

IBM i Access for Web including 5250 Browser Access

Session #409136

Wayne Bowers
Software Engineer
wbowers@us.ibm.com



Monday

8:00am	S. China Sea	OPEN LAB: Test Drive IBM i Access for Web OPEN LAB: Meet the New IBM i Access	420063 580085
9:30am	S. China Sea	OPEN LAB: Test Drive IBM i Access for Web OPEN LAB: Meet the New IBM i Access	420063 580085
2:00pm	Pacifica Ballroom 10	The Next Generation of IBM i Access	580083
5:00pm	Pacifica Ballroom 10	IBM i Access for Web Including 5250 Browser Access	409136

Tuesday

8:00am	Pacifica Ballroom 1-2	IBM i Mobile Access	590448
2:00pm	Banda Sea 1	IBM i Access 5250 Emulation	590257
3:30pm	Banda Sea 1	Not just a 'Webulator': IBM i Access for Web Leveraging Print and Database Capabilities	580029

Wednesday

8:00am	Pacifica Ballroom 11	IBM i Access Deployment and Migration	590256
5:00pm	Banda Sea 1	IBM i Access Data Transfer	590258



- **What is IBM i Access for Web?**
- **Getting started**
- **Major Functions**
 - **5250**
 - **File System**
- **Controlling Access**



What Is It?



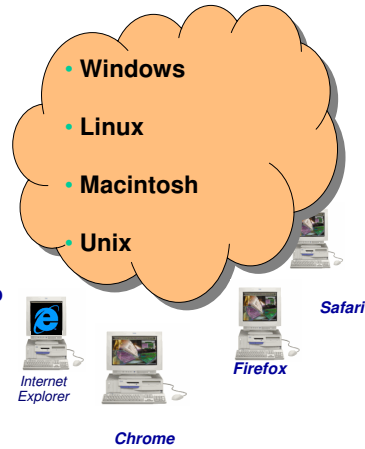
End users can leverage business information, applications, and resources across an enterprise by extending the IBM i resources to the client desktop through a web browser

Provides access to IBM i through a browser

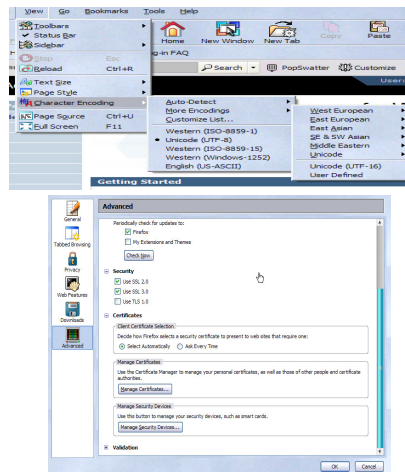
- 5250 access
- Access to database, integrated file system, printers, output queues, jobs
- Can run batch commands and send/receive messages

It has the following advantages:

- Is server based
- Requires only a browser on the client, no configuration required at desktop, no applets installed on desktop
- Uses industry standard protocols - HTTP, HTTPS and HTML



- ❖ Use any code page available in your browser
 - IBM i Access for Web translated into 38 NLVs (including DBCS)
 - See screens in preferred language
- ❖ Use any keyboard setting available in Windows
- ❖ Font Size
- ❖ Set up SSL to your browser



Packaging and Ordering



IBM i Access Family - Packaging

V7R2 5770-XW1 IBM i Access Family
IBM i Access for Windows, 5770-XE1, V7R1
IBM i Access for Web, 5770-XH2, V7R2
IBM i Access Client Solutions, 5733-XJ1, V1R1M3
<p>r6.1 and r7.1 IBM i® OS customers not wanting to upgrade their operating system to r7.2 but who want the new V7R2 IBM i Access for Web can order at no charge:</p> <p style="color: red;">Feature No. 6289 of Product No. 5761-SS1 (r6.1) or Feature No. 6289 of Product No. 5770-SS1 (r7.1)</p> <p style="color: green;">Note: Access for Web being supported at n-2 is new for release 7.2</p>

Print

- Printer output
- PDF Printer output
- Printers
- PDF Printers
- Internet Printers
- Internet Printer Shares
- Printer shares
- Output Queues
- AFP to PDF Conversion

5250

- Active Sessions
- Start 5250 Session
- Configured Sessions
- Bypass Sign-on

Files

- Browse Files
- File Shares
- Browse File Share

Scheduling of tasks

Messages

- Display Messages
- Send Messages
- Sametime
- Operator Messages
- Message Queue

Database

- Tables
 - Open Office Formats
 - Wizards supports joins
 - Chart SQL results
- My Request
- Run SQL
- Copy Data to Table
- Import Requests
 - System I Access for Windows
 - Query Manager & Query/400

Commands

- Run commands
- My commands
- Search

My Personal Folder

Jobs

- Active Jobs **(new in r7.2)**
- User Jobs
- Server Jobs

Customize

- Preferences
- Policies
- Settings
- Transfer configuration data

System **(new in r7.2)**

- Installed Products
- List Software Fixes
- System Values
- Extract IBM I data

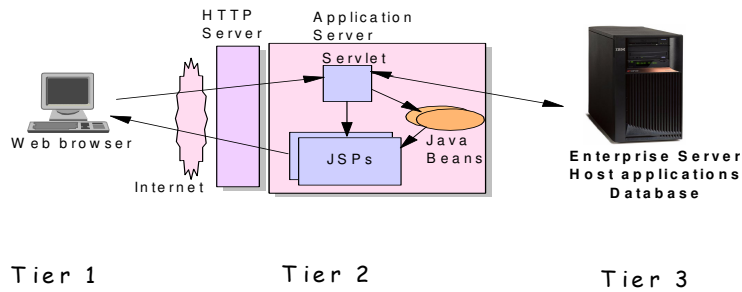
Single sign-on

- EIM (WAS authentication)
- Windows domain login (WAS SPNEGO authentication)

Getting Started



Before you start with Access for Web you must get your web application server running



11

- The IBM i Access for Web servlet code can be used with any of the following web application servers:
 - IBM i Integrated Web Application Server
 - WebSphere® Application Server V8.5, V8.0, V7.0, and V6.1 – Express for i
 - WebSphere® Application Server V8.5, V8.0, V7.0, and V6.1 – Base and Network Deployment
- The IBM i Access for Web portlet code can be used with any of the following portal servers.
 - Websphere Portal V6.1
 - Websphere Portal V7.0
 - Websphere Portal V8.0

PTFs required for latest web application server and portal support:
<http://www.ibm.com/systems/i/software/access/web/servicepacks.html>

12

- **What is the IBM i Integrated Web Application server?**
 - A web application engine much like ASF Tomcat
 - Uses fewer system resources, similar to ASF Tomcat
 - Minimal effort by an Administrator to maintain

- **How is it packaged?**
 - 5770-DG1 and 5761-DG1 IBM HTTP Server for i

- **IBM i Access for Web support**
 - V7R2 IBM i Access for Web can be installed and is supported on IBM i r7.2, r7.2 and r6.1
 - V7R1 IBM i Access for Web can be installed and is supported on IBM i R7.1 and R6.1

- **Get a copy of the IBM i Access for Web Install & Users Guide**
 - http://www.ibm.com/systems/powers/software/i/access/web_resources.html

- **Install IBM i Access for Web from your IBM i stacked media.**
 - [Install Access for Web, 57xx-XH2](#)

- **Configure and start IBM i Access for Web.**
 - [CFGACCWEB2 - Configure the IBM i Access for Web to the application server](#)

User created instance

1. Load/apply latest HTTP Server PTFs (review cover letters for any additional information)
 - V7R2 SF99713 group for product 5770-DG1
 - V7R1 SF99368 group for product 5770-DG1
 - V6R1 SF99115 group for product 5761-DG1
2. Load/apply latest Access for Web PTF
 - V7R2 SI52768 GA PTF (required for Integrated App Server 8.5)
 - V7R1 SI38412 GA PTF or later (current SI52202)
3. Start the Web Administration for i
 - STRTCPSVR SERVER(*HTTP) HTTPSVR(*ADMIN)
4. Use the Web Administration for i wizard to create an instance of the integrated Web application server and an HTTP web server.
 - http://<system_name>:2001/HTTPAdmin
 - Follow the instructions in the doc on this page: <http://www.ibm.com/systems/i/software/access/web/doc.html>
 (6.1 Link: "Configuring an Integrated Web Application Server Instance")
5. Configure Access for Web
 - QSH
 - cd /QIBM/ProdData/Access/Web2/install
 - cfgaccweb2 -appsvrtype *INTAPPSVR -instance <instance_name>
 - CL CMD: QIWA2/CFGACCWEB2 APPSVRTYPE(*INTAPPSVR) INSTANCE(<instance_name>)
6. Start integrated Web application server and HTTP web server using the Web Administration for i interface.
7. Open a browser to System i Access for Web using previously configured HTTP port
 - http://<system_name>:<port>/webaccess/iWAMain

**IBM i Access for Windows or
IBM i Access Client Solutions**

- Port 449 for Port Mapper
- Port 8476 (9476) for Sign-on
- Port 8470 (9470) for Central
- Port 8472 (9472) for Data Queues
- Port 8471 (9471) for Database
- Port 8475 (9475) for Remote Commands
- Port 8473 (9493) for Print
- Port 446 (448) for DDM
- Port 23 (992) for Telnet
- Port 137, 138 for NetServer

**IBM i Access for Web
(57xx-XH2)**

- Port 80 (or any other port) for HTTP Server
- Port 443 (or any other port) for HTTPS Server

http://www.ibm.com/systems/power/software/i/access/web_resources.html

Documentation



7.1 IBM i Access for Web is supported on IBM i 7.1 and 6.1

- [Connecting to your system: IBM i Access for Web \(Information Center\) \(PDF, 637KB\)](#)
- [IBM i Access for Web WebSphere Application Server Single Sign-on Using SPNEGO \(PDF, 270KB\)](#)
- [Configuring WebSphere Application Server - Express V8.5 for IBM i \(PDF, 192KB\)](#)
- [Configuring WebSphere Application Server - Express V8.5 for IBM i with Single sign-on \(PDF, 144KB\)](#)
- [Configuring WebSphere Application Server - Express V8.0 for IBM i \(PDF, 191KB\)](#)
- [Configuring WebSphere Application Server - Express V8.0 for IBM i with Single sign-on \(PDF, 143KB\)](#)
- [Configuring IBM WebSphere Portal V8.0 \(PDF, 141KB\)](#)
- [Configuring IBM WebSphere Portal V7.0 \(PDF, 103KB\)](#)
- [Automating Tasks - HTTPS/SSL \(PDF, 43KB\)](#)
- [Configuring Enterprise Identity Mapping \(PDF, 161KB\)](#)
- [URL interfaces to IBM i Access for Web \(PDF, 828KB\)](#)



6.1 System i Access for Web is supported on IBM i 6.1 and V5R4 i5/OS.

- [Connecting to System i: System i Access for Web \(Information Center\) \(PDF, 578KB\)](#)
- [IBM i Access for Web WebSphere Application Server Single Sign-on Using SPNEGO \(PDF, 270KB\)](#)
- [Automating Tasks - HTTPS/SSL \(PDF, 43KB\)](#)
- [Configuring an Integrated Web Application Server Instance \(PDF, 144KB\)](#)
- [Configuring IBM WebSphere Portal V7.0 \(PDF, 103KB\)](#)
- [Configuring IBM WebSphere Portal V6.1 \(PDF, 94KB\)](#)
- [Configuring WebSphere Application Server - Express V7.0 for IBM i \(PDF, 123KB\)](#)

17

- **Use 'out of the box'**
 - Would look like a Complete install of Access for Windows
- **Use 'out of the box' with some functions removed for All Users**
 - Set some policies to limit what functions are accessible to your users, and give them the URL address to IBM i Access for Web
- **Use 'out of the box', but set up predefined functions**
 - You can set up preconfigured 5250 sessions that users (or groups of users) can run, can create predefined database requests for users to run, set up commands users can run, etc.
- **Create your own 'window' to your system through Access for Web**
 - Add company banners to screens, set up 'click and link' tasks that users can perform, set up macros to simplify user access.

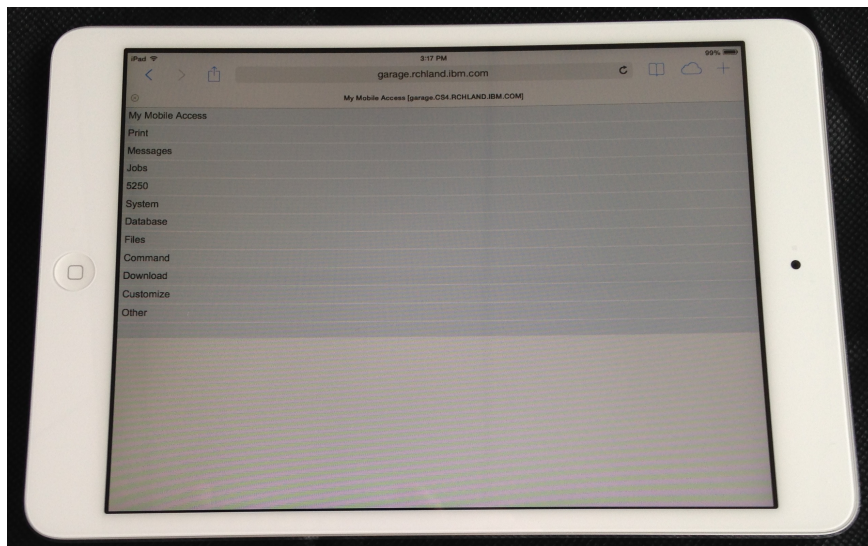
18

- We have been hearing the need for an IBM i OS management and usage tool that is optimized for a mobile device environment.
 - The IBM Navigator for i interface is optimized for full screen desktop web browsers
 - IBM i Access for Web is also optimized for full screen desktop browsers and has lacked some key management views
 - The last reduced screen footprint solution that IBM i OS had was IBM i Access for Wireless, or Management Central Pervasive
- On April 28th, 2014, IBM announced the Technology Preview of the IBM i Mobile Access solution to begin addressing the need in this environment.

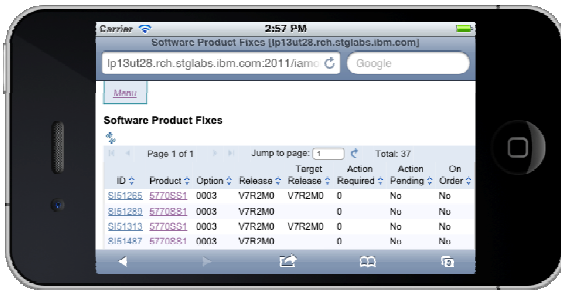


19

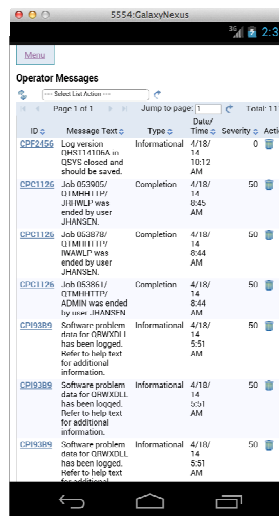
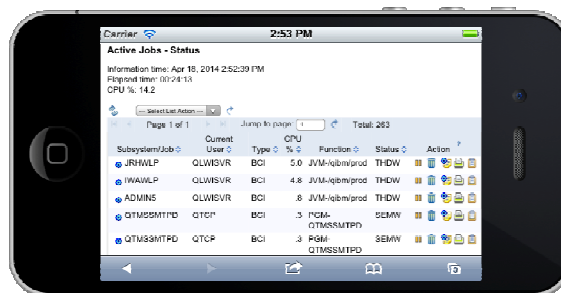
- My Mobile Access home page running on an iPad Mini



20



iPhone 4



Galaxy Nexus

- This IBM i Mobile Access Solution is a web browser based solution that has been optimized for reduced screen footprint environments.
- Easy to deploy and get running
- Simple URL to connect to
- Robust IBM i OS system interaction
 - System Management Views
 - Printing, Database, IFS, Commands, Messages
 - 5250 Interface
- Highly Customizable
 - What the user has access to can be simply set based on IBM i OS User or Group Profile



- The IBM i Mobile Access Solution Technology Preview will be distributed as part of the IBM i Access for Web (5770XH2) product.
 - What you see today is in GA PTF SI52768
- It is designed to be integrated into the IBM i OS *ADMIN HTTP Server environment.
 - Requires latest IBM i OS HTTP Server Group PTF to deploy new ADMIN5
 - r7.2 5770DG1 Group SF99713 Level 1
 - r7.1 5770DG1 Group SF99368 Level 27
 - r6.1 5761DG1 Group SF99115 Level 38
 - Started and stopped automatically with the *ADMIN HTTP Server
 - Can be started and stopped individually (r7.1 IBM i OS and later)
 - » ENDTCPSPVR SERVER(*IAS) INSTANCE(ADMIN5)
 - » STRTCPSPVR SERVER(*IAS) INSTANCE(ADMIN5)

- Deployed with a simple 2 parameter QShell command
 - /QIBM/ProdData/Access/Web2/install
 - `cfgaccweb –appsvrtype *INTAPPSVR –instance *MOBILE`
 - It can be deployed on other IBM Integrated Application Server instances or other Web Application Server types like WebSphere Application Server, though additional customization is required.
- Connected to via a simple URL from HTTP *ADMIN port 2001

<http://system:2001/iamobile>

ADMIN5 runs on port 2011, the port 2001/iamobile context root redirects
- Automatically detects common mobile browser types
 - It is possible to customize this detection



Major Functions - 5250

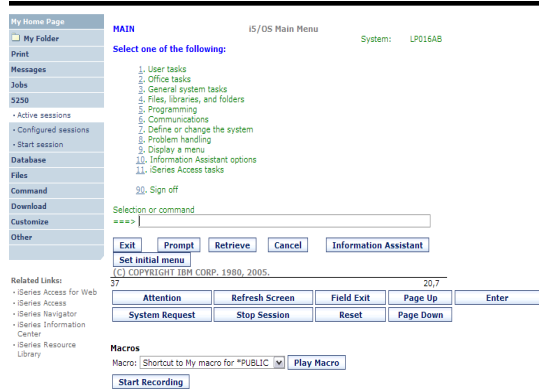


Runs as an interactive job

- Only function in IBM i Access for Web that is interactive

Telnet 5250 port

- Only function in IBM i Access for Web that uses TN5250 port



Windows PC5250 v. Web 5250

IBM i Access for Windows:

PC5250
User input and Display update



TCP/IP Network



IBM i Access Host Servers, 5250 application, Database, Files, Printer output

IBM i Access for Web:

Web Browser
User input and Display update



HTTP

HTTP Server (Apache)

IBM i Access for Web
5250 session

Application Server (WebSphere, Integrated Web App Server)

Local Sockets, or TCP/IP Network



IBM i Access Host Servers, 5250 application, Database, Files, Printer output

Because 5250 session is implemented using HTML, considerations to be aware of:

- Not intended to replace full function emulators like PC5250, Host On Demand, etc. for purposes of "heads-down" data entry type of operations
 - Does not include graphics, EHLAPPI, DDE functionality
 - Does not provide keyboard mapping
 - Does not support certain keys the way PC5250 does (ie, Field Exit)
- Does not include Printer Emulation (push to printer)
 - IBM i strategy is Internet Printing Protocol (IPP) printing
 - IBM i Access for Web provides capability to convert spooled files to PDF
- No direct interaction with server, so unsolicited server messages can't be received.
 - Need to request refresh to see break messages

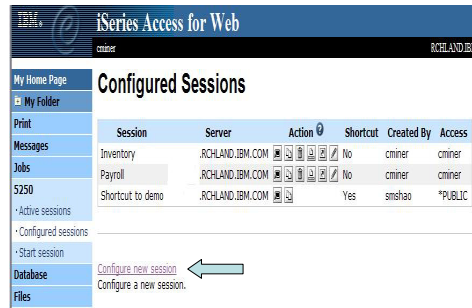
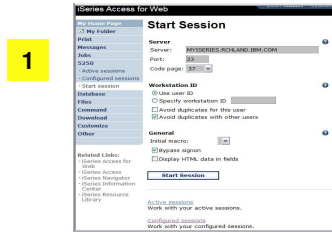


Starting a 5250 session

Two options:

1. Select 'Start Session'
 - Fill in information on Start Session and connect
 - To save the session, select 'Active Session Settings' link at bottom of screen, modify any information you wish, then click on 'Save'

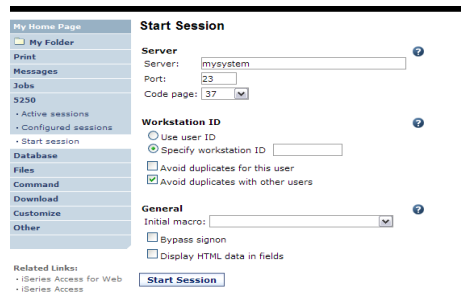
2. Select 'Configured Sessions'
 - Select 'Configure New Session' link on lower screen
 - Set up as you wish, then click on 'Save'



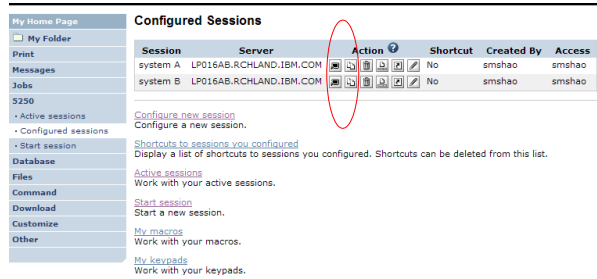
- Specify the system to connect

- Select the session attributes
 - Port, code page, workstation ID, etc.

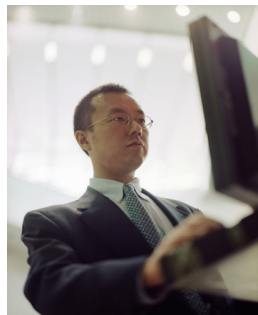
- Start session



- Configured sessions list shows the list of sessions for the logged in user
- Select the “Start” icon for the session to start



Session	Server	Action	Shortcut	Created By	Access
system A	LP016AB.RCHLAND.IBM.COM		No	smshao	smshao
system B	LP016AB.RCHLAND.IBM.COM		No	smshao	smshao



Configuration options for 5250 sessions

Select the "Configure new session" link

Session	Server	Action	Shortcut	Created By	Access
system A	LP016AB.RCHLAND.IBM.COM	[Icons]	No	smshao	smshao
system B	LP016AB.RCHLAND.IBM.COM	[Icons]	No	smshao	smshao

- Select Session Name
 - Name of this 'Configured' session
- Determine screen look
 - Web View is default
 - Traditional View can be selected
- Select IBM i to connect to
 - Enter System Name or TCP/IP address
 - Port Address

Configure New Session

General
 Session: * required

Default view: (Traditional selected)

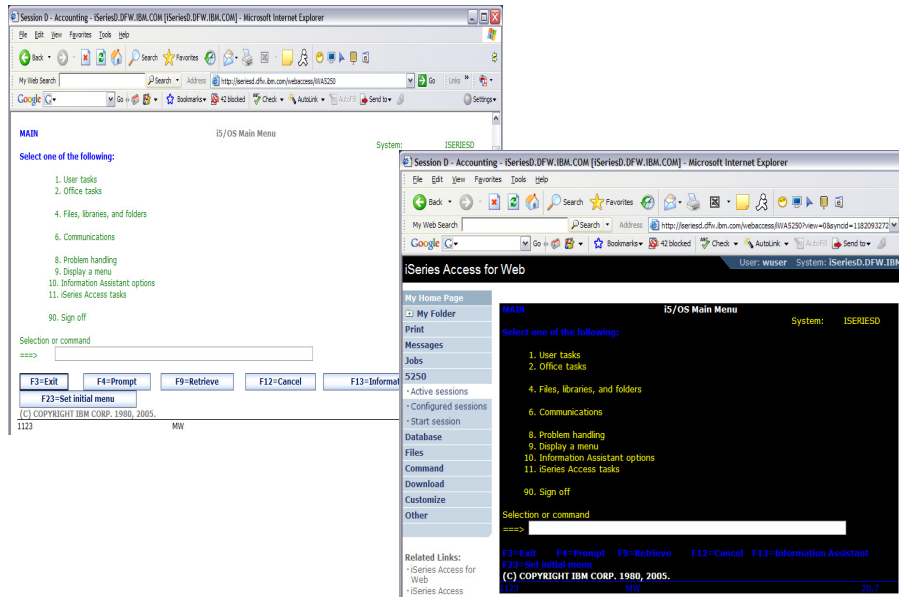
Initial macro:

Server:

Port:

Code page:

Workstation ID
 Use user ID
 Specify workstation ID



Web View

- Proportional font
- Menu displayed as links
- Active function keys displayed as buttons
- Allows cursor positioning at non-input fields
- Display "More..." as button
- Message line (25th line) treated as help

Traditional View

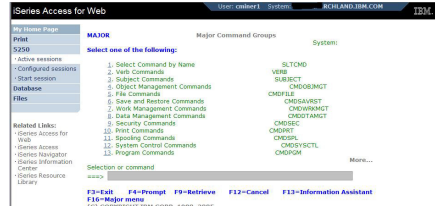
- Fixed width font
- Function key bar (F1-F24)
- Background color configurable (default is black)

- All the view settings are configurable.
- Configure web and traditional view settings for your environment.

Default for 'Web View' is to display output using Proportional width fonts

To change to Fixed width fonts, check the box that says:

- Display text using fixed width fonts



Users can also do this on-the-fly by clicking on the "Active session settings" link and change the setting for this connection, or by switching to Traditional view.

Web View and Traditional View settings

- Many keyboard and screen settings can be set to improve end user productivity and satisfaction
- Can also set up different text colors

View	Web	Traditional
	<input checked="" type="checkbox"/> Show navigation bar	<input checked="" type="checkbox"/> Show navigation bar
	<input checked="" type="checkbox"/> Show action links	<input checked="" type="checkbox"/> Show action links
	<input type="checkbox"/> Show hotspot links	<input type="checkbox"/> Show hotspot links
	<input checked="" type="checkbox"/> Show JavaScript indicator	<input checked="" type="checkbox"/> Show JavaScript indicator
	<input type="checkbox"/> Display text using fixed width font	<input checked="" type="checkbox"/> Display text using fixed width font
	<input checked="" type="checkbox"/> Enable "More..." as button	<input type="checkbox"/> Enable "More..." as button
	<input checked="" type="checkbox"/> Enable menu items as links	<input type="checkbox"/> Enable menu items as links
	<input type="checkbox"/> Show function key bar	<input checked="" type="checkbox"/> Show function key bar
	<input checked="" type="checkbox"/> Show macros section	<input checked="" type="checkbox"/> Show macros section
	<input checked="" type="checkbox"/> Show operator information area (OIA)	<input checked="" type="checkbox"/> Show operator information area (OIA)
	<input type="checkbox"/> Show active sessions	<input type="checkbox"/> Show active sessions
	<input checked="" type="checkbox"/> Enable cursor positioning	<input type="checkbox"/> Enable cursor positioning
	<input type="checkbox"/> Position cursor at exact location	<input type="checkbox"/> Position cursor at exact location
	<input checked="" type="checkbox"/> Enable message text line as help link	<input type="checkbox"/> Enable message text line as help link
	<input checked="" type="checkbox"/> Enable active function keys as buttons	<input type="checkbox"/> Enable active function keys as buttons
	<input type="checkbox"/> Show function key text (Fxx=) on button	
Foreground colors	Foreground colors	Foreground colors
Black: Black	Black: Black	Black: Black
Blue: Blue	Blue: Blue	Blue: Blue
Green: Green	Green: Green	Green: Green
Cyan: Teal	Cyan: Teal	Cyan: Teal
Red: Red	Red: Red	Red: Red
Magenta: Fuchsia	Magenta: Fuchsia	Magenta: Fuchsia
Brown: Yellow	Brown: Yellow	Brown: Yellow
White: Gray	White: White	White: White
Operator information area (OIA)	Operator information area (OIA)	Operator information area (OIA)
Color: Black	Color: Blue	Color: Blue
Background colors	Background colors	Background colors
The browser background color is used.	Color: Black	Color: Black
<input type="button" value="Save"/>	<input type="button" value="Cancel"/>	<input type="button" value="Save As Defaults"/>
		<input type="button" value="Load Defaults"/>

- Uses the credential the user used to login to IBM i Access for Web
- Option available for configured and dynamically started session

- QRMTSIGN system value must be *VERIFY
- Select bypass signon when starting or configuring a session

Start Session

Configure New Session

- IBM i Access for Web must be configured for application authentication or application server authentication with Kerberos for bypass signon to be available
 - CFGACCWEB2 AUTHTYPE(*APP)...
 - Uses the credential the user used to log in to System i Access for Web**
 - CFGACCWEB2 AUTHTYPE(*APPSVR) AUTHMETHOD(*KERBEROS)

Workstation ID

- Use user ID
- Specify workstation ID
- Avoid duplicates for this user
- Avoid duplicates with other users

Use user ID	IBM i Access for Web authenticated user ID is used for the workstation ID, up to ten characters.
Specify workstation ID	Enter a workstation ID of your choice, up to ten characters. If you select the radio button and leave the text field blank, a value is generated by IBM i. The default device name starts with <i>QPADEV</i> .
<i>Avoid duplicates for this user:</i>	When this option is enabled, a wild card character is added to the device name to make it unique for the current user.
<i>Avoid duplicates with other users:</i>	When this option is enabled, the server adds a wild card character to the device name to make it unique for all users on the server.

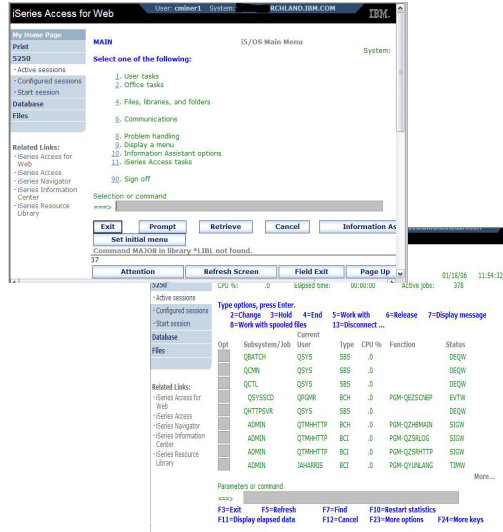
IBM i Access for Web 5250 is rendered with HTML

- Fonts are controlled by the browser
- Use browser options to change the font style and font size

Defaults:

- Display Active Function Keys as Buttons
- Show More... as a button

Can uncheck these boxes to deliver a more traditional view



“Save As Default” saves this session configuration as the default for the current user.

Can be performed from active session settings or configured session settings.

Foreground colors
5250 Browser

Black:

Blue:

Green:

Cyan:

Red:

Magenta:

Brown:

White:

Operator information area (OIA)
Color:

Background colors
The browser background color is used.

Color:

Foreground colors
5250 Browser

Black:

Blue:

Green:

Cyan:

Red:

Magenta:


















Brown:

White:

Operator information area (OIA)
Color:

Background colors
Color:

[5250 user interface help](#)
View help for editing a configured session.

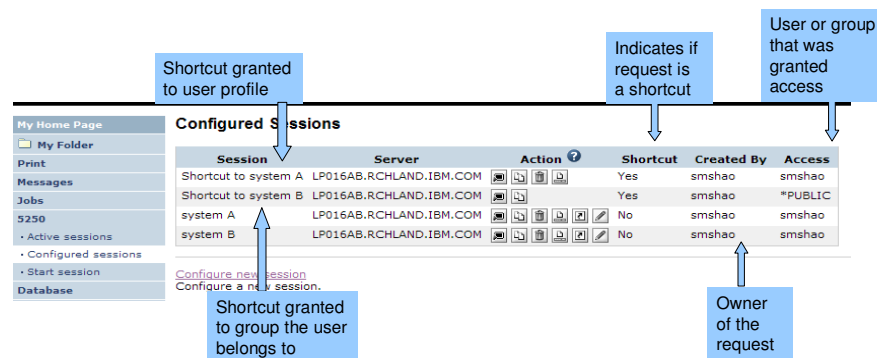
My Home Page		Configured Sessions					
<input type="checkbox"/> My Folder		Session	Server	Action	Shortcut	Created By	Access
Print		Shortcut to system A	LP016AB.RCHLAND.IBM.COM	    	Yes	smshao	smshao
Messages		Shortcut to system B	LP016AB.RCHLAND.IBM.COM	 	Yes	smshao	*PUBLIC
Jobs		system A	LP016AB.RCHLAND.IBM.COM	    	No	smshao	smshao
5250		system B	LP016AB.RCHLAND.IBM.COM	    	No	smshao	smshao
Active sessions							
Configured sessions							

Start	Start the configured session
Copy	Make a copy of the configured session for yourself
Delete	Delete the configured session
Rename	Rename the configured session
Create Shortcut	Share the configured session with another user or group of users
Edit	Change the configured session settings

Creating Shortcuts to your configured sessions



- Shortcut is a pointer to an IBM i Access for Web object
 - Configured 5250 session
 - Database request
 - Shortcuts to an object are deleted when the object is deleted
- The objects is only accessible to the user that created it
- Can share the object with other users
 - Create shortcut for user or group to share with user or group
- User of the shortcut has read-only access to the object
 - Cannot modify or delete the object



The screenshot shows a table titled "Configured Sessions" with the following data:

Session	Server	Action	Shortcut	Created By	Access
Shortcut to system A	LP016AB.RCHLAND.IBM.COM		Yes	smshao	smshao
Shortcut to system B	LP016AB.RCHLAND.IBM.COM		Yes	smshao	*PUBLIC
system A	LP016AB.RCHLAND.IBM.COM		No	smshao	smshao
system B	LP016AB.RCHLAND.IBM.COM		No	smshao	smshao

Annotations in the image point to the following elements:

- Shortcut granted to user profile:** Points to the "Shortcut" column.
- Indicates if request is a shortcut:** Points to the "Shortcut" column.
- User or group that was granted access:** Points to the "Access" column.
- Shortcut granted to group the user belongs to:** Points to the "Created By" column.
- Owner of the request:** Points to the "Created By" column.

Your Configured Session

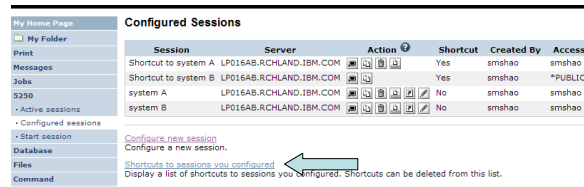
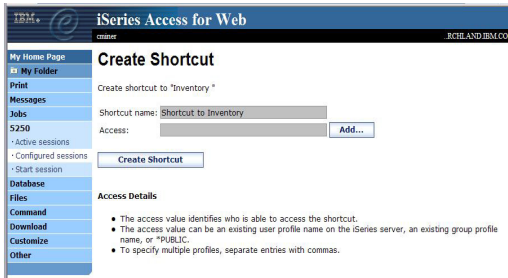
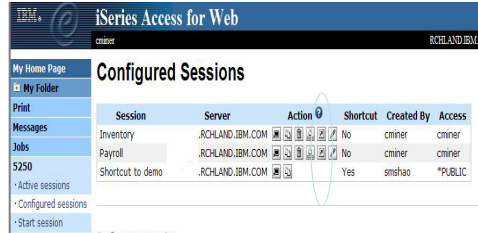
- Create 'Shortcuts' for other users

Can set Policies

- To restrict what users can do with your shortcut.

- Do not allow users to:

- Copy your shortcut
- Delete your shortcut
- Rename your shortcut



Click the "Shortcuts to sessions you configured" link

- List of shortcuts you created
- Delete shortcuts you created

My Home Page

My Folder

Print

Messages



Jobs

5250

- Active sessions
- Configured sessions
- Start session

Shortcuts to Sessions You Configured

« « [1] » » »

Session	Shortcut	Access	Action
system A	Shortcut to system A	smshao	
system B	Shortcut to system B	*PUBLIC	

« « [1] » » »



Creating Macros

Shortcuts to Macros

Adding Macros to Preconfigured Sessions


Behave differently than PC5250

- Keys processed on a screen by screen basis

PC5250 – every key is recorded and played back

IBM i Access for Web – cursor positioned in field and keys entered into field

- On a given screen, keys may not be processed in the same order as they are entered
- Functionally equivalent, but behaves differently



The screenshot shows the 'Sign On' screen of an IBM i Access for Web session. On the left is a navigation menu with options like 'My Home Page', 'My Folder', 'Print', 'Messages', 'Jobs', '9250', 'Active sessions', 'Configured sessions', 'Start session', 'Database', 'Files', 'Command', 'Download', 'Customize', and 'Other'. The main area contains a 'Sign On' form with fields for 'User', 'Password', 'Program/procedure', 'Menu', and 'Current library'. To the right, system information is displayed: 'System LP016AB', 'Subsystem QINTER', and 'Display QPADEV000G'. Below the form, there is a release and driver version: 'RELEASE: V05R04M00' and 'DRIVER: 4501130'. A legal notice states: 'USE OF THIS SYSTEM IS FOR IBM MANAGEMENT APPROVED PURPOSES ONLY. USE IS SUBJECT TO AUDIT AT ANY TIME BY IBM MANAGEMENT.' At the bottom, a copyright notice reads '(C) COPYRIGHT IBM CORP. 1980, 2005.' Overlaid on the bottom of the screen is a macro recording interface with a grid of buttons: 'Attention', 'Refresh Screen', 'Field Exit', 'Page Up', 'Enter', 'System Request', 'Stop Session', 'Reset', and 'Page Down'. Below this grid is a 'Macros' section with a dropdown menu set to 'Shortcut to My macro for *PUBLIC' and a 'Play Macro' button. A 'Start Recording' button is highlighted with a green arrow.

My Home Page

- My Folder
- Print
- Messages
- Jobs
- 5250
 - Active sessions
 - Configured sessions
 - Start session
- Database
- Files
- Command
- Download
- Customize
- Other

Sign On

System : LP016AB
Subsystem : QINTER
Display : QPADEV000G

User :
Password :
Program/procedure :
Menu :
Current library :

RELEASE: V05R04M00
DRIVER: 4501130

USE OF THIS SYSTEM IS FOR IBM MANAGEMENT APPROVED PURPOSES ONLY.
USE IS SUBJECT TO AUDIT AT ANY TIME BY IBM MANAGEMENT.

(C) COPYRIGHT IBM CORP. 1980, 2005.

37 R 6,53

Attention	Refresh Screen	Field Exit	Page Up	Enter
System Request	Stop Session	Reset	Page Down	

Macros

Macro: [Shortcut to My macro for *PUBLIC]

My Home Page

- My Folder
- Print
- Messages
- Jobs
- 5250
 - Active sessions
 - Configured sessions
 - Start session
- Database
- Files
- Command
- Download
- Customize
- Other

Save Macro

Macro:

Replace if already exists

My Home Page

- My Folder
- Print
- Messages
- Jobs
- 9250
 - Active sessions
 - Configured sessions
 - Start session
- Database
- Files
- Command
- Download
- Customize
- Other

Related Links:

- iSeries Access for Web
- iSeries Access
- iSeries Navigator
- iSeries Information Center
- iSeries Resource Library

Sign On

System LP016AB
 Subsystem QINTER
 Display QPADEV000G

User
 Password
 Program/procedure
 Menu
 Current library

RELEASE: V0SR04M00
 DRIVER: 4501130

USE OF THIS SYSTEM IS FOR IBM MANAGEMENT APPROVED PURPOSES ONLY.
 USE IS SUBJECT TO AUDIT AT ANY TIME BY IBM MANAGEMENT.

(C) COPYRIGHT IBM CORP. 1980, 2005.

37 6,53

Attention	Refresh Screen	Field Exit	Page Up	Enter
System Request	Stop Session	Reset	Page Down	

Macros

Macro: my_login_macro

Play Macro

Start Recording

My Home Page

- My Folder
- Print
- Messages
- Jobs
- 9250
 - Active sessions
 - Configured sessions
 - Start session
- Database
- Files
- Command
- Download
- Customize
- Other

Related Links:

- iSeries Access for Web
- iSeries Access
- iSeries Navigator
- iSeries Information Center
- iSeries Resource Library

Configure New Session

General

Session: Sales Info * required

Default view: Web

Initial macro: **Shortcuts to macro example for smshao**

Bypass signon
 Display HTML data in fields
 Enable advanced JavaScript functions

Server

Server: x15.ibm.com

Port: 23

Code page: 37

Workstation ID

Use user ID
 Specify workstation ID
 Avoid duplicates for this user
 Avoid duplicates with other users

All macros you have created, or shortcuts that have been shared with you will appear in pull-down

- Related Links:**
- iSeries Access for Web
 - iSeries Access
 - iSeries Navigator
 - iSeries Information Center
 - iSeries Resource Library


(C) COPYRIGHT IBM CORP. 1980, 2005.

37 6,53

Attention	Refresh Screen	Field Exit	Page Up	Enter
System Request	Stop Session	Reset	Page Down	

Macros






Macro:

- [Traditional view](#)
Switch this session to traditional view.
- [Active session settings](#)
Change the settings for this session.
- [Active sessions](#)
Work with your active sessions.
- [Configured sessions](#)
Work with your configured sessions.
- [My macros](#) ← 
Work with your macros.
- [My keypads](#)
Work with your keypads.
- [S250 user interface help](#)
View help for using the S250 user interface.

- My Home Page
- My Folder
- Print
- Messages
- Jobs
- S250
 - Active sessions
 - Configured sessions
 - Start session
- Database
- Files
- Command
- Download
- Customize
- Other

My Macros

Create shortcut

Macro	Action	Shortcut	Created By	Access
my login macro	   	No	smshao	smshao
Shortcut to My macro		Yes	aliciam	*PUBLIC

- [Active sessions](#)
Work with your active sessions.
- [Shortcuts to macros you recorded](#)
Display a list of shortcuts to macros you recorded. Shortcuts can be deleted from this list.
- [Configured sessions](#)
Work with your configured sessions.
- [Start session](#)
Start a new session.






Shows all macros I have created, plus shortcuts

My Home Page

- My Folder
- Print
- Messages
- Jobs
- 5250
 - Active sessions
 - Configured sessions
 - Start session
- Database
- Files
- Command
- Download
- Customize
- Other


My Macros

« « « [1] » » » 🔍

Macro	Action	Shortcut	Created By	Access
my login macro	   	No	smshao	smshao
Shortcut to My macro		Yes	aliciam	*PUBLIC

« « « [1] » » » 🔍

[Active sessions](#)
Work with your active sessions.

[Shortcuts to macros you recorded](#) ← 
Display a list of shortcuts to macros you recorded. Shortcuts can be deleted from this list.

[Configured sessions](#)
Work with your configured sessions.

[Start session](#)
Start a new session.

Shows just shortcuts I have created

My Home Page

- My Folder
- Print
- Messages
- Jobs
- 5250
 - Active sessions
 - Configured sessions
 - Start session
- Database
- Files
- Command
- Download
- Customize
- Other

Shortcuts to Macros You Recorded

« « « [1] » » » 🔍

Macro	Shortcut	Access	Action
my login macro	Shortcut to my login macro	smshao	

« « « [1] » » » 🔍

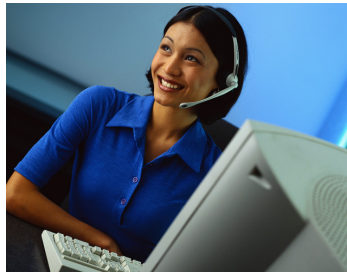
[My macros](#)
Work with your macros.

[Active sessions](#)
Work with your active sessions.

[Configured sessions](#)
Work with your configured sessions.

[Start session](#)
Start a new session.

[My keypads](#)
Work with your keypads.




Active Sessions

Active Sessions

- An active session is a session that has been started
 - Dynamically or configured session
- A user may have more than one active session

iSeries Access for Web User: CHINER System: X15



Server	Session	Started	Last Accessed	View	Action
X15	B - Sales	3/27/07 2:00:39 PM CDT	3/27/07 2:00:54 PM CDT	Web	
X15	A - Inventory	3/27/07 1:59:30 PM CDT	3/27/07 2:00:24 PM CDT	Web	

Reconnect

(Note: A blue arrow points from the 'Reconnect' text to the 'Action' column of the second row in the table above.)

- Session resides on the server, not the workstation
- Session remains active until
 - User ends (stops) the session, or
 - Session time out due to inactivity

Time out value is configurable through Access for Web

Active Sessions					
Server	Session	Started	Last Accessed	View	Action
LP01648.RICHLAND.IBM.COM	A	3/7/06 3:55:13 PM CST	3/8/06 10:44:29 AM CST	Web	 

- Taking advantage of active session behavior
- Leave the session and browse on the web, or
 - Leave your workstation and go to another workstation and
 - Reconnect to your session

Closing the browser or turning off the workstation does not end the session

- Two ways to end a session
 - From an active session
 - From active session list
- Properly cleaning up TN5250 connection
 - Frees up resources in application server (Access for Web)
 - Frees up resources on target server (TN5250)

My Home Page

- My Folder
- Print
- Messages
- Jobs
- 5250
 - Active sessions
 - Configured sessions
 - Start session
- Database
- Files
- Command
- Download
- Customize
- Other

Sign On

System : LP016AB
 Subsystem : QINTER
 Display : QPADEV000G

User :
 Password :
 Program/procedure :
 Menu :
 Current library :

RELEASE: V05R04M00
 DRIVER: 4501130

USE OF THIS SYSTEM IS FOR IBM MANAGEMENT APPROVED PURPOSES ONLY.
 USE IS SUBJECT TO AUDIT AT ANY TIME BY IBM MANAGEMENT.

(C) COPYRIGHT IBM CORP. 1980, 2005.

37	Attention	Refresh Screen	Field Exit	Page Up	6,53	Enter
	System Request	Stop Session	Reset	Page Down		

Related Links:




- Series Access for Web
- Series Access
- Series Navigator
- Series Information Center

End this active session

My Home Page

- My Folder
- Print
- Messages
- Jobs
- 5250
 - Active sessions
 - Configured sessions
 - Start session
- Database
- Files
- Command
- Download
- Customize
- Other

Active Sessions

Server	Session	Started	Last Accessed	View	Action
LP016AB.RCHLAND.IBM.COM	A	3/7/06 3:55:13 PM CST	3/8/06 12:58:01 PM CST	Web	  

[View-only sessions](#)
 Display a list of active sessions others are sharing with me.

[Shared sessions](#)
 Display a list of active sessions I am sharing with others.

[Configured sessions](#)
 Work with your configured sessions.

[Start session](#)
 Start a new session.

[My macros](#)
 Work with your macros.

[My keypads](#)
 Work with your keypads.

[5250 user interface help](#)
 View help for working with active sessions.

End session

Controlling Access: Setting Policies



71

Controlling Access

- The Customize function allows administrators to set policies for users and groups of users.
- These policies control...
 - Functions a user can perform.
 - How certain information is presented to the user.
- When a function is restricted...
 - Its navigation bar content is removed.
 - Access to the servlet is restricted.
 - It takes effect immediately.
- Administrators with *SECADM special authority are automatically authorized to administer settings for users and groups of users to which they have authority.
- These administrators can then grant other user profiles permission to administer IBM i Access for Web functions.
- IBM i Access for Web ships with default policy settings
- Default allows most functions to be available to all users
- Use *PUBLIC to set policies for all users
- Strategy:
 - Grant an administrator profile access to all functions
 - Deny access to all functions to *PUBLIC
 - Then allow specific users/groups access to specific functions

72

Profile	Description	Action
ACBARRON	Alma Carolina Barron Perez - GDL T/L 877-5656	[edit] [view] [copy] [reset]
ACN	Ali Nelson 3-6874	[edit] [view] [copy] [reset]
ADSIERRA	Alma Delia Sierra/Mexico/Contr/IBM@IBMMX	[edit] [view] [copy] [reset]
AGUEDA	Agueda Martinez Hernandez Magro/Mexico/IBM@IBMMX	[edit] [view] [copy] [reset]
AHANSON	Andrew Hanson 3-5571	[edit] [view] [copy] [reset]
AHOMIKE	Mike Aho/Rochester/IBM@IBMUS	[edit] [view] [copy] [reset]
ALEJ	Alejandro Bascuas/Rochester/IBM@IBMUS	[edit] [view] [copy] [reset]
ALICIAM	Alicia Martinez Cruz/Mexico/Contr/IBM@IBMMX	[edit] [view] [copy] [reset]
ALITEST		[edit] [view] [copy] [reset]
ANDREWS	Greg Andrews/Rochester/IBM@IBMUS	[edit] [view] [copy] [reset]
ANTARES	Elias Ricardo Castellanos/Mexico/Contr/IBM@IBMMX	[edit] [view] [copy] [reset]
ARABIC	Gilberto Martinez Cortes/Mexico/Contr/IBM@IBMMX	[edit] [view] [copy] [reset]
ATCLARK	Adam Clark, 3-3941	[edit] [view] [copy] [reset]
ATOMKO	Ana Tomko Sanchez/Mexico/Contr/IBM@IBMMX	[edit] [view] [copy] [reset]
BAZEY	John Bazey (3-7108)	[edit] [view] [copy] [reset]
BEACH	Mark Beach/Rochester/IBM@IBMUS	[edit] [view] [copy] [reset]
BECKYD	Rebecca K Dimock/Boulder/IBM@IBMUS	[edit] [view] [copy] [reset]

Policy	Derived From	Action	Setting
Database access	Shipped default	Use current setting	Allow
Database tab	Shipped default	Use current setting	Show
Tables	Shipped default	Use current setting	Allow
Maximum table rows	Shipped default	Use current setting	500
Table filter	Shipped default	Use current setting	*USRLIBL
Table filter is user preference	Shipped default	Use current setting	Allow
Insert records into table	Shipped default	Use current setting	Columns...
Insert record columns	Shipped default	Use current setting	Allow
Update records in table	Shipped default	Use current setting	Columns...
Update record columns	Shipped default	Use current setting	Allow
Quick view table records	Shipped default	Use current setting	1000
Maximum quick view rows	Shipped default	Use current setting	No

Administrator Action on each policy setting

Action	Description
Use current setting	This is the default action that is pre-selected. If the setting is not modified, no action is performed. If the setting is modified, it will be added to the user or group profile record in the System i Access for Web policies file.
Apply setting to profile	Select this action to add the current setting to the user or group profile record in the IBM i Access for Web policies file. The setting will be written to the user or group profile record, even if it was not modified. You would use this action to ensure the user or group profile gets this setting. This is because a different policy setting may be used based on the user profile being a member of one or more IBM i group profiles.
Reset to default	Select this action to remove the setting from the user or group profile record in the IBM i Access for Web policies file. This option is only available if the user or group profile record currently contains a specific setting for this policy.

The "Derived From" column indicates where the policy setting that will be used for this user profile was found.

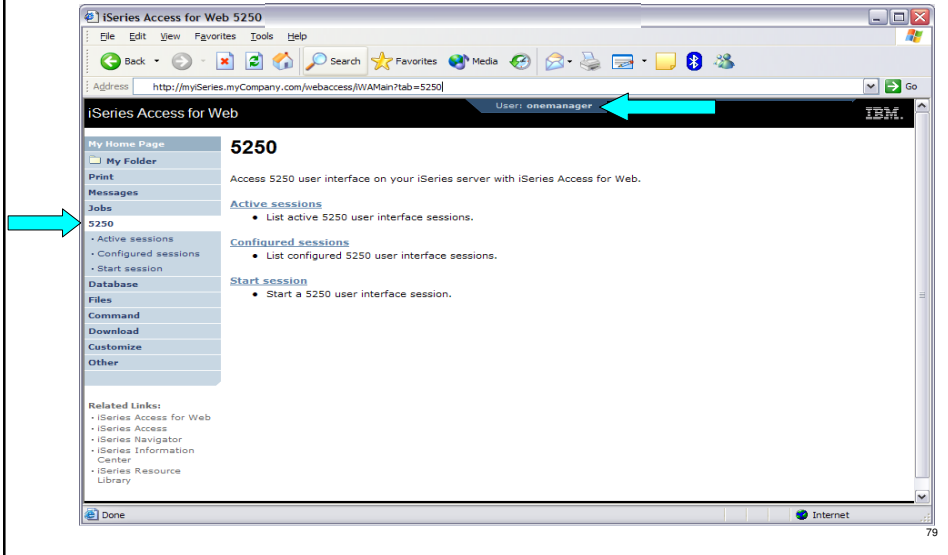
Action	Description
Profile setting	Indicates the setting is currently specific to the profile being customized. The setting had previously been applied to this profile.
Group – (groupName)	Indicates the setting is not specific to the profile being customized, but is being derived from the specified IBM i group profile and the user is a member of this group.
*PUBLIC setting	Indicates the setting is not specific to the profile being customized. No setting was found in any IBM i group profile memberships. The setting is being derived from the *PUBLIC group settings. This is a special group profile available to IBM i Access for Web administrators. All user profiles are automatically members of this special group profile. Administrators can modify this group profile to easily apply settings to all IBM i Access for Web users.
Shipped default	Indicates the setting is not specific to the profile being customized, no setting was found in any IBM i group profile memberships, or the special *PUBLIC group profile. The setting is being derived from a shipped default value.
Parent policy	Indicates the function is a sub-function of a higher level category, and its policy setting is being controlled by a top level policy setting. For example, Tables is a sub-function of Database. If Database is restricted, Tables will be restricted as well and would show its being controlled by a parent policy.

7

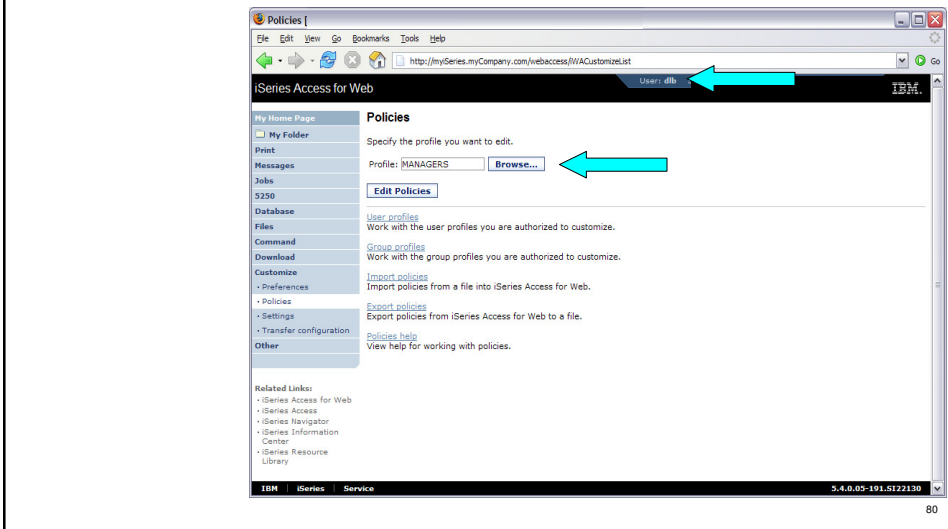
- The following screen shots step through setting up the items necessary to allow a group of users to use a single pre-configured 5250 session.
- In this example, ONEMANAGER is one of the user profiles in the MANAGERS group.
- This example shows
 - Creating a 5250 session and 5250 session shortcut to be used by the management team
 - Making the 5250 session shortcut the session used by the MANAGERS group profile.
 - Restricting access to other functions in System i Access for Web.
- When the policy is set, it takes effect immediately.

78

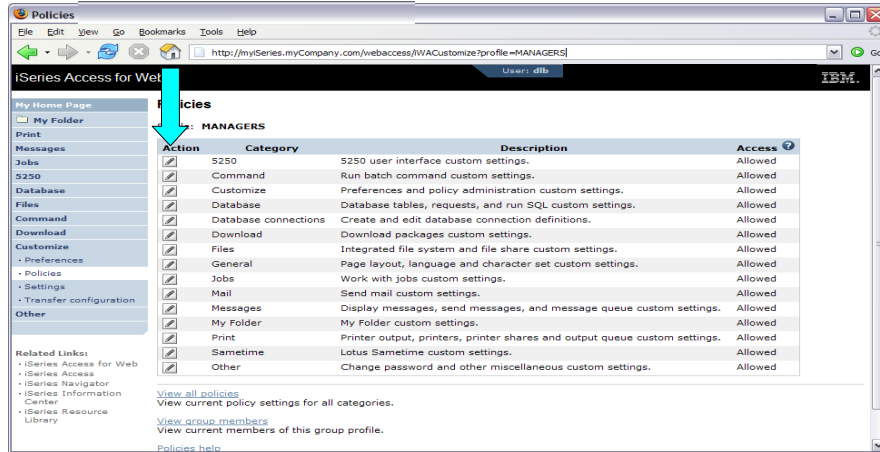
- Access the 5250 tab IBM i Access for Web Main page as user ONEMANAGER.



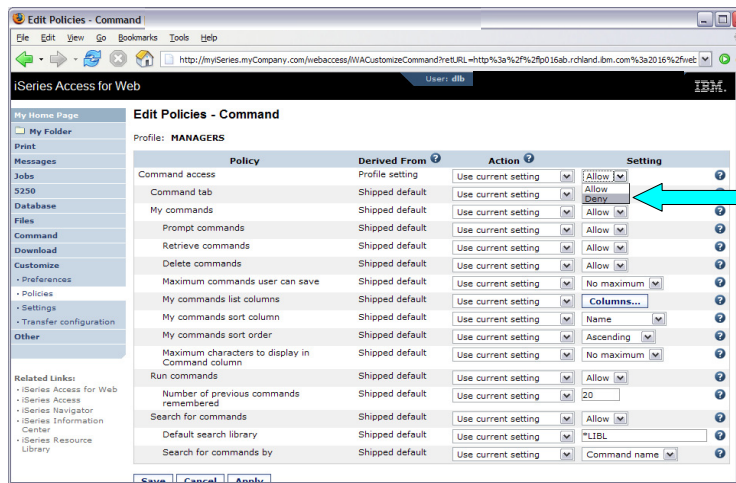
- Policies - the starting point for customization of a specific user or group.
- This is a new browser session, where we signed on as an administrator.



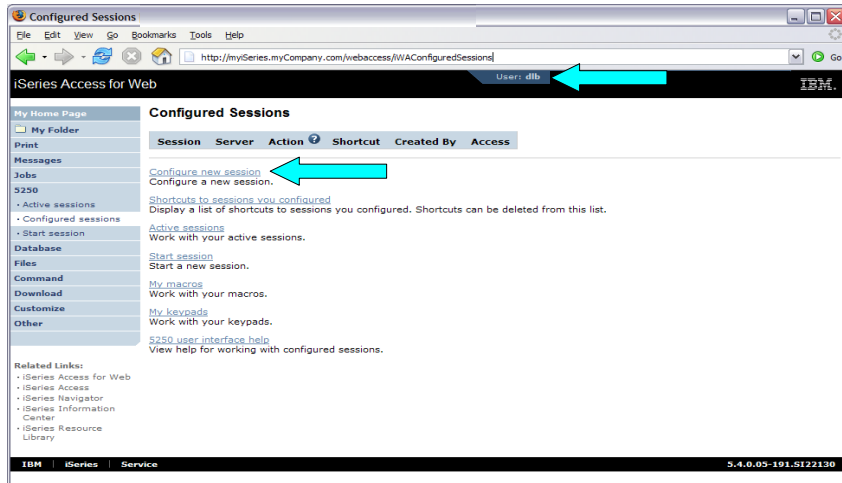
- Determine which categories need to be restricted/modified.



- Turn off the other non-5250 functions. Set top level to Deny.
- Repeat for each category that should be restricted for the MANAGERS group.

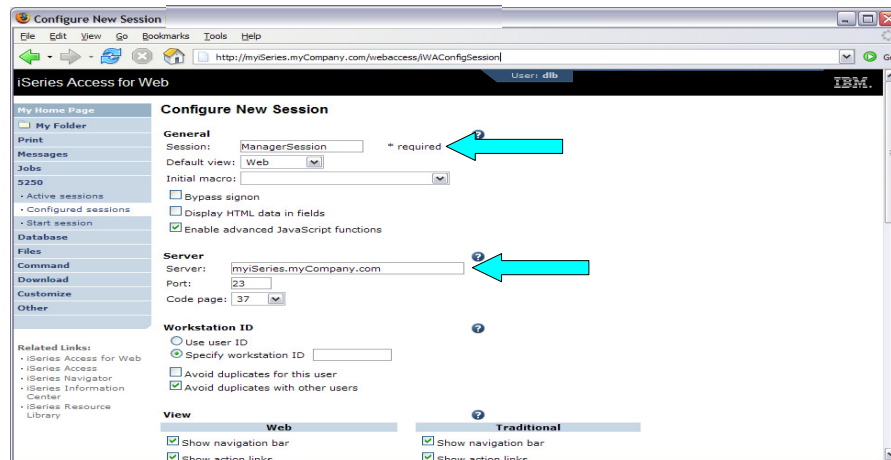


- The administrator goes to the Configured Sessions link on the 5250 tab. Select the “Configure new session” link.



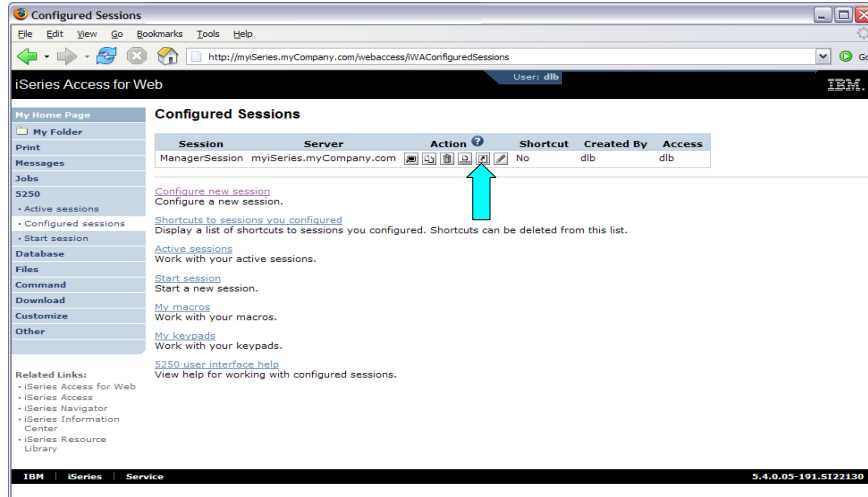
83

- The administrator configures the 5250 session settings to be used by the managers.
- Settings include the server to connect to, color schemes, and many other options.



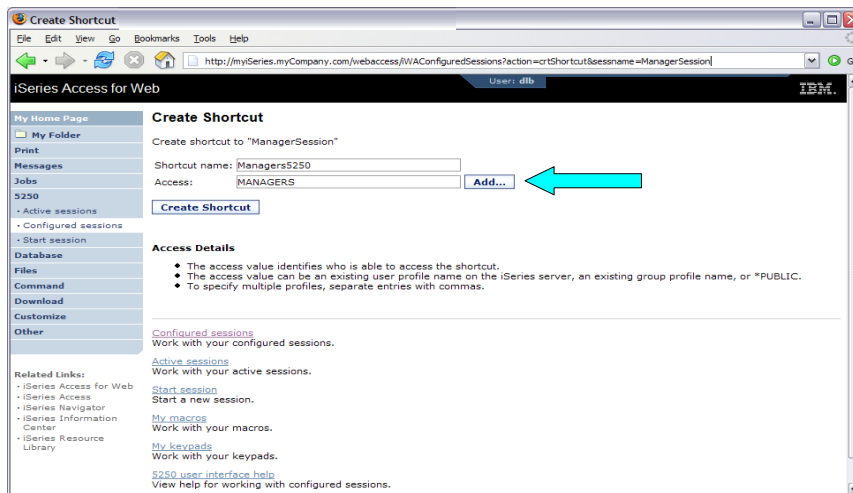
84

- The saved session is only available to the administrator that is currently signed on.
- The session must be shared to the managers. Use the “Create Shortcut” action.



85

- Name the shortcut whatever you wish.
- Session can be shared with MANAGERS group, *PUBLIC, or individual profiles.



86

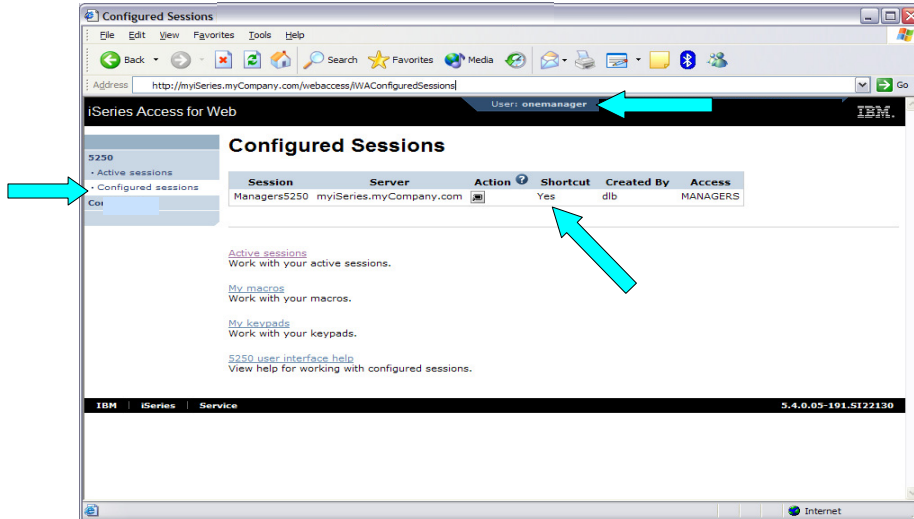
- Go back to 5250 in Customize – Policies for the MANAGERS group profile.
- Select the shortcut to use as the default session settings for the MANAGERS.
- Select settings to lock MANAGERS out of starting/configuring new sessions.

Policy	Derived From	Action	Setting
5250 access	Shipped default	Use current setting	Allow
5250 tab	Shipped default	Use current setting	Show
Start non-configured sessions	Shipped default	Use current setting	Deny
Prompt when starting non-configured sessions	Shipped default	Use current setting	Yes
Show server name in title	Shipped default	Use current setting	Yes
Show configured session name in title	Shipped default	Use current setting	No
Maximum active sessions	Shipped default	Use current setting	No maximum
Inactive session timeout	Shipped default	Use current setting	24 hours
Active sessions list columns	Shipped default	Use current setting	Columns...
Configured session to use for defaults	Shipped default	Use current setting	User defaults
Save settings as user defaults	Shipped default	Use current setting	User defaults
Load settings from user defaults	Shipped default	Use current setting	Allow
Load settings from shipped defaults	Shipped default	Use current setting	Allow
Switch between Web/Traditional views	Shipped default	Use current setting	Allow
Edit active session settings	Shipped default	Use current setting	Allow
Bypass signon	Shipped default	Use current setting	Allow
Display HTML data in fields	Shipped default	Use current setting	Allow

- Set all 5250 policies to Deny, except Configured Sessions & Start Configured Sessions
- You may also want to allow them to access My Keypads and My Macros.

Configured sessions	Profile setting	Use current setting	Allow
Create configured session	Shipped default	Use current setting	Deny
Start configured session	Shipped default	Use current setting	Allow
Copy configured session	Shipped default	Use current setting	Deny
Delete configured session	Shipped default	Use current setting	Deny
Rename configured session	Shipped default	Use current setting	Deny
Edit configured session	Shipped default	Use current setting	Deny
List configured session shortcuts	Shipped default	Use current setting	Deny
Create configured session shortcut	Shipped default	Use current setting	Deny
Copy configured session shortcut	Shipped default	Use current setting	Deny
Delete configured session shortcut	Shipped default	Use current setting	Deny
Rename configured session shortcut	Shipped default	Use current setting	Deny
Configured sessions list columns	Shipped default	Use current setting	Columns...
My keypads	Shipped default	Use current setting	Allow
My macros	Shipped default	Use current setting	Allow
Record macro	Shipped default	Use current setting	Allow
Play macro	Shipped default	Use current setting	Allow
Play initial macro	Shipped default	Use current setting	Allow
Copy macro	Shipped default	Use current setting	Allow
Delete macro	Shipped default	Use current setting	Allow
Rename macro	Shipped default	Use current setting	Allow
Edit macro	Shipped default	Use current setting	Allow
List macro shortcuts	Shipped default	Use current setting	Allow

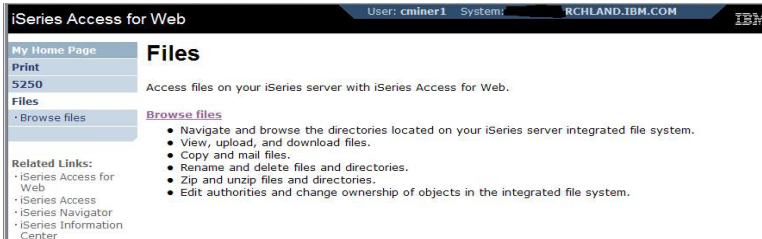
- The managers can now only start a pre-configured 5250 session, or reconnect to an active session.



Major Functions - Files



- **Navigate and browse the directories located on your IBM i integrated file system**
 - Don't need to map drives
 - Don't need to know directory structures



- **View, upload, and download files**
- **Copy and mail files**
- **Rename and delete files and directories**
- **Zip and unzip files and directories**
- **Edit authorities and change ownership of objects in the integrated file system**

Major Functions – Print and Database



- See Session 580029 “Not just a ‘Webulator’: IBM i Access for Web Leveraging Print and Database Capabilities”
- Tuesday 3:30pm Banda Sea 1

- **What is IBM i Access for Web?**
- **Getting started**
- **Major Functions**
 - **5250**
 - **File System**
- **Controlling Access**



Start your browser and connect to the following web site:

<http://iseriesd.dfw.ibm.com/webaccess/iWAHome> (case sensitive)

<p>User ID = WACUST Password = demo2pwd</p>	<p>This shows the basic look of System i Access for Web as we ship it. You can try various functions – including working with printer output, creating database requests, etc. Click on the 5250 tab, sign onto the IBM i, then start an RPG application called BOATS and run it.</p>
<p>User ID = BOATADMIN Password = demo2pwd</p>	<p>This is an example of how a customer might design a web page for their use. You will see that an end user could start the same BOATS application by clicking on the 5250 session, or they could have used HATS to run the application. You will also see other links that would let a user work with spoolfile information, work with IFS, run database requests, etc..</p>

Send email to: stymie@us.ibm.com to reset the user profiles on iseriesd.dfw.ibm.com if either one gets disabled.

Monday			
8:00am	S. China Sea	OPEN LAB: Test Drive IBM i Access for Web OPEN LAB: Meet the New IBM i Access	420063 580085
9:30am	S. China Sea	OPEN LAB: Test Drive IBM i Access for Web OPEN LAB: Meet the New IBM i Access	420063 580085
2:00pm	Pacifica Ballroom 10	The Next Generation of IBM i Access	580083
5:00pm	Pacifica Ballroom 10	IBM i Access for Web Including 5250 Browser Access	409136
Tuesday			
8:00am	Pacifica Ballroom 1-2	IBM i Mobile Access	590448
2:00pm	Banda Sea 1	IBM i Access 5250 Emulation	590257
3:30pm	Banda Sea 1	Not just a 'Webulator': IBM i Access for Web Leveraging Print and Database Capabilities	580029
Wednesday			
8:00am	Pacifica Ballroom 11	IBM i Access Deployment and Migration	590256
5:00pm	Banda Sea 1	IBM i Access Data Transfer	590258

Special notices

This document was developed for IBM offerings in the United States as of the date of publication. IBM may not make these offerings available in other countries, and the information is subject to change without notice. Consult your local IBM business contact for information on the IBM offerings available in your area.

Information in this document concerning non-IBM products was obtained from the suppliers of these products or other public sources. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

IBM may have patents or pending patent applications covering subject matter in this document. The furnishing of this document does not give you any license to these patents. Send license inquiries, in writing, to IBM Director of Licensing, IBM Corporation, New Castle Drive, Armonk, NY 10504-1785 USA.

All statements regarding IBM future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only.

The information contained in this document has not been submitted to any formal IBM test and is provided "AS IS" with no warranties or guarantees either expressed or implied.

All examples cited or described in this document are presented as illustrations of the manner in which some IBM products can be used and the results that may be achieved. Actual environmental costs and performance characteristics will vary depending on individual client configurations and conditions.

IBM Global Financing offerings are provided through IBM Credit Corporation in the United States and other IBM subsidiaries and divisions worldwide to qualified commercial and government clients. Rates are based on a client's credit rating, financing terms, offering type, equipment type and options, and may vary by country. Other restrictions may apply. Rates and offerings are subject to change, extension or withdrawal without notice.

IBM is not responsible for printing errors in this document that result in pricing or information inaccuracies.

All prices shown are IBM's United States suggested list prices and are subject to change without notice; reseller prices may vary.

IBM hardware products are manufactured from new parts, or new and serviceable used parts. Regardless, our warranty terms apply.

Any performance data contained in this document was determined in a controlled environment. Actual results may vary significantly and are dependent on many factors including system hardware configuration and software design and configuration. Some measurements quoted in this document may have been made on development-level systems. There is no guarantee these measurements will be the same on generally-available systems. Some measurements quoted in this document may have been estimated through extrapolation. Users of this document should verify the applicable data for their specific environment.

Special notices (cont.)

IBM, the IBM logo, ibm.com AIX, AIX (logo), AIX 6 (logo), AS/400, BladeCenter, Blue Gene, ClusterProven, DB2, ESCON, i5/OS, i5/OS (logo), IBM Business Partner (logo), IntelliStation, LoadLeveler, Lotus, Lotus Notes, Notes, Operating System/400, OS/400, PartnerLink, PartnerWorld, PowerPC, pSeries, Rational, RISC System/6000, RS/6000, THINK, Tivoli, Tivoli (logo), Tivoli Management Environment, WebSphere, xSeries, z/OS, zSeries, AIX 5L, ChipHopper, Chipkill, Cloudscape, DB2 Universal Database, DS4000, DS6000, DS8000, EnergyScale, Enterprise Workload Manager, General Purpose File System, . GPFS, HACMP, HACMP/6000, HASM, IBM Systems Director Active Energy Manager, iSeries, Micro-Partitioning, POWER, PowerExecutive, PowerVM, PowerVM (logo), PowerHA, Power Architecture, Power Everywhere, Power Family, POWER Hypervisor, Power Systems, Power Systems (logo), Power Systems Software, Power Systems Software (logo), POWER2, POWER3, POWER4, POWER4+, POWER5, POWER5+, POWER6, POWER6+, System i, System p, System p5, System Storage, System z, Tivoli Enterprise, TME 10, Workload Partitions Manager and X-Architecture are trademarks or registered trademarks of International Business Machines Corporation in the United States, other countries, or both. If these and other IBM trademarked terms are marked on their first occurrence in this information with a trademark symbol (® or ™), these symbols indicate U.S. registered or common law trademarks owned by IBM at the time this information was published. Such trademarks may also be registered or common law trademarks in other countries. A current list of IBM trademarks is available on the Web at "Copyright and trademark information" at www.ibm.com/legal/copytrade.shtml

The Power Architecture and Power.org wordmarks and the Power and Power.org logos and related marks are trademarks and service marks licensed by Power.org.

UNIX is a registered trademark of The Open Group in the United States, other countries or both.

Linux is a registered trademark of Linus Torvalds in the United States, other countries or both.

Microsoft, Windows and the Windows logo are registered trademarks of Microsoft Corporation in the United States, other countries or both.

Intel, Itanium, Pentium are registered trademarks and Xeon is a trademark of Intel Corporation or its subsidiaries in the United States, other countries or both.

AMD Opteron is a trademark of Advanced Micro Devices, Inc.

Java and all Java-based trademarks and logos are trademarks of Sun Microsystems, Inc. in the United States, other countries or both.

TPC-C and TPC-H are trademarks of the Transaction Performance Processing Council (TPPC).

SPECint, SPECfp, SPECjbb, SPECweb, SPECjAppServer, SPEC OMP, SPECviewperf, SPECcapc, SPECjpc, SPECjvm, SPECmail, SPECimip and SPECsfs are trademarks of the Standard Performance Evaluation Corp (SPEC).

NetBench is a registered trademark of Ziff Davis Media in the United States, other countries or both.

Altivec is a trademark of Freescale Semiconductor, Inc.

Cell Broadband Engine is a trademark of Sony Computer Entertainment Inc.

InfiniBand, InfiniBand Trade Association and the InfiniBand design marks are trademarks and/or service marks of the InfiniBand Trade Association.

Other company, product and service names may be trademarks or service marks of others.