



Consistent database management – that's what puts you firmly in command of your R/3 environment. IBM® was the first database vendor to deliver an industry-leading graphical user interface for both Windows NT® and UNIX® platforms to the R/3 database administrators.

## IBM DB2 Control Center

The management tool for SAP databases

Available to R/3 customers as of September 1997, the IBM DB2® Control Center is a customized administration tool which facilitates the execution of recurring tasks in the R/3 database administration area. The IBM DB2 Universal Database™ customers can boost productivity and reduce costs with the customized IBM DB2 Control Center for SAP R/3. This tool allows administrators to easily recognize when it is necessary to carry out certain operations such as automating execution of backing up and reorganizing the database. The IBM DB2 Control Center includes a browser-like interface for accessing and manipulating database objects; a job scheduler, which allows you to automate many database jobs; a convenient job log; and SmartGuides (dialog boxes that guide you step-by-step through performance configuration and tool setup as well as database monitoring and management).

### IBM DB2 Control Center and SAP R/3's CCMS

SAP R/3's Computer Center Management System (CCMS) and the SAP R/3 Performance Monitor work in conjunction with the DB2 Control Center providing database administrators a complementary set of database administrative tools.

- Easier Than Ever to Manage
- Consistent centralized database management
- Eliminates need-to-know DB2 commands

### Highlights of IBM DB2 Control Center

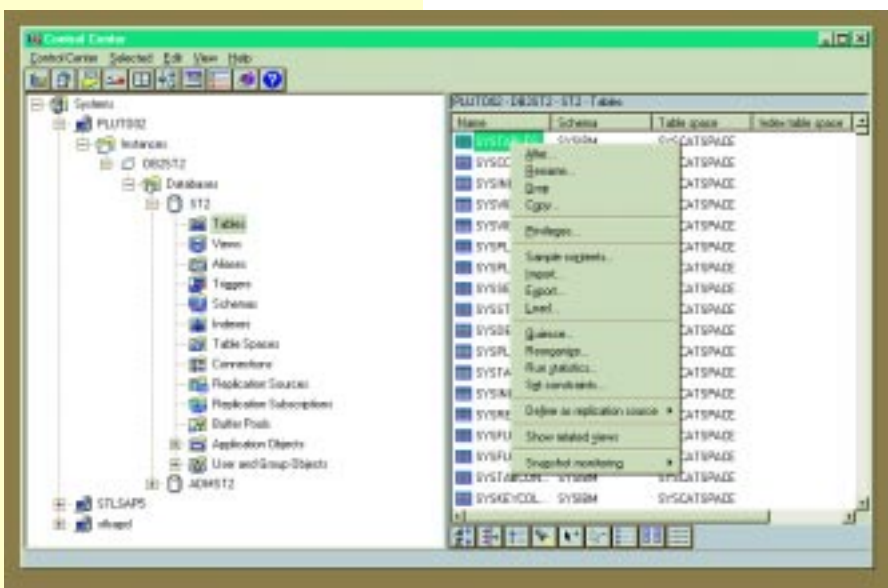
#### A tour of the IBM DB2 Control Center

Exploring the database objects from the Control Center, even across a large enterprise, is simple and easy, as it groups objects in a hierarchy. Following are the three levels in the Control Center's hierarchy, highest to lowest.

**Systems:** A system is a physical machine. There are two types of systems: local or remote. DB2 Control Center can be a single point of control for one or more R/3 systems on Windows NT, AIX®, Linux®, Sun Solaris® and OS/390® platforms. As a database administrator, you can maintain multiple R/3 databases simultaneously at your own workstation.

**Instances:** An instance is a logical database manager environment. There is one DB2 instance with its own set of databases per R/3 system. The DB2 functions that can be triggered at the instance level include:

- Starting/Stopping DB2
- List/force applications
- Snapshot monitoring
- Configuring the database manager



IBM DB2 Control Center Overview

**Databases:** The database is the place where DB2 stores your data. There are many different database object types. The significant types of objects for an R/3 database are: tablespaces, tables, views, indexes, connections, buffer pools; application objects such as packages, user-defined types/functions, and user and group objects. Each object can be expanded to display the detail information about the object. Many DB2 functions can be triggered at various object levels from the control Center.

Some of the most popular functions are:

- Run statistic on tables
- Re-organization of tables and indexes
- Online tablespace expansion
- Import/Export of data
- Online or offline backup/restore of database and tablespaces

SMARTGUIDES are also available for many of these functions to guide you through the tasks. The GUI turns a complex task into an easy experience.

## Performance Tuning Assistant

Performance tuning, particularly across an enterprise-wide setup, is often approached with dread. But even this task has been simplified through the Control Center.

To tune a database where users report slow response times is an easy task with the IBM DB2 Universal Database. The Performance Configuration SmartGuide will display a set of tabs leading from the highest level of performance tuning (choosing the database to tune) to the lowest (the resulting set of values for the configuration parameters affecting performance).

Each set of choices presents the tradeoff in making one choice over another, because performance tuning usually means getting something in exchange for giving up something.

The Performance Configuration SmartGuide provides a set of recommendations. You have the choice to apply the recommendations immediately or save the recommendations to a script. In the script form, you can use the Script Center to edit and selectively apply changes to the values affecting performance. This feature can be very helpful for benchmarking and performance fine tuning.

## DB2 Monitoring Tools

DB2 provides two main monitoring tools to help you get an overview level or a detail level of the analytical information you need from your system. You can invoke these monitoring tools and view the monitoring results directly from the Control Center.

## Snapshot Monitor

The Snapshot Monitor provides information regarding database activity for a specific point in time. It is a picture of the current state of DB2 activity.

The information to be gathered from the Snapshot Monitor include: agents, connections, sort, bufferpools and I/Os, locks, table activities and SQL statement activities.

## Event Monitor

The Event Monitor records the database activity when an event or transition occurs. The type of events that can be monitored include detail activities of the database, tables, deadlocks, tablespaces, bufferpools, connections, statements, and transactions.

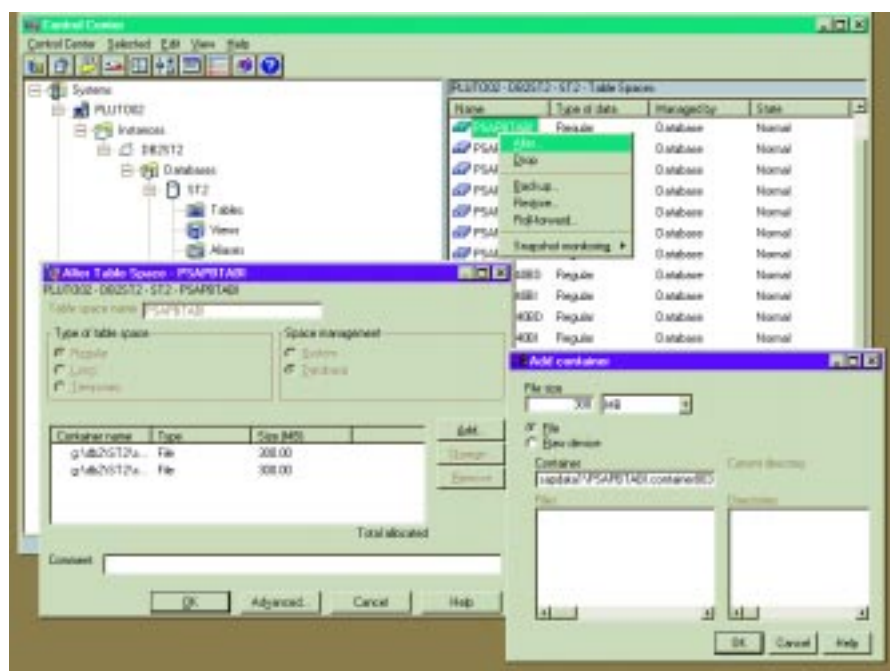
## Database Monitoring using the Alert Center

Tuning and monitoring databases are interdependent tasks. Monitoring can lead to tuning, and changes to parameters to enhance performance should be followed by monitoring to verify that objectives are met. From the Alert Center, users can choose the following monitoring categories:

- Database Instance
- Database
- Table
- Tablespace
- Database Connections

DB2 has extensive monitoring capabilities. Dozens of elements (sometimes referred to as variables) in each category can be monitored, and hundreds of elements can be monitored in total. An entire book in the DB2 library, the "System Monitor Guide and Reference", focuses on using this powerful monitoring tool.

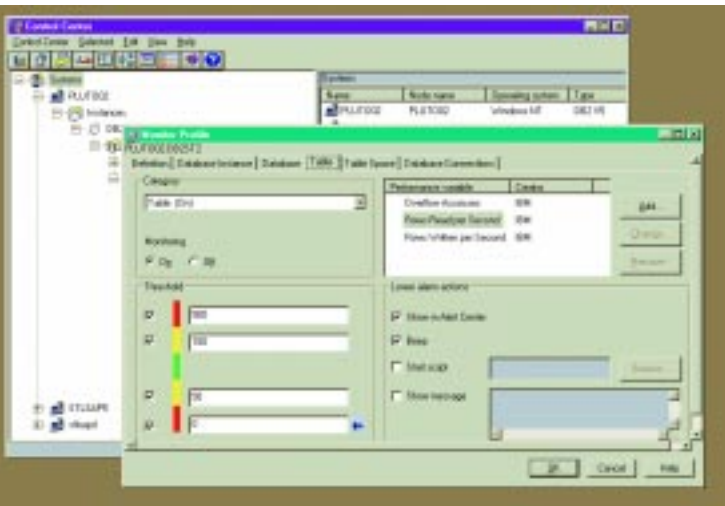
The Alert Center, like the other centers, uses colors and sound to convey important information. Once set up, you can check resource usage through messages returned by the Alert Center to the Journal. You can then begin setting more alerts to determine which applications and userids are generating them. Also, you can use the Alert



*Tablespace extension: adding new containers online*

Center messages to change your initial threshold values.

Combining alerts with the previous Performance Configuration SmartGuide is one of the most effective means of benchmarking or fine-tuning database performance.



*Database monitoring using the Alert Center*

## Explain SQL

If you are an ABAP programmer or a database administrator who need to analyze the access path of a SQL statement to determine if a performance problem exists, this feature is just for you.

The Explain function from the Control Center will display the access plan of your SQL graphically as well as textually. You are able to view the detail information of each operator such as its cumulative cost, cumulative properties, and the input arguments. The statistic of the associated tables/indexes can also be viewed here. The explained statement history can be saved for future reference.

## SAP DB2 Logfile Management

This feature is the R/3 extension that has been developed for DB2 Control Center to make life easy for users to manage their archived log files. With this feature, you can backup and restore your archived log files to/from tape or ADASM®. Logfile management has its own journal where you can view the activity logs. In case of error,

you can troubleshoot the errors from the journal by clicking HELP.

## SAP DB2 Password Management

This feature is another R/3 extension that allows you to manage the password of your database users: SAPR3 and <sid>ADM, directly from the Control Center.

## Scheduling Jobs using the Script Center

The Script Center schedules any type of jobs (or scripts). For example, backup of databases; reorganizing data; run statistic on tables. The jobs can be scheduled to start immediately or any date in the future. Jobs can also be scheduled at regular intervals.

One important feature is the ability to link jobs. After

scheduling a job to run, the Script Center provides an option to specify subsequent actions depending on a successful execution of a job. You might specify that when the first job completes successfully, then the next job should start. If the job fails, you can specify that an error message be returned.

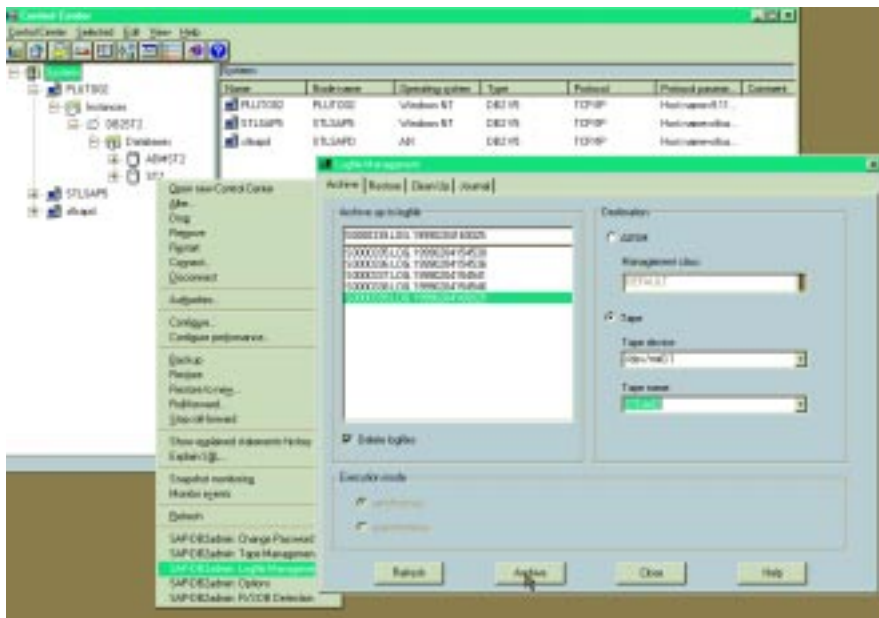
Once you begin scheduling tasks, you will find more ways of using this convenient feature which links tasks to the most appropriate time. For example, taking regular database backups is a standard database administrative task. However, taking a backup has a high cost in resource usage. Therefore, you can schedule a regular backup when most users are off the system, such as at 2:00am every night. DB2 doesn't mind working at that time.

## Checking Job Status using the Journal

To check the completion status of any job, you use the Journal. The Journal is a collection of logs. These logs allow you to look at the events that have happened, are happening, or will happen. The logs are grouped by subject:

- Jobs:** Jobs (or scripts) submitted in the Script Center are listed. These jobs are further grouped by time into Pending Jobs (waiting to be run), Running Jobs (currently executing), and Job History (completed).
- Recovery:** This category provides logs related to recovery, such as what was recovered, when and from what media (for example, a tablespace was recovered last week from a tape archive).
- Alerts:** If alerts were set to monitor operations such as excessive sorting, then the severity, date, time, object, userids, and so forth related to those alerts are presented.
- Messages:** As jobs are run, error messages are captured in these logs. They are listed by severity, date, time, and userid.

If all of the jobs are in Job history with a status of Complete, you know that they have all been run without errors. An error from any of the jobs would have resulted in a status of Failed and a message appearing in the Messages log.



## Logfile Management – Archiving logs

### Command Center

You can issue DB2 commands and view the outcomes directly from the command center. This eliminates the need to have access to the system command window.

### Information Center

Here is a problem that database management personnel face daily: how do I find the technical information on DB2 that I need right now? DB2 Control Center provides a complete information center which allows users to approach the DB2 information from several viewpoints, such as:

- Tasks
- Reference material
- Books
- Troubleshooting (messages and diagnostic information)
- Sample programs (in C, C++, Java®, COBOL, and Fortran)
- Web sites (links to DB2-related sites such as the DB2 home page)

For example, to learn how to schedule a job, you look in the Tasks section under Scheduling a job. This access point then launches the information you need.

### Provide better service to your R/3 users

Put the IBM DB2 Control Center to work monitoring and improving the health of your DB2 resources, and see how higher availability and better performance can help your most demanding users.

Management will be pleased as well, the IBM DB2 Control Center helps you ensure that business rules are enforced consistently across your managed database resources. Administrators can “train” the DB2 Control Center to perform many of their day-to-day tasks automatically and securely. The DB2 Control Center comes with more than 40 pre-defined management tasks. Use them as is or tailor them to your needs. Once they are set up, you can delegate administrative tasks to less experienced administrators, workgroups and end users.

## Control Center at a glance

- Monitor more than 300 performance variables with alert capability to help ensure high performance and availability of database
- All objects in the database including systems, databases, tablespaces, tables (with sample data), views, indexes, etc can be viewed directly from the control center.
- Perform task scheduling and automated task execution with DB2 task libraries
- Automate execution of recurring tasks such as backing up and reorganizing database
- Filter non-critical events
- User interface to the tape management feature that is used in the context of logfile management.
- Full Support for logfile archiving/retrieving to/from tape and ADSM (no need for third party product)
- User password maintenance for R/3 system-specific users on operating system
- Provides command line interface support
- The Journal keeps logs of various administrative tasks. The online help can be called directly from the journal to ease problem diagnosis
- Information center provides all database information such as documentation, tasks and reference help, sample programs, and links to DB2 Web sites

### IBM SAP INTERNATIONAL COMPETENCE CENTER



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