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DBA ONLINE

美國數據管理協會

Newsletter

*DBA Online - On the front line of database administration
DBA Online powers Oracle DBA*

DBA Online

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DBA Online Conference in April 2005

As database technology is becoming mature and standard, which direction should you go? This is the question many IT professionals have to face and think. The seminar organized by American DBAOnline addressed our members' concern. Furthermore it provided some practical solutions to stay ahead of the IT trend. The seminar was held at Clarion Hotel, Edison, NJ on April 23, 2005. More than one hundred members attended the seminar.



Our new committee member, Ms. Tong Hu, hosted the seminar. She not only introduced our speakers to the audience, but also encouraged audience who sit closely together to greet themselves to

each other. It is our mission to provide a platform for our members to exchange the most desirable technical knowledge and to build up more communication and collaboration network among database administration professionals.

Mr. David Wang, the President of American DBAOnline started the seminar with opening remarks. He welcomed the guests and talked about the work plan for DBA Online. He also provided a DBA tip on “table compression” with a real world case which saved 58% of the storage hardware and thousands of dollars with this feature. Some members responded back that the tip is valuable to their workplace. We look forward to more "secret weapons" from David.

The technical presentation covers four hot topics at the current job market: RAC, Security, Oracle Application Server and Data Guard.



First of all, Mr. Darron Clark, the senior Oracle instructor from Oracle Corporation based in NJ, provided a unique speech on "Implementation of Oracle9i/10g Real Application Cluster". Darron not only focused on RAC architecture and

implementation, but also gave an overview on the state of the Oracle Database Industry. He advised the skills that DBA should have. He gave out "knock them dead" tips on RAC related questions for the job interview. His presentation is informative and entertaining. He wore a red hat to show his confidence on “RED HAT” Linux.



Then, Mr. Henry Parnell, the product manager from Lumigent Technologies, presented the technology on "Enterprise Data Auditing with Lumigent Entegra". In today's world, continuous monitoring and auditing of data has become a prerequisite for all

companies dealing with regulatory compliance. Henry identified the various approaches on database auditing. The solution was discussed on the requirements of the enterprise auditing. It is provided as a framework to differentiate among these approaches.



After it, Mr. Nicholas Donatone, the president of NJOUG (New Jersey Oracle User Group), and the VP of MFG system, gave us a presentation on "Oracle Application Server 10g: Quick Installation Guide". Oracle

Application 10g is gaining momentum with its rich new features and enhancements. Nick is a renowned speaker in large conferences such as NJOUG, NYOUG, OracleWorld and so on. He navigated the installer through the Quick Installation Guide that Oracle provides this time. He pointed out important parameters. His step-by-step procedures significantly help attendees achieve quick and easy installation of Oracle Application Server 10g.



Last but certainly not the least, Dr. John Zhong, the senior database architect from CitiGroup, and VP from American DBAOnline gave us the keynote speech on "Oracle Data Guard for High Availability and Disaster Recovery". John started his presentation with the overview of architecture and the key features on Data Guard. Furthermore, he explained in details on configuring physical standby database and performing graceful switchover and failover. He also shared his insight on alternatives for High Availability and Disaster Recovery. Following his thorough and well-organized presentation, you can configure and manage the Data Guard by yourself even you may never touch it before.

The fun "Oracle10g Technical Quiz" was interpolated by the committee VP, Mr. Daniel Hu. The questions and the gifts he thoughtfully prepared made both participants and winners excited. The quiz becomes a must-have traditional desert for our seminar.

In addition, we were honored to have Lumigent Technologies and LogicWorks sponsored this seminar.



American DBAOnline hosted another successful event. Thanks for

David's leadership. Thanks for our committee members' voluntary work and active preparation. Thanks for our vendors' sponsorship. Most important, thank you all, our hundreds of members' participation and support!

DBA Online Committee



Summer Golf Class News

After successfully organizing two golf sessions, DBAOnline, allies with Beijing Alliance of New Jersey, is going to organize another golf learning session this summer, starting on May 1 or May 8. Mr. Peter Lin, the New Jersey's famous professional golf instructor, will teach the class. If you are interested in joining the session, please send email including your name and contact phone number to admin@dbaonline.org



Compressing Data for Space provided by David Wang

The table compression feature in Oracle9i Release 2 can save significant amounts of disk space, especially on databases with large read-only tables. If you keep in mind the loading and inserting requirements and identify tables that are good candidates for compression, you should find table compression to be an incredible way to save disk space and, in some cases, improve query performance.

Table compression feature works by eliminating duplicate data values found in database tables. Compression works at the database block level. When a table is defined as compressed, the database reserves space in each database block to store single copies of data that appear in multiple places within that block. This reserved space is called the symbol table. Data tagged for compression is stored only in the symbol table and not in the database rows themselves. As data tagged for compression appears in a database row, the row stores a pointer to the relevant data in the symbol table, instead of the data itself. The space savings come from eliminating redundant copies of data values in the table.

The effects of table compression are transparent to a user or an application developer. Developers access a table the same way regardless of whether a table is compressed or not, so SQL queries don't have to change once you decide to compress a table.

To create a compressed table, use the `COMPRESS` keyword in the `CREATE TABLE` statement. The `COMPRESS` keyword directs Oracle Database to store rows in the table in compressed format wherever possible. The following is an example of the `CREATE TABLE` and `ALTER TABLE` with `COMPRESS` statement:

```
CREATE TABLE TRANS_HISTORY (... ) COMPRESS;  
ALTER TABLE TRANS_HISTORY COMPRESS;
```

Furthermore, to ensure that data is actually compressed, you need to use a proper method to load or insert data into the table. Data compression takes place only during a bulk load or bulk insert process, using one of the following four methods:

- Direct path SQL*Loader
- Serial `INSERT` with an `APPEND` hint
- Parallel `INSERT`
- `CREATE TABLE ... AS SELECT`

If you have an existing uncompressed table, you can compress it by using the `ALTER TABLE ... MOVE` statement. For example, an uncompressed table named `TRANS_HISTORY_TEMP` could be compressed by using the following:

```
ALTER TABLE TRANS_HISTORY_TEMP MOVE COMPRESS;
```

Partitioned tables provide a unique benefit when used with compression. If, at the end of Q3 2005, data in the `TRANS_Q3_05` partition becomes read-only, you can compress this partition by using the `ALTER TABLE ... MOVE PARTITION` command, as shown in the following statement:

```
ALTER TABLE TRANS_PART_COMP MOVE PARTITION TRANS_Q3_05  
COMPRESS;
```

Since table compression takes place at the time of a bulk load, data-loading operations require extra processing because of the additional overhead involved.



 **Performing Top-N Queries in Oracle** by Boris Milrud

Introduction

The task of retrieving the top or bottom N rows from a database table (by salary, sales amount, credit, etc.) is often referred to as a "top-N query." This task is fairly common in application development.

For a top-N query you can use two ranking functions: RANK and DENSE_RANK. Both allow you to rank items in a group—for example, finding the top-five employees by salary, which is exactly what we need to achieve.

Setting Up the Table

In this 10-Minute Solution, I am going to use table EMP in the queries examples of this article. This table belongs to the SCOTT schema of the Oracle starter database provided with Oracle database server versions 7.3, 8.0, and 8i.

Here is the table's structure:

| Name | Null? | Type |
|----------|----------|--------------|
| ----- | ----- | ----- |
| EMPNO | NOT NULL | NUMBER(4) |
| ENAME | | VARCHAR2(10) |
| JOB | | VARCHAR2(9) |
| MGR | | NUMBER(4) |
| HIREDATE | | DATE |
| SAL | | NUMBER(7,2) |
| COMM | | NUMBER(7,2) |
| DEPTNO | | NUMBER(2) |

Utilizing Oracle 8i's Ranking Functions

The difference between RANK() and DENSE_RANK() is that RANK() leaves gaps in the ranking sequence when there are ties. In our case, Scott and Ford tie for second place with a \$3,000 salary; Jones' \$2,975 salary brings him in third place using DENSE_RANK() but only fourth place using RANK():

```
SELECT Empno, Ename, Job, Mgr, Sal,
       RANK() OVER
         (ORDER BY SAL Desc NULLS LAST) AS Rank,
       DENSE_RANK() OVER
         (ORDER BY SAL Desc NULLS LAST) AS Drank
FROM Emp
ORDER BY SAL Desc NULLS LAST;
```

Below shows the output of the above code.

| EMPNO | ENAME | JOB | MGR | SAL | RANK | DRANK |
|-------|-------|-----------|--------|------|------|-------|
| 7839 | KING | PRESIDENT | [NULL] | 5000 | 1 | 1 |
| 7788 | SCOTT | ANALYST | 7566 | 3000 | 2 | 2 |
| 7902 | FORD | ANALYST | 7566 | 3000 | 2 | 2 |
| 7566 | JONES | MANAGER | 7839 | 2975 | 4 | 3 |

| | | | | | | |
|------|--------|----------|------|------|----|----|
| 7698 | BLAKE | MANAGER | 7839 | 2850 | 5 | 4 |
| 7782 | CLARK | MANAGER | 7839 | 2450 | 6 | 5 |
| 7499 | ALLEN | SALESMAN | 7698 | 1600 | 7 | 6 |
| 7844 | TURNER | SALESMAN | 7698 | 1500 | 8 | 7 |
| 7934 | MILLER | CLERK | 7782 | 1300 | 9 | 8 |
| 7521 | WARD | SALESMAN | 7698 | 1250 | 10 | 9 |
| 7654 | MARTIN | SALESMAN | 7698 | 1250 | 10 | 9 |
| 7876 | ADAMS | CLERK | 7788 | 1100 | 12 | 10 |
| 7900 | JAMES | CLERK | 7698 | 950 | 13 | 11 |
| 7369 | SMITH | CLERK | 7902 | 800 | 14 | 12 |

The NULLS FIRST | NULLS LAST clause determines the position of rows with NULL values in the ordered query.

If the sequence is in descending order, then NULLS LAST implies that NULL values are smaller than non-NULL ones and rows with NULLs will appear at the bottom of the list. If the NULLS FIRST | NULLS LAST clause is omitted, then NULL values are considered larger than any other values and their ordering position depends on the ASC | DESC arguments.

If the ordering sequence is ascending (ASC), then rows with NULLs will appear last; if the sequence is descending (DESC), then rows with NULLs will appear first. NULLs are considered equal to other NULLs and, therefore, the order in which rows with NULLs are presented is nondeterministic.

Using RANK() to Obtain a Top-N Query

To obtain a top-N query, use RANK() in a subquery and then apply a filter condition outside the subquery:

```
SELECT Empno, Ename, Job, Mgr, Hiredate, Sal
FROM
    (SELECT Empno, Ename, Job, Mgr, Hiredate, Sal,
        RANK() OVER
            (ORDER BY SAL Desc NULLS LAST) AS Emp_Rank
    FROM Emp
    ORDER BY SAL Desc NULLS LAST)
WHERE Emp_Rank < 6;
```

Below shows the output of the above code.

| EMPNO | ENAME | JOB | MGR | HIREDATE | SAL |
|-------|-------|-----------|--------|------------|------|
| 7839 | KING | PRESIDENT | [NULL] | 11/17/1981 | 5000 |
| 7788 | SCOTT | ANALYST | 7566 | 12/9/1982 | 3000 |
| 7902 | FORD | ANALYST | 7566 | 12/3/1981 | 3000 |
| 7566 | JONES | MANAGER | 7839 | 4/2/1981 | 2975 |
| 7698 | BLAKE | MANAGER | 7839 | 5/1/1981 | 2850 |

Ranking functions can be used to operate within groups, too—that is, the rank value gets reset whenever the group changes. This is achieved with a PARTITION BY subclause. Here is the syntax to retrieve the top employee by salary per manager group:

```
SELECT Empno, Ename, Job, Mgr, Hiredate, Sal
FROM
    (SELECT Empno, Ename, Job, Mgr, Hiredate, Sal,
        RANK() OVER
            (PARTITION BY MGR ORDER BY MGR, SAL DESC NULLS
                LAST) AS Emp_Rank
    FROM Emp
    ORDER BY MGR, SAL DESC NULLS LAST)
WHERE Emp_Rank = 1;
```

Below shows the output of the above code.

| EMPNO | ENAME | JOB | MGR | HIREDATE | SAL |
|-------|--------|-----------|--------|------------|------|
| 7788 | SCOTT | ANALYST | 7566 | 12/9/1982 | 3000 |
| 7902 | FORD | ANALYST | 7566 | 12/3/1981 | 3000 |
| 7499 | ALLEN | SALESMAN | 7698 | 2/20/1981 | 1600 |
| 7934 | MILLER | CLERK | 7782 | 1/23/1982 | 1300 |
| 7876 | ADAMS | CLERK | 7788 | 1/12/1983 | 1100 |
| 7566 | JONES | MANAGER | 7839 | 4/2/1981 | 2975 |
| 7369 | SMITH | CLERK | 7902 | 12/17/1980 | 800 |
| 7839 | KING | PRESIDENT | [NULL] | 11/17/1981 | 5000 |

As you can see, analytic functions are extremely useful in all types of analysis and computations, and they provide substantial SQL extensions to Oracle 8i.



Oracle News: Oracle Offshoring a Failure for Many Companies by Don Burleson

Offshoring Oracle projects have proven to be a major failure for many US corporations. Plagued by huge communications issues, poorly-trained developers and huge cost over-runs, many companies find that their offshoring not only fails to save them money, but sometimes fails to deliver the project at all.

Compounding the issue is the lack of legal recourse and the differences in Indian laws, which can leave US companies with millions of dollars in unrecoverable losses.

While the corporations say that they must reduce costs to remain competitive in a global market, there has been a backlash as offshoring has failed and jobs return to the USA.

<http://www.silicon.com/management/careers/0,39024671,39119267,00.htm?nl=d20040318>

Gartner claims that 2004 will see the first major offshoring failure that will lead to a company taking its operations back onshore.

We are also seeing that the cost savings promised by offshoring are not as great as promised:

http://www.ccng.com/newsletter/newsletter_view.asp?newsid=256&Regionid=2

Although offshoring has promised big savings for U.S. companies, it hardly is delivering for many, according to a recent study commissioned by Alpharetta based Aelera Corp.

The survey shows the average company last year saved only 20 percent by exporting jobs overseas -- up to 20 percent less than expected. And nearly 10 percent of the companies in the study actually lost money.

Citing problems such as cultural issues, unforeseen expenses, complex logistics, loose security, poor work quality and the subsequent decline in American employees' morale, about 55 percent of the polled companies' executives said they are considering "reshoring," or bringing the projects back to the United States. However, that doesn't mean those companies desire to have all the projects done in-house. According to the study, 20 percent of the polled executives said they were "very likely" to "homeshore," or to outsource domestically.



 **Tech Quiz** by Daniel Hu

1. Which background process of a database instance, using Automatic Storage Management (ASM), connects as a foreground instance into the ASM instance?

- A. ASMB
- B. PMON
- C. RBAL
- D. SMON

2. Which of the following is not a valid Data Pump export and import mode?

- A. FULL
- B. TABLE
- C. SCHEMA
- D. DATA FILE
- E. TABLESPACE

F. TRANSPORTABLE TABLESPACE

3. Which initialization parameter needs to be removed from the parameter file of your database when you plan to relocate your entire database to an Automatic Storage Management (ASM) disk group?

- A. CONTROL_FILES
- B. INSTANCE_NAME
- C. USER_DUMP_DEST
- D. BACKGROUND_DUMP_DEST

4. You have a materialized view MV1, which is based on the following query:

```
SQL> SELECT deptno, sum(sal) FROM emp GROUP BY deptno;
```

You issued the following SQL from your application:

```
SQL> SELECT deptno, sum(sal) FROM emp GROUP BY deptno;
```

Which view would display whether the query executed from your application scanned the materialized view MV1 instead of the base table EMP?

- A. V\$SQL_PLAN
- B. V\$DATAFILE
- C. V\$CONTROLFILE
- D. V\$EXPLAIN_PLAN

5. Which view can you query to check the status of the database components being upgraded from an Oracle9i database to an Oracle 10g database?

- A. V\$VERSION
- B. V\$DATABASE
- C. V\$CONTROLFILE
- D. DBA_SERVER_REGISTRY

6. Which interactive command is used to terminate a data pump job so that it cannot be restarted again?

- A. STOP_JOB
- B. KILL_JOB
- C. TERMINATE_JOB
- D. You can not stop a data pump job.

7. You have created a bigfile tablespace MYTB2 in a database MYDB. How many data files can this tablespace have?

- A. ONE
- B. THREE
- C. FIVE

D. UNLIMITED

8. You need to shrink the EMP table to release the unused space below and above the High Water Mark (HWM). The EMP table is located in the USERS tablespace. Which statement release the space below the HWM?

- A. SQL> ALTER TABLE EMP COALESCE;
- B. SQL> ALTER TABLE EMP SHRINK SPACE;
- C. SQL> ALTER TABLESPACE USERS COALESCE;
- D. SQL> ALTER TABLE EMP DEALLOCATE UNUSED;

Answers:

(2) A (2) D (3) A (4) A (5) D (6) B (7) A (8) B



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