DB2 for i:
7.1 Overview

On April 13, 2010, IBM announced IBM i 7.1, a new version of the popular operating system that includes DB2 for i. The DB2 for i 7.1 and additional DB2 related product enhancements cover a broad range of new function, including:

- Enhanced SQL and XML standards support, providing productivity for developers and more flexible integration between DB2 and XML data
- New performance, auto tuning and management features
- More applications will be able to leverage the performance and scalability of DB2's SQL Query Engine (SQE)
- Improved compatibility with other database management systems making porting and cross DBMS development easier

New XML Integration Support

DB2 for i 7.1 makes it much easier to develop applications that require data interchange between DB2 and XML documents. This new level of DB2 adds support for an XML data type. This includes defining it as a column, passing it as parameters to routines, using it as a variable, etc. It also includes the ability to search these documents using the enhanced XML capability that exists in the OmniFind Text Search Server (5733-OMF) product.

In addition, XML documents can be decomposed (shredded) into relational columns based on annotations within an XML Schema. An XML Schema Repository (XSR) is introduced to store information about an XML Schema to allow for document validation or decomposition. DB2 for i 7.1 also contains built-in publishing functions needed to generate XML from relational information. These XML publishing functions enable a developer to retrieve information from the relational database and generate/publish this information as a well formed XML document, including the elements, attributes, and comments typically found in an XML document.

Column Level Encryption through new Field Procedure feature

DB2 for i is also adding the ability to call a Field Procedure (exit routine) that can modify the contents and size of the data on insert, update and read operations . This capability can be used in many ways, but the most popular way will be to provide encryption or obfuscation of sensitive data. For example, adding an encryption/decryption field procedure to a specific column of a file would then cause that column to be encrypted with no application changes. At insert or update time, the fieldproc will encrypt the data, while at read time, the fieldproc would choose to decrypt. Third-party encryption plug-ins for the DB2 fieldproc support are available from Linoma Software and Patrick Townsend & Associates.

Application Integration of Stored Procedure Result Sets
Applications running natively on IBM i can now fully utilize the capabilities of DB2 stored procedures with the new embedded SQL support for result set consumption. Direct integration of stored procedure result set data allows host applications written in RPG and COBOL to take a leap forward with improved exploitation of stored procedures.

SQL enhancements make porting databases easier!

DB2 for i SQL enhancements in 7.1 make DB2 for i more compatible with other relational database management systems such as Oracle®. Enhancements such as MERGE, Array support, Global Variables, and the REPLACE option on CREATE allows for more powerful and efficient programming. The new "currently committed" setting allows an application to avoid update locks while still retrieving a consistent view of the data by having the database find the version of the data that has already been committed and not waiting for the current update to commit or roll back. Greater scalability will result from this reduction of lock wait conditions.

Crank up performance without intervention with new Adaptive Query Processing

As with every release, 7.1 has delivered another significant set of performance enhancements for DB2. Adaptive Query Processing, or AQP, builds on top of the leading edge SQL Query Engine (SQE) to improve performance without requiring database administration.

Adaptive Query Processing, built into DB2, enables the DB2 for i query optimizer to make real-time adjustments to its execution plan, such as changing the join order or utilizing a new index, while the SQL request is running. These adjustments are implemented without any disruption to the application or requiring any manual tuning effort!

Traditional applications meet SQE!

Many more applications will be able to leverage the significant performance boosts from use of the SQL Query Engine with its new support for select/omit logical files! Because of the heavy use of select/omit logical files in many IBM i applications, this is great news, as those applications can now benefit from the huge performance gains that SQE can bring without having to alter the applications!

More Data Warehousing Enhancements

Encoded Vector Indexes (EVIs) are IBM patented indexing technology that has been included in DB2 for i for many years now and can significantly accelerate query performance in large complex query environments. EVIs have been enhanced to contain summary information, allowing for superior indexing strategies, particularly in a data warehousing environment.

Combine DB2 for i 7.1 and the latest POWER7 processor based systems for great performance gains in a data warehouse or Business Intelligence environment. This combination has produced an 80% performance improvement (over a similar configuration on POWER6 and DB2 for i 6.1) in the certified SAP Business Intelligence Mixed Workload benchmark[1] (see figure below).

SAP BI Mixed Load Application Benchmark
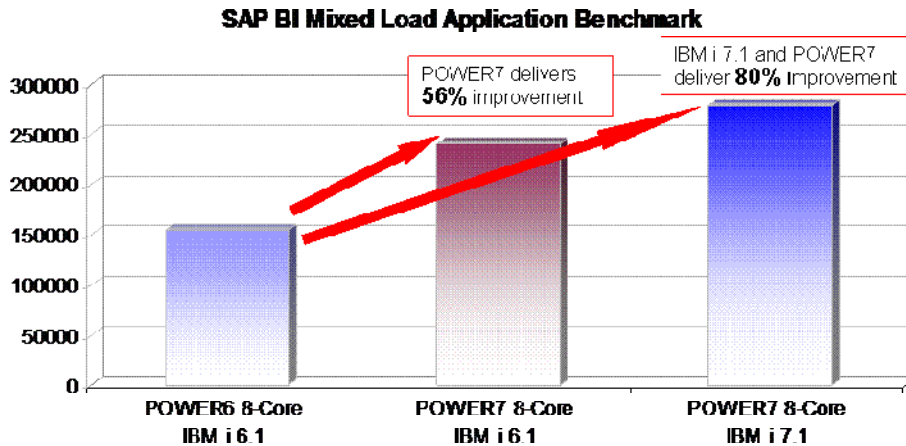
Solid support for Solid State Disk (SSD) Drives

In addition to the ability to place tables on Solid State Disk (SSD), which has been in place since last year, a file can now be marked as in-memory to reduce the IO cost when reading that file. IBM i automatically moves most active data to SSDs, and clients and ISVs can easily optimize applications for SSD.

Usability and Self Managing Features

For the administrator, new tooling has been added to monitor long running operations such as an index build, a text search index build, ALTER TABLE and reorganize. The type of IO (Random or Sequential) done against a file is now available through the GUI, providing more information when making the determination about whether to place a certain file on SSD. Partitioned tables are available as an option in more environments in 7.1 as tables with identity columns and referential constraints can now be partitioned, which can benefit very large database environments in the areas of growth or management (e.g., backups).

DB2 Web Query continues to evolve

The popular DB2 Web Query for i product is enhanced in the April time frame (this support also available in IBM i 5.4 and 6.1) to provide better security over metadata and allow users to change passwords from within the DB2 Web Query interface. Change management functions make it easier to deploy DB2 Web Query objects across development, test, and production environments.

Additional Information on DB2 for i:

DB2 for i Home Page:
http://www.ibm.com/systems/i/db2
Note 1: SAP certified results are found at www.sap.com/benchmark