

## DB2 for i5/OS: Autonomic Computing Frequently Asked Questions



### 1. What is DB2 for i5/OS?

DB2 for i5/OS is the relational database management system (RDBMS) that is built into the Operating System (i5/OS) for the IBM System i5. It is an open, extensible, high performance, scalable database that adheres to many industry standards while leveraging the System i5 architecture to maintain its value proposition of lower total costs to own. See <http://www.ibm.com/servers/eserver/series/db2>.

### 2. What is Autonomic Computing

Autonomic Computing refers to IBM's cross brand initiative to make e-Business infrastructure, in particular IBM Systems and related software, to be self managing. It covers a broad range of concepts, including:

- Self Configuring
- Self Healing
- Self Tuning
- Self Protecting

### 3. How does DB2 for i5/OS address Autonomic Computing?

DB2 for i5/OS is uniquely positioned to leverage the self managing concepts inherent in Autonomic Computing due to the fundamental architecture of the System i5 and i5/OS. The following describes four key areas of autonomic computing:

- Self Configuring

Unlike many Relational Database Management Systems, DB2 for i5/OS requires limited configuration work prior to use. Because it is pre-loaded with i5/OS, and doesn't require any specific database installation procedures, the database itself is ready to go! Because of the unique Single Level Store concepts of the system, database management tasks such as creation and monitoring of table spaces or complex partitioning of data across disk subsystems are not required. DB2 for i5/OS provides automatic data spreading and automatic storage allocation.

- Self Healing

DB2 for i5/OS contains a number of self-healing qualities. Systems Managed Access Path Protection (SMAPP) automatically journals (logs) high risk indexes (including Encoded Vector Indexes) to minimize the recovery time in the case of a system failure. Self-managed journal receivers allow the system to automatically monitor the capacity of a journal receiver (database transaction log), creating a new receiver and auto switching transaction logging to it should it become close to maximum capacity. Automatic journaling of Sequence Objects and auto restart of journal processing after a copy or restore further increase the autonomic capabilities of DB2!

Index rebalancing, a common DBA task on other systems (because indexes can become unbalanced over time), is handled automatically by DB2 for i5/OS. DB2 will also automatically rebuild catalog views when necessary, eliminating the need for manual intervention.

- Self Tuning

While i5/OS comes with an "auto-tuner" that adjusts resources based on predictive analysis, DB2 for i5/OS also contains several self tuning attributes. One key component of DB2 for i5/OS is the cost-based optimizer. This component processes all SQL/Query database activity and automatically recognizes resource

changes on the system and without user intervention rebuilds access plans (if desirable) to optimize the available resources.

Statistics are used by the optimizer to assist in determining the least cost method of accessing the data. Statistics are collected and maintained automatically by DB2 for i5/OS during normal database processing.

The DB2 On Demand Performance Center (included with i5/OS) allows you to easily analyze and improve your indexing strategy by reviewing the indexes advised system-wide by the optimizer. This new support allows you to identify indexes that are not being used, as well as managing index creation. Index advice is provided for both traditional indexes (Keyed Logical Files or SQL Indexes), as well as Encoded Vector Indexes (EVIs).

The 'always-available' diagnostic information in the SQL plan cache allows you to analyze query performance and compare performance behavior from one point in time to another; all without the overhead of a Database Monitor. DB2 for i5/OS can also automate the creation of indexes when required, and keep them around for use by other queries or other jobs.

- Self Protecting

DB2 for i5/OS is very well positioned in this area because of the object based structure of i5/OS, which DB2 leverages. In addition to the high degree of security that is made possible by the object based kernel, other self protecting attributes that are built into the operating system and available to use include:

- ◆ Digital signing of objects to help prevent unauthorized access
- ◆ 128 bit data encryption and SSL
- ◆ US Government C2 security compliance including object auditing

#### 4. Does DB2 for i5/OS support V7.2 or V8.x of DB2 for Linux/Unix/Windows?

The version/release naming convention for DB2 for i5/OS is linked to the Operating System version and release naming convention. DB2 for Linux/Unix/Windows follows a different version/release naming scheme. Refer to question #5 for more detail.

#### 5. How does DB2 for i5/OS compare to DB2 for Linux/Unix/Windows?

All the DB2 family members (DB2 runs on over twenty platforms) share common attributes, but also differ in their optimization for the specific platform and operating environments. For instance, DB2 for i5/OS shares common SQL standard support and common database related products with the other family members. All DB2 family members leverage the significant database research conducted by IBM labs. IBM continues to lead the industry in number of technology patents awarded each year.

For example, sophisticated SQL Optimization techniques developed by IBM are leveraged across the entire family. Utilities like Data Propagator, Query Management Facility (QMF), and DB2 XML Extenders are available across multiple DB2 environments.

Where the products differ are in packaging (function built in vs. delivered as an add-on feature), administrative facilities (many database administrative functions are either not needed or part of the OS with DB2 for i5/OS), and timing in delivering specific database function.

A document describing common SQL syntax across the DB2 family can be found at:  
<http://www-919.ibm.com/developer/db2/downloads/cpsqlref.pdf>

6. Are Health Center and Configuration Advisor (DB2 V8.x components) available for DB2 for i5/OS?

No, these functions are either not required for i5/OS or provided through other tools. This is a good example of administrative facility differences pointed out in question #5. These utilities are specific to DB2 V8.x. Health Center is unique to the Linux/Unix/Windows operating environment and provides functionality to address issues that generally do not exist with DB2 for i5/OS. Tools built into i5/OS allow for collection of performance data similar to what is found in Configuration Advisor.

7. Where can I find more education on DB2 for i5/OS

There is a wealth of information available via the web, at the DB2 for i5/OS home page:  
<http://www.ibm.com/servers/eserver/series/db2>.

