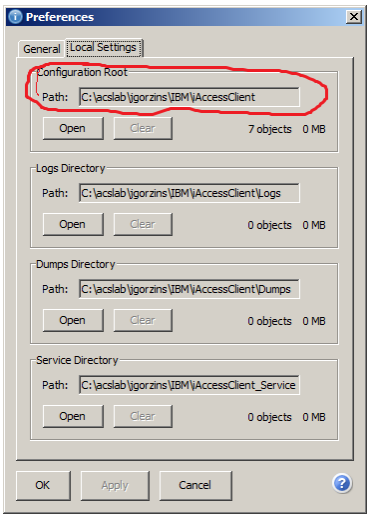
d) {ROOT}/ACS/{USER}

f) {PRODUCTDIR}/ACS/{USER}

Verifying location



Verifying location



Cliff's notes: Common configurations

Default ("My Documents" on Windows, home dir otherwise)

```
com.ibm.iaccess.AcsBaseDirectory=
```

Network share

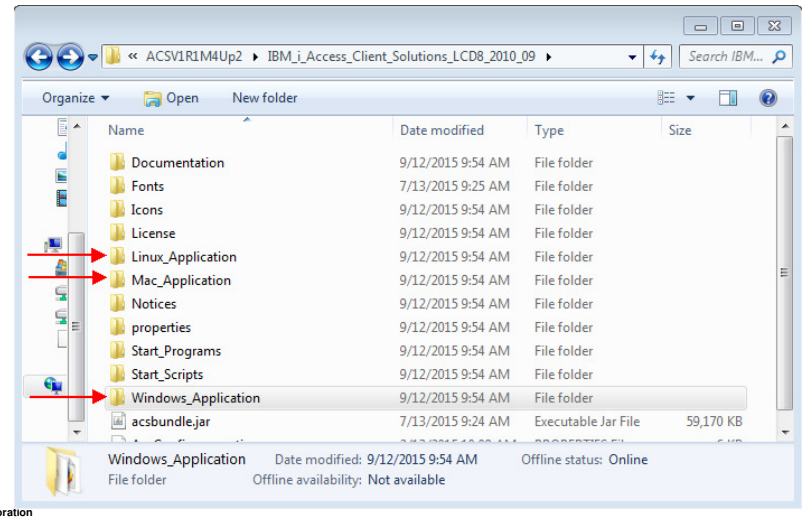
```
com.ibm.iaccess.AcsBaseDirectory={ROOT}/config_directory/{USER}
com.ibm.iaccess.AcsBaseDirectory={PRODUCTDIR}/config_directory/{USER}
```

Thumb drive!

```
com.ibm.iaccess.AcsBaseDirectory={PRODUCTDIR}/config_directory
```

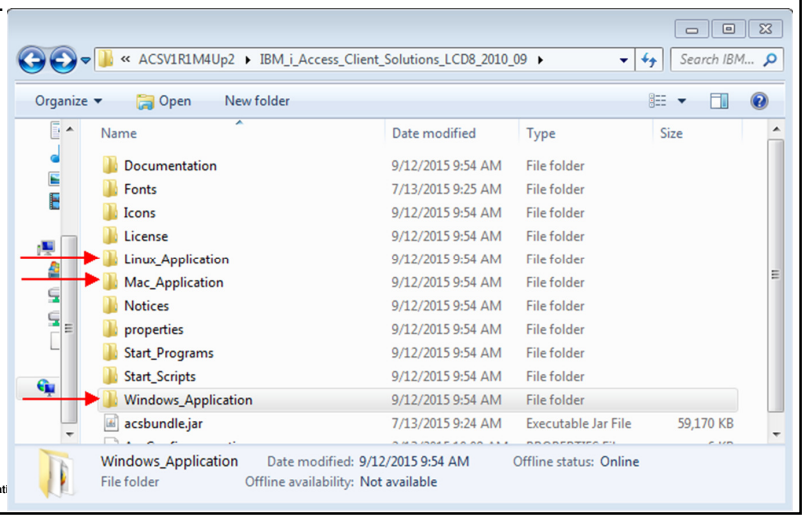
Provided Deployment/Install Scripts

- IBM i Access Client Solutions v1r1m4 provided Operating System specific Application deployment scripts to make deployment easier for an user



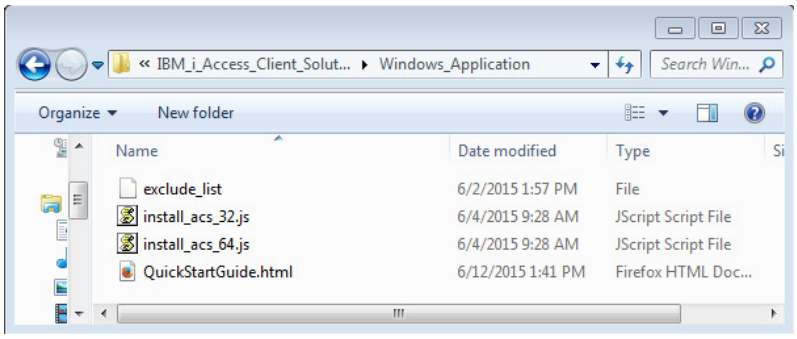
Provided Deployment/Install Scripts

- Provided Javascript will copy the IBM i Access Client Solutions deployment to a specific location that makes sense for the Operating System being used.



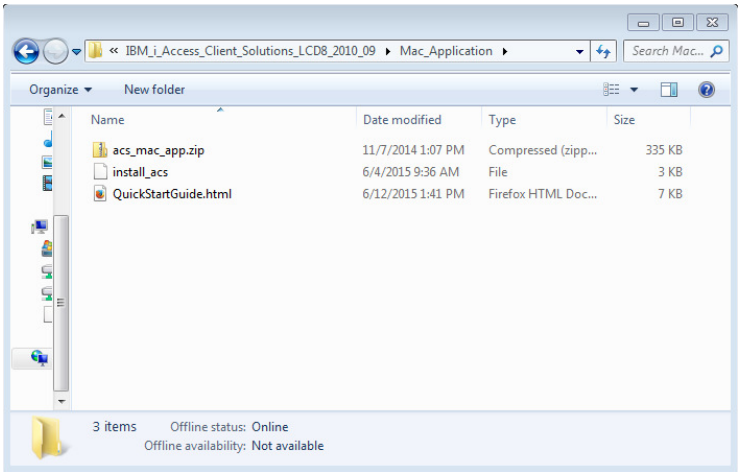
Provided Deployment/Install Scripts

- Provided install_acs Javascript on Windows will copy the IBM i Access Client Solutions deployment to C:\Users\<WindowsUser>\IBM\ClientSolutions and will create shortcuts on the Desktop for the Main User Interface and 5250 Session Manager. It will also create file associations for the .hod, .bchx, .dttx & .dtfx if they haven't already been created.



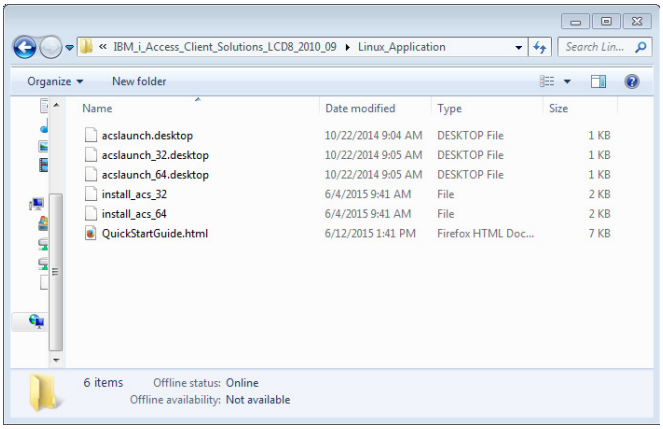
Provided Deployment/Install Scripts

- Provided install_acs Javascript on Mac will copy the IBM i Access Client Solutions deployment to the Mac Applications folder.



Provided Deployment/Install Scripts

- Provided install_acs Javascript on Linux will copy the IBM i Access Client Solutions deployment to the locations of
  - /usr/share/applications/
  - /opt/ibm/iAccessClientSolutions/



Provided Deployment/Install Scripts

- IBM i Access Client Solutions v1r1m4 Update 3 (October 2015) provided an update to these deployment scripts for Windows to allow an Administrator to control some of the deployment behavior and how the client behaves for the user.
  - An Administrator runs the script passing a parameter of /AdminConfig
    - The Administrator is then presented with a series of questions about the deployment, like if ACS should be ran locally or remotely, what functions will the user have, and if desktop icons should be created.
  - The IBM i Access Client Solutions product files are placed in a central location
  - Users run the deployment script and IBM i Access Client Solutions is deployed to their Windows workstation.
- More Details
  - https://www.ibm.com/developerworks/ibmi/library/i-ibmi-access-client-solutions-customization-trs/
  - http://www-01.ibm.com/support/docview.wss?uid=nas8N1020967

Power Systems

IBM

Database Enhancements

Power Systems

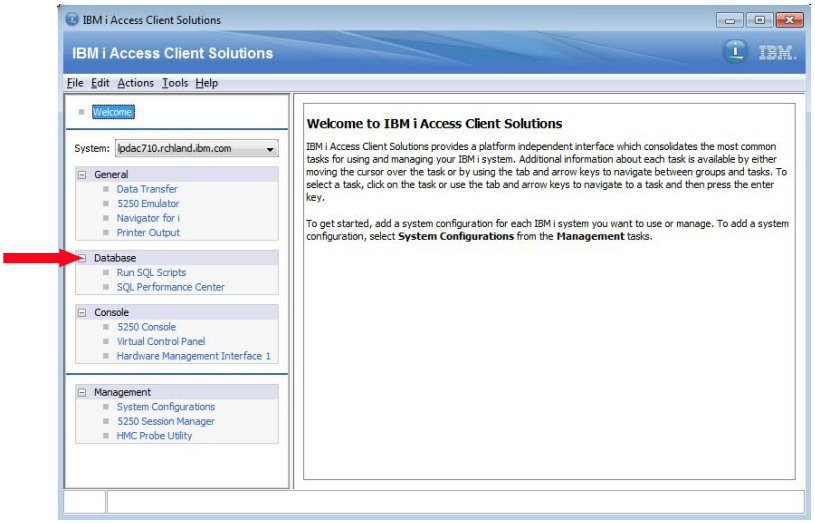
Database Enhancements

IBM

- IBM i Access Client Solutions v1r1m5 released December 2015 added a section of Database functions
  - Run SQL Scripts
  - SQL Performance Center
  - Closing the gap to Access for Windows System i Navigator
    - Visual Explain expected around July 2016

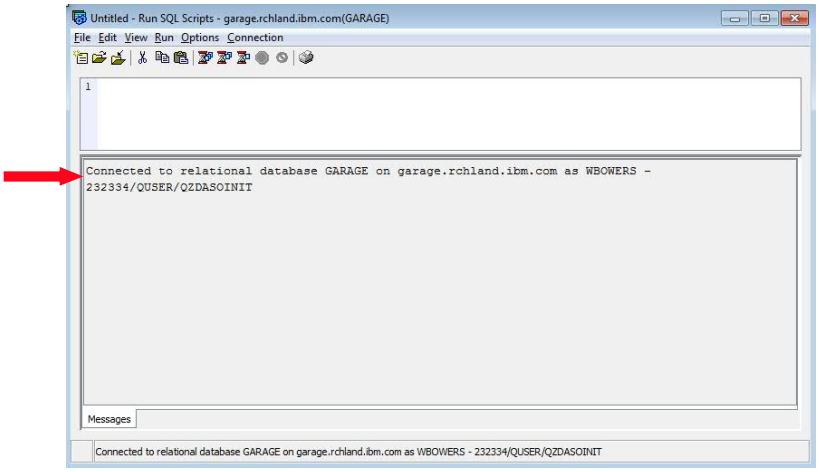
Database Enhancements

- New Database Section



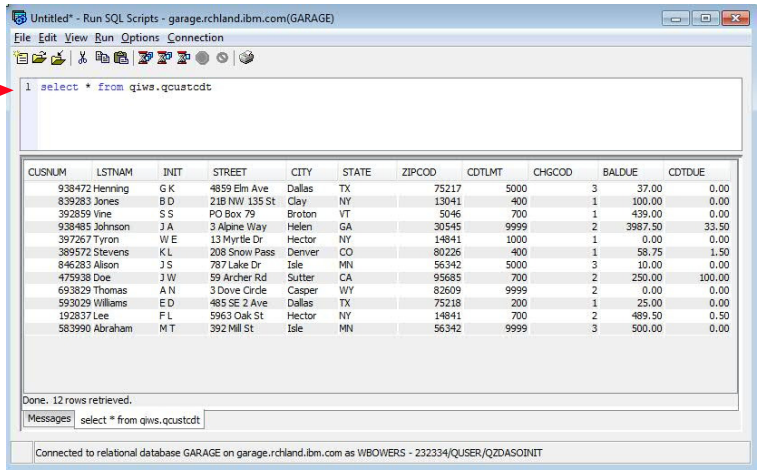
Database Enhancements

- Run SQL Scripts



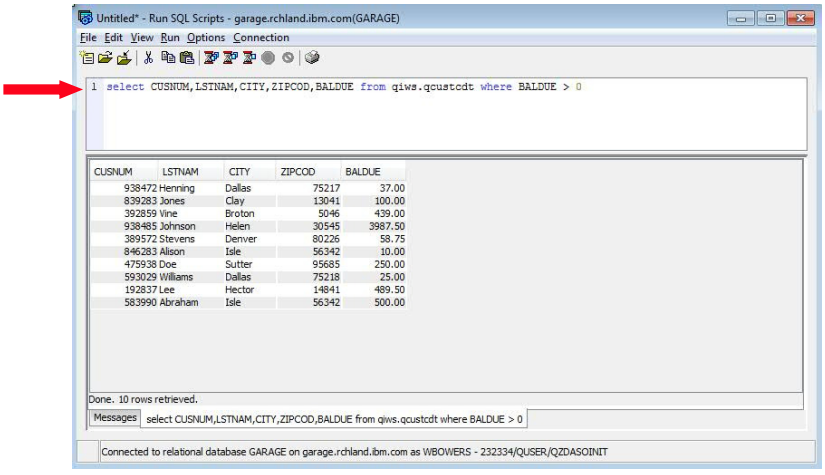
Database Enhancements

- Run SQL Scripts



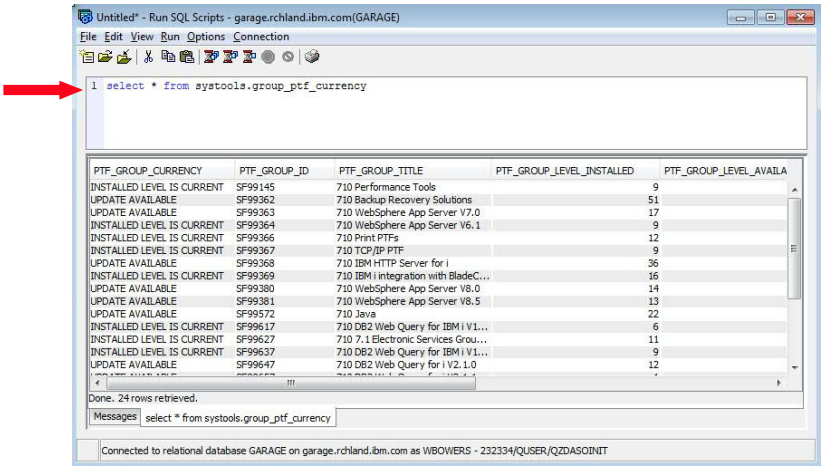
Database Enhancements

- Run SQL Scripts



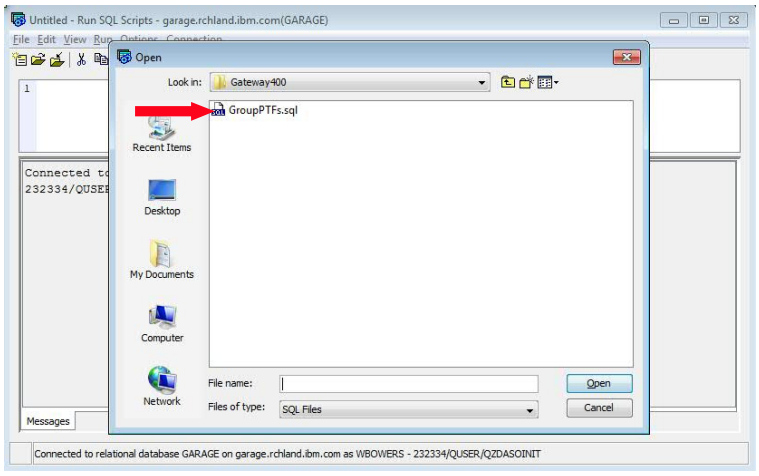
Database Enhancements

- Run SQL Scripts



Database Enhancements

- Run SQL Scripts

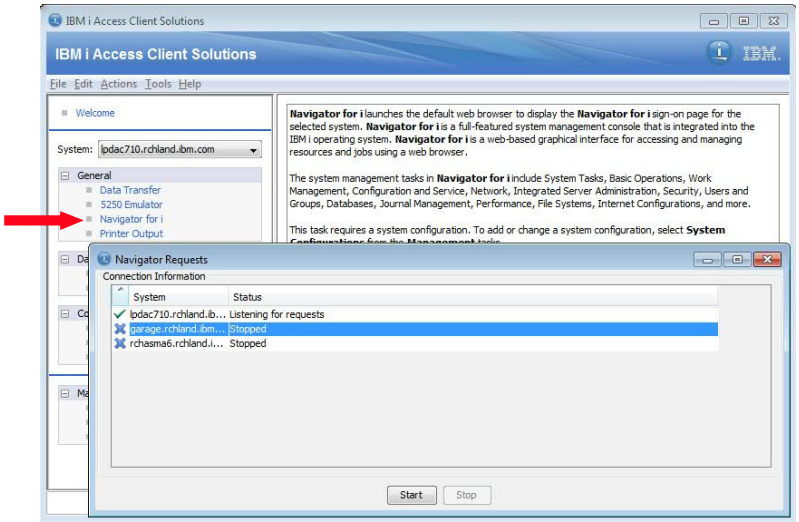


Database Enhancements

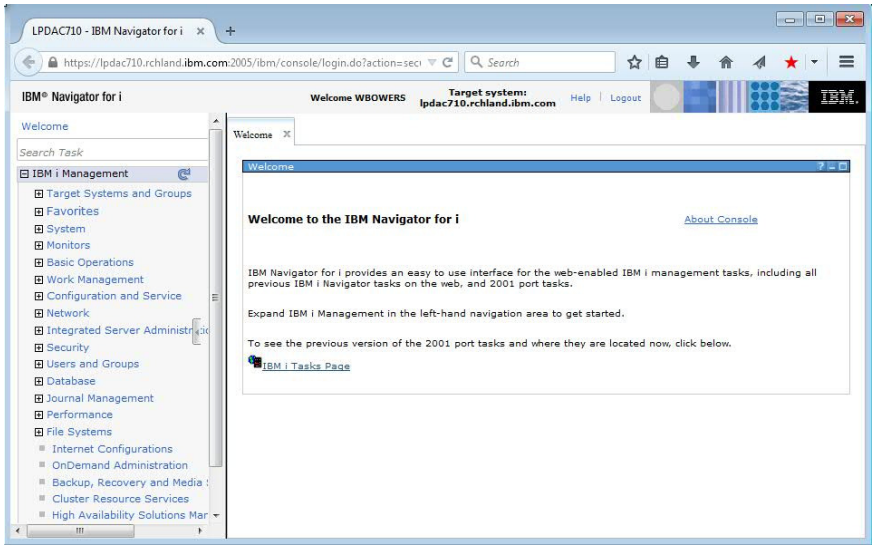
- Run SQL Scripts – Integration with IBM Navigator for I
  - IBM i Access Client Solutions v1r1m5 in conjunction with 2016 HTTP Group PTF Levels
  - A connection link is created between IBM Navigator for I
    - IBM i ACS authenticated/cached credentials are used to authenticate with IBM Navigator for i
      - No Kerberos integration
    - Allows IBM Navigator for i to send requests to IBM i Access Client Solutions

Database Enhancements

- Run SQL Scripts – Integration with IBM Navigator for i

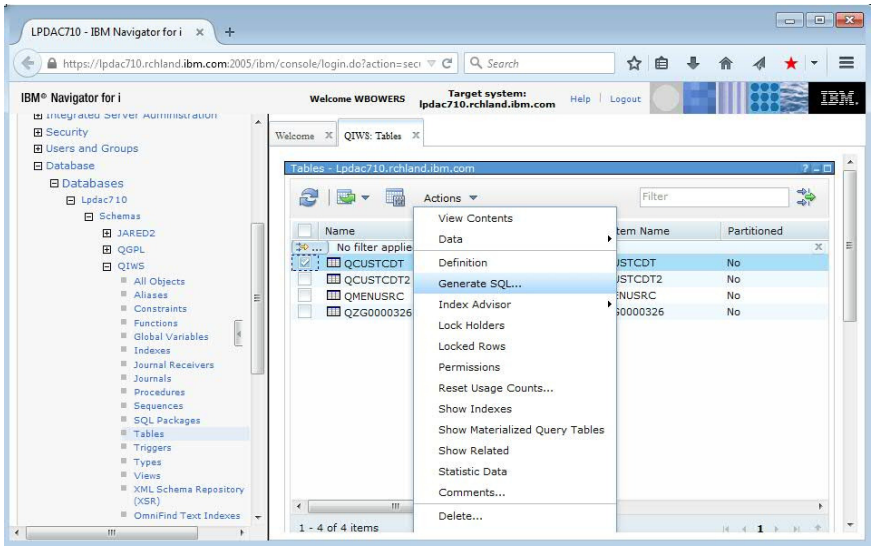


Database Enhancements



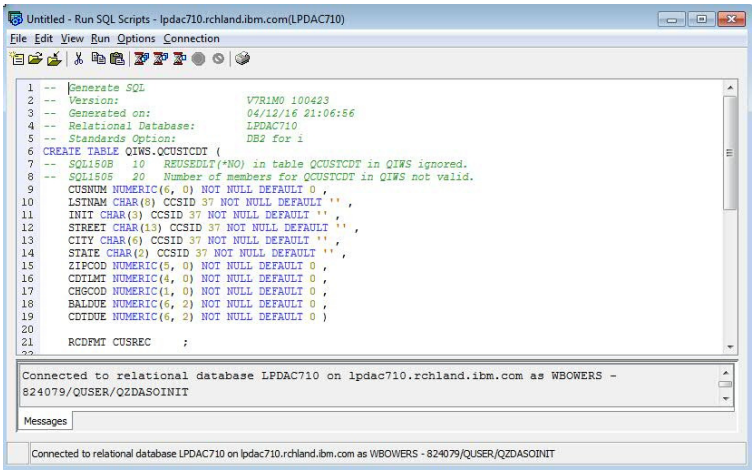
Database Enhancements

- Run SQL Scripts – Integration with IBM Navigator for i



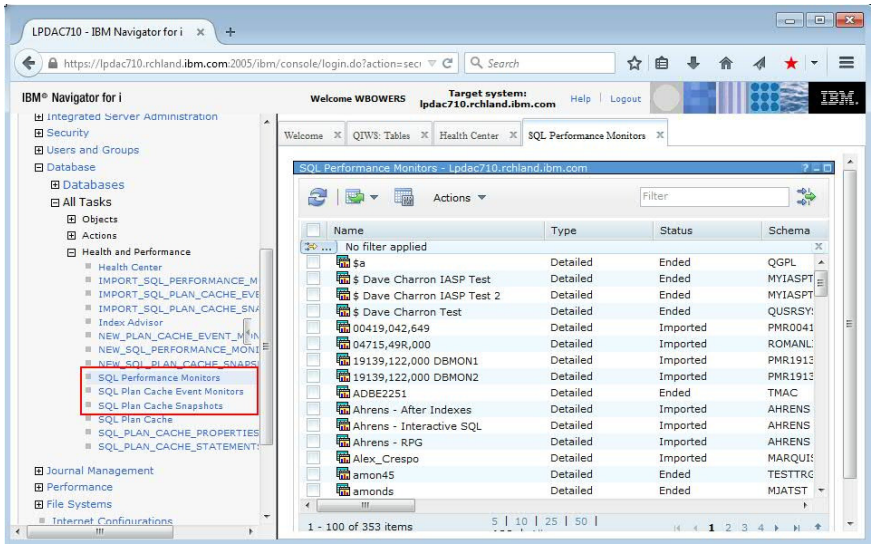
Database Enhancements

- Run SQL Scripts – Integration with IBM Navigator for i



Database Enhancements

- SQL Performance Center

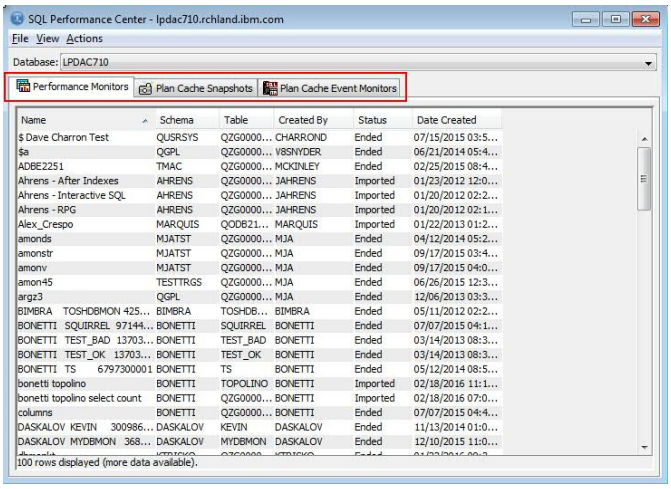


Power Systems

Database Enhancements

IBM

- SQL Performance Center



Power Systems

IBM

Demo / Questions

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Special notices (cont.)

Notes on benchmarks and values

The IBM benchmarks results shown herein were derived using particular, well configured, development-level and generally-available computer systems. Buyers should consult other sources of information to evaluate the performance of systems they are considering buying and should consider conducting application oriented testing. For additional information about the benchmarks, values and systems tested, contact your local IBM office or IBM authorized reseller or access the Web site of the benchmark consortium or benchmark vendor.

IBM benchmark results can be found in the IBM Power Systems Performance Report at http://www.ibm.com/systems/p/hardware/system_perf.html.

All performance measurements were made with AIX or AIX 5L operating systems unless otherwise indicated to have used Linux. For new and upgraded systems, AIX Version 4.3, AIX 5L or AIX 6 were used. All other systems used previous versions of AIX. The SPEC CPU2006, SPEC2000, LINPACK, and Technical Computing benchmarks were compiled using IBM's high performance C, C++, and FORTRAN compilers for AIX 5L and Linux. For new and upgraded systems, the latest versions of these compilers were used: XL C Enterprise Edition V7.0 for AIX, XL C/C++ Enterprise Edition V7.0 for AIX, XL FORTRAN Enterprise Edition V9.1 for AIX, XL C/C++ Advanced Edition V7.0 for Linux, and XL FORTRAN Advanced Edition V9.1 for Linux. The SPEC CPU95 (retired in 2000) tests used preprocessors, KAP 3.2 for FORTRAN and KAP/C 1.4.2 from Kuck & Associates and VAST-2 v4.01X8 from Pacific-Sierra Research. The preprocessors were purchased separately from these vendors. Other software packages like IBM ESSL for AIX, MASS for AIX and Kazushige Goto's BLAS Library for Linux were also used in some benchmarks.

For a definition/explanation of each benchmark and the full list of detailed results, visit the Web site of the benchmark consortium or benchmark vendor.

TPC	http://www.tpc.org
SPEC	http://www.spec.org
LINPACK	http://www.netlib.org/benchmark/performance.pdf
Pro/E	http://www.proe.com
GPC	http://www.spec.org/gpc
NotesBench	http://www.notesbench.org
VolanoMark	http://www.volano.com
STREAM	http://www.cs.virginia.edu/stream/
SAP	http://www.sap.com/benchmark/
Oracle Applications	http://www.oracle.com/apps_benchmark/
PeopleSoft - To get information on PeopleSoft benchmarks, contact PeopleSoft directly	
Siebel	http://www.siebel.com/crm/performance_benchmark/index.shtm
Baan	http://www.ssaglobal.com
Microsoft Exchange	http://www.microsoft.com/exchange/evaluation/performance/default.asp
Veritest	http://www.veritest.com/clients/reports
Fluent	http://www.fluent.com/software/fluent/index.htm
TOP500 Supercomputers	http://www.top500.org/
Ideas International	http://www.ideasinternational.com/benchmark/bench.html
Storage Performance Council	http://www.storageperformance.org/results

Revised January 15, 2008

Notes on HPC benchmarks and values

The IBM benchmarks results shown herein were derived using particular, well configured, development-level and generally-available computer systems. Buyers should consult other sources of information to evaluate the performance of systems they are considering buying and should consider conducting application oriented testing. For additional information about the benchmarks, values and systems tested, contact your local IBM office or IBM authorized reseller or access the Web site of the benchmark consortium or benchmark vendor.

IBM benchmark results can be found in the IBM Power Systems Performance Report at http://www.ibm.com/systems/p/hardware/system_perf.html.

All performance measurements were made with AIX or AIX 5L operating systems unless otherwise indicated to have used Linux. For new and upgraded systems, AIX Version 4.3 or AIX 5L were used. All other systems used previous versions of AIX. The SPEC CPU2000, LINPACK, and Technical Computing benchmarks were compiled using IBM's high performance C, C++, and FORTRAN compilers for AIX 5L and Linux. For new and upgraded systems, the latest versions of these compilers were used: XL C Enterprise Edition V7.0 for AIX, XL C/C++ Enterprise Edition V7.0 for AIX, XL FORTRAN Enterprise Edition V9.1 for AIX, XL C/C++ Advanced Edition V7.0 for Linux, and XL FORTRAN Advanced Edition V9.1 for Linux. The SPEC CPU95 (retired in 2000) tests used preprocessors, KAP 3.2 for FORTRAN and KAP/C 1.4.2 from Kuck & Associates and VAST-2 v4.01X8 from Pacific-Sierra Research. The preprocessors were purchased separately from these vendors. Other software packages like IBM ESSL for AIX, MASS for AIX and Kazushige Goto's BLAS Library for Linux were also used in some benchmarks.

For a definition/explanation of each benchmark and the full list of detailed results, visit the Web site of the benchmark consortium or benchmark vendor.

SPEC	http://www.spec.org
LINPACK	http://www.netlib.org/benchmark/performance.pdf
Pro/E	http://www.proe.com
GPC	http://www.spec.org/gpc
STREAM	http://www.cs.virginia.edu/stream/
Veritest	http://www.veritest.com/clients/reports
Fluent	http://www.fluent.com/software/fluent/index.htm
TOP500 Supercomputers	http://www.top500.org/
AMBER	http://amber.scripps.edu/
FLUENT	http://www.fluent.com/software/fluent/fl5bench/index.htm
GAMESS	http://www.msg.chem.iastate.edu/gamess
GAUSSIAN	http://www.gaussian.com
ABAQUS	http://www.abaqus.com/support/sup_tech_notes64.html select Abaqus v6.4 Performance Data
ANSYS	http://www.ansys.com/services/hardware_support/index.htm select "Hardware Support Database", then benchmarks.
ECLIPSE	http://www.sis.slb.com/content/software/simulation/index.asp?seg=geoquest&
MM5	http://www.mmm.ucar.edu/mm5/
MSC.NASTRAN	http://www.mscsoftware.com/support/prod%5Fsupport/nastran/performance/v04_sngl.cfm
STAR-CD	www.cd-adapco.com/products/STAR-CD/performance/320/index/html
NAMD	http://www.ks.uiuc.edu/Research/namd
HMMER	**http://hmmer.janelia.org/** http://powerdev.osuosl.org/project/hmmerAltivecGen2mod

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Notes on performance estimates

- **rPerf for AIX**
- **rPerf (Relative Performance) is an estimate of commercial processing performance relative to other IBM UNIX systems. It is derived from an IBM analytical model which uses characteristics from IBM internal workloads, TPC and SPEC benchmarks. The rPerf model is not intended to represent any specific public benchmark results and should not be reasonably used in that way. The model simulates some of the system operations such as CPU, cache and memory. However, the model does not simulate disk or network I/O operations.**
- **rPerf estimates are calculated based on systems with the latest levels of AIX and other pertinent software at the time of system announcement. Actual performance will vary based on application and configuration specifics. The IBM eServer pSeries 640 is the baseline reference system and has a value of 1.0. Although rPerf may be used to approximate relative IBM UNIX commercial processing performance, actual system performance may vary and is dependent upon many factors including system hardware configuration and software design and configuration. Variations in incremental system performance may be observed in commercial workloads due to changes in the underlying system architecture.**
- **All performance estimates are provided "AS IS" and no warranties or guarantees are expressed or implied by IBM. Buyers should consult other sources of information, including system benchmarks, and application sizing guides to evaluate the performance of a system they are considering buying. For additional information about rPerf, contact your local IBM office or IBM authorized reseller.**
- **==========**
- **CPW for IBM i**
- **Commercial Processing Workload (CPW) is a relative measure of performance of processors running the IBM i operating system. Performance in customer environments may vary. The value is based on maximum configurations. More performance information is available in the Performance Capabilities Reference at: www.ibm.com/systems/i/solutions/perfmgmt/resource.html**

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