How DB2 V2.3 Impacts EDM Pool Size


DB2 V2.3 provides quite a few new application programming options; not only packages and versions, but also new program preparation options and programming features. How will these new features impact the usage and sizing of the EDM Pool? Will you need to adjust the size of the EDM Pool prior to implementing packages at your shop?

Before answering these questions, let's review the purpose of the EDM Pool. EDM is an acronym which stands for Environmental Descriptor Manager. The EDM is a component of DB2 that manages the internal structures needed by DB2 to execute application programs. It places these internal structures into an area of storage called the EDM Pool. EDM Pool storage is obtained at DB2 start-up time.

The following structures are stored in the EDM Pool for application programs to use as they execute:

- **DBDs**, or database descriptors. Every DB2 database has a corresponding DBD which can be thought of as an internal roadmap that DB2 uses to access the objects defined in that database.
- **SKCTs and CTs**, short for skeleton cursor tables and cursor tables. These are the executable form of your application plans.
- **SKPTs and PTs**, short for skeleton package tables and package tables. These are the executable form of packages.

Figure 1

Refer to the diagram in Figure 1 for clarification. CTs and PTs are composed of sections. A section is made up of the SQL statement and its associated access path control structures. The EDM will read CTs and PTs from the DB2 Directory into the EDM Pool section by section. Sections are read into the EDM Pool as an executing program issues SQL requests.

The first time that an SQL statement is issued, the EDM will build a CT or PT in the EDM Pool depending upon whether the statement comes from a plan or a package. As the EDM builds the CT or PT it will also build an SKCT or SKPT. The SKCT and SKPT can be thought of as master CTs and PTs. Subsequent executions of the same plan or package will read the CT or PT from the SKCT or SKPT, thereby avoiding costly I/O to the DB2 Directory.

Each user of a plan will have their own CT in the EDM Pool and each user of a package will have their own PT in the EDM Pool. However, only one SKCT per plan or one SKPT per package will be in the EDM Pool at any one time.

Given this information, how will packages impact EDM storage? The answer is: It depends. Based upon how you implement packages and what types of plans they are replacing, packages can either increase or decrease the amount of EDM Pool storage used by an application. In general, however, after converting to packages, EDM storage needs will tend to **increase**. PTs read into the EDM Pool must be placed on a 4K page boundary,
How V2.3 Impacts...

whereas DBRM bound directly into a plan need not. This can increase the
storage required for package
execution. Additionally, each
package will have a PT header,
which will consume some extra EDM
storage; DBRM do not have headers.

Also, there is one specific instance
where converting from DBRM to
packages will decrease the EDM Pool
storage required. If a plan with
multiple DBRM is bound with
ACQUIRE(ALLOCATE), converting
the plan to use packages instead of
DBRM can decrease the EDM stor-
age needed for the plan. Packages are
always executed as ACQUIRE(USE),
which requires less EDM storage
because certain internal structures
will not be stored in the EDM Pool,
but in working storage instead.

In addition to package considerations,
DB2 V2.3 provides two other features
which may impact EDM Pool storage
usage:

- cursor with hold; and
- user specifiable authorization cache
  size.

When a cursor is declared using the
WITH HOLD option, issuing a
COMMIT will not lose cursor
positioning. The benefit being that
repositioning logic need not be executed
after each COMMIT thereby
making programs more efficient and
easier to read. The cost is that a
COMMIT will not free locks held on
the current page (for all cursors
defined WITH HOLD) nor will if free
CT and PT sections from the EDM
Pool. This can cause the EDM Pool to
be more active as CT and PT sections
"hang around" longer.

Finally, additional storage may be
required for authorization caching.
DB2 V2.3 automatically provided an
authorization cache of 1024 bytes for
each application plan. With DB2
V2.3, you can explicitly specify the
size of the authorization cache at
BIND time (note: there is no
authorization cache for packages).

The size of the authorization cache
can be from 0 to 4096 bytes in 256
byte increments. DB2 will allocate
a portion of the skeleton cursor table,
equal to the cache size specified at
BIND time, to hold a list of
authorized userids that can execute
the plan. This feature reduces the
amount of DB2 Catalog reading
required at run time. Depending
upon the nature of your applications,
EDM storage may:

- remain the same if you specify
  CACHESIZE of 1024 for all of your
  plans; if CACHESIZE is not specified
  at BIND time, 1024 is the default;
- increase if you consistently specify
  CACHESIZE larger than 1K
  (possibly to support applications
  with a large user base);
- decrease if you consistently specify
  CACHESIZE less than 1K (possibly
  because of heavy PUBLIC
  authorization).

Overall, DB2 V2.3 will provide a more
effective platform for application
development. It will, however, require
analyzing the EDM storage impact of
the new application development
features that DB2 V2.3 provides.

IDUG Membership
Benefits

Industry Contact
IDUG provides direct access to
the largest, most innovative group
of DB2 users internationally and
the opportunity to network and
exchange information with users
seen in the DB2 community.

Voting Privileges
All IDUG user members have full
voting privileges, allowing
opportunities to be a part of
shaping the course of this
growing and vital organization.

Professional Growth
Members are welcomed and
encouraged to get involved in
IDUG by participating on the
board of directors or on special
committees.

Exclusive Vendor Participation
Vendor members attending
IDUG conferences enjoy
exclusice privileges, including
opportunities to exhibit, host
hospitality suites, conference
rooms or reception rooms, and
make vendor-sponsored
presentations. And of course
IDUG member members enjoy
unique access to all user
members.

IDUG GLOBE Newsletter
Only members regularly receive
IDUG's quarterly newsletter,
which features contributed
articles by industry experts and
updates on IDUG's many
activities and conferences.

Innovative Programs
IDUG annually provides
opportunities to share
experiences and ideas with the
DB2 community and learn the
latest DB2 trends and
innovations.

Special Publications
Members of IDUG have access to
valuable conference proceed-
ingues, publications
highlights and innovative conference
presentations.

Vendor Recognition Program
Vendor members can be
recognized for their support
of IDUG with special awards.

IDUG GLOBE/January 1993 5