DB2 Universal Database Server for OS/390

Version 7

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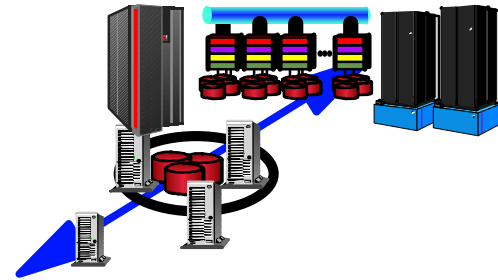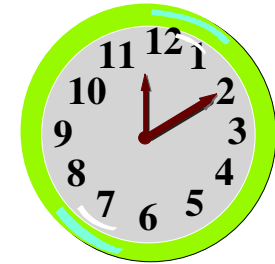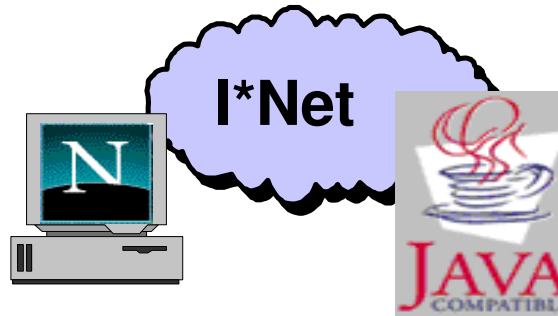# DB2 Family Investment Areas

Applications:
Vendors & Development

Scalability:
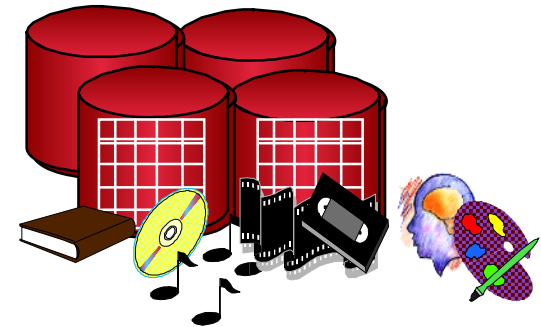Users, Data, Queries,
Transactions

Availability:
Planned (reorg) &
Unplanned (restart)

Management:
Java Control Center,
Visual Tools

Access: Web & DRDA
Java, DB2 Connect, Net.Data,
DataJoiner, Replication

Extensibility:
New data & function for
e-business

I*Net

DB2 UDB for OS/390 Strategic Direction

Continue to Evolve as The Enterprise Server for Network Computing Solutions
Centralized Processing of Massive Quantities of Data
DB2 Family Compatibility
Business Intelligence, Enterprise Resource Planning and e-business
Vendor Enabling and Portability

Premier Use of Parallel Technology and System/390 Integration
Data Sharing
Continuous Availability
Incremental Growth
Work Load Balancing

Improved Application Enablement Through Extensive SQL Functionality
Object-Oriented Extensions
Rules Driven Integrity

Continual Performance Improvement
Optimizer Technology
Transaction, Query, Batch, Utility Concurrency
Utilities and Tools Focus

DB2 UDB for OS/390 Version 7

- **New DB2 Warehouse Manager Feature**

  - Data Warehouse Center - A GUI for defining and managing the data warehouse, integrates with DB2 Control Center
  - QMF Family -QMF for OS/390, QMF High Performance Option, QMF for Windows
  - DB2 OLAP Starter Kit - Limited user license for DB2 OLAP Server and OLAP Integration Server for building and deploying OLAP applications
  - Information Catalog - Common respository of metadata of objects to help users find, understand and access data
  - Warehouse Transformers - Stored Procedures and user-defined functions to provide data transformations to build a DW
  - Warehouse Agents - Execute processes on behalf of the Data Warehouse Center to enable point-to-point data movement
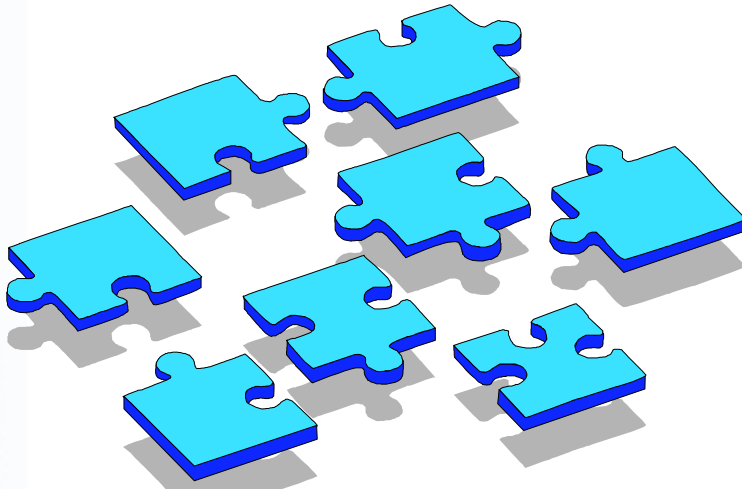
DB2 UDB for OS/390 Tools

Administration
- DB2 Administration Tool
- DB2 Forms
- DB2 High Performance Unload
- DB2 Automation Tool
- DB2 Log Analysis Tool
- Load, Unload, Online Reorg...
- DB2 Control Center*
- DB2 Installer*

Performance Management
- DB2 Performance Monitor
- DB2 SQL Performance Analyzer
- DB2 Visual Explain*
- DB2 Buffer Pool Tool
- DB2 Estimator*

Recovery/replication Management
- DB2 Data Propagator
- DB2 Recovery Manager
- DB2 Warehouse Manager
- DB2 Row Archive Manager

Application Management
- DB2 Bind Manager
- DB2 Web Query Tool
- DB2 Stored Procedures Builder*

Manage
Automate
Monitor
Tune...

* no licence fees

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DB2 UDB for OS/390 Version 7 - New Tools

- **DB2 SQL Performance Analyzer**
  - Can evaluate a query's execution cost before it runs - static or dynamic SQL

- **DB2 Bind Manager**
  - Helps to avoid executing binds when an existing SQL structure has not changed
  - DBRM Checker option
  - Will only bind those packages in a plan that require it

- **DB2 Recovery Manager**
  - Can coordinate and simplify data recovery from DB2, IMS or both

- **DB2 Forms**
  - A drag and drop solution for rapid development of user friendly e-business front-ends to any DB2 database

- XML Extender and Net.Data improvements

- Stored Procedures
  - Stored Procedure Builder
  - Nested Stored Procedures
  - Stored Procedure commit & rollback
  - Java Stored Procedures
  - SQL Procedure Language

- Net Search Extender
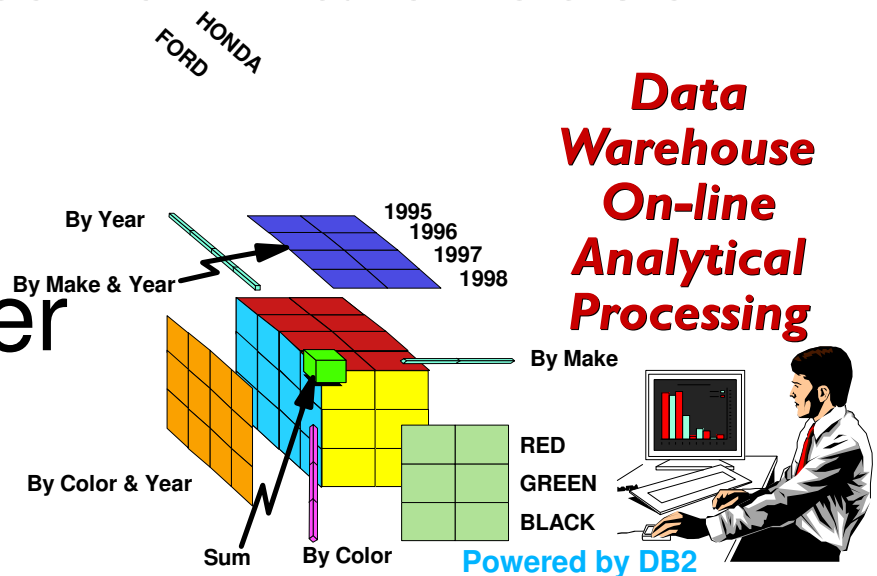
- DB2 Connect Improvements

- Unicode

DB2 family Version 7 business intelligence improvements

- Control Center Enhancements
  - Utility Support
  - Data set management
  - DDL Generation
  - Integrated SQL Assist
- Warehouse Center & Warehouse Manager
- Index Advisor
- DB2 OLAP Server

Data Warehouse On-line Analytical Processing

By Year

By Make & Year

1995
1996
1997
1998

HONDA
FORD

By Make

By Color & Year

RED
GREEN
BLACK

Sum   By Color

Powered by DB2

DB2 UDB for OS/390 Version 7

- **Application:** Scrollable cursors, Union in View
  Row Expressions, Limited Fetch, Unicode
- **Scalability:** Unload utility
  Improved optimization and parallelism
- **Availability:** Online utility improvements,
  Online parameters and more consistent restart
- **Management:**
  Utility lists, patterns and dynamic allocation
  Migration to Version 7 from V5 or V6
  Fallback from Version 7 to V5 or V6
- **Access:** Improved DB2 Connect, JDBC & ODBC

DB2 UDB for OS/390 Version 7

- **Application:**

  Scrollable cursors

  Scrolling concept moved into SQL

  Forward or backward "n" rows

  ODBC and SQL interfaces

  UNION and UNION ALL in a VIEW, predicate, table

  expression, INSERT or UPDATE

  Row Expressions

  WHERE (cola, colb, colc) IN (SELECT ...

DB2 UDB for OS/390 Version 7

- **Application:**

  Fetch for Limited Number of Rows

  - FETCH FIRST "n" ROWS clause

  - FETCH FIRST ROW ONLY clause

  Self-Referencing Subselect on UPDATE or DELETE

  Precompiler services

  - Rules more consistent with COBOL

  - Easier portability

  UNICODE data storage and manipulation

  New XML Extender

  Enhanced Text Extender

DB2 UDB for OS/390 Version 7

- **Scalability:**
  - Unload utility - new high performance utility
    - Unload from table space or image copy
    - Field selection, ordering, formatting
    - Sampling and/or limited numbers
    - SHRLEVEL CHANGE or REFERENCE
    - Parallel processing for partitions
  - Parallel Load with multiple inputs
  - Improved optimization & parallelism
    - Correlated subquery able to use index, stage 1
    - Improved sort avoidance for ORDER BY
    - IN-list index access parallelism

DB2 UDB for OS/390 Version 7

- **Availability:**

  Online utility improvements

   Online REORG

   Fast switch: Avoid data set rename

   Parallel BUILD2 phase

   Online Load resume

  Online subsystem parameters (DSNZPARMS)

  Consistent restart enhancements

  Ability to cancel thread without rollback

DB2 UDB for OS/390 Version 7

- **Management:**

  Utility lists, patterns & dynamic allocation

    Allow copy for a database or name patterns

    Perform dynamic allocation for data sets

  Allow DBADM to create VIEW for others

  Data Sharing enhancements

    Improved restart, faster retained lock release

  Index Advisor

    Use Index Advisor across the DB2 family

  Statistics History

DB2 UDB for OS/390 Version 7

- **Access:**

  Improved DB2 Connect, JDBC & ODBC

  Initial JDBC 2.0 support

  Allow commit / rollback in stored procedure

  Kerberos security for Windows 2000
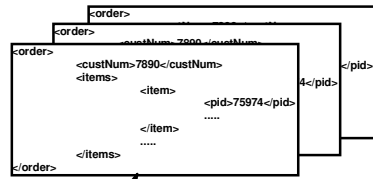
XML ⟺ **DB2**

orderXML
date
.....

```
<order>
  <order>
    <order>
      <custNum>7890</custNum>
      <items>
        <item>
          <pid>75974</pid>
          .....
        </item>
        .....
      </items>
    </order>
  </order>
</order>
```

SELECT orderXML
.....
WHERE custNum = 7890
.....

XML:RDB mapping XML
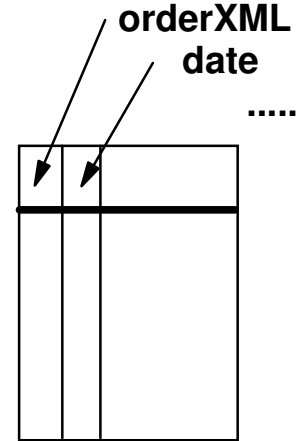
Indices on element/attb values

custNum
....

pid
.....

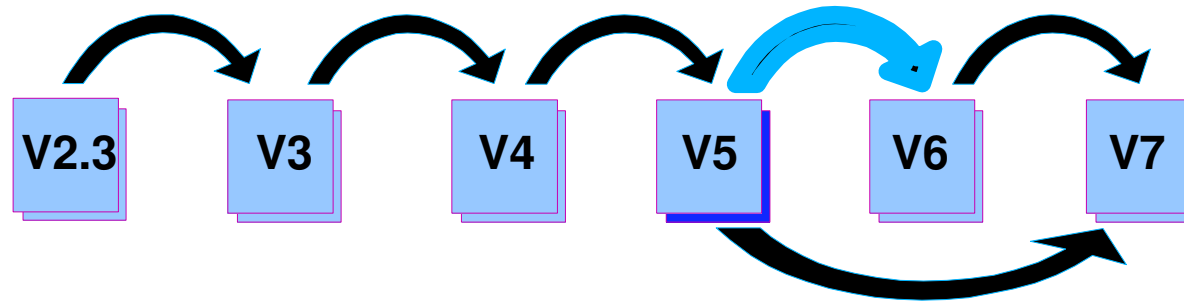**XML zone**

www.ibm.com/xml

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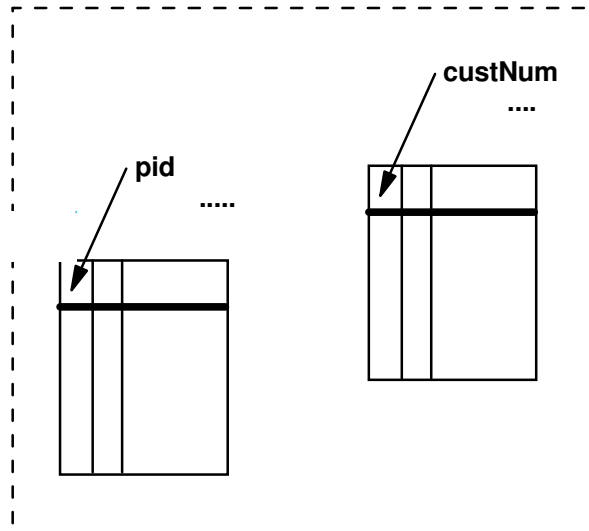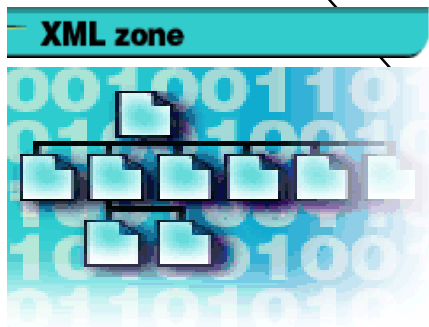
DB2 UDB for OS/390 Version 7 Information

- DB2 UDB for OS/390 Version 7
  - Web: Online Access or Download PDF Files
  - ibm.com/software/db2os390
    - What's New? - Version 7 Document
    - Version 7 Announcement Letter
  - Introduction to DB2 for OS/390
    - Prentice Hall, Oct. 30, 2000
    - www.phptr.com
- Early Support Program began June 2000

Migration Paths

V2.3 → V3 → V4 → V5 → V6 → V7

Most customers expected to go to V6

Migration direct from V5 to V7 possible

   Primarily for later migrations

   Includes Fallback & Data Sharing Coexistence

      Maximum of two releases

   V7 SPE PQ34467 required for fallback, data sharing, and strongly recommended for all

What function do you need?

   When do you need it?

   When can you consider migration?

   How much can you test?

DB2 UDB for Linux & DB2 Connect on System/390

- DB2 Connect on Linux: Connect to DB2 family
- DB2 UDB on Linux for S/390
    SQL consistent with UNIX, Windows, OS/2
- IMS V7 Connect: Access to IMS from Linux for S/390
- ibm.com/software/db2/linux
- ibm.com/s390/linux
- ibm.com/linux

Open up your enterprise
to a world of new applications
with Linux for S/390

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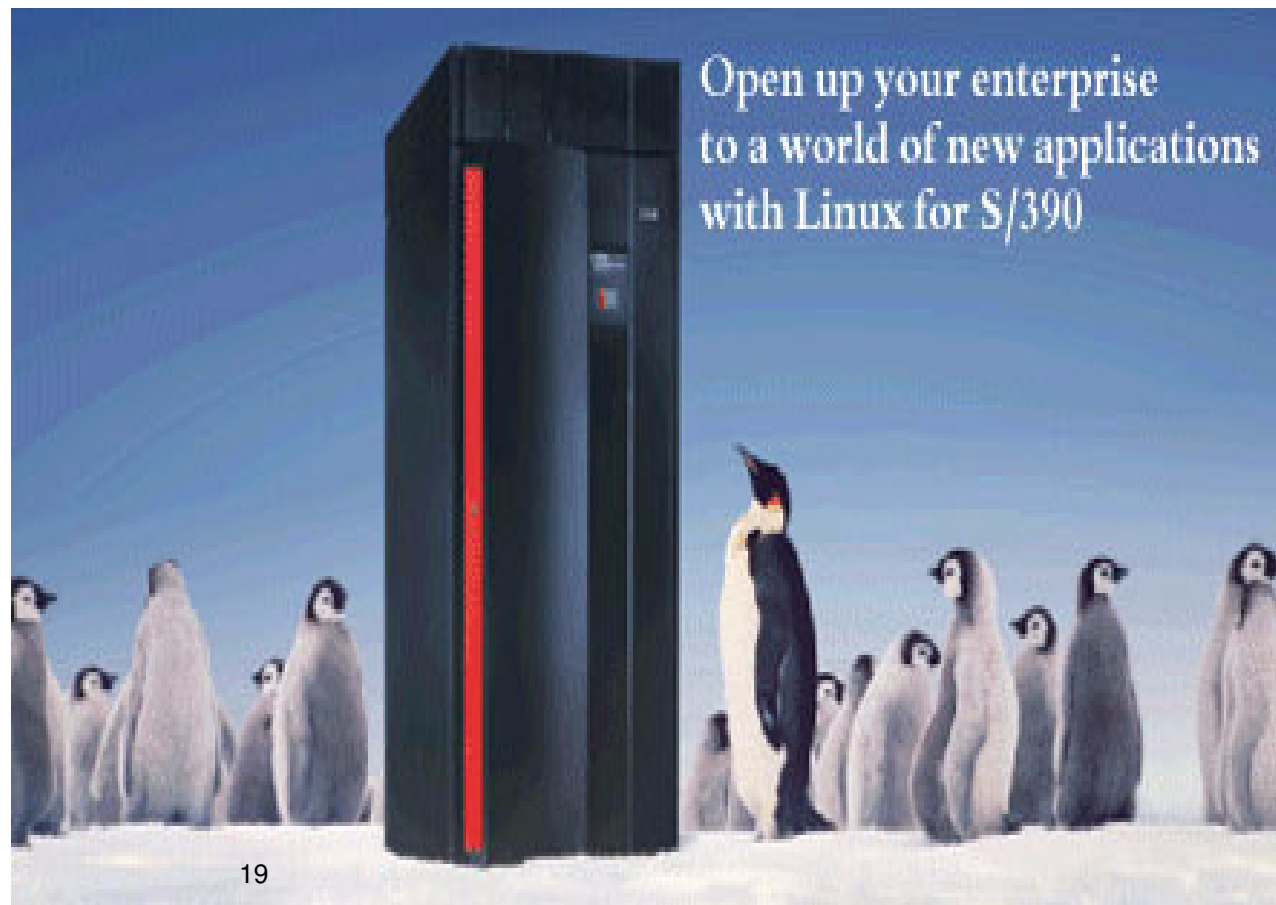
Get the Latest DB2 Information on the Web

IBM Data Management: White Papers, Product Information
   ibm.com/software/data

DB2 Family
   ibm.com/software/db2

DB2 for OS/390
   ibm.com/software/db2os390

DB2 for Unix, Windows, Linux, and OS/2
   ibm.com/software/db2/udb

DB2 for AS/400
   ibm.com/as400/db2

DB2 Family Performance
   ibm.com/software/db2/performance

IBM Benchmarks
   ibm.com/software/db2/benchmarks

Red Books from International Technical Support Organization
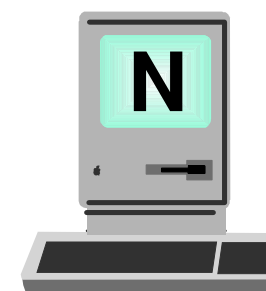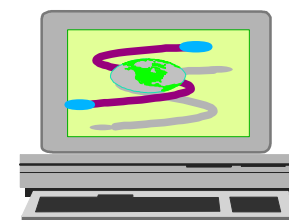   ibm.com/redbooks

DB2 Users Groups
   www.idug.org
   www.share.org

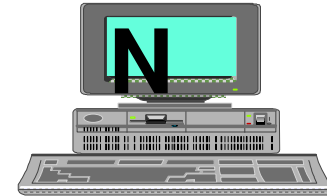**IBM iSource (email subscription for IBM SW)**
   ibm.com/isource

Information on DB2 Customer Usage
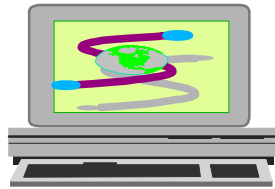
DB2 Case Studies
ibm.com/software/db2os390/casestudy.html
ibm.com/s390/customer/success_industry.html

Richard Winter Very Large Database (VLDB) Survey
www.wintercorp.com

DB2 Solutions Directory - DB2 Applications and Tools
ibm.com/ibmlink/cgi-bin/s390sasw
ibm.com/software/partners/solutions

DB2 Magazine
www.db2mag.com

IDUG Solutions Journal
www.idug.org/journal/index.html

DB2 Customer Success Spotlight
ibm.com/software/solutions/dsprod.htm