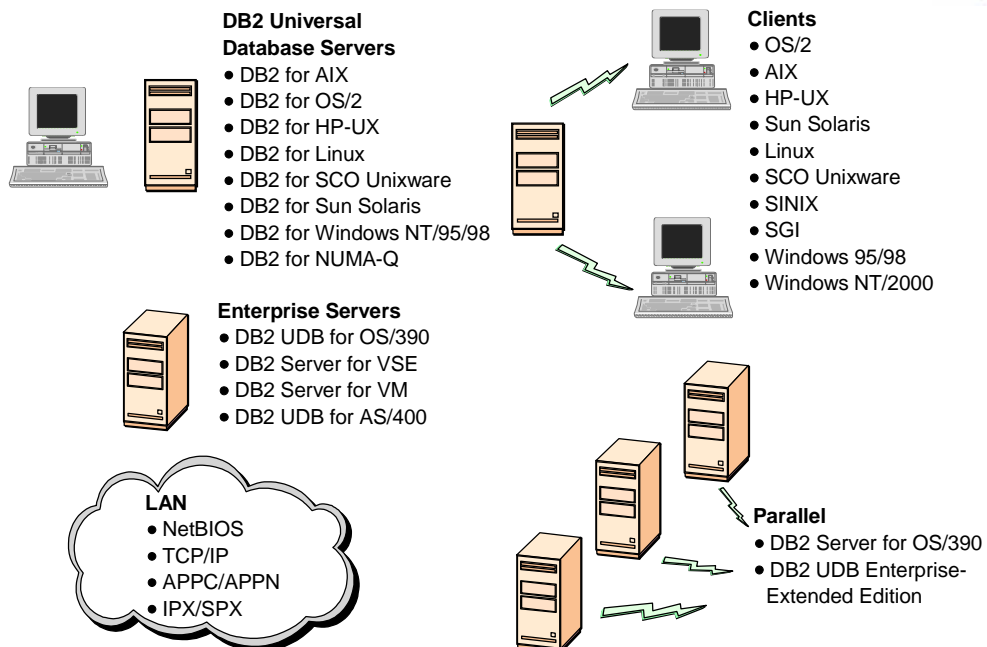


# What's New for DB2 Server for VSE & VM



## DB2 Family

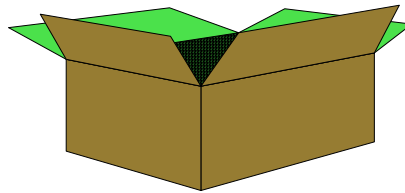
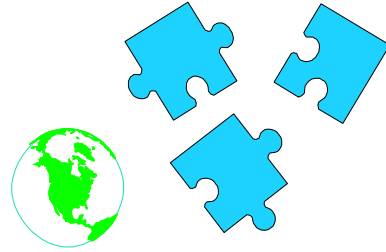


[www.software.ibm.com/data/db2/vse-vm](http://www.software.ibm.com/data/db2/vse-vm)

## DB2 Server for VSE & VM



- Base product
- Optional features
- Complementary products

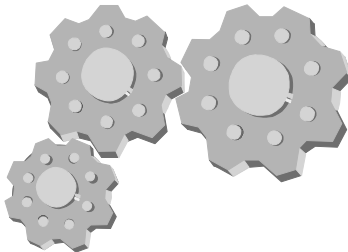
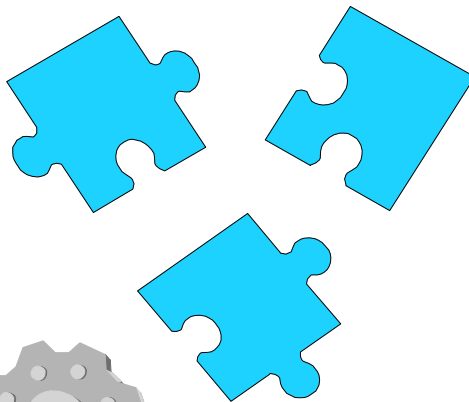


[www.software.ibm.com/data/db2/vse-vm](http://www.software.ibm.com/data/db2/vse-vm)

## Base Product



- DB2
- VMDSS
- DPropR
- DB2 UDE



[www.software.ibm.com/data/db2/vse-vm](http://www.software.ibm.com/data/db2/vse-vm)

## DB2 Server for VSE & VM 6.1



- TCP/IP Support on VM
- VSE Online DRDA1 AR
- Stored Procedures
- RDS above 16M
- New Code Page / Euro / Unicode Support

[www.software.ibm.com/data/db2/vse-vm](http://www.software.ibm.com/data/db2/vse-vm)

## TCP/IP Support (VM only)



- Enables communication using TCP/IP in addition to SNA
- Implemented on both the AR and the AS
- Supported for both private and DRDA protocol
- No DRDA2 support using TCP/IP



[www.software.ibm.com/data/db2/vse-vm](http://www.software.ibm.com/data/db2/vse-vm)

## Using TCP/IP on the VM Server



- Uses the value of the TCPSPORT initialization parameter, if specified
- Otherwise, looks in the ETC SERVICES file
- Otherwise, uses the well-known port (446)
- If TCP/IP is not to be used, specify TCPSPORT=0 at startup
- More details are in the DB2 Server for VM System Administration manual

[www.software.ibm.com/data/db2/vse-vm](http://www.software.ibm.com/data/db2/vse-vm)

## Using TCP/IP on the VM Requester



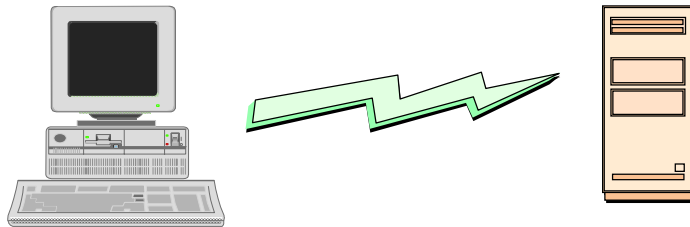
- The database servers must be defined in the communications directory:  
    :nick.TCPVM1     :**service.SQLTEST**  
                          :**host.TORVMLB6**  
                          :security.PGM  
                          :userid.USERID  
                          :password.PASSWORD  
                          :dbname.SQLTEST
- On the :service tag, a port number can be specified instead of a service name
- On the :host tag, an IP address can be specified instead of a host name

[www.software.ibm.com/data/db2/vse-vm](http://www.software.ibm.com/data/db2/vse-vm)

## VSE Online DRDA1 Requester



- ❑ Enables an online (CICS) requester on VSE to access remote databases using DRDA protocol
- ❑ Implemented for the online AR only, ie., no VSE batch DRDA AR support at this time



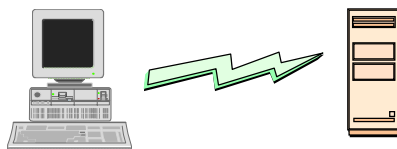
[www.software.ibm.com/data/db2/vse-vm](http://www.software.ibm.com/data/db2/vse-vm)

## VSE Online DRDA1 Requester (continued)



### Notes:

- ❑ DBname Directory has a new format
- ❑ Must create CCSID phases at installation / migration time
- ❑ Creating a package on a remote database is a 2-step process (PREP and CBND)



[www.software.ibm.com/data/db2/vse-vm](http://www.software.ibm.com/data/db2/vse-vm)

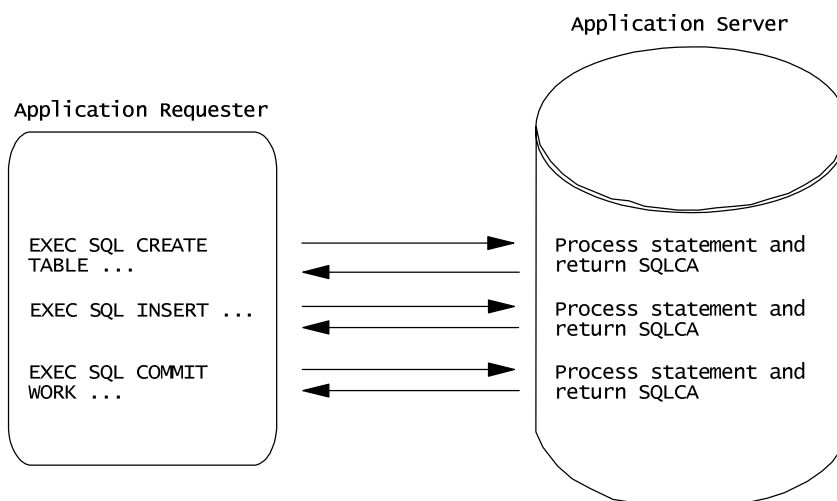
## Stored Procedures



- ❑ Allow SQL statements and logic to be encapsulated in a stored procedure that is local to the database
- ❑ Improve performance by reducing network traffic
- ❑ Allow applications to be platform independent
- ❑ Increase security of data
- ❑ Hide database design from end users

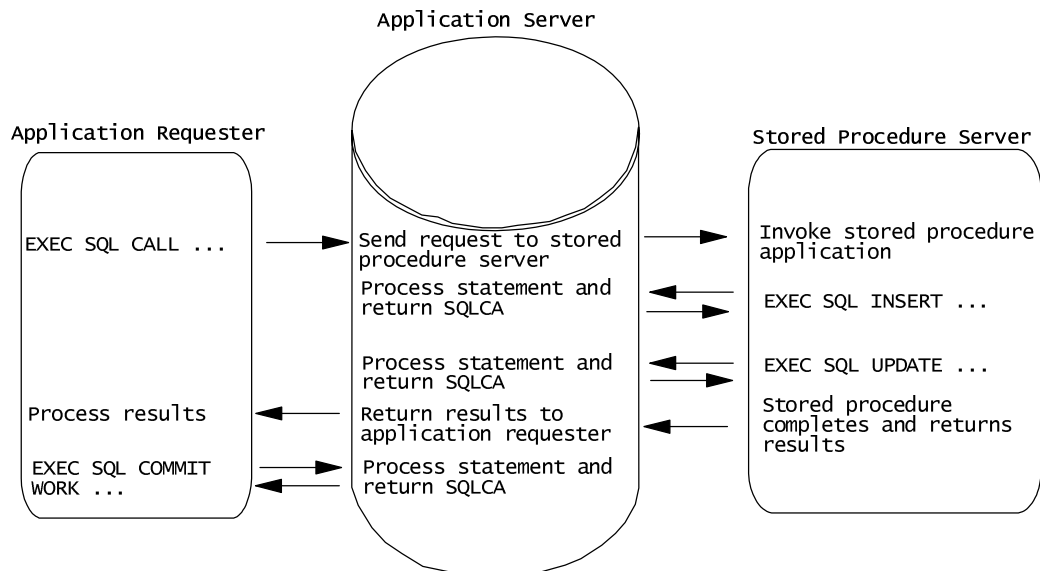
[www.software.ibm.com/data/db2/vse-vm](http://www.software.ibm.com/data/db2/vse-vm)

## Without Stored Procedures



[www.software.ibm.com/data/db2/vse-vm](http://www.software.ibm.com/data/db2/vse-vm)

## With Stored Procedures

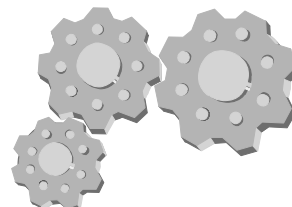


[www.software.ibm.com/data/db2/vse-vm](http://www.software.ibm.com/data/db2/vse-vm)

## Stored Procedures (continued)



- ❑ In 6.1, a VSE or VM requester can issue the CALL statement in private flow only
- ❑ A VSE or VM server can process a CALL statement in private or DRDA flow
- ❑ In both private and DRDA flow, input and output parameters can be provided

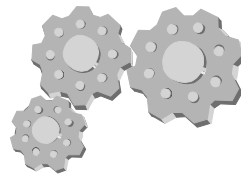


[www.software.ibm.com/data/db2/vse-vm](http://www.software.ibm.com/data/db2/vse-vm)

## Stored Procedures - Result Sets



- In DRDA flow, a VSE or VM server can return result sets
- Declaring a cursor 'WITH RETURN', and leaving it open after the stored procedure ends, creates a result set
- Any unfetched rows in the result set are returned to the calling application



[www.software.ibm.com/data/db2/vse-vm](http://www.software.ibm.com/data/db2/vse-vm)

## RDS Above 16M



- Allows the RDS component to reside above 16M
- Frees 2M to 3M of storage below 16M



[www.software.ibm.com/data/db2/vse-vm](http://www.software.ibm.com/data/db2/vse-vm)



## Improved Internationalization



- Added support for code pages containing the Euro symbol
- Added conversion support from Unicode (UCS-2) to several host code pages
- Added support for several new code pages (Latvian/Lithuanian, Estonian, Ukranian, Vietnamese, and Lao)



[www.software.ibm.com/data/db2/vse-vm](http://www.software.ibm.com/data/db2/vse-vm)

## DB2 Server for VSE & VM 7.1



- TCP/IP Support on VSE
- VSE Batch DRDA1 AR
- Stored Procedures DRDA Requester
- New Code Page / Euro / Unicode Support

[www.software.ibm.com/data/db2/vse-vm](http://www.software.ibm.com/data/db2/vse-vm)

## *The Dbname Directory*



- ❑ A required, user-definable directory of ALL Local, Remote, and Host VM application server names
- ❑ Also contains TPNs used by remote requesters
- ❑ IBM-supplied default is in the A-type source member ARISDIRD
- ❑ Format changed in 7.1; see the DB2 Server for VSE System Administration manual

[www.software.ibm.com/data/db2/vse-vm](http://www.software.ibm.com/data/db2/vse-vm)

## *TCP/IP Support in VSE*



- ❑ Enables communication using TCP/IP for the VSE server, online requester, and batch requester
- ❑ Supported for remote connections only
- ❑ No DRDA2 support using TCP/IP

[www.software.ibm.com/data/db2/vse-vm](http://www.software.ibm.com/data/db2/vse-vm)

## Using TCP/IP on the VSE Server



- Uses the value of the TCPSPORT initialization parameter, if specified
- Otherwise, looks in the DBname directory
- Otherwise, uses the well-known port (446)
- If TCP/IP is not to be used, specify TCPSPORT=0 at startup
- More details are in the DB2 Server for VSE System Administration manual

[www.software.ibm.com/data/db2/vse-vm](http://www.software.ibm.com/data/db2/vse-vm)

## Using TCP/IP on the VSE Requester



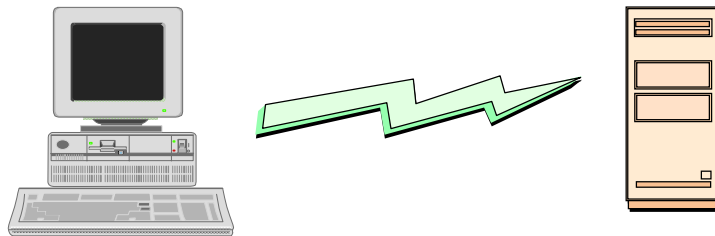
- The VSE batch DRDA requester can use TCP/IP only
- The VSE online DRDA requester can use SNA or TCP/IP
- The SYSID / TCPSPORT information in the dbname directory provide the SNA / TCP/IP information for the DRDA requester. If both are specified, the online requester uses the communications protocol information in the SQLGLOB file to determine which to use

[www.software.ibm.com/data/db2/vse-vm](http://www.software.ibm.com/data/db2/vse-vm)

## VSE Batch DRDA Requester



- Always uses TCP/IP communication
- Uses the information in the dbname directory to connect to the server
- Makes it possible to use the preprocessors against remote databases



[www.software.ibm.com/data/db2/vse-vm](http://www.software.ibm.com/data/db2/vse-vm)

## Summary of DRDA Support



	VM or VSE AS	VM AR	VSE Batch AR	VSE Online AR
DRDA1 over SNA	yes	yes	no	yes
DRDA1 over TCP/IP	yes	yes	yes	yes
DRDA2 over SNA	yes	no	no	no
DRDA2 over TCP/IP	no	no	no	no

[www.software.ibm.com/data/db2/vse-vm](http://www.software.ibm.com/data/db2/vse-vm)

## *Result Set Requester Support*



- VM and VSE requesters can now invoke stored procedures over DRDA
- The DRDA application requester can process result sets returned by the stored procedure
- Several new statements added for processing result sets

[www.software.ibm.com/data/db2/vse-vm](http://www.software.ibm.com/data/db2/vse-vm)

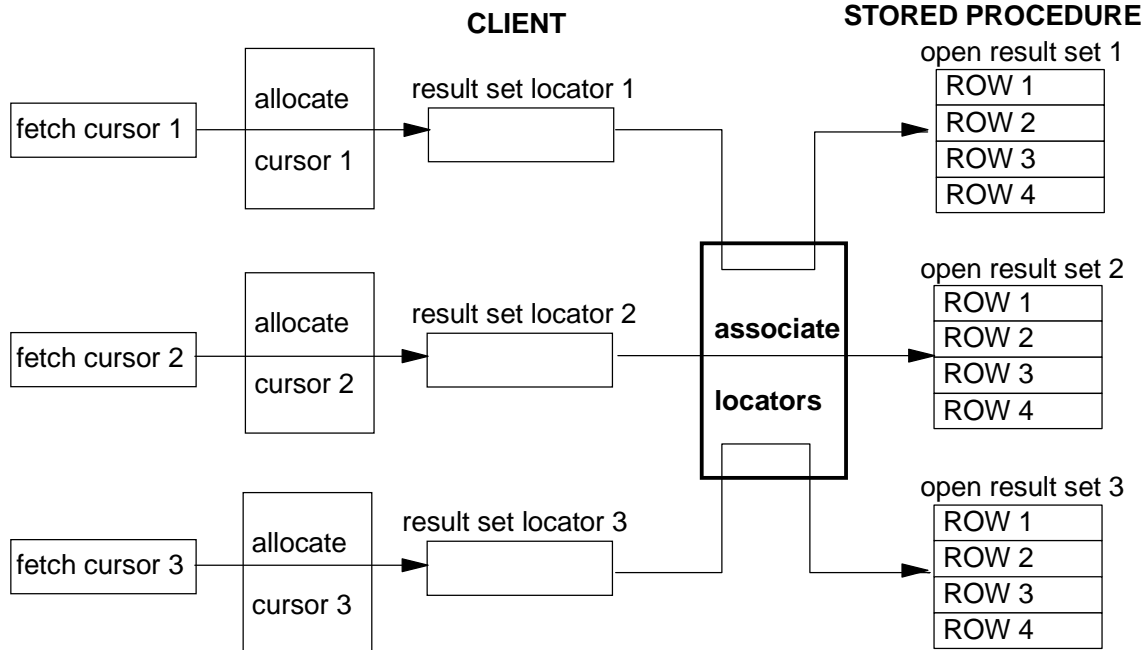
## *Result Set Requester Support (2)*



- Locator data type
- ASSOCIATE LOCATORs statement
- ALLOCATE CURSOR statement
- DESCRIBE PROCEDURE statement
- DESCRIBE CURSOR statement

[www.software.ibm.com/data/db2/vse-vm](http://www.software.ibm.com/data/db2/vse-vm)

## Result Set Requester Support (3)



[www.software.ibm.com/data/db2/vse-vm](http://www.software.ibm.com/data/db2/vse-vm)

## Code Page Support



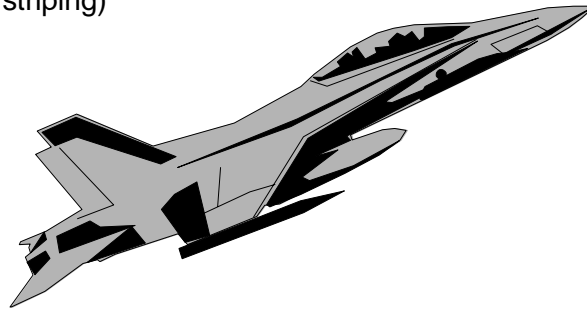
- Added support for more Euro code pages
- Added conversion support from Unicode (UTF-8) to several host code pages
- Added support for Hindi

[www.software.ibm.com/data/db2/vse-vm](http://www.software.ibm.com/data/db2/vse-vm)

## DB2 Server - VMDSS



- ▶ **High performance feature**
- ▶ **Reduces processing overhead**
- ▶ **Significant performance improvements**
  - ▶ Shorter path length
  - ▶ Automatic blocking
  - ▶ Prefetching
  - ▶ Parallel I/O (enhanced with striping)
  - ▶ Asynchronous writes
  - ▶ Page fault notification
  - ▶ Release of pages
  - ▶ Directory I/O reduction
  - ▶ Thrashing protection
  - ▶ Target working set size
  - ▶ Usage counters
  - ▶ Storage residence classes

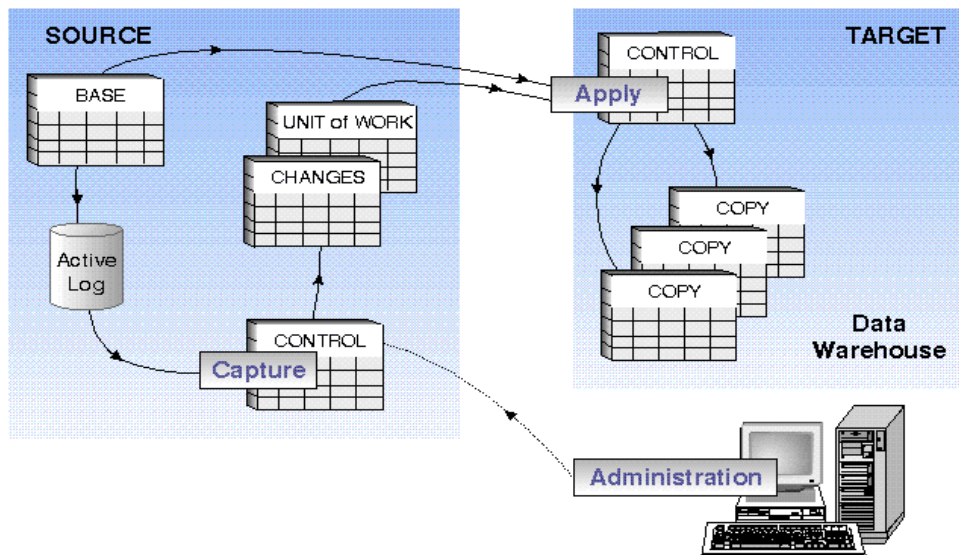


[www.software.ibm.com/data/db2/vse-vm](http://www.software.ibm.com/data/db2/vse-vm)

## DB2 Server - Replication



- Captures Base Table Changes from Log
- Timestamps Changes
- Runs at User-specified Intervals
- Runs from Source or Target Platforms



[www.software.ibm.com/data/db2/vse-vm](http://www.software.ibm.com/data/db2/vse-vm)

## DB2 Server - DB2 Universal Developer's Edition



- ✓ Client Application Enablers
- ✓ Software Development Kits
- ✓ Extenders
- ✓ DB2 Connect
- ✓ Tools
- ✓ Licensed for Application Development



Net.Data

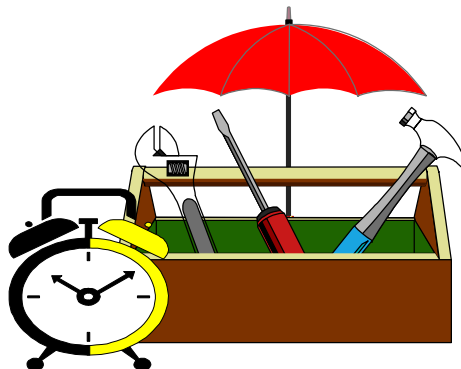
[www.software.ibm.com/data/db2/vse-vm](http://www.software.ibm.com/data/db2/vse-vm)

## Optional Features



### DB2 Server for VSE & VM Toolkit

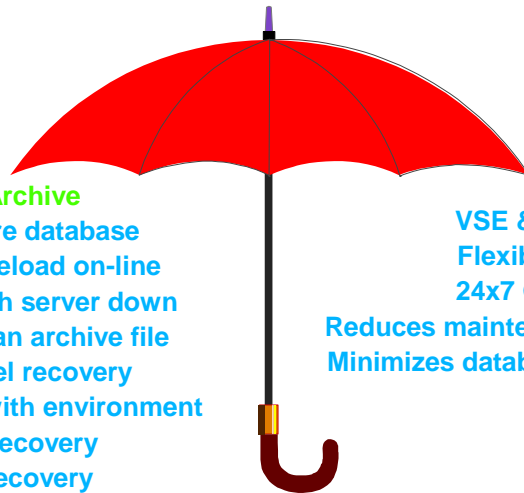
- Data Restore
- Control Center
- QMF
- RXSQL (VM only)
- DB2 Connect



[www.software.ibm.com/data/db2/vse-vm](http://www.software.ibm.com/data/db2/vse-vm)



## Optional Features - Data Restore



### Incremental Archive

- Backup and restore database
- Partial unload and reload on-line
- Access data even with server down
- Display contents of an archive file
- Storage Pool Level recovery
- Table Level Recovery with environment
- Forward Log Recovery
- Point in time recovery
- Backup to tape or disk
- Reload new tables
- Reload rows into an existing table
- Simultaneous backup to 2 devices

### VSE & VM Flexibility 24x7 Goal

- Reduces maintenance window
- Minimizes database downtime

[www.software.ibm.com/data/db2/vse-vm](http://www.software.ibm.com/data/db2/vse-vm)

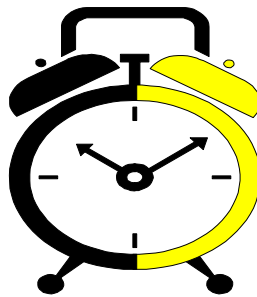
## Optional Features - Control Center



### Automates database administration

#### Data Administration Tools

- Explain Utility
- CREATE TABLE utility
- QMF Tools
- Table Utility
- Referential Integrity Tool (VM)
- QMF Invocation
- Group Authorization
- Package Administration
- Dbospace Analysis
- Dbospace Reorganization
- Dbospace Redefinition
- Update Statistics
- Table Redefinition



#### System Administration Tools

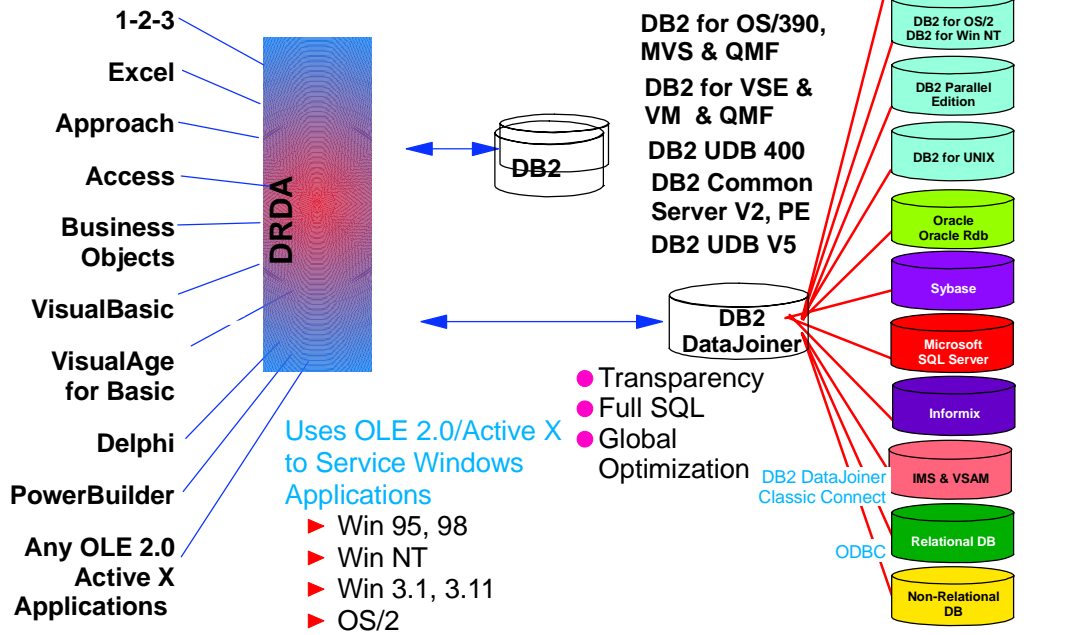
- Online FILEDEF Support
- Incremental Archive
- Shared File System Support
- Data Restore integration
- Dbextent/dbospace and log monitors
- Startup/shutdown for database
- DBFORCE

#### Operation Administration Tools

- Operator Command Support (VSE)
- Dynam-T Support (VM)
- Commit count on reload
- Monitors for VSE
- Show/Set Init Parm (VM)
- Console Management
- Job Scheduling
- Tape Management

[www.software.ibm.com/data/db2/vse-vm](http://www.software.ibm.com/data/db2/vse-vm)

## Optional Features - QMF for Windows



[www.software.ibm.com/data/db2/vse-vm](http://www.software.ibm.com/data/db2/vse-vm)

## Optional Features - QMF for Windows

### The Dual Interface

- ✓ Prompted Query
- ✓ SQL Query
- ✓ Table Editor



QMF for Windows

### OLE 2 Application

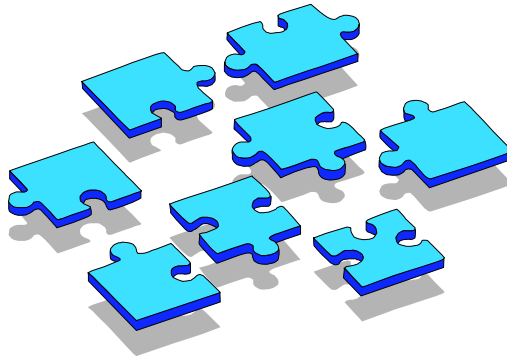
- ✓ Lotus 1-2-3
- ✓ Excell
- ✓ Access
- ✓ Web browser
- ✓ and more...

[www.software.ibm.com/data/db2/vse-vm](http://www.software.ibm.com/data/db2/vse-vm)

## Complementary Products



- DB2 VSAM Transparency for VSE/ESA
- Lotus Approach
- DB2 Forms
- Net.data
- English Wizard
- VisualGen
- and many more ...

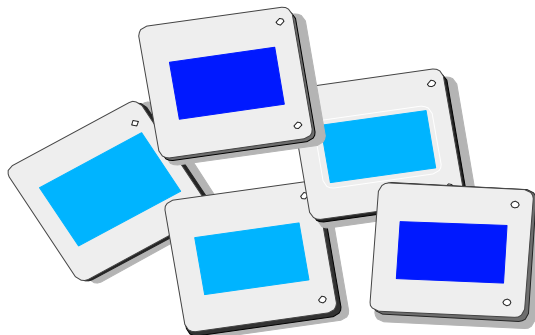


[www.software.ibm.com/data/db2/vse-vm](http://www.software.ibm.com/data/db2/vse-vm)

## Complementary Products - VSAM Transparency



- Use existing VSAM applications with DB2 tables
- Data migration tools
- Mixed data sources
- Stage migration
- DB2 Server for VSE table generation

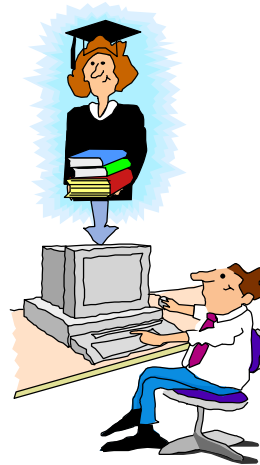


[www.software.ibm.com/data/db2/vse-vm](http://www.software.ibm.com/data/db2/vse-vm)

## Complementary Products - English Wizard



- Allows SQL queries to be entered in natural English
- Runs on Windows



[www.software.ibm.com/data/db2/vse-vm](http://www.software.ibm.com/data/db2/vse-vm)