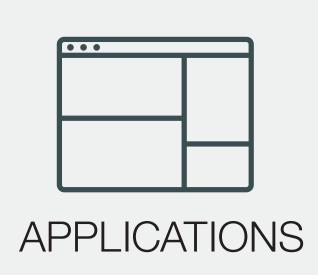
BM DB2.11 Your Bridge to the Cloud

- 1 MPP BLU Scalability
- **BLU Acceleration Advancements**
- **Enterprise Encryption**
- pureScale Enahancements
- **Manageability and Performance Enhancements**
- **Federation Enhancements**



Database Tools

Integrated Design & Development

- Data Studio
- InfoSphere Data Architect
- SQL Warehousing Tool (SQW).

Advanced Database Management

- IBM Data Server Manager
- DB2 Advanced Recovery Feature

Application

Federation Enhancements

- Increased connectivity and integration
- Wrappers to connect to DB2, PDA, dashDB, BigSQL, and other BigData sources
- ODBC access to Hive and Impala data sources
- JDBC access to Spark data sources

Manageability and Performance Improvements 4 5

- Simplified deployment for pureScale
- Usability improvements
- Revamped internal concurrency controls
- pureScale Member Subset manageability enhancements
- Parallel sort capabilities
- Optimizer query rewrite enhancements



CLIENTS

IBM Data Server Clients and Drivers

• DB2 Connect First Steps **Command Line Processor** Tutorials Ingest Utility

• Replication Center access DB2

Application Development Header Files Shared

Tools

- Libraries Precompilers Samples
- WebSphere Studio

Microsoft Visual Studio

Plug-ins

• .Net

Provides a simple way to

CLPPlus

Application Development

CLP that provides compatible features with the SQL *Plus utility

IBM Data Server Driver for JDBC and SQLJ

Provides support for type 4 JDBC connections

IBM Data Server Driver for ODBC and CLI

Provides standalone package for applications containing:

• CLI • ODBC • db2cli Support XA

• LDAP

C/C++

Available Drivers

CLI, DB2 APIs, Embedded SQL, DB2CI

Windows:

ADO, ODBC, OLE DB, .NET

Security

• LDAP

Auditing

Kerberos

• OS Based

Instance Level

Database Level

• Row and Column

Access Control

Privileges

Roles

Authorities

Authorization Controls

• Label-based Access Control

Native Data Encryption 3

Self-tuning Memory Manager

Problem Determination

• First Occurence Data Capture

Diagnostic Logs

Trap Resiliency

Workload Manager

Authentication

Open Source:

Ruby on Rails, PHP, Perl*, Python, Swift*

*Driver not included however, header files are provided to complie the driver.

Distributed Relational Database Architecture (DRDA)

Utilities

Load

db2look

extracts

Reorg

Backup

Restore

Rollforward

Common Services

System Monitor

Configuration Services

Data Protection Services

Concurrency Control

Deadlock Detection

• Locks

Logging

Memory

Management

Data Movement

import/export

db2convert

• DDL Statements

Table Statistics

Maintenance Tasks

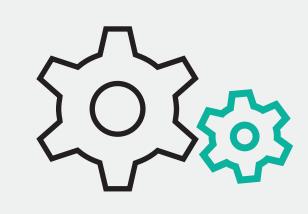
• Rebind • Explain

Data Recovery

• Tablespace Characteristics

Runstats

• ADMIN_MOVE_TABLE



ENGINE



BLU Acceleration

- No Indexes, no aggregates, no SQL
- In-memory columnar processing • Multicore and SIMD parallelism
- Industry leading parallel sort

IBM testing and customer reports for BLU Acceleration have shown:

- Performance improvements of 8-25x for typical analytics
- Compression rates of 10x or higher

Massively Parallel Processing (MPP) with BLU Acceleration



- In-memory speeds beyond the petabyte range
- Support for no schema changes
- Distribute data across servers
- Support for column-organized tables

Partitioned database environments provide:

- BLU MPP delivers high performance with scale out capability
- Support for both operational and analytical workloads
- Designed to handle more than 1000 concurrent operational queries

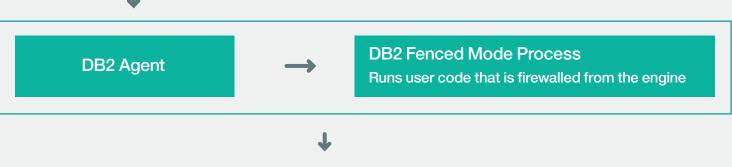
pureScale & High Availability Disaster Recovery (HADR)

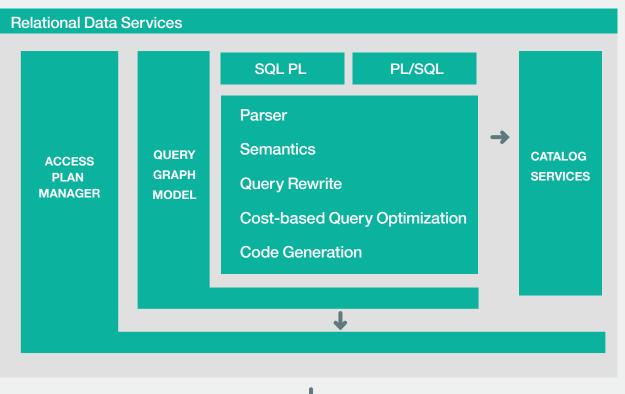


- Enhancements include:
- pureScale simplified install and deploy
- HADR SYNC and NEARSYNC modes • Support for Linux PPC LE
- Improved health checks for pureScale

DB2 pureScale is designed for:

- Transparent application scalability beyond 100 members
- Consolidation of multiple workloads
- Integrated disaster recovery for RPO=0
- Continuous availability across planned and unplanned events





RUNTIME INTERPRETER

Columnar (BLU) Runtime **ROWSTORE RUNTIME RELATIONAL OPERATION** Aggregation **DATA MANAGEMENT** Bloom Filter **SERVICES** • Group By Index Manager • Hash join Automatic Storage Math SORT Adaptive Compression Nested-loop join • Table/Range Partitioning • Table Queue Multidimensional Clustering

BUFFER POOL MANAGEMENT

Page Cleaner: **Asynchronous Write to Disk**

Latching

Transaction Management

Message

Queues

Tracing

Throttling

File I/O

OPERATING SYSTEMS

Prefetcher:

Predictive Read-ahead from Disk

OPERATING SYSTEM SERVICES



Code Page

Conversion



UNIX

Semaphores



Wait Post



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