在线重定义表

1 在重定义过程中允许原表DML操作，只是在完成重定义时，有一个刷新动作，在这个很短的时间窗口内，排他锁定表。

时间的长短依据原表的大小和重定义的复杂度，以及重定义期间对原表的DML操作多少

2 在线重定义表需要额外的空间，空间大小与原表大体一致

优点

1 改变物理存储位置，移动到不同的表空间

2 改变逻辑结构，添加删除列

3 将非分区表转成分区表

4 重建表结构减少碎片化

对比move操作，move阻止对原表的DML操作，但不需要额外的存储空间

set linesize 200

col segment\_name format a25

col owner format a20

col tablespace\_name format a20

select owner,SEGMENT\_NAME,BYTES,tablespace\_name,bytes/1024/1024 from dba\_segments where owner='HR';

OWNER             SEGMENT\_NAME            BYTES TABLESPACE\_NAME      BYTES/1024/1024

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HR             REGIONS                65536 EXAMPLE             .0625

HR             LOCATIONS                65536 EXAMPLE             .0625

HR             DEPARTMENTS            65536 EXAMPLE             .0625

HR             JOBS                65536 EXAMPLE             .0625

HR             EMPLOYEES                65536 EXAMPLE             .0625

1 确认表可以重定义

BEGIN

  DBMS\_REDEFINITION.CAN\_REDEF\_TABLE('hr','employees',

      DBMS\_REDEFINITION.CONS\_USE\_PK);

END;

/

注意：重定义的表需要有主键或伪主键（列组件有唯一约束且非空）

select owner,CONSTRAINT\_NAME,CONSTRAINT\_TYPE,TABLE\_NAME from dba\_constraints where table\_name='EMPLOYEES';

OWNER             CONSTRAINT\_NAME            C TABLE\_NAME

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HR             EMP\_JOB\_NN             C EMPLOYEES

HR             EMP\_HIRE\_DATE\_NN            C EMPLOYEES

HR             EMP\_EMAIL\_NN            C EMPLOYEES

HR             EMP\_LAST\_NAME\_NN            C EMPLOYEES

HR             EMP\_SALARY\_MIN            C EMPLOYEES

HR             EMP\_MANAGER\_FK            R EMPLOYEES

HR             EMP\_JOB\_FK             R EMPLOYEES

HR             EMP\_DEPT\_FK            R EMPLOYEES

HR             EMP\_EMP\_ID\_PK            P EMPLOYEES

HR             EMP\_EMAIL\_UK            U EMPLOYEES

10 rows selected.

select owner,constraint\_name,table\_name,column\_name from dba\_cons\_columns where constraint\_name='EMP\_EMP\_ID\_PK';

OWNER             CONSTRAINT\_NAME            TABLE\_NAME               COLUMN\_NAME

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HR             EMP\_EMP\_ID\_PK            EMPLOYEES               EMPLOYEE\_ID

2 创建过度表（与原表结构一致）

set line 200

set pagesize 0

set long 99999

set feedback off

set echo off

select dbms\_metadata.get\_ddl('TABLE','EMPLOYEES','HR') from dual;

CREATE TABLE "HR"."EMPLOYEES"

   (    "EMPLOYEE\_ID" NUMBER(6,0),

    "FIRST\_NAME" VARCHAR2(20),

    "LAST\_NAME" VARCHAR2(25) CONSTRAINT "EMP\_LAST\_NAME\_NN" NOT NULL ENABLE,

    "EMAIL" VARCHAR2(25) CONSTRAINT "EMP\_EMAIL\_NN" NOT NULL ENABLE,

    "PHONE\_NUMBER" VARCHAR2(20),

    "HIRE\_DATE" DATE CONSTRAINT "EMP\_HIRE\_DATE\_NN" NOT NULL ENABLE,

    "JOB\_ID" VARCHAR2(10) CONSTRAINT "EMP\_JOB\_NN" NOT NULL ENABLE,

    "SALARY" NUMBER(8,2),

    "COMMISSION\_PCT" NUMBER(2,2),

    "MANAGER\_ID" NUMBER(6,0),

    "DEPARTMENT\_ID" NUMBER(4,0),

     CONSTRAINT "EMP\_SALARY\_MIN" CHECK (salary > 0) ENABLE,

     CONSTRAINT "EMP\_EMAIL\_UK" UNIQUE ("EMAIL")

  USING INDEX PCTFREE 10 INITRANS 2 MAXTRANS 255 COMPUTE STATISTICS NOLOGGING

  STORAGE(INITIAL 65536 NEXT 1048576 MINEXTENTS 1 MAXEXTENTS 2147483645

  PCTINCREASE 0 FREELISTS 1 FREELIST GROUPS 1

  BUFFER\_POOL DEFAULT FLASH\_CACHE DEFAULT CELL\_FLASH\_CACHE DEFAULT)

  TABLESPACE "EXAMPLE"    ENABLE,

     CONSTRAINT "EMP\_EMP\_ID\_PK" PRIMARY KEY ("EMPLOYEE\_ID")

  USING INDEX PCTFREE 10 INITRANS 2 MAXTRANS 255 COMPUTE STATISTICS NOLOGGING

  STORAGE(INITIAL 65536 NEXT 1048576 MINEXTENTS 1 MAXEXTENTS 2147483645

  PCTINCREASE 0 FREELISTS 1 FREELIST GROUPS 1

  BUFFER\_POOL DEFAULT FLASH\_CACHE DEFAULT CELL\_FLASH\_CACHE DEFAULT)

  TABLESPACE "EXAMPLE"    ENABLE,

     CONSTRAINT "EMP\_DEPT\_FK" FOREIGN KEY ("DEPARTMENT\_ID")

      REFERENCES "HR"."DEPARTMENTS" ("DEPARTMENT\_ID") ENABLE,

     CONSTRAINT "EMP\_JOB\_FK" FOREIGN KEY ("JOB\_ID")

      REFERENCES "HR"."JOBS" ("JOB\_ID") ENABLE,

     CONSTRAINT "EMP\_MANAGER\_FK" FOREIGN KEY ("MANAGER\_ID")

      REFERENCES "HR"."EMPLOYEES" ("EMPLOYEE\_ID") ENABLE

   ) SEGMENT CREATION IMMEDIATE

  PCTFREE 10 PCTUSED 40 INITRANS 1 MAXTRANS 255

NOCOMPRESS NOLOGGING

  STORAGE(INITIAL 65536 NEXT 1048576 MINEXTENTS 1 MAXEXTENTS 2147483645

  PCTINCREASE 0 FREELISTS 1 FREELIST GROUPS 1

  BUFFER\_POOL DEFAULT FLASH\_CACHE DEFAULT CELL\_FLASH\_CACHE DEFAULT)

  TABLESPACE "EXAMPLE"

CREATE TABLE "HR"."INT\_EMPLOYEES"

   (    "EMPLOYEE\_ID" NUMBER(6,0),

    "FIRST\_NAME" VARCHAR2(20 BYTE),

    "LAST\_NAME" VARCHAR2(25 BYTE),

    "EMAIL" VARCHAR2(25 BYTE),

    "PHONE\_NUMBER" VARCHAR2(20 BYTE),

    "HIRE\_DATE" DATE,

    "JOB\_ID" VARCHAR2(10 BYTE),

    "SALARY" NUMBER(8,2),

    "COMMISSION\_PCT" NUMBER(2,2),

    "MANAGER\_ID" NUMBER(6,0),

    "DEPARTMENT\_ID" NUMBER(4,0)

  USING INDEX PCTFREE 10 INITRANS 2 MAXTRANS 255 COMPUTE STATISTICS NOLOGGING

  STORAGE(INITIAL 65536 NEXT 1048576 MINEXTENTS 1 MAXEXTENTS 2147483645

  PCTINCREASE 0 FREELISTS 1 FREELIST GROUPS 1

  BUFFER\_POOL DEFAULT FLASH\_CACHE DEFAULT CELL\_FLASH\_CACHE DEFAULT)

  TABLESPACE "EXAMPLE";

3 启动重定义过程

BEGIN

    dbms\_redefinition.start\_redef\_table('hr','employees','int\_employees','EMPLOYEE\_ID EMPLOYEE\_ID,FIRST\_NAME FIRST\_NAME, LAST\_NAME LAST\_NAME, EMAIL EMAIL, PHONE\_NUMBER PHONE\_NUMBER,HIRE\_DATE HIRE\_DATE,JOB\_ID JOB\_ID,SALARY SALARY,COMMISSION\_PCT COMMISSION\_PCT,MANAGER\_ID MANAGER\_ID,DEPARTMENT\_ID DEPARTMENT\_ID'

,dbms\_redefinition.cons\_use\_pk);

END;

/

4 拷贝依赖对象

DECLARE

num\_errors PLS\_INTEGER;

BEGIN

  DBMS\_REDEFINITION.COPY\_TABLE\_DEPENDENTS('hr', 'employees','int\_employees',

   DBMS\_REDEFINITION.CONS\_ORIG\_PARAMS, TRUE, TRUE, TRUE, TRUE, num\_errors);

END;

/

5 如果有，查询拷贝错误

select object\_name,base\_table\_name,ddl\_txt from DBA\_REDEFINITION\_ERRORS;

6 可选，同步临时表

BEGIN

  DBMS\_REDEFINITION.SYNC\_INTERIM\_TABLE('hr', 'employees', 'int\_employees');

END;

/

7 完成重定义

BEGIN

  DBMS\_REDEFINITION.FINISH\_REDEF\_TABLE('hr', 'admin\_emp', 'int\_employees');

END;

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If START\_REDEF\_TABLE fails for any reason, you must call ABORT\_REDEF\_TABLE, otherwise subsequent attempts to redefine the table will fail.

 