

ParnassusData is a software company

PRM-DUL for Oracle [Case-001]

- Oracle SYS schema 下的 bootstrap 字典核心表被删导致的数据库奔溃

Parnassus
诗 檀

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文档控制

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简介

本文目的

很多中小企业在使用和维护 Oracle 数据库时候,由于误操作,导致系统奔溃。由于数据库文件无备份,无归档,无闪回。这就造成了恢复困难。

本文主要介绍如何使用 PRM-DUL 在丢失 SYS schema 下部分表,导致数据库奔溃的情况下挽救企业数据。

相关参考

1. ParnassusData Recovery Manager For Oracle Database 用户手册 v0.3.pdf (Parnassusdata.com -> 资源 -> 白皮书)
2. PD_虚拟个人实验环境的模板搭建.pdf
3. PD_使用 VirtualBox 在 Oracle Linux 5.7 上安装 Oracle Database 11g Release 2 RAC 的最佳实践.pdf

模拟环境准备

文中将使用虚拟机来进行演示操作, 所用虚拟机软件为 VirtualBox 4.3.12 (Windows 版)。

对于数据库的安装将不会在本文中进行进一步描述, 如需相关资源, 请看简介中的相关参考, 以搜索下载对应内容。

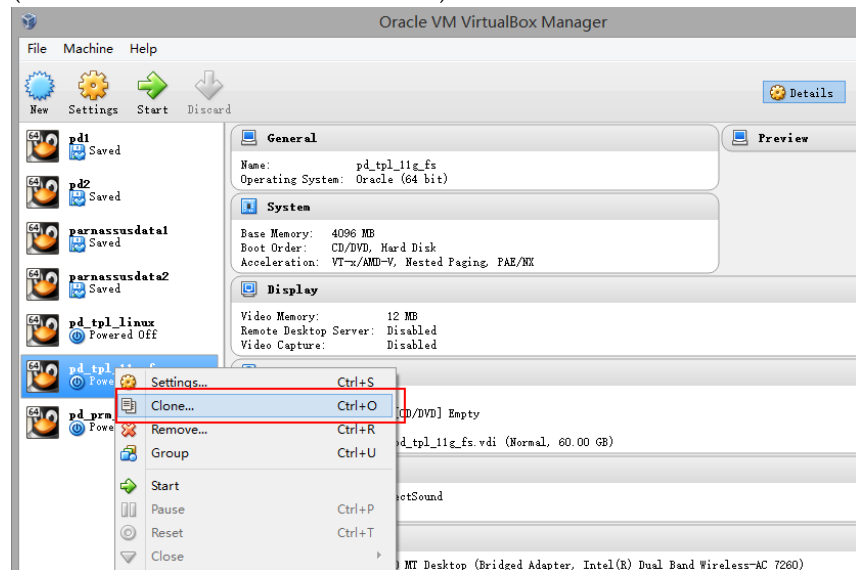
系统及数据库

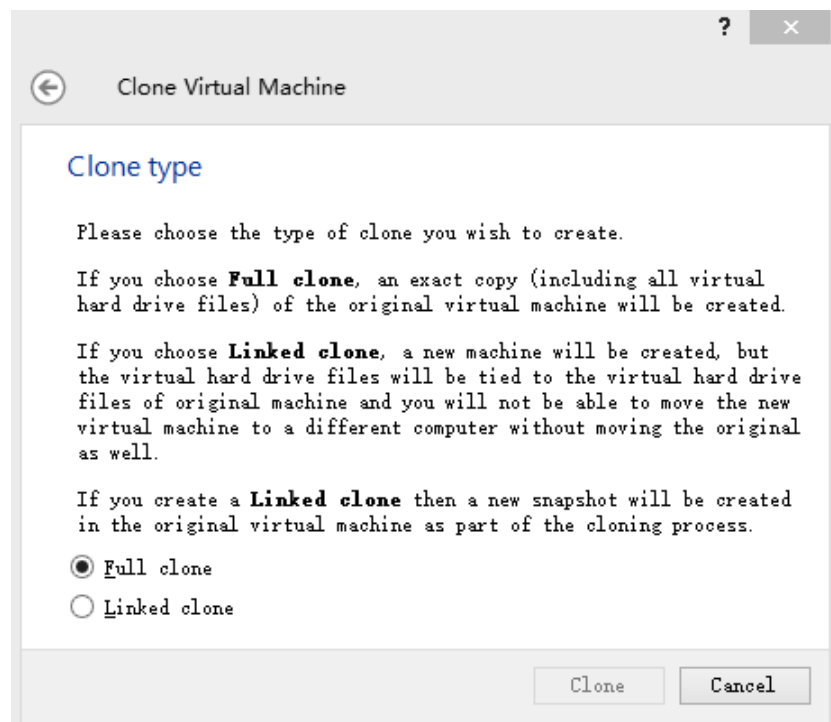
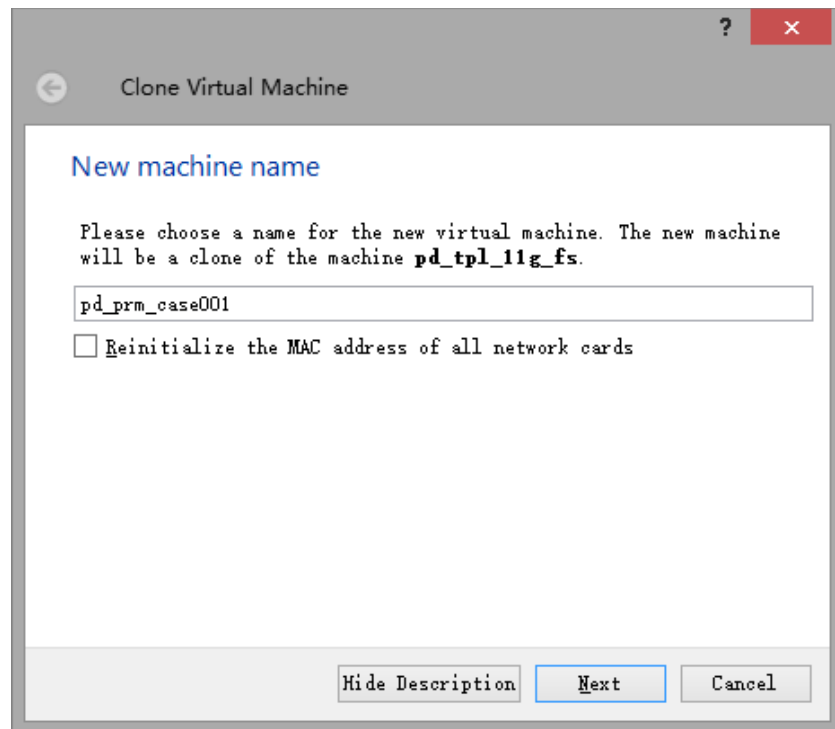
Oracle Linux Release 5 Update 7 Media Pack for x86_64 (64 bit)

Oracle Database 11.2.0.4

先克隆一个已有系统, 用于此实验:

(设置此虚拟主机 IP 为: 192.168.1.130)





Java 及 PRM-DUL 安 装

1. Java 安装

挂载 Linux 安装光盘 , Login with root:

```
# mkdir /media/disk  
# mount /dev/cdrom /media/disk
```

配置 yum 之后:

```
# yum install java  
安装 openjdk-1.6.0 并检查配置 :  
# alternatives --config java  
# java -version
```

2. PRM-DUL 安装

FTP (login with oracle) PRM-DUL 软件包

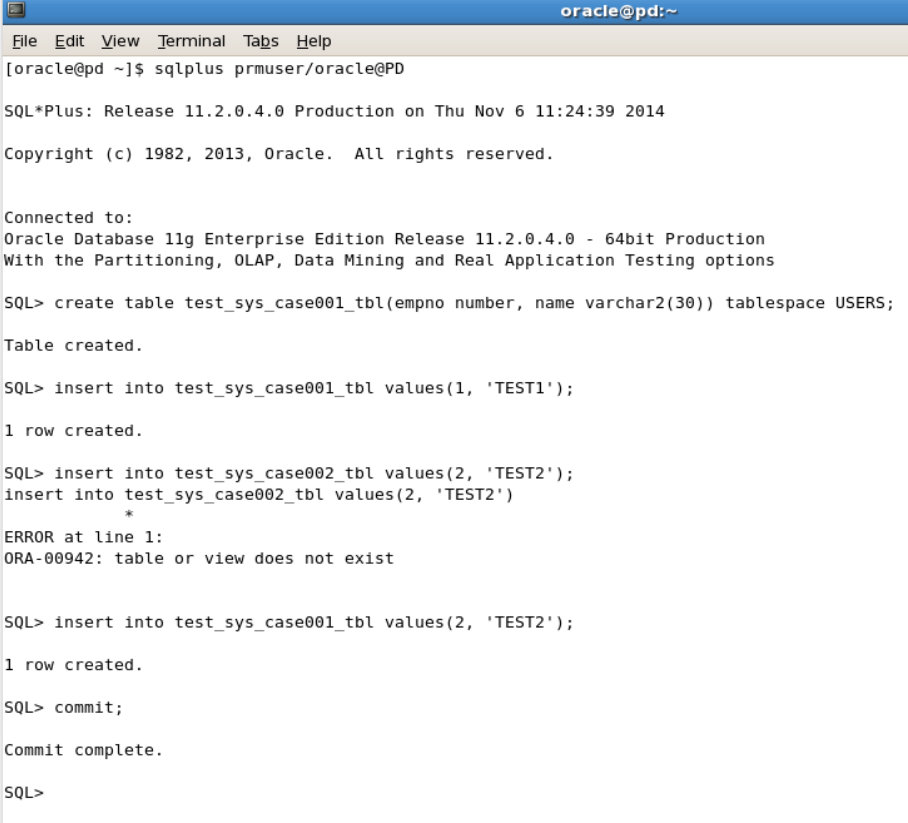
ParnassusData_PRM-DULForOracle_3206.zip 至/home/oracle

```
$ cd ~  
$ unzip ParnassusData_PRM-DULForOracle_3206.zip  
$ cd ParnassusData_PRM-DULForOracle_3206  
$ chmod 750 prm.sh  
$ chmod 750 prm_startup.sh  
$ chmod 750 prm.bat  
$ exit  
Login with oracle (not root)  
$ startx  
Open one terminal :  
$ cd ~/ParnassusData_PRM-DULForOracle_3206  
$ sh prm.sh
```

模拟场景

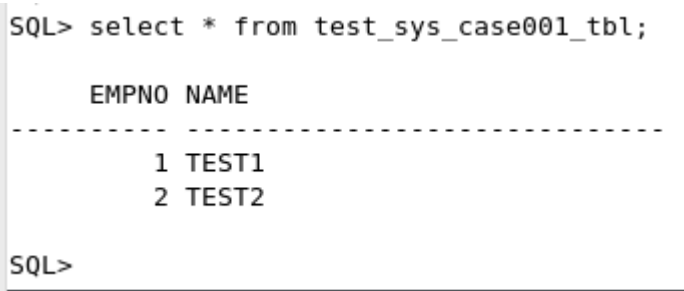
```
$ sqlplus / as sysdba  
SQL> create user PRM-DULuser identified by oracle;  
SQL> grant dba to PRM-DULuser;  
SQL> exit  
  
$ sqlplus PRM-DULuser/oracle@PD  
SQL> create table test_sys_case001_tbl(empno number, name  
varchar2(30)) tablespace USERS;  
SQL> insert into test_sys_case001_tbl values(1, 'TEST1');
```

```
SQL> insert into test_sys_case001_tbl values(1, 'TEST2');  
SQL> commit;
```



```
oracle@pd:~  
File Edit View Terminal Tabs Help  
[oracle@pd ~]$ sqlplus prmsuser/oracle@PD  
SQL*Plus: Release 11.2.0.4.0 Production on Thu Nov 6 11:24:39 2014  
Copyright (c) 1982, 2013, Oracle. All rights reserved.  
  
Connected to:  
Oracle Database 11g Enterprise Edition Release 11.2.0.4.0 - 64bit Production  
With the Partitioning, OLAP, Data Mining and Real Application Testing options  
  
SQL> create table test_sys_case001_tbl(empno number, name varchar2(30)) tablespace USERS;  
Table created.  
  
SQL> insert into test_sys_case001_tbl values(1, 'TEST1');  
1 row created.  
  
SQL> insert into test_sys_case002_tbl values(2, 'TEST2');  
insert into test_sys_case002_tbl values(2, 'TEST2')  
*  
ERROR at line 1:  
ORA-00942: table or view does not exist  
  
SQL> insert into test_sys_case001_tbl values(2, 'TEST2');  
1 row created.  
  
SQL> commit;  
Commit complete.  
  
SQL>
```

```
SQL> select * from test_sys_case001_tbl;
```



```
SQL> select * from test_sys_case001_tbl;  
  
      EMPNO NAME  
-----  
         1 TEST1  
         2 TEST2  
  
SQL>
```

破坏操作

1. 启动虚拟机 pd_PRM-DUL_case001 及数据库：
使用 oracle 用户登录
\$ sqlplus / as sysdba

SQL> startup

2. 检查数据库状态：

SQL> archive log list

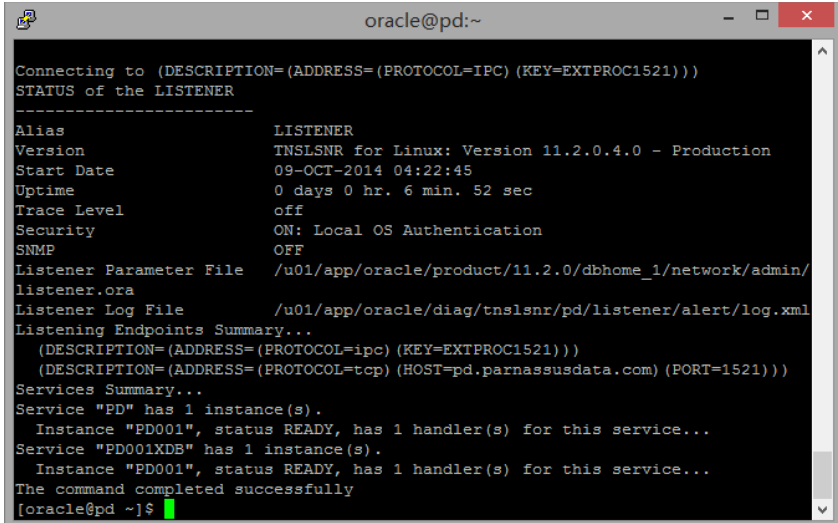
显示非归档模式

```
SQL>
SQL> archive log list
Database log mode                No Archive Mode
Automatic archival               Disabled
Archive destination              USE_DB_RECOVERY_FILE_DEST
Oldest online log sequence      4
Current log sequence             6
SQL>
```

确认监听状态，如果监听无服务，需要使用 `lsnrctl stop/start` 来重启，之后手动注册下数据库到监听中：

SQL> alter system register

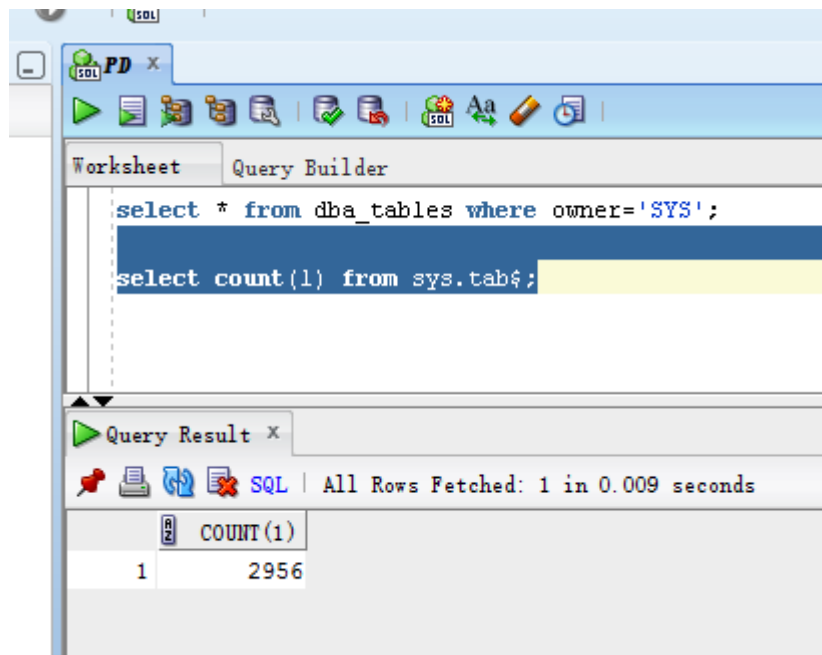
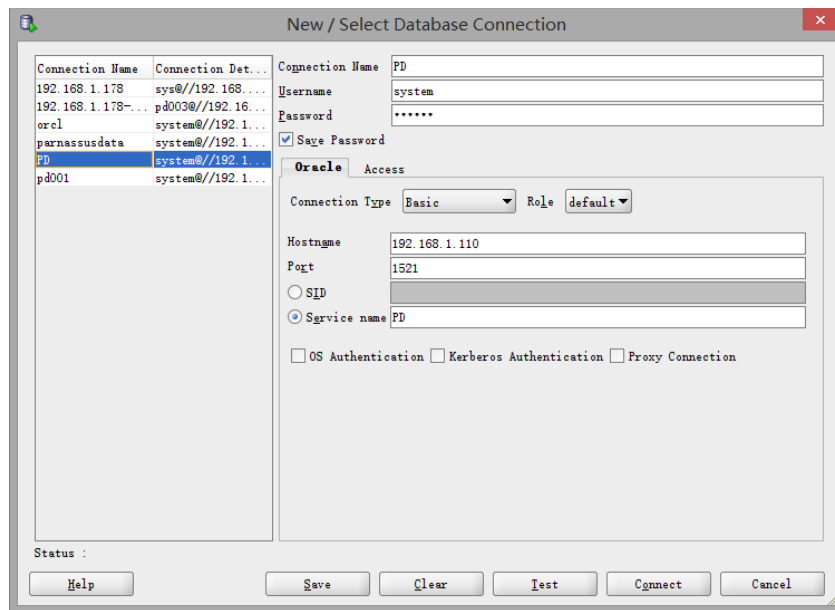
\$ lsnrctl status



```
oracle@pd:~
Connecting to (DESCRIPTION=(ADDRESS=(PROTOCOL=IPC)(KEY=EXTPROC1521)))
STATUS of the LISTENER
-----
Alias                LISTENER
Version              TNSLSNR for Linux: Version 11.2.0.4.0 - Production
Start Date           09-OCT-2014 04:22:45
Uptime               0 days 0 hr. 6 min. 52 sec
Trace Level          off
Security             ON: Local OS Authentication
SNMP                OFF
Listener Parameter File /u01/app/oracle/product/11.2.0/dbhome_1/network/admin/
listener.ora
Listener Log File    /u01/app/oracle/diag/tnslsnr/pd/listener/alert/log.xml
Listening Endpoints Summary...
  (DESCRIPTION=(ADDRESS=(PROTOCOL=ipc)(KEY=EXTPROC1521)))
  (DESCRIPTION=(ADDRESS=(PROTOCOL=tcp)(HOST=pd.parnassusdata.com)(PORT=1521)))
Services Summary...
Service "PD" has 1 instance(s).
  Instance "PD001", status READY, has 1 handler(s) for this service...
Service "PD001XDB" has 1 instance(s).
  Instance "PD001", status READY, has 1 handler(s) for this service...
The command completed successfully
[oracle@pd ~]$
```

3. 先记录需要删除的系统表：

使用 SQL Developer 连数据库。



```
SQL> delete from sys.tab$;  
SQL> commit;  
SQL> alter system checkpoints;
```

```
File Edit View Terminal Tabs Help
[oracle@pd ~]$ sqlplus / as sysdba

SQL*Plus: Release 11.2.0.4.0 Production
Copyright (c) 1982, 2013, Oracle. All

Connected to:
Oracle Database 11g Enterprise Edition
With the Partitioning, OLAP, Data Minin

SQL> delete from tab$;

2957 rows deleted.

SQL> commit;

Commit complete.

SQL> alter system checkpoint;

System altered.

SQL>
```

一旦数据库关闭后，就打不开了。

```
oracle@pd:~
File Edit View Terminal Tabs Help
[oracle@pd ~]$ sqlplus / as sysdba

SQL*Plus: Release 11.2.0.4.0 Production on Thu Nov 6 11:33:42 2014
Copyright (c) 1982, 2013, Oracle. All rights reserved.

Connected to an idle instance.

SQL> startup
ORACLE instance started.

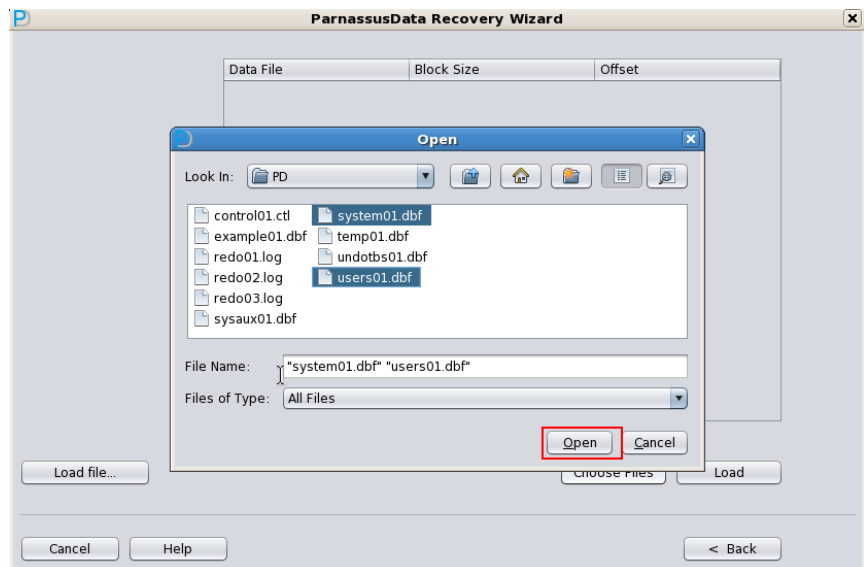
Total System Global Area 1653518336 bytes
Fixed Size 2253784 bytes
Variable Size 1006636072 bytes
Database Buffers 637534208 bytes
Redo Buffers 7094272 bytes
Database mounted.
ORA-01092: ORACLE instance terminated. Disconnection forced
ORA-00704: bootstrap process failure
ORA-00704: bootstrap process failure
ORA-00600: internal error code, arguments: [16703], [1403], [20], [], [], [],
[], [], [], [], [], []
Process ID: 4385
Session ID: 1 Serial number: 5

SQL>
```

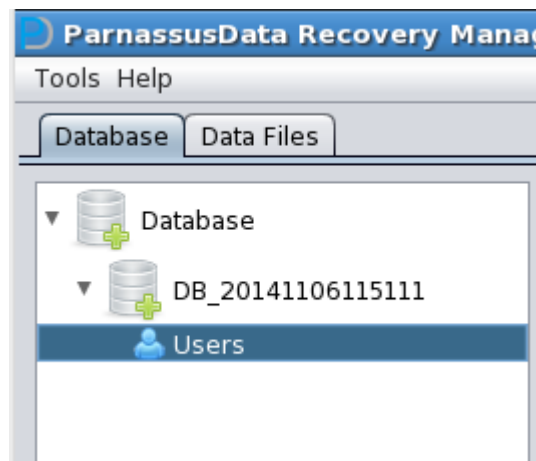
PRM-DUL 数据抽取

操作步骤(DataBridge)

1. 启动 PRM-DUL (Login with oracle)
\$ cd ParnassusData_PRM-DULForOracle_3206
\$ sh prm.sh
2. 尝试使用字典模式, 做 DataBridge
Tools -> Recovery Wizard -> Next
Select 'Dictionary Mode' -> Next



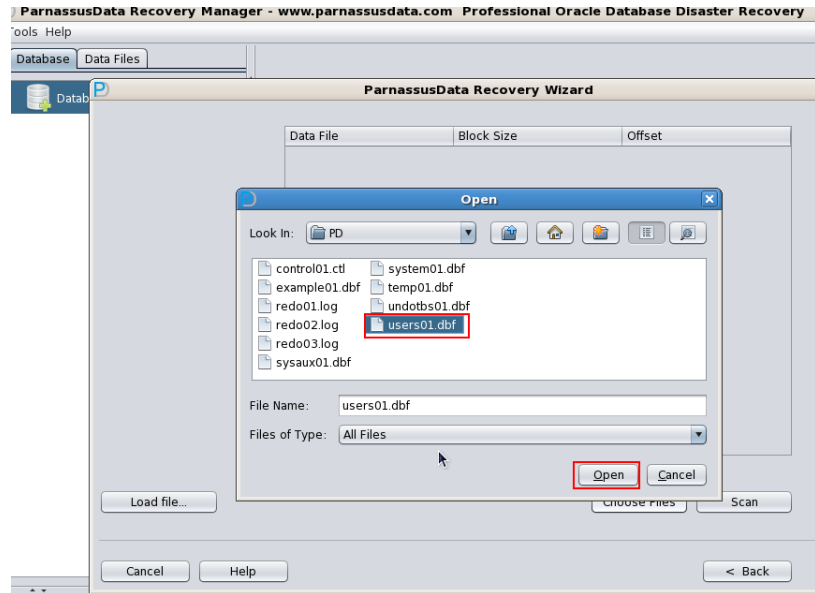
发现无法找到数据, 字典模式无法解决问题



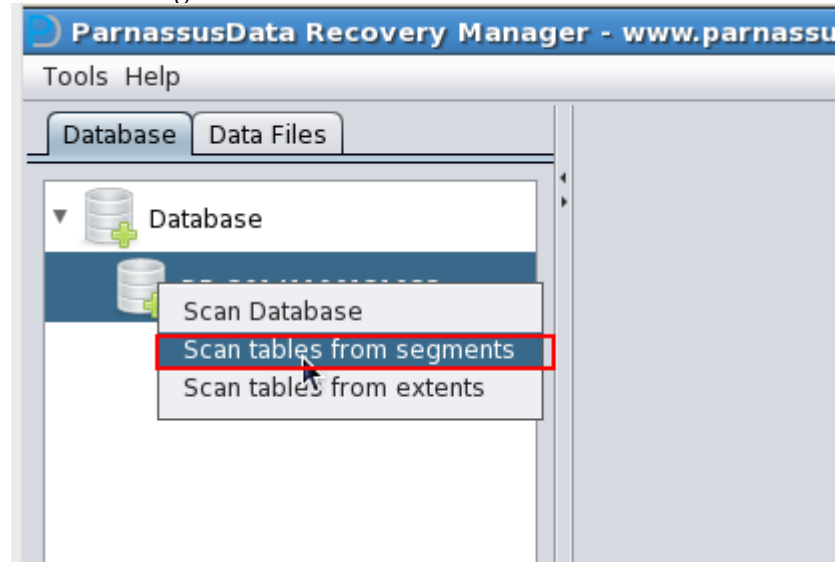
3. 尝试使用非字典模式, 做 DataBridge

Tools -> Recovery Wizard -> Next

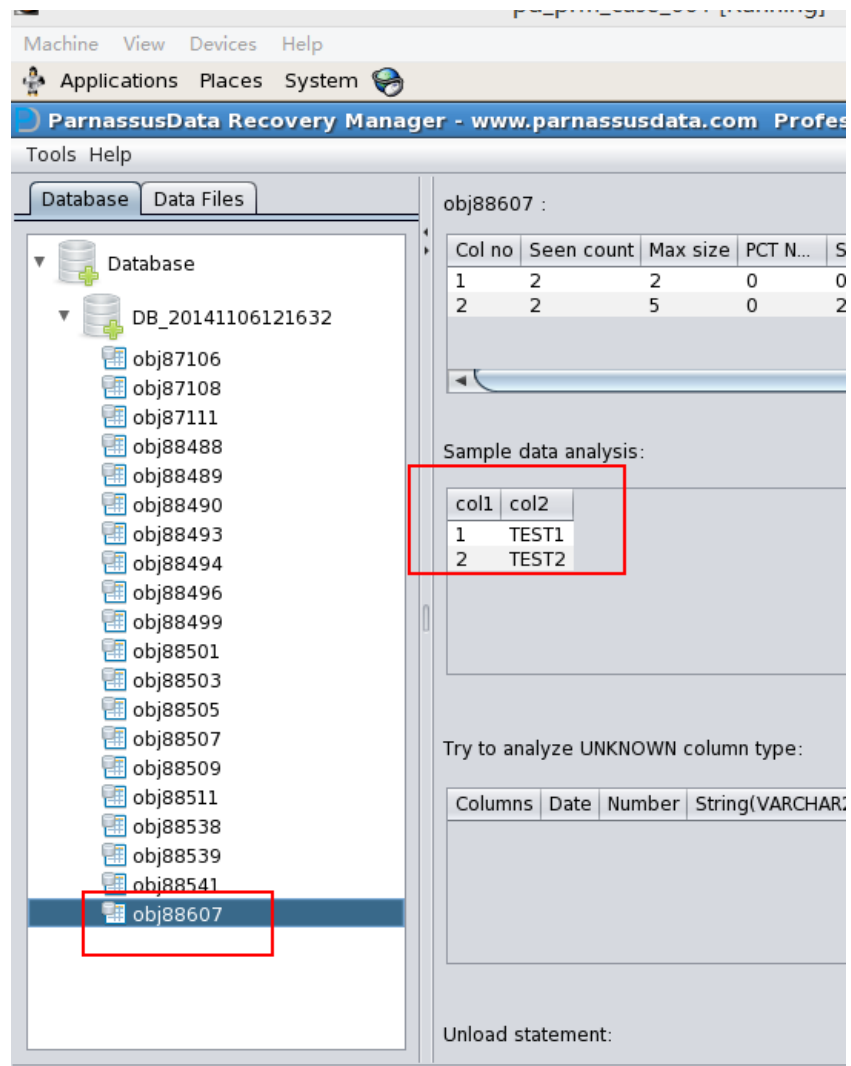
Select 'Non-dictionary Mode' -> Next



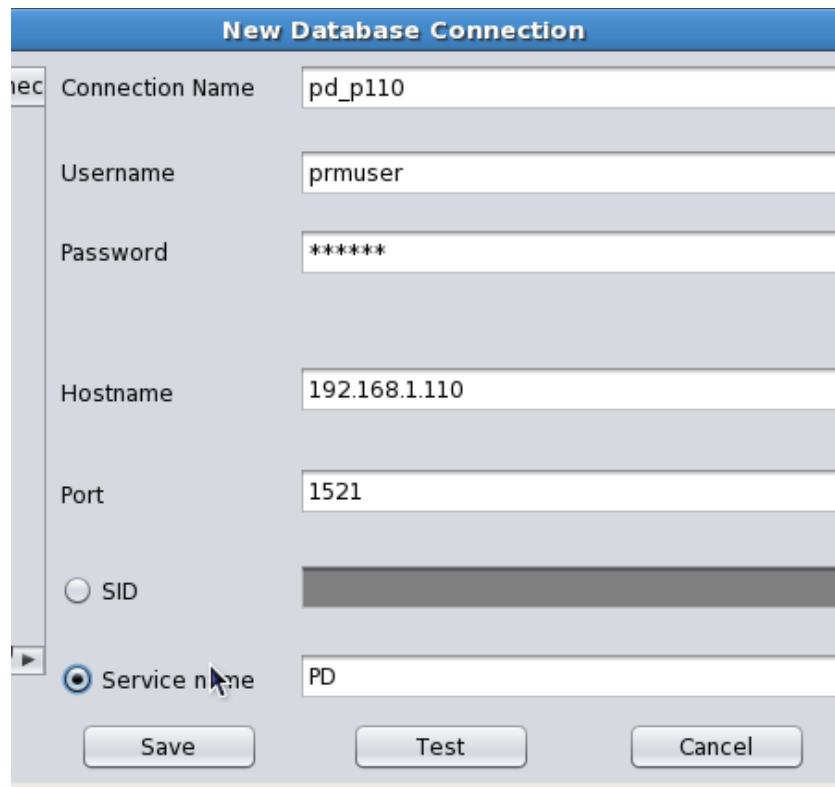
由于只是系统表空间数据丢失, 其他客户表数据完好, 因此使用'Scan tables from segments':



通过人工识别可知:

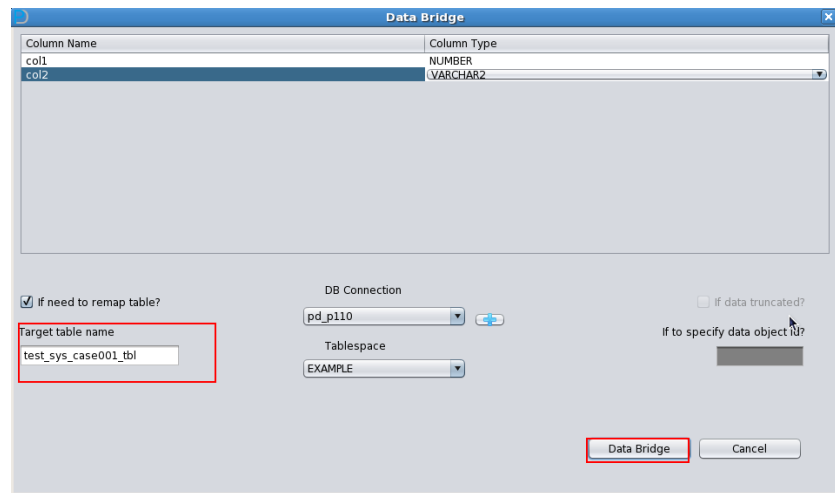


Right Click obj88607 and do DataBridge:



The 'New Database Connection' dialog box contains the following fields and options:

- Connection Name: pd_p110
- Username: prmuser
- Password: *****
- Hostname: 192.168.1.110
- Port: 1521
- Radio buttons: SID, Service name
- Service name: PD
- Buttons: Save, Test, Cancel



The 'Data Bridge' dialog box contains the following elements:

Column Name	Column Type
col1	NUMBER
col2	VARCHAR2

Options and fields:

- If need to remap table?
- DB Connection: pd_p110
- Tablespace: EXAMPLE
- If data truncated?
- If to specify data object ID? (disabled)
- Target table name: test_sys_case001_tbl
- Buttons: Data Bridge, Cancel



Parnassus

i **Totally inserted row count: 2**
Elapsed time(seconds): 0.0

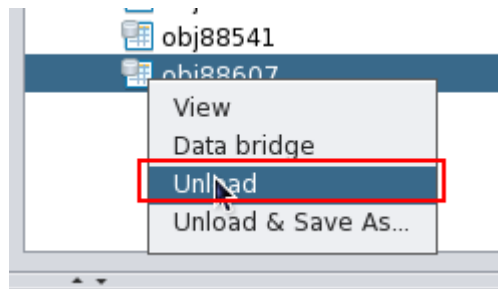
```
SQL> select * from test_sys_case001_tbl;

   COL1 COL2
-----
      1 TEST1
      2 TEST2
```

抽取并 DataBridge 成功。

PRM-DUL Unload

除了使用 DataBridge, 也可使用 Unload, 修改 ctl 文件格式后再倒入:



```
[oracle@pd ParnassusData_PRMForOracle_3206]$ cd prmdata/
[oracle@pd prmdata]$ ls
parnassus_dbinfo_DB_20141106121632
[oracle@pd prmdata]$
```

```
[oracle@pd prmdata]$ cd parnassus_dbinfo_DB_20141106121632/
[oracle@pd parnassus_dbinfo_DB_20141106121632]$ ls
db_20141106121632.obj88607.ctl  EXT.dat          SEG.dat
db_20141106121632.obj88607.dat  scanTables.out
[oracle@pd parnassus_dbinfo_DB_20141106121632]$ cat db_20141106121632.obj88607.d
at
"1" "TEST1"
"2" "TEST2"
[oracle@pd parnassus_dbinfo_DB_20141106121632]$ cat db_20141106121632.obj88607.c
tl
LOAD DATA
INFILE 'db_20141106121632.obj88607.dat'
APPEND
INTO TABLE db_20141106121632.obj88607
FIELDS TERMINATED BY ' '
OPTIONALLY ENCLOSED BY '"'
TRAILING NULLCOLS (
"col1" ,
"col2"
)[oracle@pd parnassus_dbinfo_DB_20141106121632]$
```


其他问题

未解决的问题

问题号	问题描述	解决方案	日期

已解决的问题

问题号	问题描述	解决方案	解决日期

更多资源

技术资源 : <http://www.parnassusdata.com/resources/>

技术支持: service@parnassusdata.com

销售: sales@parnassusdata.com

下载 PRM-DUL FOR ORACLE 灾难恢复软件: <http://www.parnassusdata.com/>

联系诗檀软件: <http://www.parnassusdata.com/zh-hans/contact>

最后

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