

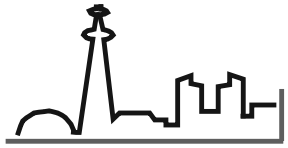
Performance





32-bit Performance

- **32-bit Database Manager & DDCS**
 - DBM typically 50% CPU and 50% I/O
 - ▶ 32 bit significant for CPU cost
 - ▶ 32-bit not as significant for I/O cost: greater improvement to be found in hardware selection & tuning
 - DDCS is 100% CPU - great benefit



Tuning Parameters: Overview

- **Existing hardware**
 - Model 95: **64** meg RAM
 - Model 295: **128** meg RAM
- **Upcoming hardware trends**
 - OS/2 v2 maximum addressable memory is >higher
- **Broaden DB2/2 tuning scope**
 - take advantage of existing hardware
 - position for future hardware
- **Much improved documentation**
 - Information from the "EE Parameter & Tuning Guide" has been added to our "IBM DB2/2 OS/2 Guide"



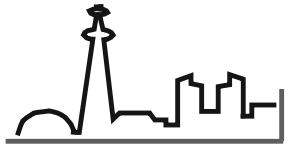
Expanded Tuning Parameters

■ **SQLENSEG**

- maximum number of segments allowed to the kernel
- increased in proportion to BUFFPAGE and DBHEAP
- **802** increased to **8192**
- only allocated parm that is allocated as needed
 - ▶ set at maximum and forget

■ **BUFFPAGE**

- holds data in memory for faster access
- ***MOST*** important tuning parameter
- **1500** increased to **32767**



Expanded Tuning Parameters

■ **SORTHEAP**

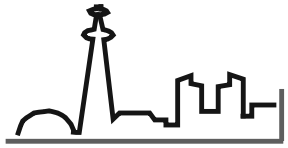
- holds data being sorted
- **20** increased to **32767**

■ **SORTHEAP-THRESHOLD (new!)**

- used to determine accept/reject for a in-memory sort
- **250** increased to **524288**

■ **DBHEAP**

- holds various internal structures, including one that keeps track of the status of pages in the buffer pool
- **45** increased to **255**



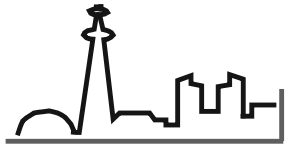
Expanded Tuning Parameters...

■ **INDEXREC (new!)**

- Database checks indexes during recovery
 - ▶ INX file renamed to EIX if found to be invalid
- Determines when corrupted indexes will be rebuilt
- Choice of rebuild time:
 - ▶ DATABASE RESTART or first attempted index use
- DATABASE RESTART
 - ▶ will require more time to bring back up server
- First attempted index use
 - ▶ will impact first person whose access plan uses index
- Set either globally or by individual database

Enhanced SQL Compatibility





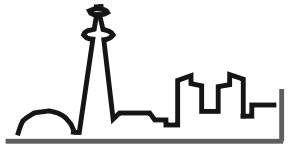
SQL Enhancements...

■ **NOT NULL WITH DEFAULT**

- ▶ DB2 compatibility requirement
- ▶ Default to a system-defined value based on the column datatype
- ▶ CREATE TABLE (emplid integer not null with default)
- ▶ ALTER TABLE ... not null with default...

■ **RUN as synonym for EXECUTE**

- use the word RUN as a synonym for EXECUTE in DCL



SQL Enhancements...

■ **DECIMAL Scalar**

– Returns a decimal representation

▶ SELECT PARTNO, DECIMAL(QTY_ON_HAND,7,2) FROM INV

■ **INTEGER Scalar**

– Returns a integer representation

▶ SELECT PARTNO, INTEGER(DEL_TIME * 1.5) FROM QUOTES

■ **FLOAT Scalar**

– Returns a floating point representation

▶ SELECT EMPNO, FLOAT(SALARY)/COMM FROM EMPLOYEE



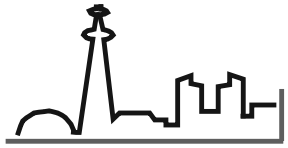
SQL Enhancements...

- **CURRENT SERVER Special Register**

- determine name of current server to which the application is connected
 - ▶ select current server into :hostvar from table

- **USER Special Register**

- Uses the run-time authorization ID
 - ▶ select name from sysibm.systables where creator = user



SQL Enhancements...

■ **CONNECT**

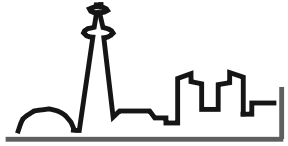
- Conforms to standards
 - ▶ CONNECT TO SAMPLE USING SHARE MODE;
 - ▶ equivalent to START USING DATABASE API
 - ▶ CONNECT RESET;
 - ▶ equivalent to STOP USING DATABASE API
 - ▶ CONNECT;
 - ▶ "null connect" returns information about the current server
- START/STOP USING API still supported

Manageability





- **Configuration, Installation, Distribution**
- **Remotely install DB2/2 from a central server**
- **Can call other REXX programs to:**
 - migrate databases
 - set database configuration parameters



Management Tools

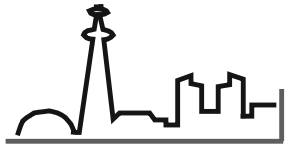
■ **FFST/2**

- Additional probe points in base code
- Captures diagnostic information when an error occurs
- Provides additional debugging information

■ **LAN NetView/2**

- 6 Object Classes managed
 - ▶ DB & DBM
 - ▶ DB Directory
 - ▶ Remote Node Directory Entry
 - ▶ DB Gateway; Remote GW Directory Entry

■ **DCAF/2**

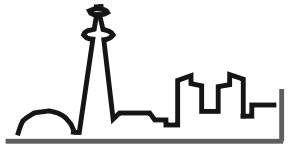


DataHub

- **Common interface to compliant relational databases**
- **Based on IBM's Distributed Relational Database Architecture**
- **Features of DataHub**
 - Track database objects
 - Copy data from system to system
 - Change authorizations from a common point
- **Vendor participation**

Application Development





Compilers

■ 16-bit

– OS/2

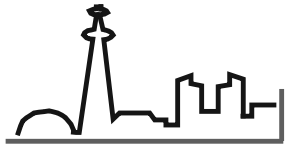
- ▶ Microsoft C v6
- ▶ WATCOM FORTRAN F77 Compiler v9.01 patch D
- ▶ MicroFocus COBOL v3

– DOS & DOS/Windows

- ▶ Microsoft C v6
- ▶ MicroFocus COBOL v3

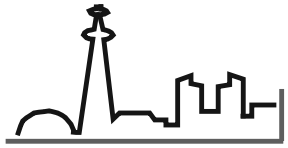
■ 32-bit OS/2

- IBM C SET/2 v1
- WATCOM Fortran F77/386 v9.01 patch D



Implicit CONNECT

- **Automatic connection to a default database**
- **No need to code database name in the program**
- **Greater portability to DB2 (MVS)**
 - where database connection is always implicit
- **Set externally by environment variable**
 - SET SQLDBDFT=SAMPLE
 - ▶ Set in CONFIG.SYS or command file
 - ▶ Default DB may be local or remote
 - ▶ could have different connection in different sessions



C Enhancements

■ **Enhancements:**

- 'const' and 'volatile' storage class attributes
- Multiple statements per line
 - ▶ `exec sql open c1; if (sqlca.sqlcode < 0) CheckError("Opening C1");`
- INCLUDE support
- Trigraph support
 - ▶ brackets, braces, hash mark, backslash, caret, vertical bar, tilde

■ **Precompiler**

- Line Macro Option
 - ▶ suppresses generation of #line macros