



Session: 420017 / 22CS

# iSeries. mySeries.

## iSeries Access for Windows: What's New in V5R3?

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**iSeries. mySeries.**

## IBM. Topics to be covered



- Packaging



- Middleware

- Data Transfer

- PC5250

- Security



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## Integrating native Windows with iSeries



**Want a single solution for working with all iSeries resources...**

- **A single offering designed for Windows users that provides:**
  - High-function, easy-to-use 5250 emulator to work with iSeries applications
  - A PC print server that OS/400 output can be sent to and run unattended
  - Access to iSeries database and other resources from Windows application
  - Ability to use iSeries as file and print server
  - Administer users and monitor/manage iSeries servers in the network
- **No special web application server code required**
  - All code runs natively on the Windows
- **It's all in iSeries Access for Windows**
  - PC5250 emulation, Data Transfer, ODBC, etc for end users and Windows programmers
  - iSeries Navigator to operate and administer iSeries systems and database
  - Operations Console to work with OS/400 system console
  - EZ-Setup to quickly and easily set up new iSeries servers



*You have the most comprehensive iSeries native Windows connectivity solution in the market*

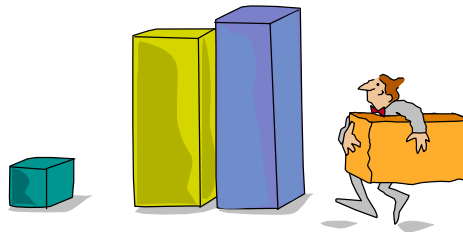
80+% of iSeries customers already using iSeries Access for Windows

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## Packaging & Ordering



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## iSeries Access for Windows - Product Information

### iSeries Access for Windows

- 1st Release
  - May 1999, VRM = V4R4M0
  - End of Support 5/31/2001
- 2nd Release
  - August 2000, VRM = V4R5M0
  - End of Support 12/31/2002
- 3rd Release
  - May 2001, VRM = V5R1M0
  - End of Support ~~5/31/2003~~ 9/30/2005\*
- 4th Release
  - August 2002, VRM = V5R2M0
  - End of Support ~~9/30/2004~~ 9/30/2005\*
- 5th Release
  - June 2004, VRM = V5R3M0



### Welcome to iSeries Access for

[What is iSeries Access for Windows?](#)

[Using iSeries Access for Windows](#)

[What's New in V5R3?](#)

[Sources of Information](#)

Show this Welcome when I restart my computer

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## iSeries Access Family - Packaging



V5R3 5722-XW1 iSeries Access Family	V5R2 5722-XW1 iSeries Access Family
iSeries Access for Windows 5722-XE1, V5R3	iSeries Access for Windows 5722-XE1, V5R2
iSeries Access for Web 5722-XH2, V5R3	iSeries Access for Web 5722-XH2, V5R2
	WebSphere Host Publisher 5724-B81, V4.0 5724-B81, V4.01
HATS Limited Edition 5724-F97-01, V5.0	HATS Limited Edition 5724-D34-01, V4.0
iSeries Access for Linux, 5722-XL1, V5R3	
	You can get the V5R3 versions of iSeries Access Family by ordering no-charge Feature No. 2647 of Product No. 5722-XW1

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## Set up the License Key Information

iSeries Access Family (5722-XW1) is included on the Keyed Stamped media.

- Can use all functions of iSeries Access Family for 70 days without purchasing 5722-XW1.

### To set up License key information for 5722-XW1

- Run WRKLICINF command.
  - Type '1' in the entry field next to the product 5722XW1 Option 1, Feature 5101.
  - This is where you enter your software license key.
- On the Add License Key Information (ADDLICKEY) display
  - Type the required information and add the license key information
  - Always enter the value \*NOMAX regardless of what was entered for usage limit.



## Notes: Software License Keys



With V5R1, iSeries Client Access Family (Licensed Program number 5722-XW1) is added to the Keyed Stamped Media to enable you to evaluate the function. This feature is for evaluation use only and keys are not supplied. The Client Access functions that require the Client Access Family license can be evaluated for 70 days. After 70 days, you need to order (or have upgraded to) the V5R1 5722-XW1 product to receive the software license key. As in prior releases, all components of Client Access Express can be installed on the PC, whether the components require a license or not. Also as in prior releases, the 5722-XW1 license will be checked at the point when a user tries to use a licensed function. The difference for V5R1 is that now users will be allowed 70 days to evaluate the licensed functions without having the license key.

The 5722-XW1 licensed program now has both a base and option 1. Both need to be installed when XW1 is installed on the iSeries or iSeriese server. 5722-XW1 feature 5050, which is the base. This is where you need to enter your usage limit.

If you ordered a user-based option you would need to enter a use quantity equal to the number of users you are entitled to use.

If you ordered the PBOTC option, you would enter a use quantity of \*NOMAX."

5722-XW1 feature 5101, which is option 1. This is where you enter your software license key.

The screens for ADDLICKEY have a 'usage limit' value (for release-to-release compatibility) and they cannot be left with the default of '0'. Thus our instructions recommend that you enter a value of \*NOMAX. This field is ignored by Client Access license management as it checks the usage limit value entered on the base.



## PC Hardware Requirements

### Connection Options

**The V5R3 version of iSeries Access for Windows will not install on:**

- Windows 95
- Windows 98
- Windows ME

**The V5R3 version of iSeries Access for Windows can be installed on:**

- Windows NT 4.0
- Windows 2000
- Windows XP Professional
- Windows 2003 Server



- The V5R2 version of iSeries Access for Windows can be used on Windows 98, ME, NT 4.0, 2000, XP, **2003**
- The V5R1 version of iSeries Access for Windows can be used on Windows **95**, 98, and ME, NT 4.0, 2000, XP



- By default, once Windows XP SP2 is installed, the Windows Firewall is automatically configured to prevent some incoming connections into the PC. This can affect the following iSeries Access for Windows functions:
  - Incoming Remote Commands
  - Operations Console
  - Management Central
- If you are using these functions, and they stop working once Windows XP SP2 is installed, here are steps you can take ...



### Incoming Remote Command uses port 512 by default

- Typical error messages would be:
  - CPE3447 "A remote host did not respond within the timeout period"
  - rexec:connect:Connection timed out
  - rexec: can't establish connection
- Solution:
  - Configure a **port exception** to allow incoming TCP connections on port 512:  

```
C:\> netsh firewall add portopening TCP 512 "rexecd server (exec service, port 512)"
```
  - OR –
  - Configure an **application exception** to allow the iSeries Access for Windows Remote Command service (cwbrxd.exe) to accept any incoming connection, regardless of port number or protocol:  

```
C:\> netsh firewall add allowedprogram %windir%\cwbrxd.exe "iSeries Access Incoming Remote Command server"
```



Operations Console uses ports 67 and 2112 for local (async and LAN) connections

- Can use any one of a number of different ports for RCS -> LCS connections
- Typical failures are:
  - When connecting an **LCS (local connection)**, the status may not progress beyond "connecting console".
  - When connecting an **RCS (remote connection) to an LCS** that has not had all needed firewall exceptions configured, it may fail to connect; or it may connect but fail to authenticate.
    - The failure reason noted at the RCS may be that the local system is not configured to receive calls.



### Steps to correct:

- Configure a **port exception** to allow incoming UDP connections on port 67:
  - C:\> netsh firewall add portopening UDP 67 "bootp server (bootps service, port 67)"
- Configure a **port exception** to allow incoming TCP connections on port 2112 from the local PC (127.0.0.1) only:
  - C:\> netsh firewall add portopening TCP 2112 "Internal Op Console worker server (port 2112)" ENABLE CUSTOM 127.0.0.1
- Configure an **application exception** to allow the Operations Console program to accept any incoming connection, regardless of port number or protocol:
  - C:\> netsh firewall add allowedprogram <INSTALL>\cwbopcon.exe "iSeries Access Operations Console (cwbopcon)"



## Management Central



### Refer to:

- **For V5R3:**  
<http://publib.boulder.ibm.com/infocenter/iserics/v5r3/ic2924/info/experience/mcfirewall.pdf>
- **For V5R2:**  
<http://publib.boulder.ibm.com/iserics/v5r2/ic2924/info/experience/mcfirewall.pdf>

These reports detail Management Central connections and the configurations required to enable Management Central to operate within a variety of firewall environments. As a distributed management application, Management Central requires numerous incoming and outgoing TCP/IP socket connections.

In contrast, the basic premise of a firewall is to restrict/modify incoming and outgoing connections. To assist in configuring Management Central within a firewall environment, these reports discuss the nature and orientation of Management Central connections and the restrictions of specific types of firewalls that limit or disable some Management Central connections.



## Info on Web



**The preceding information on Windows XP SP2 is also available on the web at:**

- <http://www-1.ibm.com/servers/eserver/iserics/access/supportedos.htm>
- Then click on the appropriate link in the Windows XP Professional section





## Hardware/Software requirements...



Operating system	iSeries Access for Windows	iSeries Navigator
Windows NT 4.0	<ul style="list-style-type: none"> <li>Pentium 100 MHz and at least 32 MB</li> <li>Microsoft Windows NT Service Pack 6a</li> <li>Microsoft Internet Explorer 5.01 or later</li> </ul>	<ul style="list-style-type: none"> <li>Pentium 850 MHz minimum and at least 256 MB, 512 MB recommended</li> <li>Microsoft Windows NT Service Pack 6a</li> <li>Microsoft Internet Explorer 5.01 or later</li> </ul>
Windows 2000	<ul style="list-style-type: none"> <li>Pentium 133 MHz and at least 64 MB</li> <li>Pentium 850 MHz minimum and at least 256 MB, 512 MB recommended</li> </ul>	<ul style="list-style-type: none"> <li>Pentium 850 MHz minimum and at least 256 MB, 512 MB recommended</li> </ul>
Windows XP	<ul style="list-style-type: none"> <li>Pentium 233 MHz and at least 128 MB</li> </ul>	<ul style="list-style-type: none"> <li>Pentium 850 MHz and at least 256 MB, 512 MB recommended</li> </ul>
Windows Server 2003	<ul style="list-style-type: none"> <li>32-bit PC Pentium 133 MHz and at least 128 MB Pentium</li> <li>64-bit PC Pentium 733 MHz and at least 192 MB</li> </ul>	<ul style="list-style-type: none"> <li>Pentium 850 MHz and at least 256 MB, 512 MB recommended</li> </ul>

*Note: If you do not plan to use iSeries Navigator for anything other than managing your iSeries connections (adding, removing, and changing connection properties), it is recommended that you do not install the iSeries Navigator base component. Installing that component will result in higher memory usage when managing your iSeries connections.*

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## Hardware/Software requirements...



Other PC requirements	Value
Disk Space - Install	<ul style="list-style-type: none"> <li>Typical - 148 MB (approximately)</li> <li>PC5250 User - 39 MB (approximately)</li> <li>Full - 221 MB (approximately)</li> <li>Custom - varies, depending on components installed</li> </ul>
Adapter Card	A communications adapter card that supports TCP/IP.

### Notes

- The Disk Space - Install values are approximate. For the exact values, see PC requirements ([www.ibm.com/eservers/iseries/access/pcreq.html](http://www.ibm.com/eservers/iseries/access/pcreq.html))
- You need 5 MB available on the drive where the Windows operating system is installed to accommodate temporary files that the iSeries Access for Windows setup program creates.
- Additional files are downloaded from the iSeries server when you use the File Systems function of iSeries Navigator.
- Service packs require additional space.
- The size for a Full installation could be different depending on whether SSL and plug-ins are in the installation search path.

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## Supports Microsoft operating environments...



### Microsoft Transaction Services (MTS)

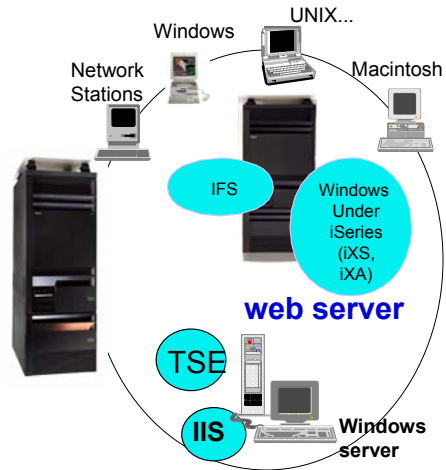
- example, an Auction House application where may need to back out transactions (ie, 2-phase commit)

### Terminal Server Edition (TSE)

- iSeries Access runs on a Windows server, and enables multiple simultaneous users (such as Network Stations, DOS, Unix, or Macintosh) work with iSeries resources

### Internet Information Services (IIS)

- Provides a Web application infrastructure for Windows Servers. iSeries Access runs on server, and fulfill requests for iSeries data (ie, ODBC, OLE DB, etc)



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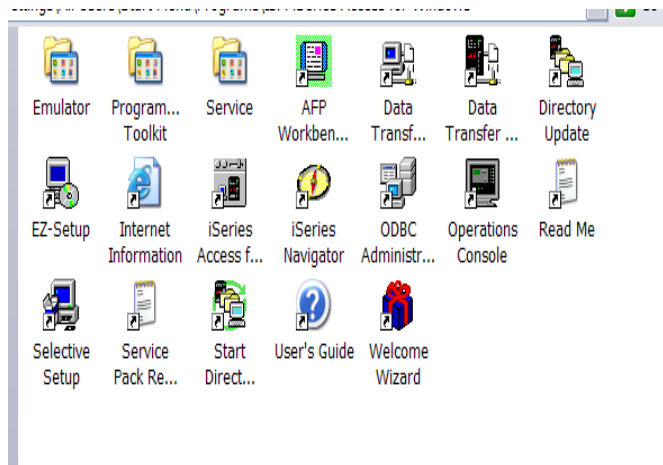
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## Getting Started...



**Many new functions available from iSeries Access for Windows icon group...**



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## iSeries Access for Programmers Application Enablement

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## iSeries Access Middleware



Middleware	Where it fits	Value to iSeries
<ul style="list-style-type: none"> <li>iSeries ODBC driver</li> </ul>	<ul style="list-style-type: none"> <li>Industry-standard Windows database access method.</li> <li>Supports Microsoft V3.0 specification.</li> </ul>	<ul style="list-style-type: none"> <li>Access to DB2 UDB for iSeries</li> </ul>
<ul style="list-style-type: none"> <li>iSeries OLE DB provider (driver)</li> <li>Visual Basic Wizards</li> </ul>	<ul style="list-style-type: none"> <li>Microsoft's universal data access standard interface for Windows applications working with relational and non-relational data.</li> <li>Supports OLE DB 2.5</li> <li>Can use ADO 2.2 and 2.5</li> <li>Can use VB 6.0</li> </ul>	<ul style="list-style-type: none"> <li>Access to DB2 UDB for iSeries</li> <li>Can use OS/400 Data queues, Remote Commands, Stored Procedures, Distributed Program Calls...</li> <li>VB Wizards can be used with iSeries OLE DB provider</li> </ul>
<ul style="list-style-type: none"> <li>.NET Data provider called IBM.Data.DB2.iSeries</li> </ul>	<ul style="list-style-type: none"> <li>Microsoft .NET Framework is a platform for building, deploying, and running Web Services and applications</li> </ul>	<ul style="list-style-type: none"> <li>Enables applications using Microsoft's .NET framework to access DB2 UDB for iSeries databases</li> </ul>
<ul style="list-style-type: none"> <li>Data Queues</li> <li>Remote Commands</li> <li>Stored Procedures</li> <li>Distributed Program Calls</li> <li>SQL APIs</li> <li>Data Transfer APIs</li> </ul>	<ul style="list-style-type: none"> <li>Active X Automation Controls &amp; Objects</li> <li>Industry-standard Windows programming interface</li> </ul>	<ul style="list-style-type: none"> <li>Works with OS/400 Data queues, Remote Commands, Stored Procedures, Distributed Program Calls...</li> <li>Access to DB2 UDB for iSeries</li> </ul>
<ul style="list-style-type: none"> <li>PC5250 enablers</li> </ul>	<ul style="list-style-type: none"> <li>Includes ActiveX controls</li> <li>Industry-standard EHLLAPI, WinHLLAPI, DDE for code conversion.</li> </ul>	<ul style="list-style-type: none"> <li>For 5250 applications</li> <li>ENPTUI for enhanced 5250 datastream functions</li> </ul>

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## Notes: Middleware



### iSeries ODBC Driver

ODBC is a Microsoft-defined standard database access interface for Windows users. Client Access provides an iSeries ODBC driver to enable any ODBC 32-bit Windows application (written to MS V3.0 specification) to transparently access DB2/400 information. iSeries ODBC driver supports Dynamic SQL access at static SQL speed (4x improvement), Block Fetch, Insert, Update, & Delete functions, takes advantage of DB2/400 Optimizer, supports Stored Procedures (result sets from stored procedures), SQL Collections do not need to be defined

### iSeries OLE DB Provider (driver)

OLE DB is a Microsoft 32-bit Windows architecture for universal data access. OLE DB is defined as a multi-platform access method for relational and non-relational data, and is a superset of ODBC. Client Access includes an iSeries OLE DB Provider so that any PC application written to this interface can be used to access iSeries resources. The iSeries OLE DB Provider can be used for record level access, SQL calls, stored procedures, data queues, programs, and CL commands. The OLE DB and ActiveX toolkit which provides Visual Basic wizards and other sample programs is provided as part of the Client Access Toolkit.

### ActiveX Automation Objects

ActiveX automation objects are provided for Client Access data queues, remote commands, and distributed program calls. Many popular client languages, such as Visual Basic, Delphi, PowerBuilder, and Visual C++, support ActiveX automation objects, and now these programs can use the Express client key components to develop client/server applications between the PC and the iSeries. Online help (including example code) is provided and can be accessed from object browsers.

### iSeries Toolbox for Java

The iSeries Toolbox for Java includes a series of low-level APIs for accessing iSeries data and resources from a Java program. It also includes a set of GUI classes to present iSeries data to the user from a Java program. The GUI classes use the Java Swing 1.0 (JFC 1.1) framework. This is a separately installable option of Client Access install. Once installed through Client Access, future updates to the Java Toolbox will be delivered to PC users through the Client Access 'service' function (ie, whenever a PTF for the Java Toolbox is applied to the iSeries Check Service Level recognizes the new level and downloads the fix to the client).

### PC5250 Enablers

- EHLLAPI support is provided so programmers can add a graphical interface to applications written to a 5250 interface to perform functions such as host data access, screen scraping and host automation. This industry-standard 32-bit support also enables applications currently written to another emulation products' EHLLAPI to migrate and run unchanged using PC5250.
- WinHLLAPI support is implemented so customers who have WOSA-compliant applications can migrate to PC5250.
- PC5250 DDE now includes code conversion support. This provides a more consistent set of DDE APIs thus making it easier to migrate applications across different platforms.
- Enhanced Non-Programmable Terminal User Interface (ENPTUI) provides 5250 datastream functions such as ability to show radio buttons and check boxes on end-user desktops that can support these functions (such as a PC versus a 5250 terminal).
- PC5250 ActiveX Controls have been added and can be used in any application that supports ActiveX controls (such as Visual Basic, C++, etc). These controls enable host applications to use a list box or button.

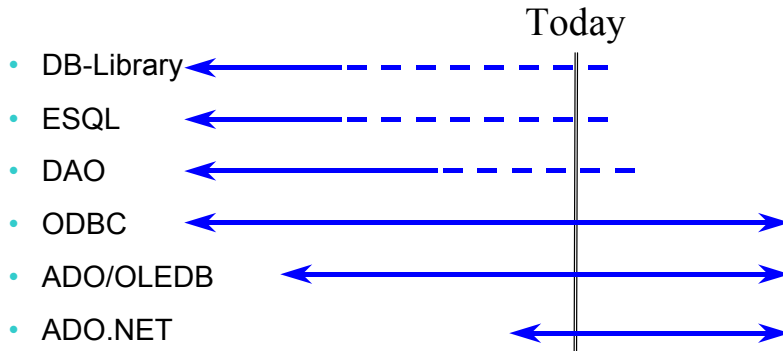


## .NET



.NET is the next big wave in Microsoft technology...

### Microsoft Technology Roadmap





## Notes: What is Microsoft .NET



Microsoft .NET is software that connects information, people, systems, and devices. It spans clients, servers, and developer tools, and consists of:

- The .NET Framework 1.1, used for building and running all kinds of software, including Web-based applications, smart client applications, and XML Web services—components that facilitate integration by sharing data and functionality over a network through standard, platform-independent protocols such as XML (Extensible Markup Language), SOAP, and HTTP.
- Developer tools, such as Microsoft Visual Studio® .NET 2003 which provides an integrated development environment (IDE) for maximizing developer productivity with the .NET Framework.
- A set of servers, including Microsoft Windows® Server 2003, Microsoft SQL Server™, and Microsoft BizTalk® Server, that integrates, runs, operates, and manages Web services and Web-based applications.
- Client software, such as Windows XP, Windows CE, and Microsoft Office XP, that helps developers deliver a deep and compelling user experience across a family of devices and existing products.

The .NET Framework is an integral Windows component for building and running the next generation of software applications and Web services. The .NET Framework:

- Supports over 20 different programming languages.
- Manages much of the plumbing involved in developing software, enabling developers to focus on the core business logic code.
- Makes it easier than ever before to build, deploy, and administer secure, robust, and high-performing applications.
- The .NET Framework is composed of the common language runtime and a unified set of class libraries.

### Common Language Runtime

- The common language runtime (CLR) is responsible for run-time services such as language integration, security enforcement, and memory, process, and thread management. In addition, the CLR has a role at development time when features such as life-cycle management, strong type naming, cross-language exception handling, and dynamic binding reduce the amount of code that a developer must write to turn business logic into a reusable component.

### Class Libraries

- Base classes provide standard functionality such as input/output, string manipulation, security management, network communications, thread management, text management, and user interface design features.

The ADO.NET classes enable developers to interact with data accessed in the form of XML through the OLE DB, ODBC, Oracle, and SQL Server interfaces. XML classes enable XML manipulation, searching, and translations. The ASP.NET classes support the development of Web-based applications and Web services. The Windows Forms classes support the development of desktop-based smart client applications.

Together, the class libraries provide a common, consistent development interface across all languages supported by the .NET Framework.

Note: The .NET Compact Framework does not ship natively with the .NET Framework. Developers may access the .NET Compact Framework using Visual Studio .NET 2003.



## .NET Data Provider new in V5R3...



### ADO.NET Managed Provider

- The new .NET provider is named IBM.Data.DB2.iSeries
- It allows applications using Microsoft's .NET framework to access DB2 UDB for iSeries databases
- For complete documentation of the .NET Data Provider, see IBM DB2 UDB for iSeries .NET Provider Technical Reference.

**Supported**

- SQL (INSERT, UPDATE, DELETE)
- Commitment Control
- Connection Pooling
- SQL naming
- Unicode
- Tracing
- Threads
- IASPs (multiple databases)
- Compression
- Limited stored procedure support

**Not supported**

- Large Objects (LOBs)
- System naming ( / )
- Package support
- Data links
- User Defined Types
- Record Level Access
- CMD/PGM call
- Data Queues

**IBM Notes: Using ADO.NET**

The IBM DB2 UDB for iSeries .NET Provider (which is also called the Managed Provider or the IBM.Data.DB2.iSeries data provider) is based on the ADO.NET architecture. ADO.NET is a set of classes that uses .NET technologies to allow access to database servers. The IBM.Data.DB2.iSeries data provider supports the full set of ADO.NET classes to allow your application to access and use data that is stored in your iSeries DB2 database.

The IBM.Data.DB2.iSeries data provider is compiled for .NET and runs under the .NET Common Language Runtime (CLR) function and, therefore, follows established .NET provider and class definitions.

According to ADO.NET rules, managed providers do not define traditional external data structures or header files so your iSeries Access for Windows Managed Provider does not have a header file or unique data structures.

ADO.NET data providers do not offer as many classes or interfaces as traditional data providers and the properties for these classes are always a single word with no intervening spaces. This means that you can get and set IBM.Data.DB2.iSeries data provider properties by simply calling to methods supported by the various classes.



## iSeries ODBC Driver

@server<sup>®</sup>



# ODBC

Most popular database access method from a Windows application



Compliant with Microsoft ODBC Version 3 specification

- PC applications can now take advantage of new functions included in the 3.5 Specification.

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## ODBC (Open Database Connectivity)...

@server<sup>®</sup>

### V5R3 enhancements

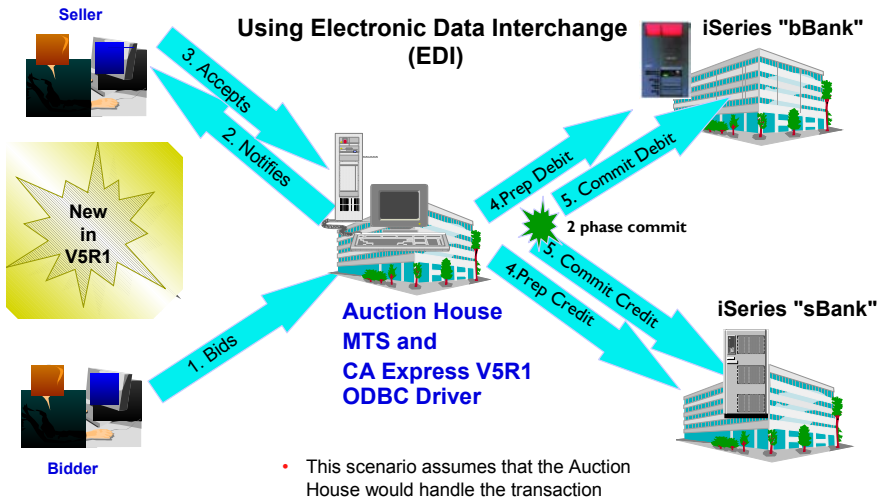
- Support for BINARY/VARBINARY data types
- Support for UTF-8 / UTF-16 data
- Support for increased precision of decimal numbers
- Enhanced MTS support
- ANSI/ISO (American National Standards Institute/International Standards Organization) Core Level SQL standard of 1999

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# Microsoft Transaction Services (MTS)...V5R2



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# Notes: What is ODBC MTS Support?



## What is MTS?

- Microsoft Transaction Server (MTS) is a feature of the Microsoft Windows NT and 2000 Server O/S for development and deployment of three-tiered, server-centric applications built using COM technologies. MTS offers automatic transaction support, role-based security, access to other databases (including connection pooling), message queuing products and mainframe-based applications.

## What is in Express V4R4/5 ODBC for MTS?

- Connection Pooling, which provides improved performance, is already available as the Microsoft ODBC driver manager handles it (ie, the Express ODBC driver doesn't do anything different or special). The user can turn connection pooling on and off via the ODBC Administrator's 'Connection Pooling' tab. This displays a list of the installed drivers, click on one to set whether connection pooling will be enabled or not and set the time-out value for unused connections.
- The Express ODBC driver was made 'Thread Safe' via V4R4 Service Pack SF59557. See Information APAR I11851 for information on thread safety.

## What is in Express V5R1 ODBC for MTS?

- OS/400 V5R1 UDB/400 supports the X/Open XA standard for transaction coordination that the ODBC driver uses to provide two phase commit. ODBC driver will accept the commands and send them to the iSeries via a new set of database host server functions.
- ODBC driver support the `SQLSetConnectAttr(SQL_ATTR_ENLIST_IN_DTC)` statement
- The user can turn connection pooling on and off via the ODBC Administrator's 'Connection Pooling' tab. This displays a list of the installed drivers, click on one to set whether connection pooling will be enabled or not and set the time-out value for unused connections.
- ODBC driver is thread safe (see Information APAR I11851 which describes thread safety and documents that since V4R4 Service Pack SF59557, our driver is thread safe).

## MTS Requirements and Restrictions

- MTS 2.0 (Windows NT with Option Pack 4.0 or Windows 2000) installed in the second tier machine. Distributed Transaction Coordinator (DTC) is included.
- Client Access Express V5R1 with ODBC installed in the same machine.
- OS/400 V5R1 for two phase commit.
- V5R1 MTS support is restricted to one transaction per connection at a time.

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## ODBC (Open Database Connectivity)...



### V5R2 enhancements

- MTS support
- Working with iSeries Database
  - Supports ROW-ID
  - 64K SQL Statements
  - additional descriptor information

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## iSeries OLE DB Provider



**OLE DB**

Microsoft-recommended  
Access for 32-bit Windows  
applications

- Record level access
- Data Queues
- Stored Procedures
- SQL
- Remote Commands
- ODBC.

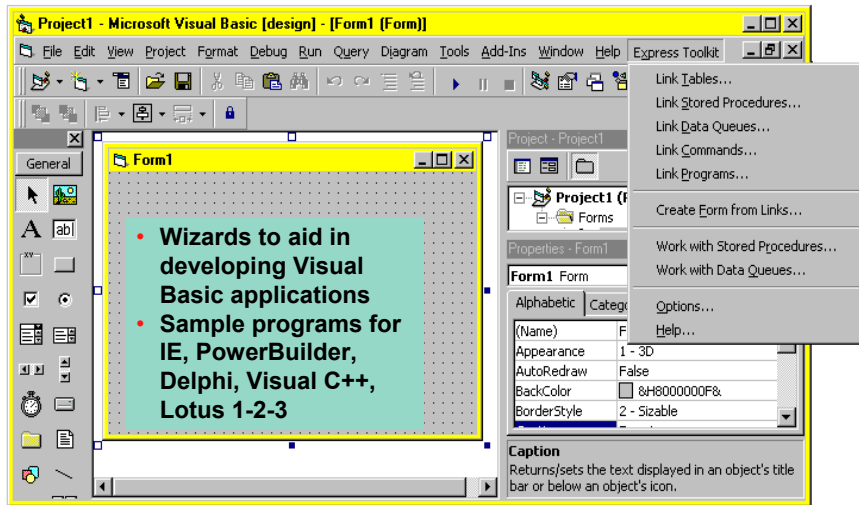


plus add-ins for Visual Basic

OLE DB Provider supports OLE DB 2.5

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## V5R3 Enhancements:

- **New SQL-only provider (IBMDASQL)**
  - SQL commitment control using IBMDASQL
  - MTS support using IBMDASQL
- **SQL**
  - Custom blocking in SQL
  - SQL data compression
  - SQL package support
- **New Record-Level Access-only provider (IBMDARLA)**
  - Record-level access support for forward-only cursors and blocked reads using IBMDARLA
- **DB2 UDB for iSeries support:**
  - Database BINARY and VARBINARY data types
  - Database larger decimal precision support
- **Unicode support**
  - UTF-8 and UTF-16 support



## OLE DB (Object Linking and Embedding)...



### OLE DB provider work with Windows products, such as:

- ADO 2.1 - this ships with Microsoft IE 5.0 and Office/2000 products
- ADO 2.5 - this ships with Microsoft Windows 2000
- Visual Basic 6.0 OLE DB controls and wizards
- An OLE DB interface is provided to support ADO recordset Seek (ADO 2.x)

### Custom properties added

- Force Translate (translate CCSID 65535 data)
- Default Collection
- Catalog Library List
- Convert Date Time To Char

### Supports updatable cursors for the SQL dialect

Is thread safe

### V5R2 enhancements...

- Working with iSeries Database
  - Supports ROW-ID
  - 64K SQL Statements
  - Additional descriptor information

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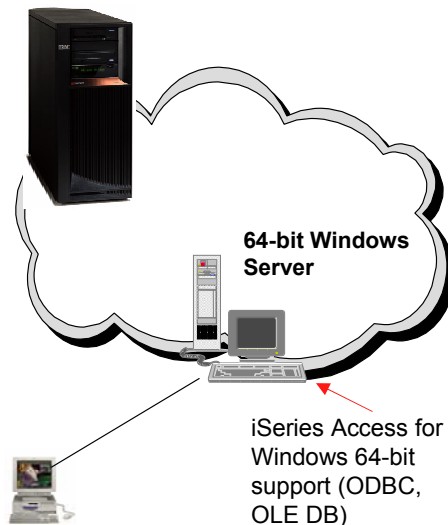
## 64-bit Windows



### ODBC, OLE DB

#### Intel Itanium hardware

- The ODBC and OLE DB components have been ported to run natively on 64-bit Windows
  - Most other components will run in 32-bit mode on 64-bit hardware (print drivers and SSL support will not run with 64-bit applications).



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## Incoming Remote Command (IRC)



- **RUNRMTCMD** is used to run a PC command from the OS/400 command line in a 5250 session
- Since it is a CL command, **RUNRMTCMD** may also be run from a CL program running on a server

1

2

iSeries Access for Windows



- **CWBRXD** is the name of the program that provides and controls the Incoming Remote Command (IRC) function
  - RXD in the name stands for Remote eXecution Daemon
  - The terms CWBRXD and IRC are used interchangeably

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## IRC enhancements in V5R3...



### A new option: /loadprof

- Allows commands to have access to the user-specific registry and environment variable settings while they are running
- Some commands require setting this option in order to work properly
- This option can be saved on the Incoming Remote Command tab of iSeries Access for Windows Properties, where it is called **Load user profile when command run in user context**

**For further information regarding this new option, refer to the CWBRXD and Incoming Remote Command topic in the User's Guide**

- Use this path:
- Start > Programs > IBM iSeries Access for Windows > User's Guide

- The Incoming Remote Command function runs the command on the Windows PC and then routes any text output that is generated by the command back to the requesting system
- Commands are sent to the Windows PC in the format of commands that are typed on a Windows command prompt
  - The output that would normally appear in that command prompt is sent back to the requesting system
  - If the command produces no output, a no output message is sent instead.
- When a command is sent from a remote system, a message is logged in the iSeries Access for Windows history log
  - The message information that is logged identifies the system and user ID that sent the remote command, the text of the command that was sent, and whether or not the command could run
  - If no user ID is specified with the command, no user ID is logged.

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- Installable option of Access for Windows
- Included in the icon group for Access for Windows
- Contains sample programs, and documentation
- Also contains links to header files and Windows Help files installed on your PC
- Has Internet links to more sample programs, documentation, and other helpful information

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## Data Transfer ActiveX Automation support

- The database transfer automation objects provide a programming interface for the Data Transfer functionality.

## Visual Basic wizards

- Data types (BigInt, Large Objects (LOBs))
- Set cursor type and lock type properties
- Generate recordset seek code for tables record level access

## Tools for Java

- Two new Java tools, GUI Builder and Resource Script Converter, are included in Express.
  - The **GUI Builder** is a visual editor for creating Java dialogs, property sheets and wizards.
  - The **Resource Script Converter** converts Windows user interface elements into a form usable by Java programs. These tools are an optionally installable component of the Toolkit, and require the current JRE and Java Toolbox.



## Data Transfer

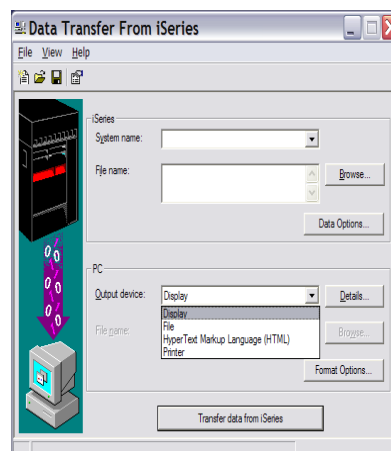
## What is Data Transfer?

### Provides an SQL-like interface

- To allow full file **SELECT** or customized queries including joins, sorting, and record grouping
- Provides access to iSeries file members

### Provides an easy-to-use GUI so users can:

- Download selected DB2 UDB for iSeries information to a
  - PC file
  - HTML file
  - PC display
  - PC printer
- Upload PC data to DB2 UDB for iSeries
  - From PC file





## Many Other Ways to Run Data Transfer...



### Batch Transfers

- **RTOPCB and RFROMPCB**
- **Can also run multiple batch requests on a single connection**

### Pre-defined Transfer Request

**Auto-run without user intervention**

**Can be placed in a start-up file**

**Can be started from:**

- **PC5250 Toolbar**
- **Express icon group**
- **Desktop objects or Explorer**
- **Create new ones from Windows New menu**

Compatible with previous formats (ie, Enh.Win3.1, RUMBA)

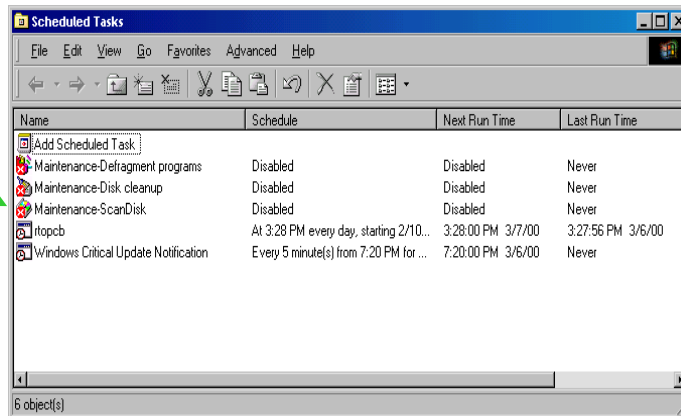


## Automating Data Transfer



*You could schedule Batch Transfers using a Windows Scheduler*

**RTOPCB is scheduled to run at a given date and time**



## IBM Notes: Scheduling a Data Transfer Request



iSeries Access for Windows does not provide a scheduler program. For an example of how to schedule a Data Transfer request, we picked Microsoft's System Agent application.

From Microsoft Task Scheduler select *Add Scheduled Task*. Go through the wizard to create the scheduled task and enter

"C:\Program Files\IBM\Client Access\RTOPCB.EXE" your.TTO

for the task to execute.

Complete the other scheduling options offered by the System Agent application. You are now ready to run transfer requests on a scheduled basis.

## IBM Data Transfer Provides Data Conversions



**Capable of transferring data to and from many popular PC file types including:**

- **ASCII Text**
- **CSV**
- **Excel and Lotus spreadsheet types**
- **Tab-Delimited Text**
- **UTF-8 & -16 (used by browsers)**

**ActiveX Automation support for all Data Transfer GUIs**

- **ActiveX automation objects for transferring database data to and from iSeries and iSeries servers.**
- **These objects provide both a high-level and a low-level interface.**
- **These objects can be used from **Visual Basic** and other languages which support ActiveX automation.**





## Create iSeries Database File Wizard

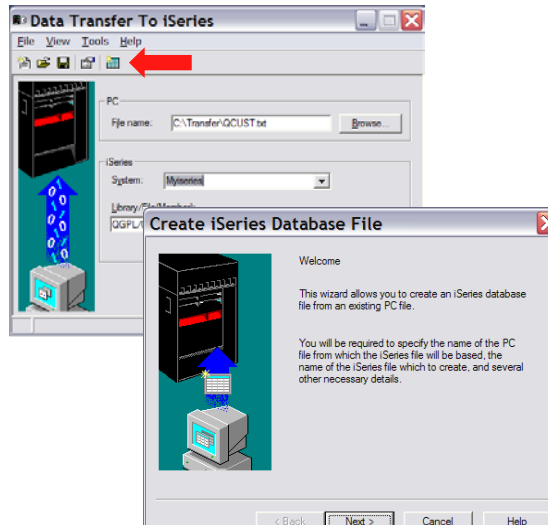


To help you create new tables in DB2 UDB for iSeries, use the **Database File Wizard**

It also creates the File Description File (FDF) required for uploading the data to a new file

Start the Create iSeries Database File tool by:

- Selecting it from the Tools menu, or
- By clicking on its icon in the toolbar



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## Notes: Create Database File Wizard



In iSeries Access for Windows, Data Transfer now has the ability to define and create a new iSeries database file based on an existing PC data file. The new file is created as an SQL table. In previous releases, Data Transfer was only able to create files based on existing iSeries database files. The new function will also create the FDF file required for uploading the data to the new file. The interface to create a new database file is found in the Data Transfer to iSeries application. The function can be started from the Tools menu or a new toolbar icon.

The first step in creating a new iSeries database file is to specify the PC file that you want the file based off of. The file can be in any of the following formats: ASCII text, BASIC Sequential, BIFF3, BIFF4, BIFF5, CSV, DIF, Tab-delimited text, or WK4. If you pick a file type containing detailed type information, such as BIFF or WK4, Data Transfer is able to more accurately determine the definition of the iSeries file you will want to create to hold your data. After specifying your PC file, Data Transfer attempts to determine the type of the file. The type detected by Data Transfer is shown in the window. If this "guess" by Data Transfer is not correct, you will need to set the correct file type before you continue. If this is not done, Data Transfer will not be able to read the data file correctly, and an error will be displayed.

The information you enter along the way in the wizard will be loaded into the Data Transfer to iSeries application upon completion of the wizard function. The FDF file is an essential item for step of transferring the data to the iSeries. This panel allows you to set the name of the FDF file to be used for the transfer. In order to retrieve the field information from the PC data file, Data Transfer must "scan" or parse the data. If you chose not to do this, you will be required to manually set up the field definitions from scratch. If you run the scan operation, Data Transfer will scan the PC file and come up with a first pass at what the field definitions of the new database file will need to be to hold the data from the PC data file. If you chose to have Data Transfer scan the PC data file, you will be presented with a list of fields found in the PC data file. If you chose a simple file type such as ASCII text, the field definitions will almost always need to be modified. If you chose a more complex file type such as BIFF or WK4, only minor modifications may be needed. Either way, it is a good idea to verify the field definitions are going to allow for all possible values you will want to insert into the iSeries database. A context menu (right click in Details list control) is available to allow users to add to or remove fields from the list.

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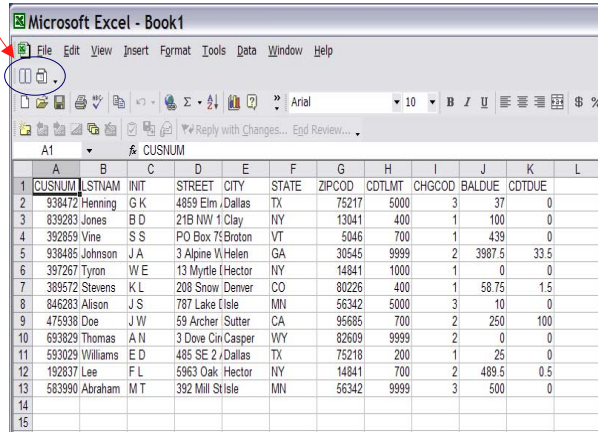


## Data Transfer and Excel integration...

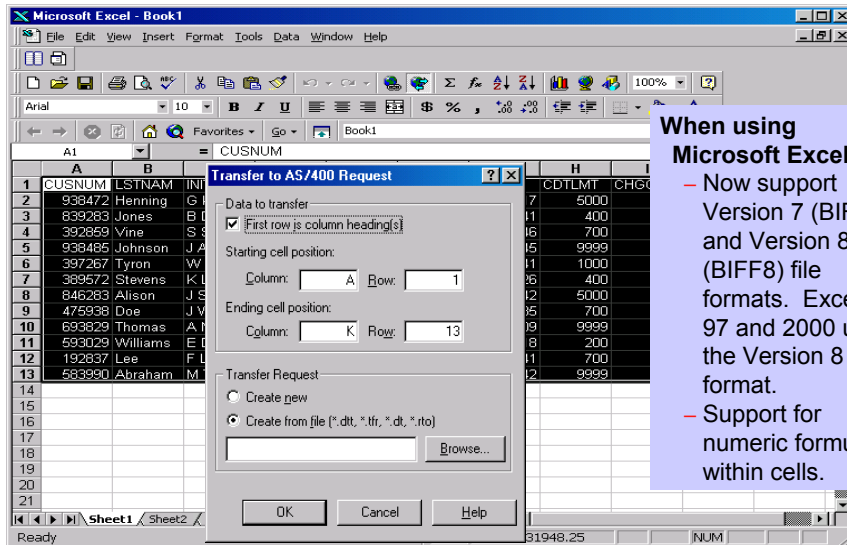


### Data Transfer has add-ins for Excel users

- Can **download** from DB2 UDB for iSeries directly into spreadsheet
  - Can create request
  - Can run previously saved request
- Can **upload** PC data to DB2 UDB for iSeries directly from spreadsheet
  - Added in V5R2



## Enhancements for Excel users - V5R2



**When using Microsoft Excel**

- Now support Version 7 (BIFF7) and Version 8 (BIFF8) file formats. Excel 97 and 2000 use the Version 8 file format.
- Support for numeric formulas within cells.



## Enhancements for Excel users - V5R3



- Support most recently used request list and last directory in Excel Add-in

- Date/Time fields recognized by Data Transfer and now stored on DB2 for iSeries as 'date or time' field.

- Option to convert numeric to character when transferring to iSeries DB

- Support data compression for faster transfers

	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	DATE	CUSNUM	LSTNAM	INIT	STREET	CITY	STATE	ZIPCOD	CDT	LMT	CHGCOD	BALDUE	COTDUE	
2	1/4/2002	6	123456	DA	Algonquin	Rich	IL	59001-1234	0	1	0	0	0	
3	2/4/2003	1	123456	DA	Algonquin	Rich	IL	59001	1	1	2	0.5		
4	4/3/2002	2	123456	DA	Algonquin	Rich	IL	59001	2	1	4	1		
5	5/4/02	3	123456	DA	Algonquin	Rich	IL	59001-6678	3	1	6	1.5		
6	4/9/2002	4	123456	DA	Algonquin	Rich	IL	59001	4	1	8	2		
7	10/30/2001	5	123456	DA	Algonquin	Rich	IL	59001	5	1	10	2.5		
8	4/9/2002	6	123456	DA	Algonquin	Rich	IL	59001	6	1	12	3		
9	11/9/2002	7	123456	DA	Algonquin	Rich	IL	59001-7890	7	1	14	3.5		
10	12/30/2002	8	123456	DA	Algonquin	Rich	IL	59001	8	1	16	4		
11	1/4/2002	9	123456	DA	Algonquin	Rich	IL	59001	9	1	18	4.5		
12	2/4/2003	10	123456	DA	Algonquin	Rich	IL	59001	10	1	20	5		
13	4/3/2002	11	123456	DA	Algonquin	Rich	IL	59001	11	1	22	5.5		

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## Notes: Convert Excel data and time cells



Convert Excel date and time cells to iSeries date and time allows the transfer of standard Excel internal date and time formats to the iSeries without requiring conversion. Typically, date and time cells uploaded to the iSeries must be character strings. By enabling this option, Excel data can be converted to an iSeries compatible date or time without requiring prior conversion to a character string.

The following standard Microsoft Excel date and time formats are supported:

Format string	Example
m/d/yy	10/01/74
m/d/yyyy	10/01/1974
d-mmm-yy	01-Oct-74
d-mmm	01-Oct
mmm-yy	Oct-74
h:mm AM and PM	10:15 AM
h:mm:ss AM and PM	10:15:22 PM
h:mm	18:22
h:mm:ss	18:22:34
m/d/yy h:mm	10/01/74 6:20
mm:ss	18:25
[h]:mm:ss	18:25:32
mm:ss.0	25:23.0

Convert numeric data in character columns to character data - allows the conversion of numeric cells in spreadsheet data to be converted to character. With this option disabled, numeric cells in character columns cause Data Transfer to end with an error message. By enabling this option, you can specify that numeric cells are converted to character on the upload to the iSeries to avoid Data Transfer ending when it encounters numeric data.

NOTE: Converted character strings are not verified by Data Transfer since the expected string cannot be determined. Data loss could occur during the conversion.

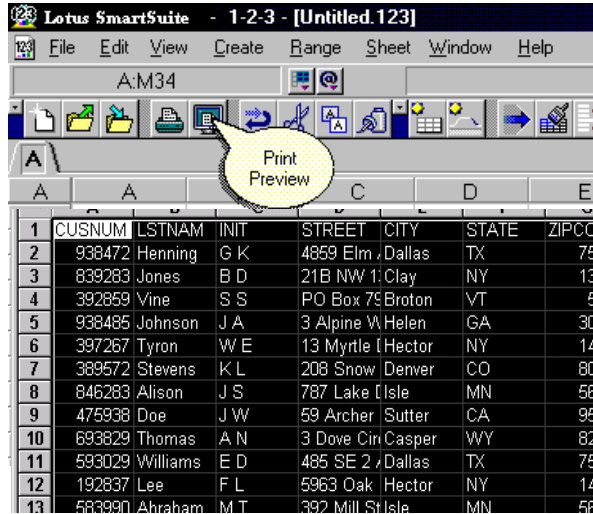
In the past, customers could not upload this data. Now they can by using this new option. For example: (notice the ZIPCODE column. ZIP+4 data is character and 5 digit ZIP codes are numeric.)

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## Enhancements for Lotus users - V5R2



### New in V5R1 version

- Support 97 Edition (123)
- When transferring a spreadsheet formula cell, Data Transfer now tries to determine the numeric value.

- If the formula does not resolve to a numeric value it will continue to pass a value of 0

### New in V5R2 version

- Support Lotus 123 Version 9 file format

- With 65,536 rows (Version 97 support 8,192 rows)



## Notes: Enhancements for Excel and Lotus 1-2-3 users



Lotus 123 .123 file support added. The .123 file type is the standard type used in 97 Edition of Lotus 123. Lotus .WK4 support was added in release V4R4. The current .WK4 selectively installed option is expanded to include .123 support since these file types use the same LMBCS character conversion routines. The .123 support includes UNICODE character set support and support for new .123 numeric storage types. These types are defined in the Lotus .123 file format specification. Like .WK4 file support, .123 file format support includes the capability to read and write records to multiple sheets within a single workbook. Support for these types is also now included in the 'Create iSeries Database File' wizard.

Upload from Excel Add-In. Today, Data Transfer provides the ability to download information into an Excel spreadsheet. This function is integrated into the Excel by providing (1) an Excel add-in module called cwbtfxla.xll, (2) a toolbar icon/button the user can select to invoke a Client Access data transfer GUI, and (3) a menu option from the Excel "Data" pulldown menu called "Transfer Data From iSeries..." Data Transfer now extends its integration with Excel by providing an option to upload information from Excel to the iSeries. This additional integration include (1) an additional icon/button on the Client Access toolbar, (2) an additional menu option on the Excel "Data" pulldown menu called "Transfer Data To iSeries...", (3) a new dialog similar to the current download dialog, which allows the user to specify what data to upload and where to upload it to. A new DLL to be shipped and installed to provide this new capability.

Microsoft Excel BIFF7 and BIFF8 file support - support for the Microsoft Excel Versions 7 and 8 file formats. Version 7 support is simply an extension of the Version 5 file format which Data Transfer currently supports. The major change from Version 7 to Version 8 is that in Version 8 character data is stored as UNICODE. Like .WK4 file support, Excel Version 8 support includes the option to save to multiple sheets within a workbook. Support for these types also has been added to the Create iSeries Database File wizard.

Previously Data Transfer "ignored" formula cells and passed the default value of the field type to the iSeries. For example, a numeric formula cell found in Excel today would cause Data Transfer to pass a value of 0 to the iSeries database file. Data Transfer now determines if the formula is for a numeric value. If it is, Data Transfer pulls the result of the formula from the cell and passes it to the iSeries database file. If the formula does not resolve to a numeric value, Data Transfer will continue to pass the default value for the cell type.



## Data Transfer enhances e-business



CHAR	CHAR	DATALINK
name	address	website
IBM	Rochester	<a href="http://www.as400.ibm.com">http://www.as400.ibm.com</a>

running a Data Transfer request

HTML Tables	
<b>Update an existing HTML file with new DB2/400 info</b>	Can download iSeries database information directly into HTML tables Database information can be inserted directly into a section of an existing HTML file. A 'template' section is used to tell D/T where to put the resulting table in the HTML file. This enables users who have web pages of text/images update a section of database information yet leave the rest of the web page text intact. Previously the entire HTML file was replaced with a table containing the database data.
<b>DATALINK data type support</b>	OS/400 V4R4 added a DATALINK data type. This type supports url entries pointing at files accessible by your network. When transferring to an HTML table Data Transfer provides a link for this url

**In V4R5**

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## Data Transfer - V5R3



### Unicode enablement / New Unicode text file type

- Support for UTF-8 and UTF-16 data in DB2 database tables

UTF8	UCS2	UTF16
ABC	ABC	ABC
εΦΩ	εΦΩ	εΦΩ
Для	Для	Для
אבג	אבג	אבג
طسذ	طسذ	طسذ

Retrieved record 7

Many different characters from many languages from a single character set

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## Notes: Unicode data support



Unicode allows the use of many different characters from many languages from a single character set. In today's global economy this is extremely important. For example, a product description could be stored in the database in 10 different languages and used during product packaging for all these languages.

Here are some of the Unicode features added to Data Transfer in V5R3:

- True Unicode support in Microsoft Excel Version 8 files.
- A new Unicode text file format that allows you to store data in UTF-8, UTF-16, or Big-endian UTF-16.
- Unicode display support.
- Unicode print support including configurable fonts.
- Support for UTF-8 and UTF-16 native DB2 column types



## Other enhancements...



### **V5R3 Data Transfer enhancements:**

- Support for larger decimal precision
- Support for BINARY and VARBINARY SQL data types

### **V5R2 Data Transfer enhancements:**

- Support for uploading more than 256 columns of data to a database file
- Support new iSeries database functions



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## PC5250 Display & Print Emulation

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## PC5250 V5.7 included in V5R3M0...

@server®

### New in PC5250 V5.7:

- Accessibility enhancements to the operator information area (OIA): Popup keypad, and Color mapping as well as visual indication of sounds
- Enhanced mouse marking
- Bidirectional (LamAlef) enhancements
- USB Japanese 106 keyboard support
- Basic\_ascii print PDF and PDT



Personal Communications  
iSeries Access for Windows

WorkStation Program  
Version 5.7 for Windows

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20031002



◆ *PC5250 V5.5 included in iSeries Access for Windows V5R2 version*

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## Notes: PC5250 Emulation



**PC5250 display emulation** enables users to run iSeries programs, work with OS/400 screens, and to send iSeries output to PC printers. PC5250 display emulation supports up to 26 sessions to one or more iSeries systems. To configure and start an emulator session:

- 1 Start the PC5250 configuration program.
- 2 Select Display for the session type.
- 3 Select the size for the session.

Note: Do not use End Connection \*YES to log off your emulator session and disconnect from the iSeries. Instead, select COMMUNICATION from menu bar then select DISCONNECT.

**PC5250 print emulation** can be used to print iSeries output on printers known to the iSeries – this could be a network printer or a PC-attached printer. Up to 26 printer sessions can be simultaneously running to one or more iSeries systems.

To configure and start a printer emulation session

- 1 Start the configuration program.
- 2 Select Printer for the session type.
- 3 Click the Setup button to configure additional options for the printer session.

Help text is available if you need additional help with the options.

The new "Basic\_ascii print PDF" enhancement is that all print formatting commands are omitted except for the following:

- BEGIN\_MACROS
- BAK EQU 08 /\* Back Space \*/
- TAB EQU 09 /\* Tab \*/
- LFF EQU 0A /\* Line Feed \*/
- FFF EQU 0C /\* Form Feed \*/
- CRR EQU 0D /\* Carriage Return \*/
- END\_MACROS

This is useful in cases when you do not want to have the host output to be formatted according to the host application, ie, you want to see the pure text (and things like horizontal position, vertical position, CPI, LPI, font name, bold, underscore, italic, etc, do not matter) and you possibly want to direct the output to a flat ASCII file for further viewing.

If you run a host print test to a file using a "normal" PDT file and to a Basic ASCII.

- The file created with the "normal" PDT will have some binary "garbage" - escape sequences of the print formatting commands.
- The file created with Basic ASCII contains only those formatting commands which are common between printers and text processors, like FF, LF, CR.



## PC5250 V5.5 (V5R2 enhancements)



### Usability...

- **Bypass sign-on can now be used in conjunction with Kerberos tickets to avoid a sign-on screen**
- **Wrap pasted text. Allows the paste of copied text across fields and lines without breaking in the middle of a word, or ending a line with an invalid word.**
- **Move +/- sign before the number when copying/pasting - for consistency with other Windows applications**
- **Improved error messages**

### National language support

- **Support has been added for Hindi and Japanese code page 1390/1399**





## Use CWBLOGON to sign onto iSeries



### CWBLOGON command –

*Simulates persistent password caching (ie, remembered across restarts)*

Use to connect to an iSeries without being prompted for Userid or Password

- Password in clear text - use appropriate security measures.
- Documented in User's Guide

Quite useful if PC is set up as an iSeries printer server (ie, PC5250 Printer Emulation always running on this PC)

Useful on NT/2000/XP/2003 where Windows password cache not provided

Add CWBLOGON.exe program to Windows start-up folder



```
CWBLOGON
system /u userid /p password
```

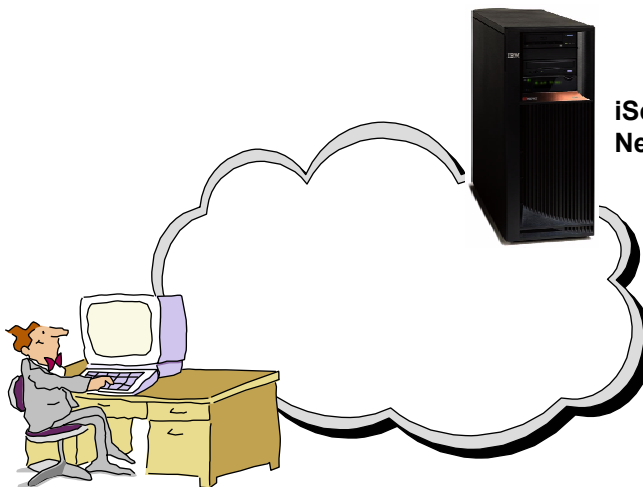


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## Installing



**iSeries  
NetServer**

```
\QIBM -->
\ProdData -->
\CA400 -->
\Express -->
\Install -->
\Image
```

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## iSeries Access for Windows installs code in iSeries IFS (NetServer)



iSeries Access client Install Image placed in IFS in:

- \QIBM\ProdData\CA400\Express\Install\Image
- Already set up as 'shared'

Service Pack placed in IFS in:

- V5R1 - Service Pack PTFs saved in the main install image--no extra reboot! 
- For V4R5 or earlier, \QIBM\ProdData\CA400\Express\Service\Image

Express installs and services other code placed in IFS:

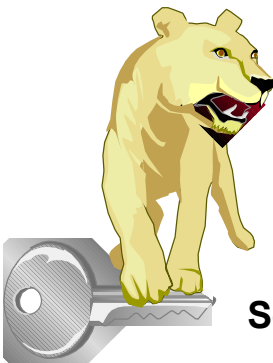
- iSeries Toolbox for Java, Java Runtime Environment, Secure Sockets Layer (SSL) Encryption programs, iSeries Navigator Plug-ins, Add-ins
- V5R1 - EZ Setup

Creating Customized Install CD images

- SSL component can now be included in your customized install CD image (V5R2) 

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## Security Considerations

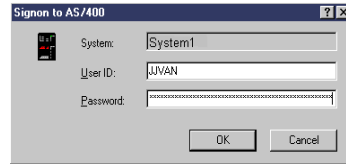
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# IBM Long Password Support



- Connections to iSeries servers can now be done with 128-character passwords, for better security.
- The Password Level (QPWDLVL) must be set to 2 or 3 for these long passwords to be used.
  - A value of 0 is the default and allows 1 to 10-character passwords.
  - A value of 1 allows 1 to 10-character passwords and iSeries Netserver passwords for Windows 95,98,Me will be removed from the system.
  - A value of 2 enables 1 to 128-bit passwords.
  - A value of 3 enables 1 to 128-bit passwords, and iSeries Netserver passwords for Windows 95,98,Me will be removed from the system.
- Password level can be modified in green screen, or through Security ->Policies within iSeries Navigator.



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# IBM 40-bit and 56-bit Encryption Removed



## On iSeries

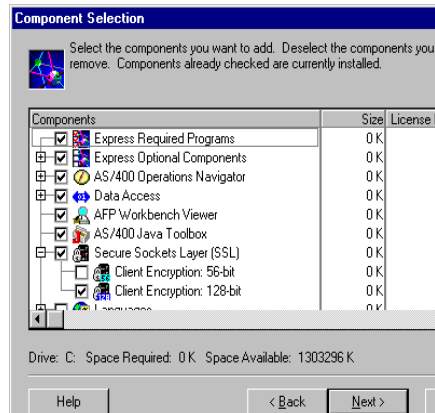
- Cryptographic Access Provider LPP (5722-ACx)
  - AC3 = 128-bit
- Client Encryption LPP (5722-CE3)
  - CE3 = 128-bit

## On PC

- Client Encryption LPP (5722-CE3)
  - CE3 = 128-bit

## New:

**128-bit SSL included on V5R3 iSeries Access PC CD**



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## Notes: SSL



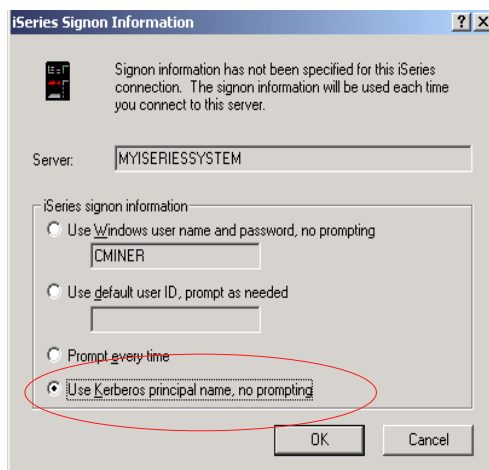
Secure Sockets Layer (SSL) is a popular security scheme that allows the PC client to authenticate the server and encrypts all data and requests. Use it when transferring sensitive data between clients and servers. The transfer of credit card and bank statement information are examples of client/server transactions that typically take advantage of SSL. There is an increased cost in performance with SSL because of the added encryption and decryption processing.

iSeries Access for Windows includes optionally-installable support for Secure Sockets Layer (SSL) and a way to manage key databases with IBM Key Management. All functions of iSeries Access for Windows can communicate over SSL except Incoming Remote Command and Ultimedia. However, on a PC using an Intel 64-bit processor, such as Itanium, only 32-bit applications and connections can use SSL. iSeries Access for Windows allows SSL communications with the iSeries server at the 128-bit level of encryption.

Beginning in with iSeries Client Access Express for Windows (V5R1 version), client authentication is also available for PC5250.



## Kerberos added to V5R2 version



### Support for Kerberos authentication of users

- Kerberos ticket can replace the sending of userid and password from a PC to the iSeries.
- Kerberos authentication as a new connection property to select

We all want something to keep all of our passwords in sync for all of our iSeries. As computing environments get more complex, and more and more servers are added, IT shops need a way to simplify the management of users across disparate systems and applications. While managing user identities can be challenging in a shop with multiple iSeries machines, the complexity compounds when you try to manage users across a network of dissimilar hosts. Additionally, users often have different names on different systems and even different names within multiple applications on the same system. System administrators aren't the only set of people who have multiple IDs, as application developers build applications that pull data from multiple, often disparate, systems. These developers often must resolve the differences in user IDs on all of these systems in order to make their applications function. And when they must, they often compound the problem by implementing a new user registry to control access to their application. Finally, industry studies say that a typical user has an average of 14 passwords to memorize between work, home, and various Web interfaces. Remembering all those passwords is tough. Requiring hundreds of users to manage 10+ passwords apiece makes our systems and networks inherently less secure.

Kerberos offers many advantages over other ways of managing the sign-on process. Some of the more important advantages are the fact that passwords are not stored or transmitted in any clear text or de-cryptable form, user enablement (or disablement) is done at a single point, and there is no way for passwords to get out of sync because a user's passwords are not stored on every single system. Best of all, Kerberos is an industry standard that is already supported in Windows(W2K and above), most versions of UNIX, and Linux. And as IBM rolls out their OS updates through the rest of this year, look for support for EIM-enabled Single Signon on all of the servers in the eServer line.

On 4/29/2002, IBM announced Enterprise Identity Mapping,(EIM). EIM fits nicely into two prominent IBM initiatives: eServer and eLiza. IBM also announced a Single Signon application that will run on top of EIM, but please don't confuse the two. EIM is designed to allow system administrators to associate user registries (an EIM term) across a variety of systems. Single Signon is the first application built on top of the EIM infrastructure, and it improves other "password synchronization" schemes that have been available to iSeries customers to date. The Single Signon solution uses the Kerberos network authentication protocol standard to authenticate a user and then grants that user a one-time use, time-limited Kerberos "ticket" that the user can present to all of the Kerberos-enabled servers in the network. If the ticket is valid for the system in question, access is granted. If the ticket is not valid for the system (or has expired), access is denied. EIM and Single Signon are included with OS/400



## Other Functions in iSeries Access for Windows

**iSeries Navigator  
Operations Console  
EZ-Setup**



## Notes: Sources of Technical Information



iSeries Access web site is <http://www.ibm.com/eserver/series/access>

- Contains the latest information about the entire family of Client Access products, including Client Access Express for Windows, such as late breaking news, Information APARS, FAQs, information on beta programs, how-to information, service and support, new product announcements, plus much more.
- Provides links to other important web pages, such as iSeries Navigator, Operations Console, iSeries NetServer, etc

Client Access Express for Windows Redbook (SG24-5191)

- Access online by going to Client Access web page and selecting iSeries Client Access Express for Windows: Implementing V4R4M0, SG24-5191 from main page.

iSeries Information Center

- Contains information on workshops, tools, and other technical information on topics such as Client Access, Operations Navigator, Domino for iSeries and more. Also provided is an iSeries Client Access Express Administrators Guide which has technical information on the Express client content for advanced users, such as administration and programming documentation. This can be accessed by going to the Client Access web page, then selecting 'iSeries Information Center' from main page.

iSeries Online/Softcopy Library

- Is an entire library of iSeries books organized into bookshelves, accessible on CD or on the internet. The books on the CD-ROM can be read using the IBM Library Reader program, provided on the CD-ROM.

Toolkit for iSeries Access for Windows

- Toolkit ships with Express. Install it when you install Express, or later use Selective Install to get it. It also has links to additional important programming information that is contained on the Client Access web page.
- Information on OLE DB and Visual Basic Wizards is at <http://www.ibm.com/eserver/series/access/oledb>
- iSeries PartnerWorld for Developers web page (<http://www.ibm.com/eserver/series/developer/>) then search on ODBC) contains detailed tips and techniques for developing ODBC applications.

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## Web Information



**iSeries Access web page has latest up-to-date information**

- <http://www.ibm.com/eserver/series/access>

**For Information on**

- Information APARs on specific topics, such as Windows 2003 support
- Access to all Red Books and other Reference Manuals
- FAQs, Articles, links to Administrator Guide...

**Select 'Additional Links'**

- iSeries NetServer for information on setting up your file and print serving
- Operations Console for information on setting up a PC as your system console
- iSeries Navigator for i5/OS administration

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