ParnassusData Technical White Paper

Dec 2013

ParnassusData is a software company

ParnassusData Recovery Manager For Oracle Database User Guide V0.3

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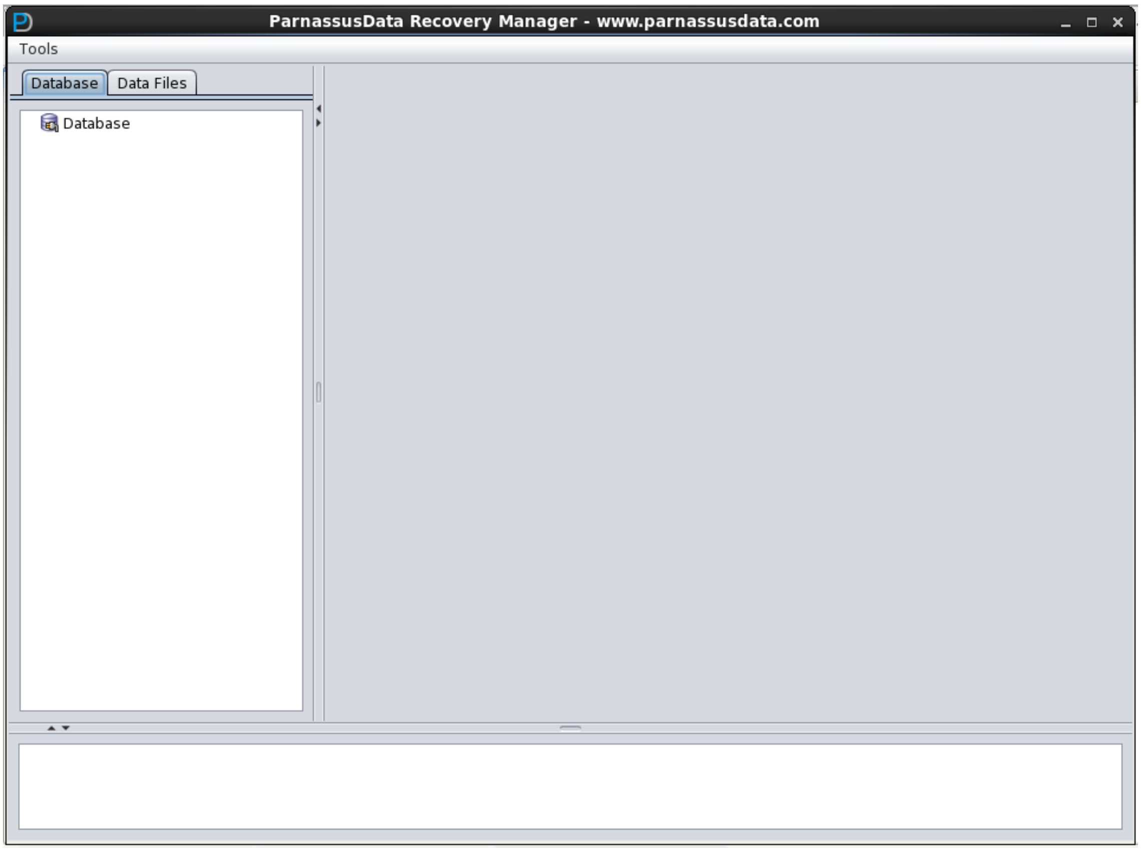
Summary

ParnassusData Recovery Manager (PRM) is an enterprise Oracle database recovery tool, which can extract database datafile from Oracle 9i, 10g, 11g, 12c directly without any SQL execution on database. ParnassusData Recovery Manager was developed by Java, which can be used cross platforms. It can be run without any installation. Download it, and click to run

PRM has full rich GUI for any command. It is not necessary to learn script or master any skill in Oracle data structure. Recovery Wizard is integrated in the tool.



Picture 1

Why PRM is necessary?

Isn’t RMAN enough for ORACLE database recovery? Why need PRM for Oracle recovery?

In modern growing IT systems, database size is growing geometrically. Oracle DBAs are facing the problem that disks are insufficient for full backup, and tape storages take much more time than usual expectation.

Truth been told, “Database, backup 1st” is the first lesson for DBAs, however that fact is : disk space is not sufficient, new storage is still on the way, even the backup image may not work.

In order to solve the above problems, PD Recovery Manager integrates the algorithm in Oracle database data structure, boot process which can solve system table lost, data dictionary error, and storage corruption impaction. In addition, it can also recovery the data from Truncate/DROP mistake.

No matter you are a professional DBA or new fish in Oracle world, you can master this user-friendly tool immediately. PRM is easy to install and use. You don’t need to have any Oracle deep knowledge or skill in scripts, but just click-by-click finishing all recovery process.

Comparing the traditional recovery tool like Oracle DUL that is an Oracle internal tool and only for Oracle employee usage. PRM can be used for any kind of IT professionals or geeks. It saves time, decreases the recovery failure, and cuts down the total cost of enterprise.

There are 2 modes for data recovery:

By traditional way, data has to be extract to text file and then insert to new DB by SQLLDR tools, which takes double time and occupies double storage size.

ParnassusData Recovery Manager integrates data bridge features, which can extract data from original source database and then insert into new destination database without any inter-media. This is a truly time and storage saver.

Oracle ASM is becoming popular in enterprise database implementation, due to its advantage in high performance, cluster support, and easy administration. However, for many IT professionals, ASM is a black box. Once ASM occurs error in disk group mounting, it means that all data is locked in ASM. In this circumstance, without PRM, only senior Oracle experts can patch ASM internal structure, which is also a problem for oracle normal user.

PRM now can support two kinds of ASM data recovery ：

1. Once Disk Group cannot be mounted, PRM can read metadata, and clone ASM file from Disk Group
2. Once Disk Group cannot be mounted, PRM can read ASM file and extract data, which supports data export, and data bridge 2 modes

PRM Software Introduction

ParnassusData Recovery Manager (PRM) was developed by Java, which ensured cross-platform ability. No matter AIX, Solaris, HPUNIX, Red-Hat, Oracle Linux, SUSE, or Window, It can be run smoothly.

PRM Supports OS & Platform ：

Platform Name	Supported
AIX POWER	✓
Solaris Sparc	✓
Solaris X86	✓
Linux X86	✓
Linux X86-64	✓
HPUX	✓
MacOS	✓

PRM Supported Database Version:

ORACLE DATABASE VERSION	Supported
Oracle 7	×
Oracle 8	×
Oracle 8i	×
Oracle 9i	✓
Oracle 10g	✓
Oracle 11g	✓
Oracle 12c	✓

Considering many servers run early OS like AIX 4.3 that can not install the latest JD, PRM was developed by JDS 1.4.

In addition, Oracle 10g database integrated JDK 1.4, and 11g with JDK 1.5. Therefore, users can run PRM directly without any JDK updates or installation

For users who needs JDK 1.4, please download from below link:

http://www.oracle.com/technetwork/java/javasebusiness/downloads/java-archive-downloads-javase14-419411.html

ParnassusData strongly recommend user to use Open JDK on Linux, for less bug and performance purpose.

Open JDK For Linux download Link:

Open jdk x86_64 for Linux 5	http://pan.baidu.com/s/1qWO740O
Tzdata-java x86_64 for Linux 5	http://pan.baidu.com/s/1gdeiF6r
Open jdk x86_64 for Linux 6	http://pan.baidu.com/s/1mg0thXm
Open jdk x86_64 for Linux 6	http://pan.baidu.com/s/1sjQ7vjf
Open jdk x86 for Linux 5	http://pan.baidu.com/s/1kT1Hey7
Tzdata-java x86 for Linux 5	http://pan.baidu.com/s/1kT9iBAn
Open jdk x86 for Linux 6	http://pan.baidu.com/s/1sjQ7vjf
Tzdata-java x86 for Linux 6	http://pan.baidu.com/s/1kTE8u8n

JDK on Other platform downloads:

AIX JAVA SDK 7	http://pan.baidu.com/s/1i3JvAlv
JDK Windows x86	http://pan.baidu.com/s/1qW38LhM
JDK Windows x86-64	http://pan.baidu.com/s/1qWDcoOk
Solaris JDK 7 x86-64bit	http://pan.baidu.com/s/1gdzgSvh
Solaris JDK 7 x86-32bit	http://pan.baidu.com/s/1mgjxFlQ
Solaris JDK 7 Sparc	http://pan.baidu.com/s/1pJjX3Ft

PRM runs at least on JAVA JDK 1.4. Parnassus Data strongly recommends you to run it on JDK 1.6, since comparing JDK 1.5, JDK 1.6 has a lot of performance tuning in code and running environment. Therefore, it can be faster for recovering on JDK 1.6

PRM hardware requirement:

CPU	At least 800 MHZ
Memory	At least 512 MB
Disk	At least 50 MB

PRM recommended hardware requirement:

CPU	2.0 GHZ
Memory	2 GB
Disk	2 GB

PRM Language Support

Language	Character Set	Encoding
Simplified/Traditional Chinese	ZHS16GBK	GBK
Simplified/Traditional Chinese	ZHS16DBCS	CP935
Simplified/Traditional Chinese	ZHT16BIG5	BIG5
Simplified/Traditional Chinese	ZHT16DBCS	CP937
Simplified/Traditional Chinese	ZHT16HKSCS	CP950

Simplified/Traditional Chinese	ZHS16CGB231280	GB2312
Simplified/Traditional Chinese	ZHS32GB18030	GB18030
Japanese	JA16SJIS	SJIS
Japanese	JA16EUC	EUC_JP
Japanese	JA16DBCS	CP939
Korean	KO16MSWIN949	MS649
Korean	KO16KSC5601	EUC_KR
Korean	KO16DBCS	CP933
French	WE8MSWIN1252	CP1252
French	WE8ISO8859P15	ISO8859_15
French	WE8PC850	CP850
French	WE8EBCDIC1148	CP1148
French	WE8ISO8859P1	ISO8859_1
French	WE8PC863	CP863
French	WE8EBCDIC1047	CP1047
French	WE8EBCDIC1147	CP1147
Deutsch	WE8MSWIN1252	CP1252
Deutsch	WE8ISO8859P15	ISO8859_15
Deutsch	WE8PC850	CP850
Deutsch	WE8EBCDIC1141	CP1141
Deutsch	WE8ISO8859P1	ISO8859_1
Deutsch	WE8EBCDIC1148	CP1148
Italian	WE8MSWIN1252	CP1252
Italian	WE8ISO8859P15	ISO8859_15
Italian	WE8PC850	CP850
Italian	WE8EBCDIC1144	CP1144
Thai	TH8TISASCII	CP874
Thai	TH8TISEBCDIC	TIS620
Arabic	AR8MSWIN1256	CP1256
Arabic	AR8ISO8859P6	ISO8859_6
Arabic	AR8ADOS720	CP864
Spanish	WE8MSWIN1252	CP1252
Spanish	WE8ISO8859P1	ISO8859_1

Spanish	WE8PC850	CP850
Spanish	WE8EBCDIC1047	CP1047
Portuguese	WE8MSWIN1252	CP1252
Portuguese	WE8ISO8859P1	ISO8859_1
Portuguese	WE8PC850	CP850
Portuguese	WE8EBCDIC1047	CP1047
Portuguese	WE8ISO8859P15	ISO8859_15
Portuguese	WE8PC860	CP860

Features Supported

Features	Supported
Cluster Table	YES
Inline or out-of-line LOBS, different chunk version and size, LOB partition	YES
Heap table, partitioned or non-partitioned	YES
Partition and Subpartition	YES
Table With chained rows ,migrated rows,intra-block chaining	YES
Bigfile Tablespace	YES
ASM Automatic Storage Management 10g,11g,12c,diskgroups are dismounted	YES
ASM 11g Variable Extent Size	YES
IOT, partitioned or non-partitioned	YES(Future)
Basic Compressed Heap table	YES(Future)
Advanced Compressed Heap Table	NO
Exudates HCC Heap Table	NO
Encrypted Heap Table	NO
Table with Virtual Column	NO

Attention: for virtual column、11g optimized default column, it may lose some column, and these two are new feature and less used in production environment.

PRM supports data type:

Data Type	Supported
BFILE	No
Binary XML	No
BINARY_DOUBLE	Yes
BINARY_FLOAT	Yes
BLOB	Yes
CHAR	Yes
CLOB and NCLOB	Yes
Collections (including VARRAYS and nested tables)	No
Date	Yes
INTERVAL DAY TO SECOND	Yes
INTERVAL YEAR TO MONTH	Yes
LOBs stored as SecureFiles	Future
LONG	Yes
LONG RAW	Yes
Multimedia data types (including Spatial, Image, and Oracle Text)	No
NCHAR	Yes
Number	Yes
NVARCHAR2	Yes
RAW	Yes
ROWID, UROWID	Yes
TIMESTAMP	Yes
TIMESTAMP WITH LOCAL TIMEZONE	Yes
TIMESTAMP WITH TIMEZONE	Yes
User-defined types	No
VARCHAR2 and VARCHAR	Yes
XMLType stored as CLOB	No
XMLType stored as Object Relational	No

PRM supports ASM:

Function	Supported
Directly extract Table data from ASM	YES
Directly copy datafile from ASM	YES
Repair ASM metadata	YES
Draw ASM Structure by GUI	Future

PRM installation and boot

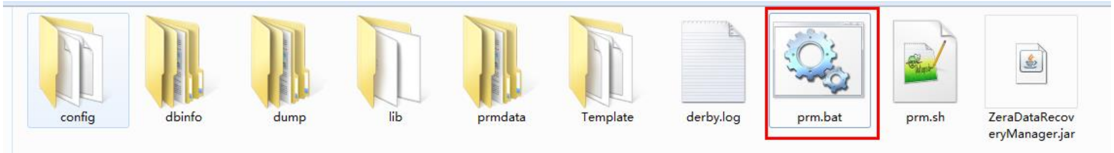
It is not necessary to install PRM since it is Java developed software. Extract the ZIP package and click to RUN

```
unzip     prm_latest.zip
```

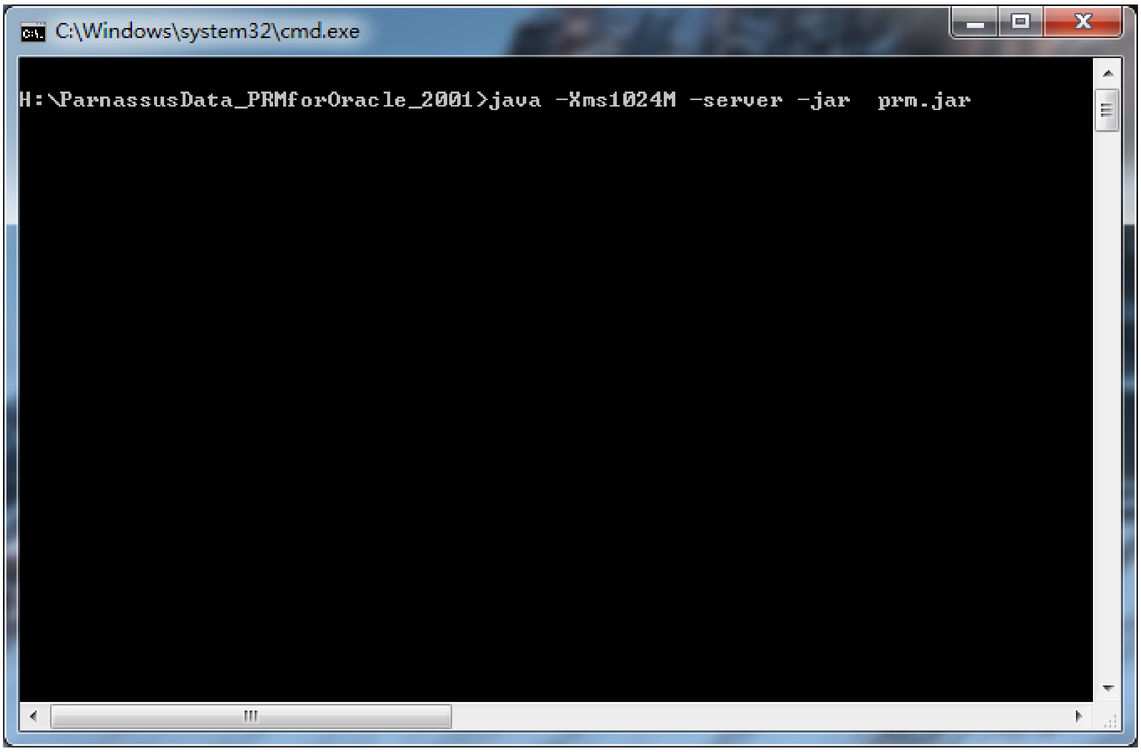
ParnassusData recommends you to run PRM with command line, therefore it will show more diagnose information

Windows:

1. Make sure you had installed JDK and add JAVA to profile
2. Double click 'prm.bat' which is in the folder

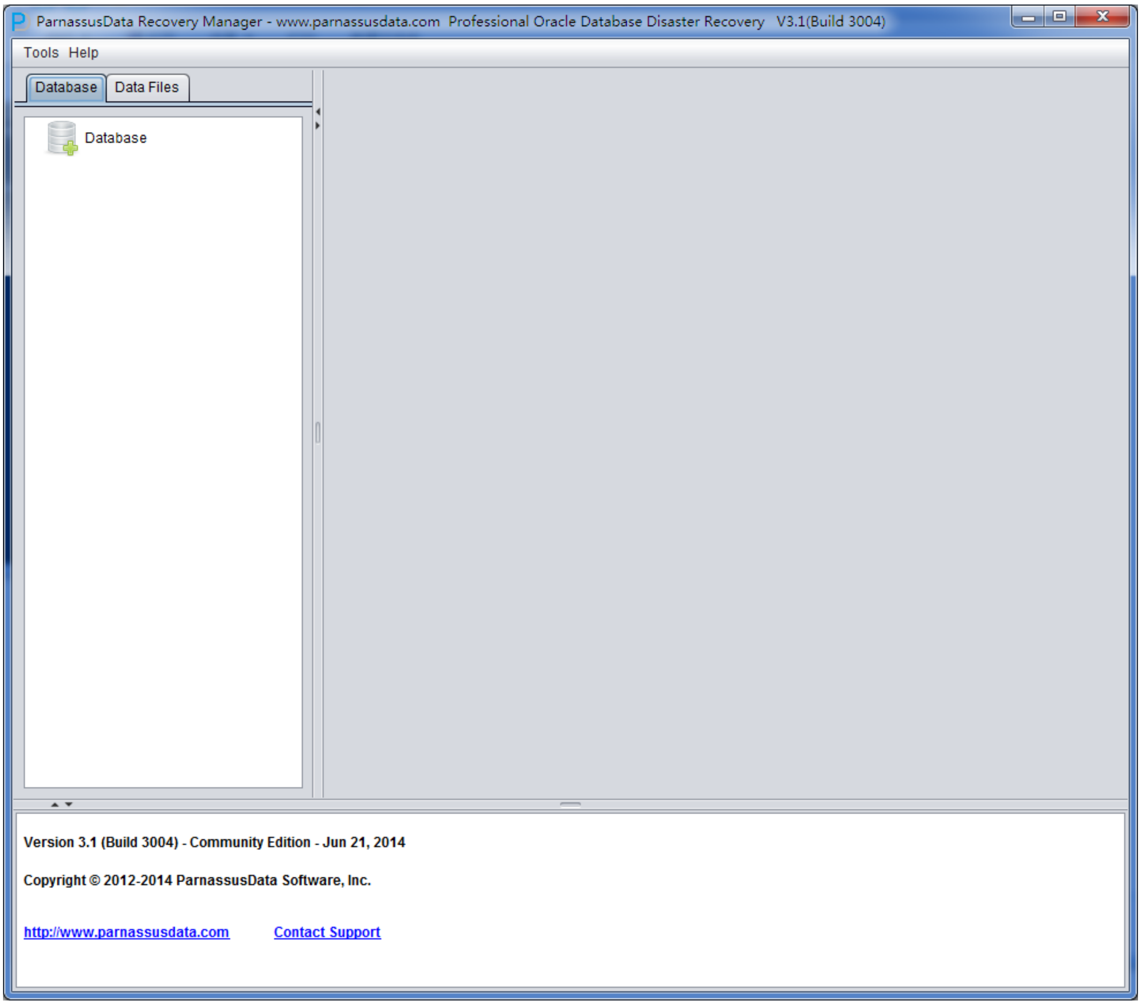


prm.bat will launch PRM in the back



```
H:\ParnassusData_PRMforOracle_2001>java -Xms1024M -server -jar  prm.jar
```

Then, it pops up PRM main interface：



ParnassusData Recovery Manager - www.parnassusdata.com Professional Oracle Database Disaster Recovery V3.1(Build 3004)
Tools Help
Database
Data Files
Database

Version 3.1 (Build 3004) - Community Edition - Jun 21, 2014

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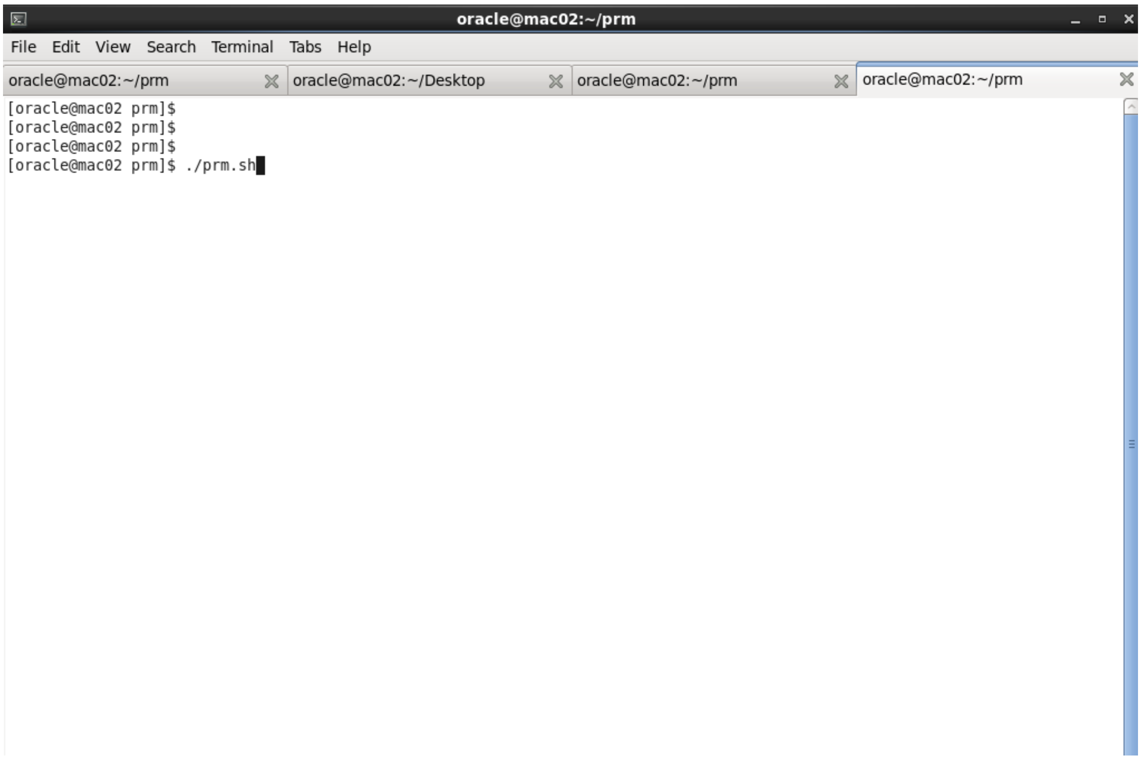
http://www.parnassusdata.com Contact Support

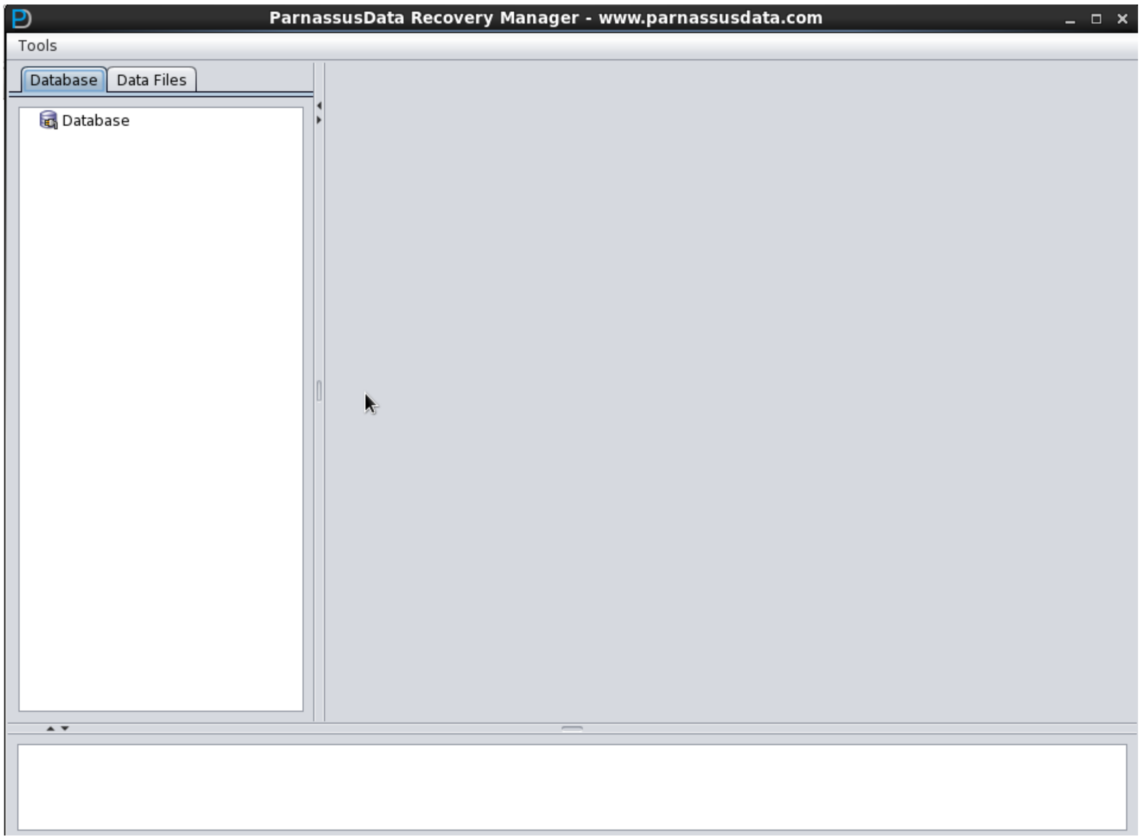
Linux/Unix:

In Linux/Unix, use X Server for GUI

1. Make sure you had installed JDK and add Java to profile
2. cd to PRM folder, and run./prm.sh to start the tool



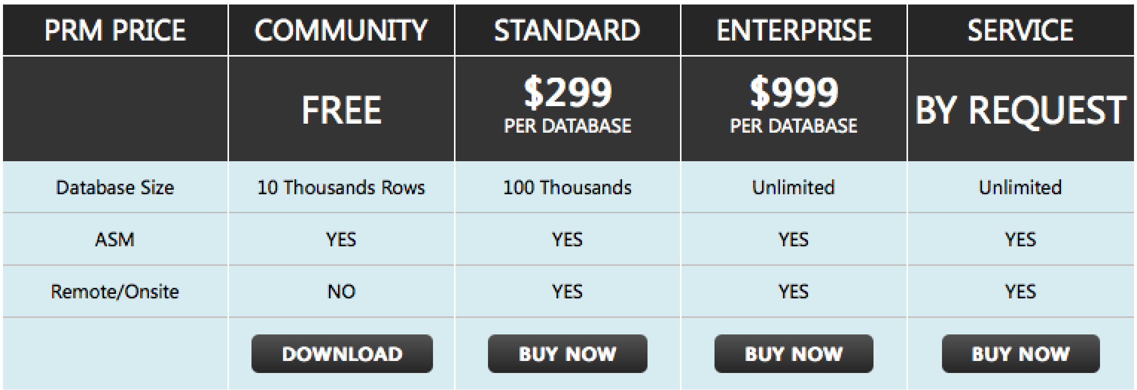
```
[oracle@mac02 prm]$
[oracle@mac02 prm]$
[oracle@mac02 prm]$
[oracle@mac02 prm]$ ./prm.sh
```



PRM License Registration

ParnassusData Recovery Manager (PRM) needs license for full use. ParnassusData provide community version for user testing and demo. (Community version has no limits on ASM close, and we will add more function on it)

It needs license for full use of PRM. Now, clients have two kinds of license: Standard Edition and Enterprise Edition,



PRM PRICE	COMMUNITY	STANDARD	ENTERPRISE	SERVICE
	FREE	$299 PER DATABASE	$999 PER DATABASE	BY REQUEST
Database Size	10 Thousands Rows	100 Thousands	Unlimited	Unlimited
ASM	YES	YES	YES	YES
Remote/Onsite	NO	YES	YES	YES
	DOWNLOAD	BUY NOW	BUY NOW	BUY NOW

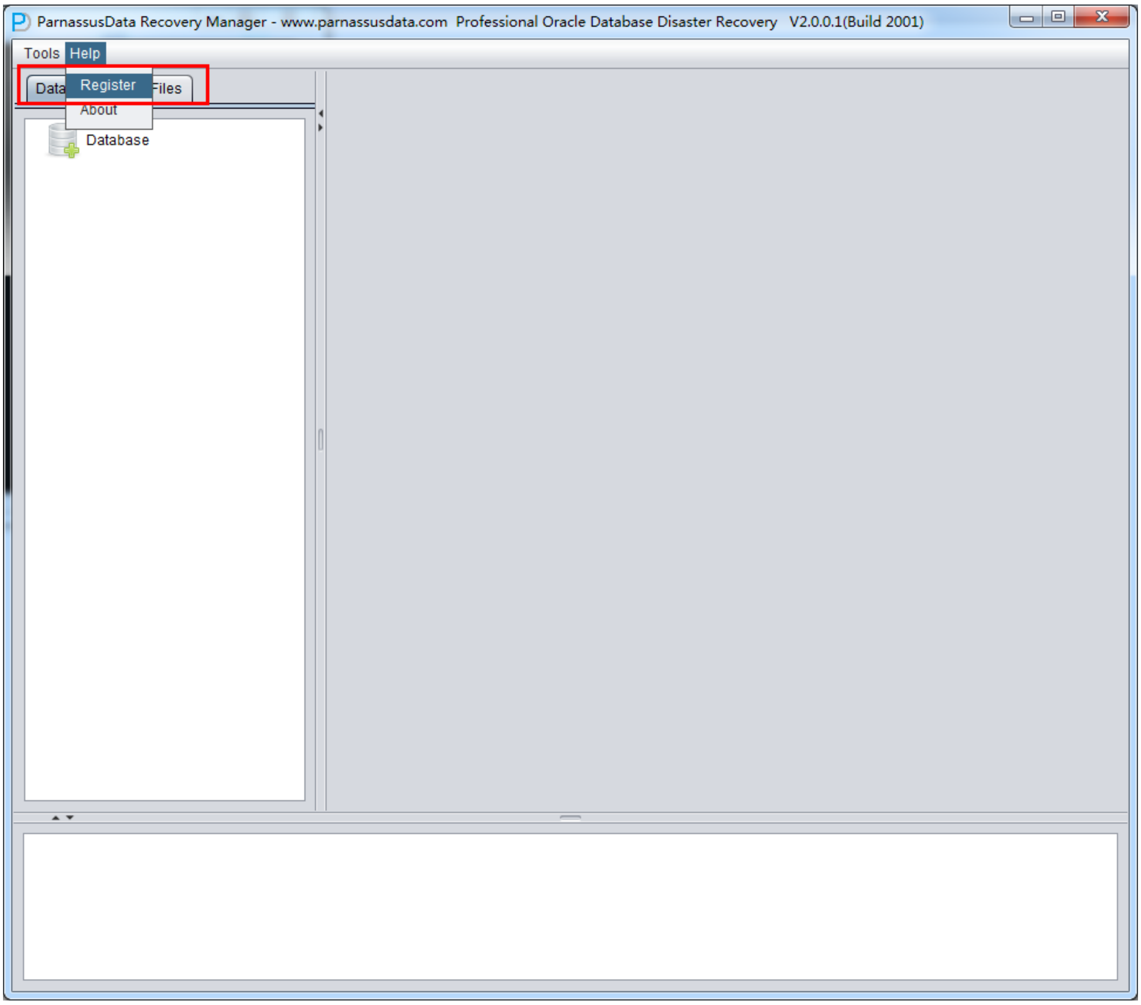
Clients can purchase license via office website: www.parnassusdata.com, and it needs Database name. After your purchasing, you will receive an email which includes DBNAME and License Key

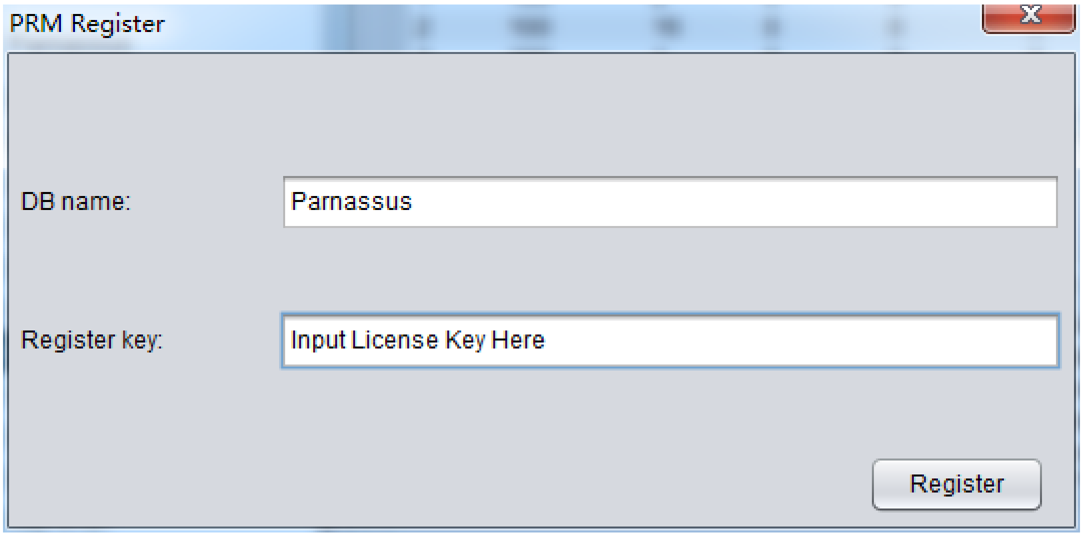
Once you have License Key, please register the software as below;

Menu Help => Register

Input DB NAME and you License Key, then click Register button

After registration, you don’t need to input license key again on your next boot.

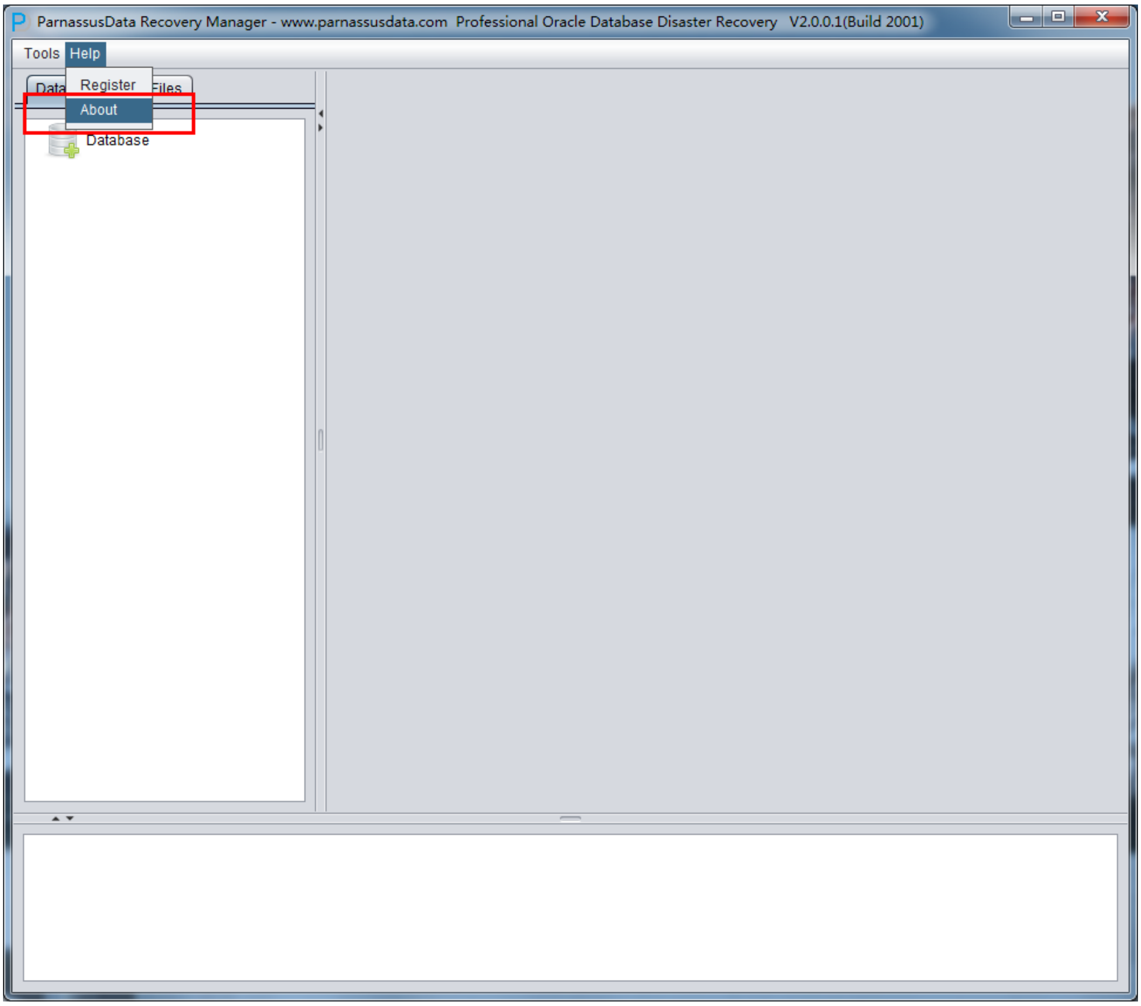

ParnassusData Recovery Manager - www.parnassusdata.com Professional Oracle Database Disaster Recovery V2.0.0.1(Build 2001)
Tools
Help
Register
About
Data
Files
Database



DB name: Parnassus

Register key: Input License Key Here

Your successful registration information is in Help=>about


ParnassusData Recovery Manager - www.parnassusdata.com Professional Oracle Database Disaster Recovery V2.0.0.1(Build 2001)
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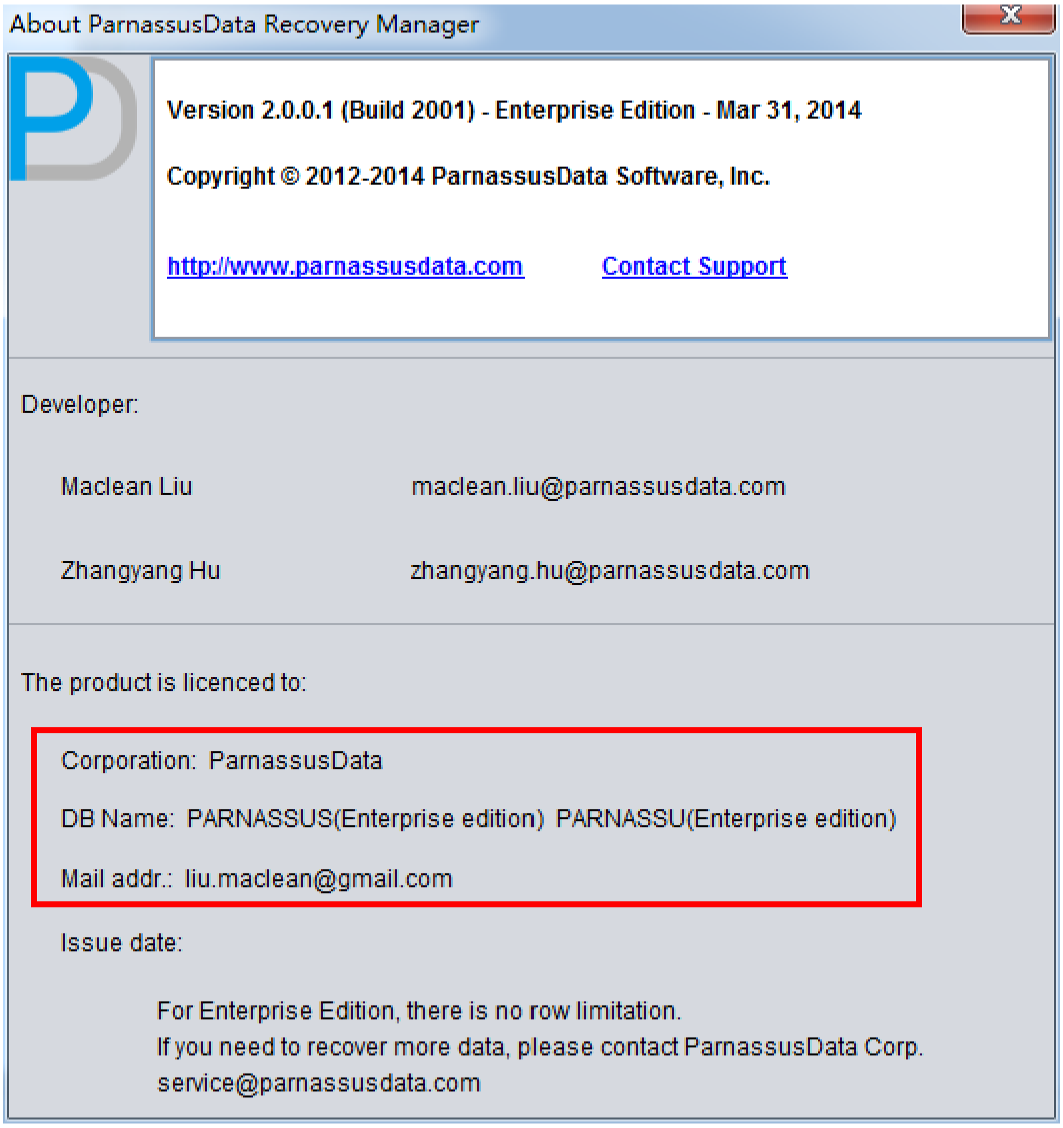
Data
Files
Database



Version 2.0.0.1 (Build 2001) - Enterprise Edition - Mar 31, 2014

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http://www.parnassusdata.com   Contact Support

Developer:

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The product is licenced to:

Corporation: ParnassusData

DB Name: PARNASSUS(Enterprise edition) PARNASSU(Enterprise edition)

Mail addr.: liu.maclean@gmail.com

Issue date:

For Enterprise Edition, there is no row limitation.
If you need to recover more data, please contact ParnassusData Corp.
service@parnassusdata.com

Case Study on Oracle database recovery via PRM

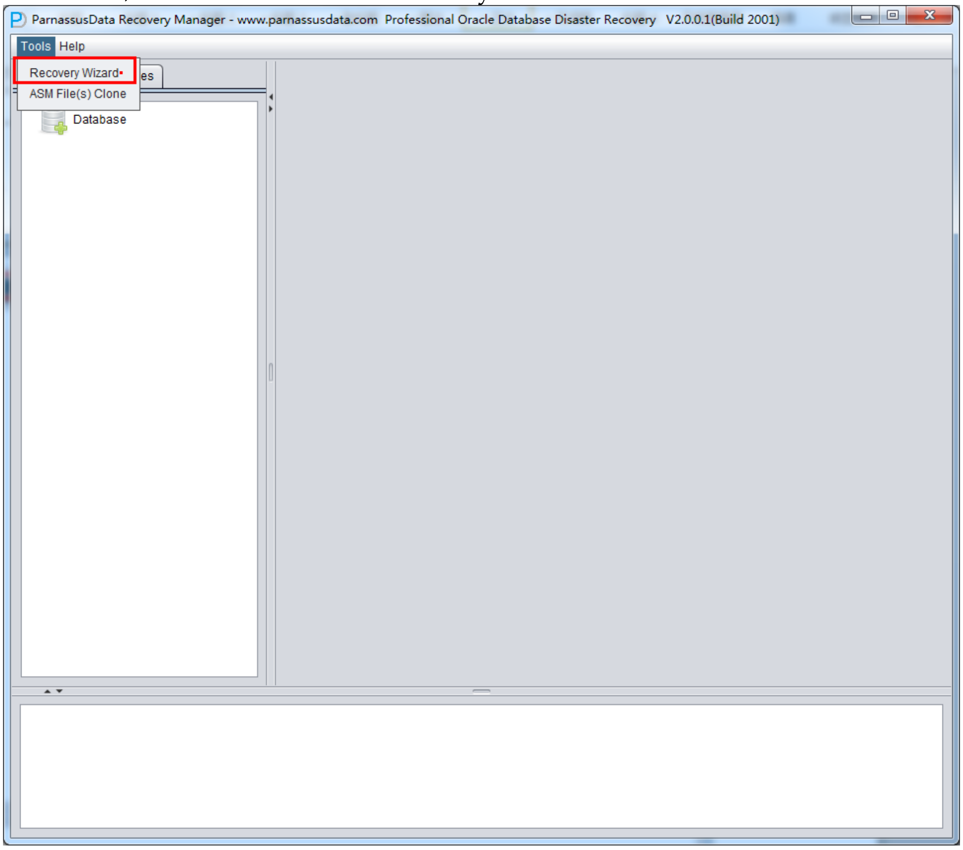
CASE 1: Truncate table by mistake

User D had truncated a table by mistake on production environment. The DBA tried to recover table from RMAN backup, and accidently the backup is unavailable. Therefore DBA decided to use PRM for rescuing all truncated data.

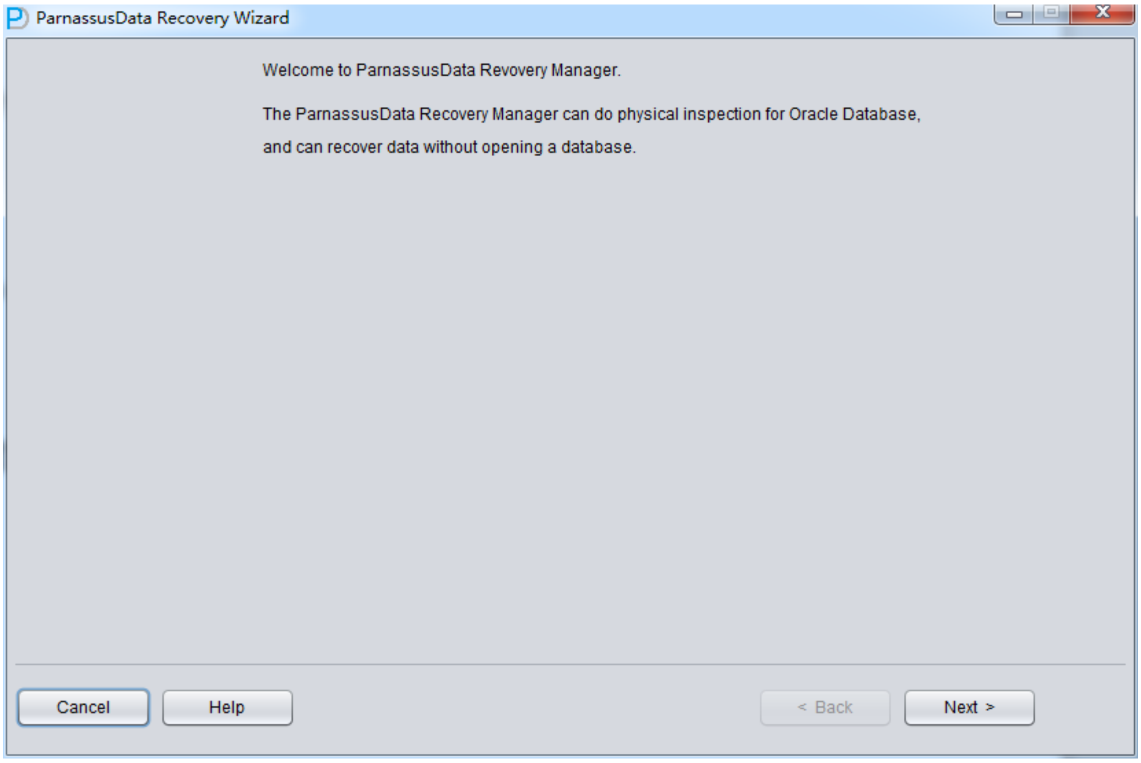
Since all database system files are healthy, DBA just needs to load SYSTEM table data file in dictionary mode and TRUNCATED table file. For example:

```
create table ParnassusData.torderdetail_his1   tablespace   users as
select * from parnassusdata.torderdetail_his;



 SQL> desc   ParnassusData.TORDERDETAIL_HIS
  Name                              Null?      Type
  ---------------------- -------- --------------
SEQ_ID                        NOT NULL     NUMBER(10)
  SI_STATUS                                  NUMBER(38)
  D_CREATEDATE                                  CHAR(20)
  D_UPDATEDATE                                  CHAR(20)
  B_ISDELETE                                 CHAR(1)
  N_SHOPID                                    NUMBER(10)
  N_ORDERID                                    NUMBER(10)
  C_ORDERCODE                                   CHAR(20)
  N_MEMBERID                                     NUMBER(10)
  N_SKUID                                    NUMBER(10)
  C_PROMOTION                                   NVARCHAR2(5)
  N_AMOUNT                                      NUMBER(7,2)
  N_UNITPRICE                                 NUMBER(7,2)
  N_UNITSELLINGPRICE                             NUMBER(7,2)
  N_QTY                                      NUMBER(7,2)
  N_QTYFREE                                   NUMBER(7,2)
  N_POINTSGET                    NUMBER(7,2)
  N_OPERATOR                     NUMBER(10)
  C_TIMESTAMP                    VARCHAR2(20)
  H_SEQID                       NUMBER(10)
  N_RETQTY                       NUMBER(7,2)
  N_QTYPOS                       NUMBER(7,2)


 select count(*) from ParnassusData.TORDERDETAIL_HIS;

   COUNT(*)
 ----------
     984359

 select bytes/1024/1024 from dba_segments where
segment_name='TORDERDETAIL_HIS' and
owner='PARNASSUSDATA';

 BYTES/1024/1024
 ---------------
       189.71875



 SQL> truncate table ParnassusData.TORDERDETAIL_HIS;

 Table truncated.

 SQL> select count(*) from
ParnassusData.TORDERDETAIL_HIS;

   COUNT(*)
 ----------
          0
```

Run PRM, and select Tools =>Recovery Wizard


ParnassusData Recovery Manager - www.parnassusdata.com Professional Oracle Database Disaster Recovery V2.0.0.1(Build 2001)
Tools
Help
Recovery Wizard
ASM File(s) Clone
Database

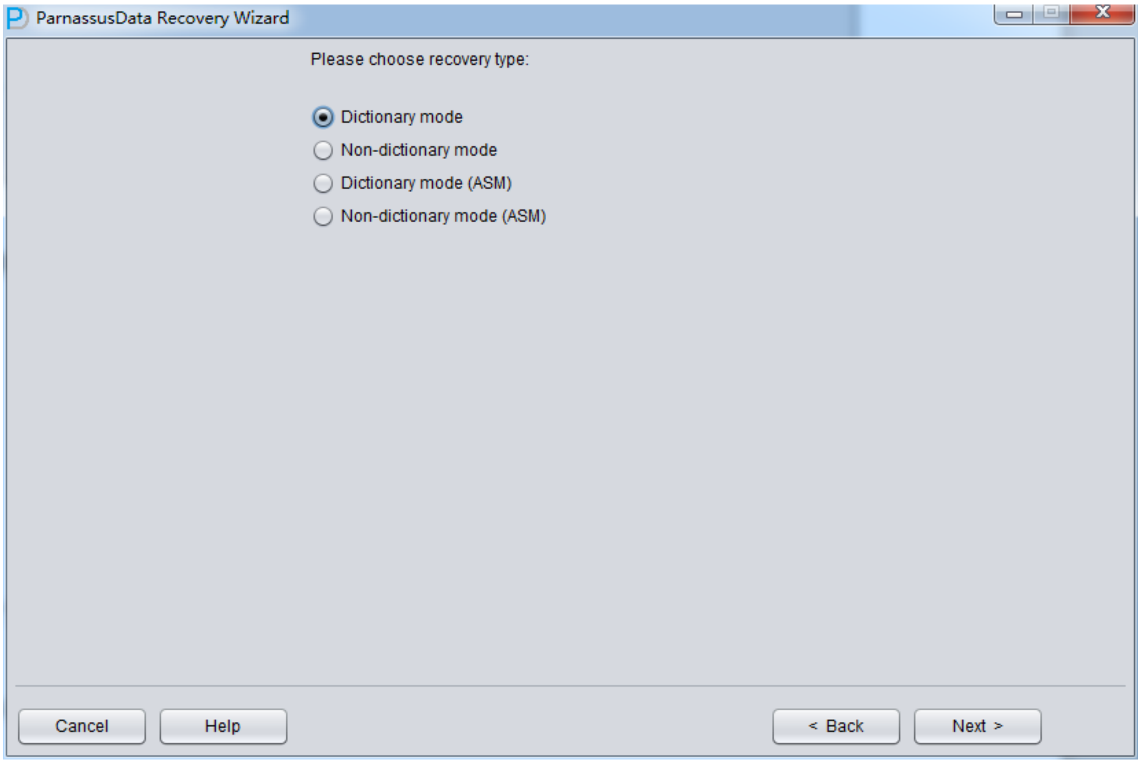
Click Next



Welcome to ParnassusData Revovery Manager.

The ParnassusData Recovery Manager can do physical inspection for Oracle Database,
and can recover data without opening a database.

Client did not user ASM storage, therefore just select 'Dictionary Mode':



Please choose recovery type:

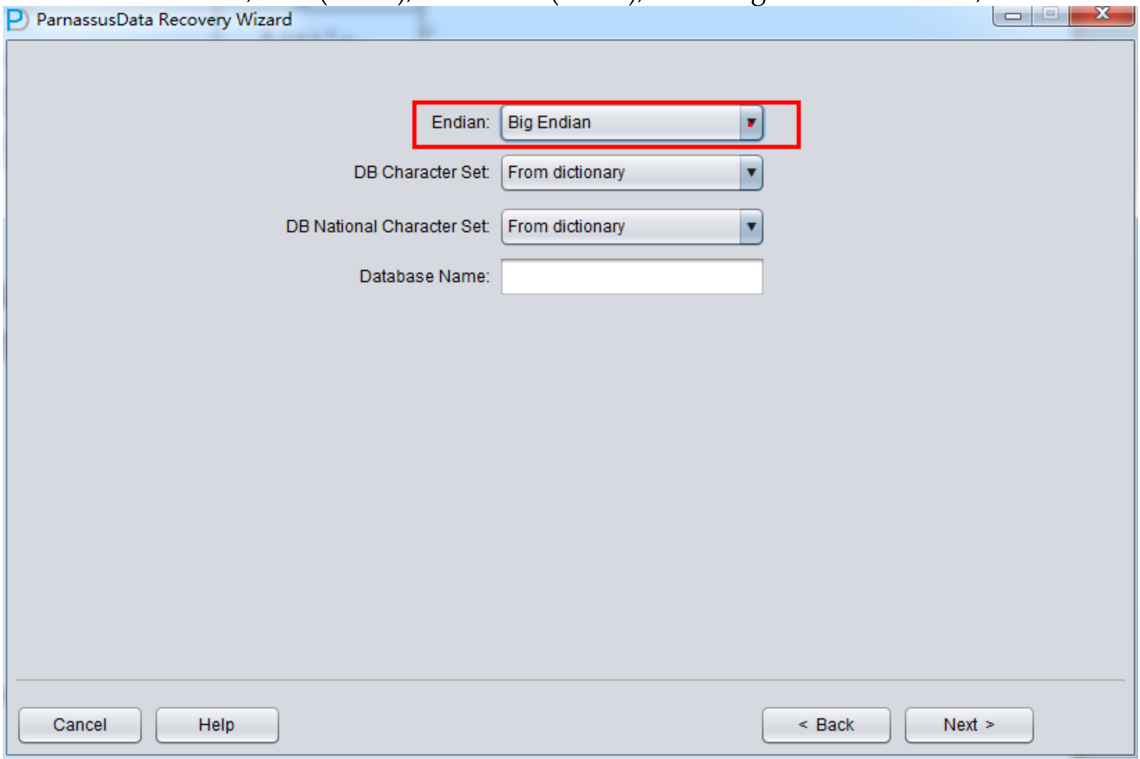
● Dictionary mode
○ Non-dictionary mode
○ Dictionary mode (ASM)
○ Non-dictionary mode (ASM)

Next, we need to select some characters: including Endian bit order and DBNAME

Since Oracle datafiles have different Endian bit orders on different OS, please choose accordingly:

Solaris[tm] OE (32-bit)	Big
Solaris[tm] OE (64-bit)	Big
Microsoft Windows IA (32-bit)	Little
Linux IA (32-bit)	Little
AIX-Based Systems (64-bit)	Big
HP-UX (64-bit)	Big
HP Tru64 UNIX	Little
HP-UX IA (64-bit)	Big
Linux IA (64-bit)	Little
HP Open VMS	Little
Microsoft Windows IA (64-bit)	Little
IBM zSeries Based Linux	Big
Linux x86 64-bit	Little
Apple Mac OS	Big
Microsoft Windows x86 64-bit	Little
Solaris Operating System (x86)	Little
IBM Power Based Linux	Big
HP IA Open VMS	Little
Solaris Operating System (x86-64)	Little
Apple Mac OS (x86-64)	Little

In traditional UNIX, AIX (64-bit), UP-UNIX (64-bit), it use Big Endian bit order,



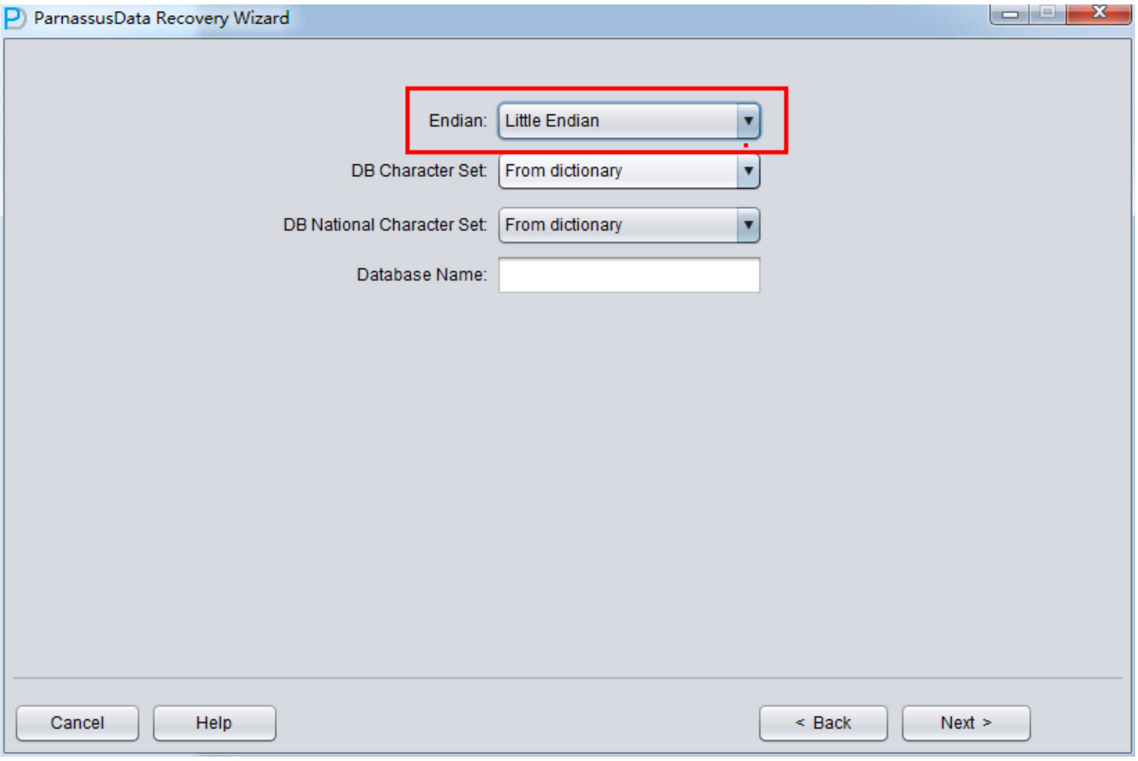
Endian: Big Endian

DB Character Set: From dictionary

DB National Character Set: From dictionary

Database Name:

Usually, Linux X86/64, Windows remain default Little Endian:



Endian: Little Endian

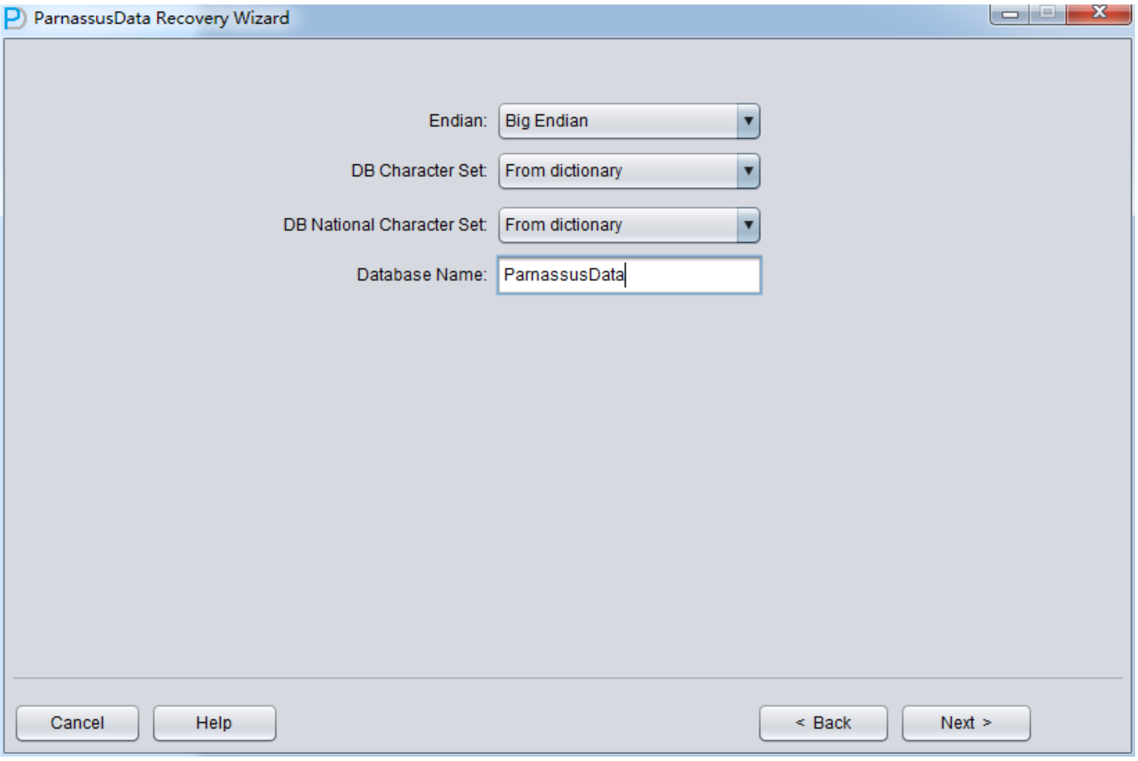
DB Character Set: From dictionary

DB National Character Set: From dictionary

Database Name:

Attention: if your data file was generated on AIX, if you want to recover data on window, please select original Big Endian format.

Since the data file is on Linux X86, we select Little as Endian, and input database name. (The input database name can be different from DB_NAME found in datafile header, the input database name is just an alias. PRM will check if your PRM license is valid , the valid license key is generated based on DB_NAME found in datafile header)



Endian: Big Endian

DB Character Set: From dictionary

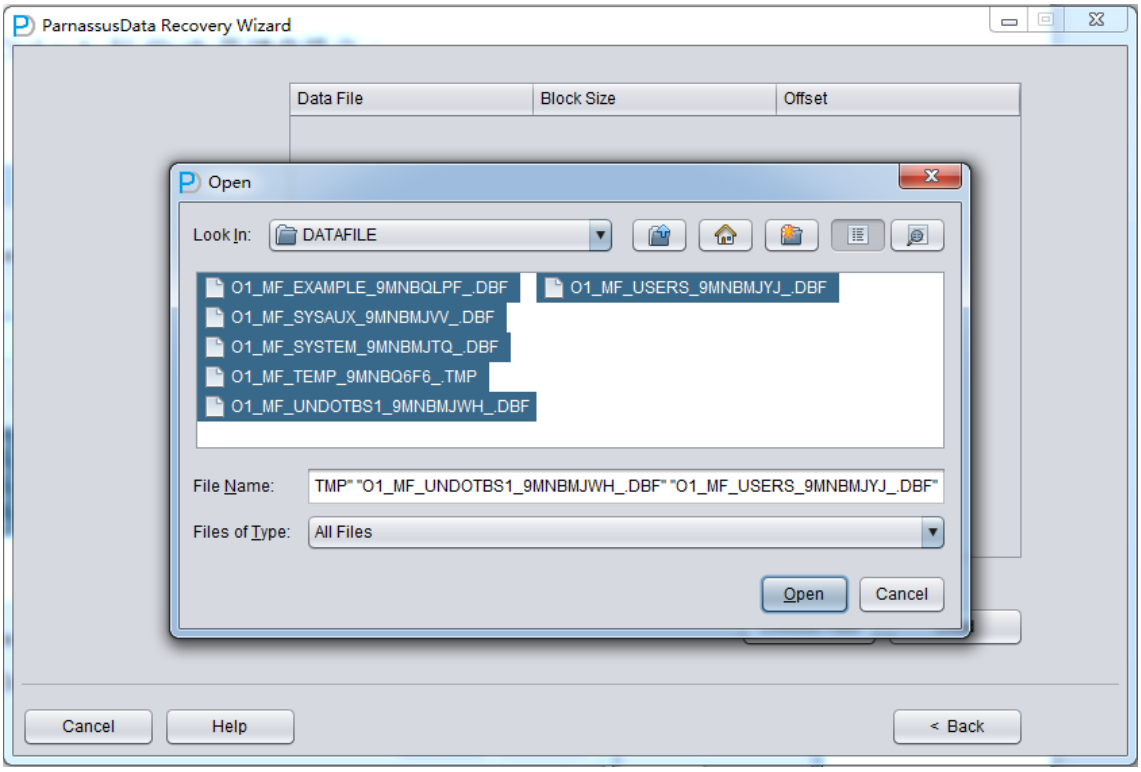
DB National Character Set: From dictionary

Database Name: ParnassusData

Click Next =>Click Choose Files

Usually, if the database is not too big, we could select all data files together; if the database capacity is huge and DBA knows the data location, at least you should select both SYSTEM tablespace and specified datafile.

Attention, the GUI Supports Ctrl + A & Shift short keys:

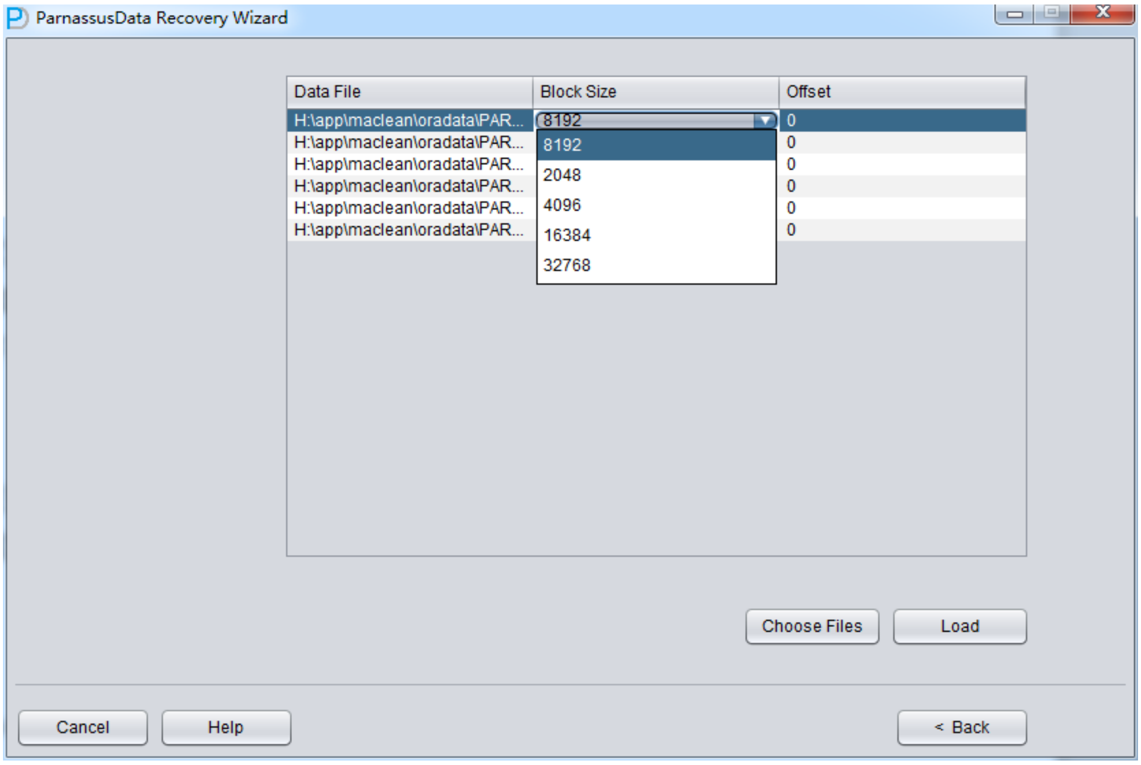


Look In: DATAFILE

- O1_MF_EXAMPLE_9MNBQLPF_.DBF
- O1_MF_SYSAUX_9MNBMJVV_.DBF
- O1_MF_SYSTEM_9MNBMJTQ_.DBF
- O1_MF_TEMP_9MNBQ6F6_.TMP
- O1_MF_UNDOTBS1_9MNBMJWH_.DBF
- O1_MF_USERS_9MNBMJYJ_.DBF

File Name: TMP" "O1_MF_UNDOTBS1_9MNBMJWH_.DBF" "O1_MF_USERS_9MNBMJYJ_.DBF"

Files of Type: All Files



Data File	Block Size	Offset
H:\app\maclean\oradata\PAR...	8192	0
H:\app\maclean\oradata\PAR...		0
H:\app\maclean\oradata\PAR...		0
H:\app\maclean\oradata\PAR...		0
H:\app\maclean\oradata\PAR...		0
H:\app\maclean\oradata\PAR...		0

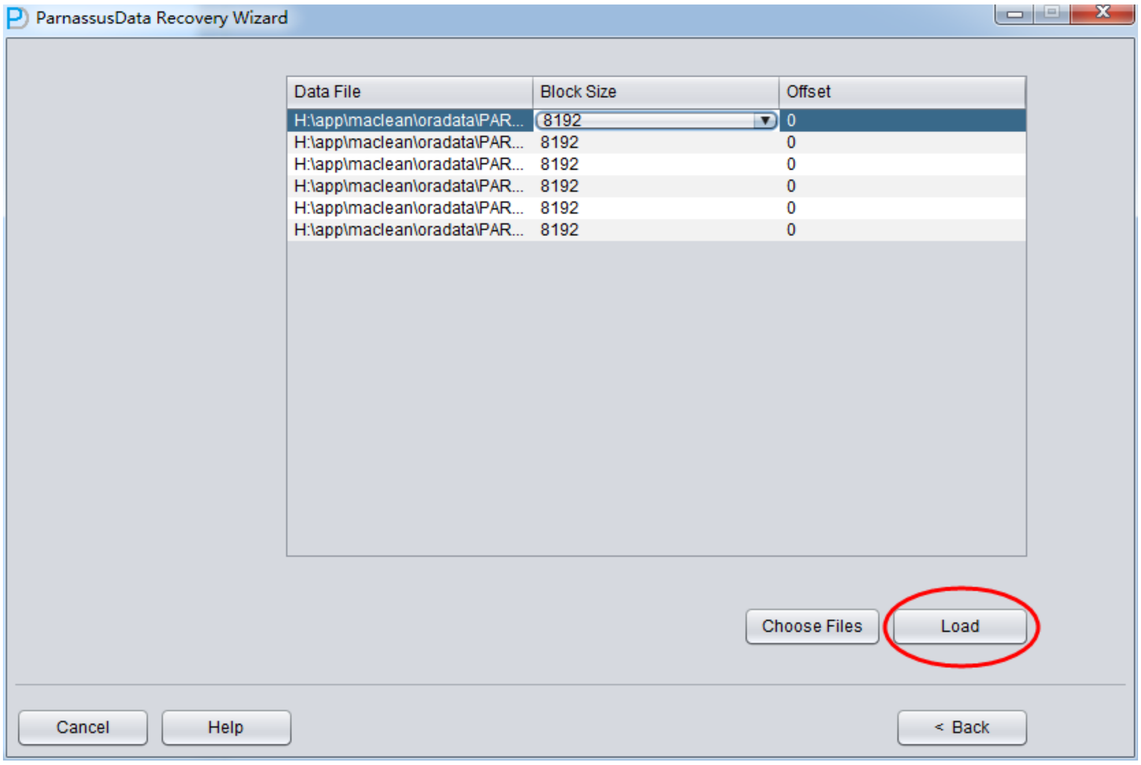
Specify the Block Size (Oracle data block size) according to the real circumstance. For example, if default DB_BLOCK_SIZE is 8K, but part of tablespaces' block size is 16k,then user has to specify them as correct block size one by one.

OFFSET setting are just for raw device storage mode, for example: on AIX, based on LV of normal VG, the offset will be 4k OFFSET.

If you are using raw device but don't know what the OFFSET is, please use dbfsize tool which is under $ORACLE_HOME/bin

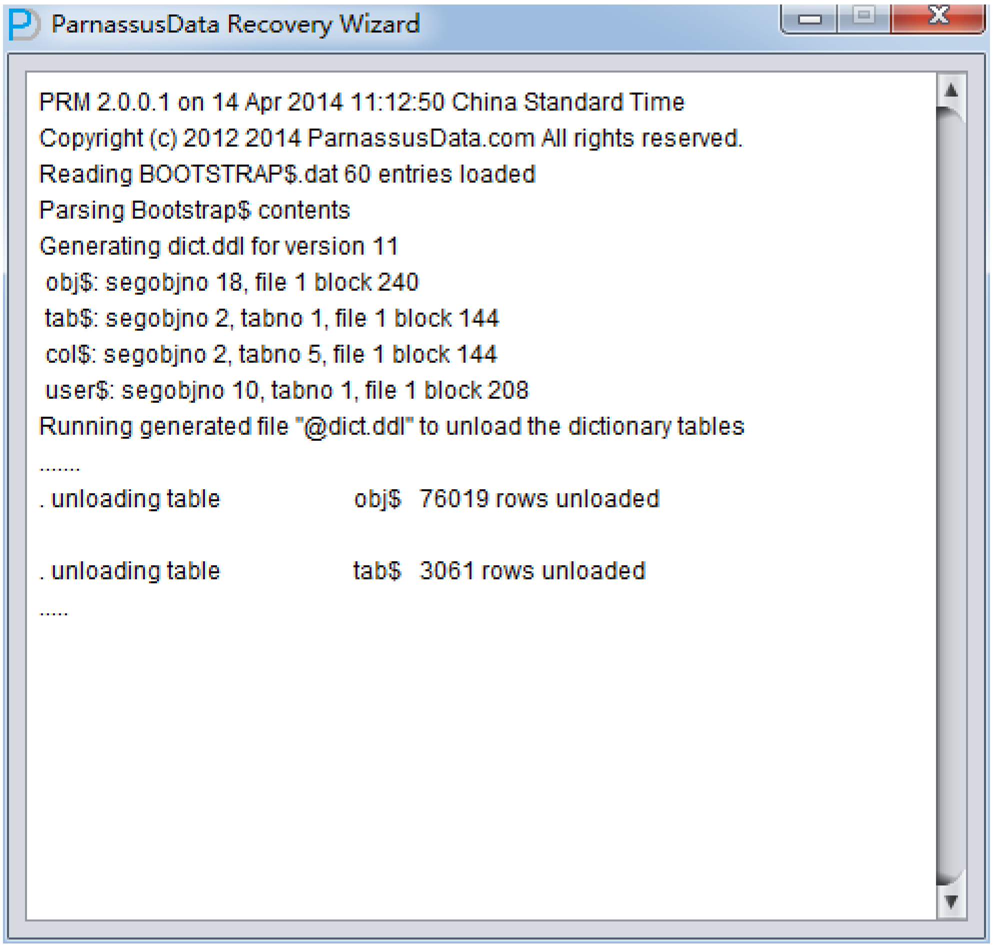
```
$dbfsize /dev/lv_control_01


Database file: /dev/lv_control_01
Database file type: raw device without 4K starting offset
Database file size: 334 16384 byte blocks
```

Since all data file block size here is 8K and there is no OFFSET, please click load:



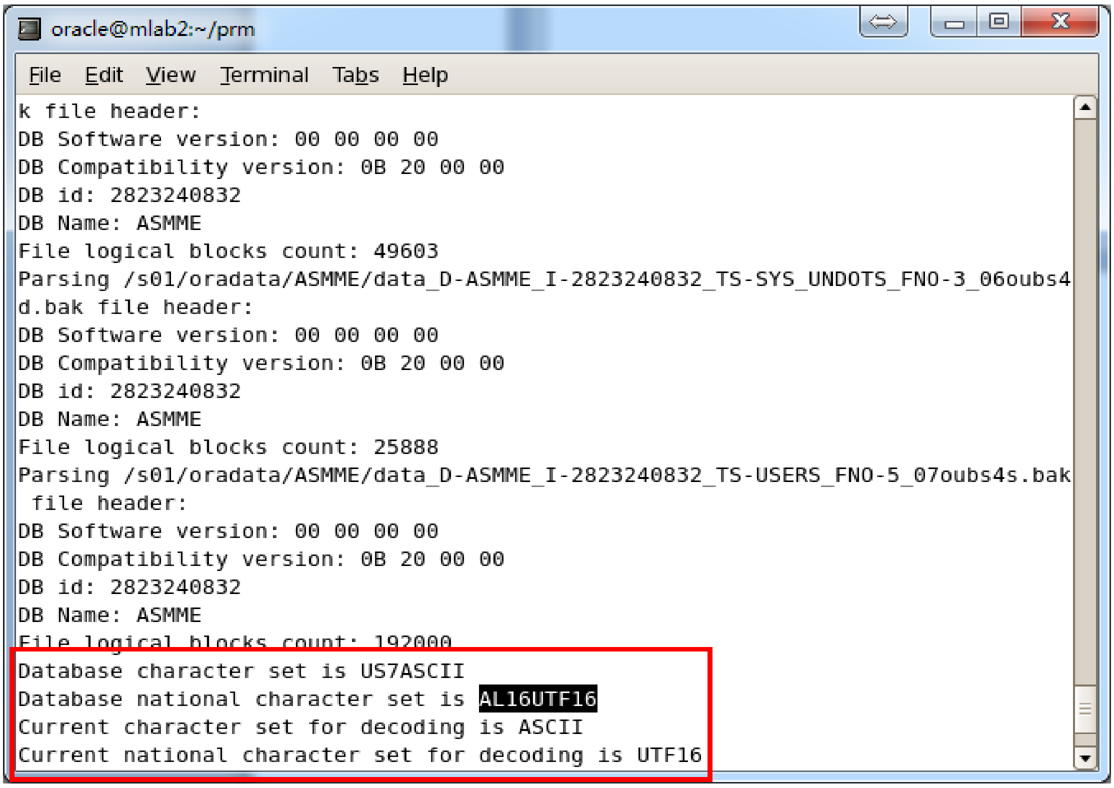
Data File	Block Size	Offset
H:\app\maclean\oradata\PAR...	8192	0
H:\app\maclean\oradata\PAR...	8192	0
H:\app\maclean\oradata\PAR...	8192	0
H:\app\maclean\oradata\PAR...	8192	0
H:\app\maclean\oradata\PAR...	8192	0
H:\app\maclean\oradata\PAR...	8192	0

PRM read Oracle dictionary directly, and recreate a new dictionary in embedded database. It can help us to recuse most types of data in Oracle DB.



```
PRM 2.0.0.1 on 14 Apr 2014 11:12:50 China Standard Time
Copyright (c) 2012 2014 ParnassusData.com All rights reserved.
Reading BOOTSTRAP$.dat 60 entries loaded
Parsing Bootstrap$ contents
Generating dict.ddl for version 11
 obj$: segobjno 18, file 1 block 240
 tab$: segobjno 2, tabno 1, file 1 block 144
 col$: segobjno 2, tabno 5, file 1 block 144
 user$: segobjno 10, tabno 1, file 1 block 208
Running generated file "@dict.ddl" to unload the dictionary tables
.......
. unloading table                obj$   76019 rows unloaded

. unloading table                tab$   3061 rows unloaded
.....
```

After recreating dictionary, the dialog show character information:



```
k file header:
DB Software version: 00 00 00 00
DB Compatibility version: 0B 20 00 00
DB id: 2823240832
DB Name: ASMME
File logical blocks count: 49603
Parsing /s01/oradata/ASMME/data_D-ASMME_I-2823240832_TS-SYS_UNDOTS_FNO-3_06oubs4
d.bak file header:
DB Software version: 00 00 00 00
DB Compatibility version: 0B 20 00 00
DB id: 2823240832
DB Name: ASMME
File logical blocks count: 25888
Parsing /s01/oradata/ASMME/data_D-ASMME_I-2823240832_TS-USERS_FNO-5_07oubs4s.bak
 file header:
DB Software version: 00 00 00 00
DB Compatibility version: 0B 20 00 00
DB id: 2823240832
DB Name: ASMME
File logical blocks count: 192000
Database character set is US7ASCII
Database national character set is AL16UTF16
Current character set for decoding is ASCII
Current national character set for decoding is UTF16
```

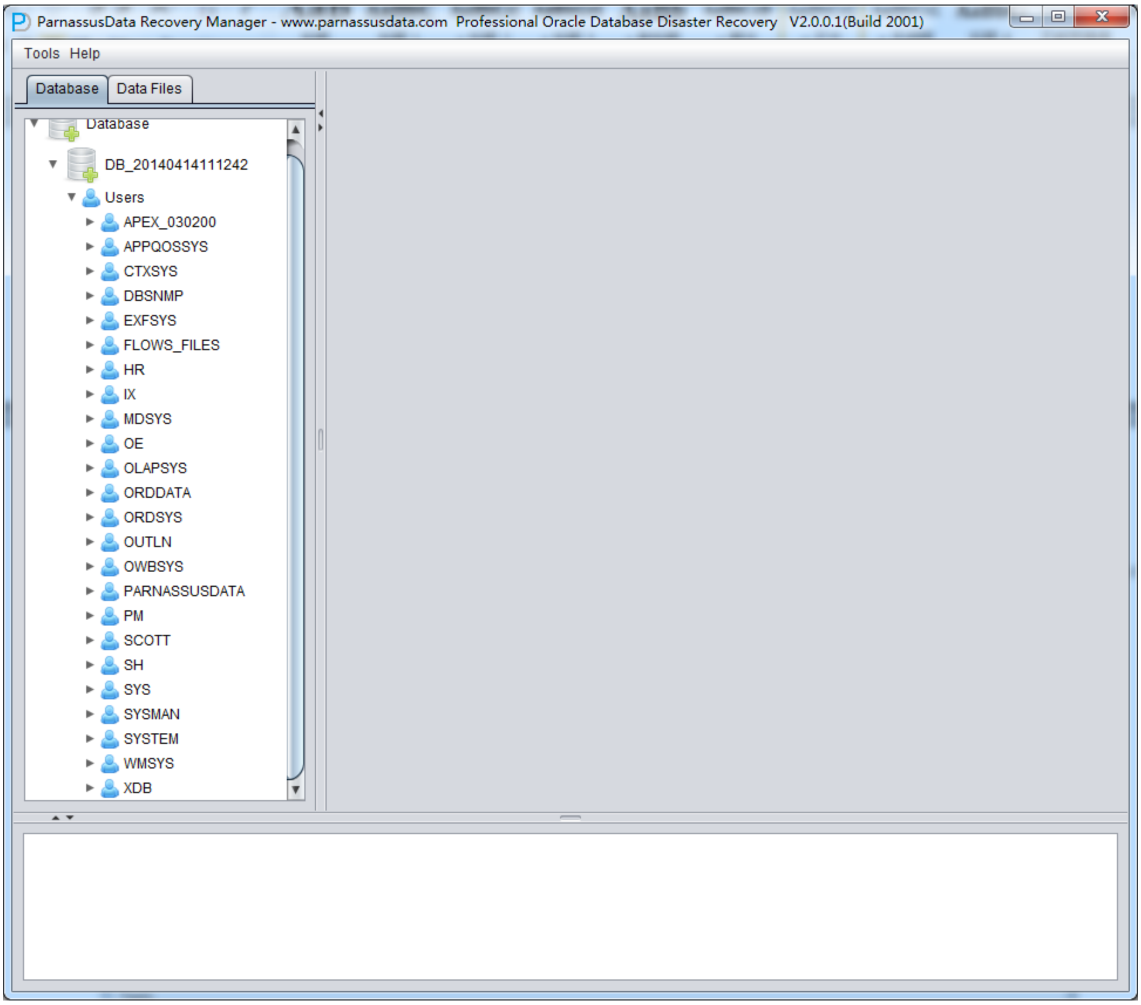
Attention: PRM supports multiple languages and multiple Oracle character set. However, the prerequisite is the OS had installed specified language packages. For example, on Windows, if you didn't install Chinese language package, even Oracle database characters are independent and support ZHS16GBK, PRM would display Chinese as messy code. Once the Chinese language package is installed on OS, PRM can display multibyte character set properly.

Similarly, on Linux, it need font-Chinese language package.

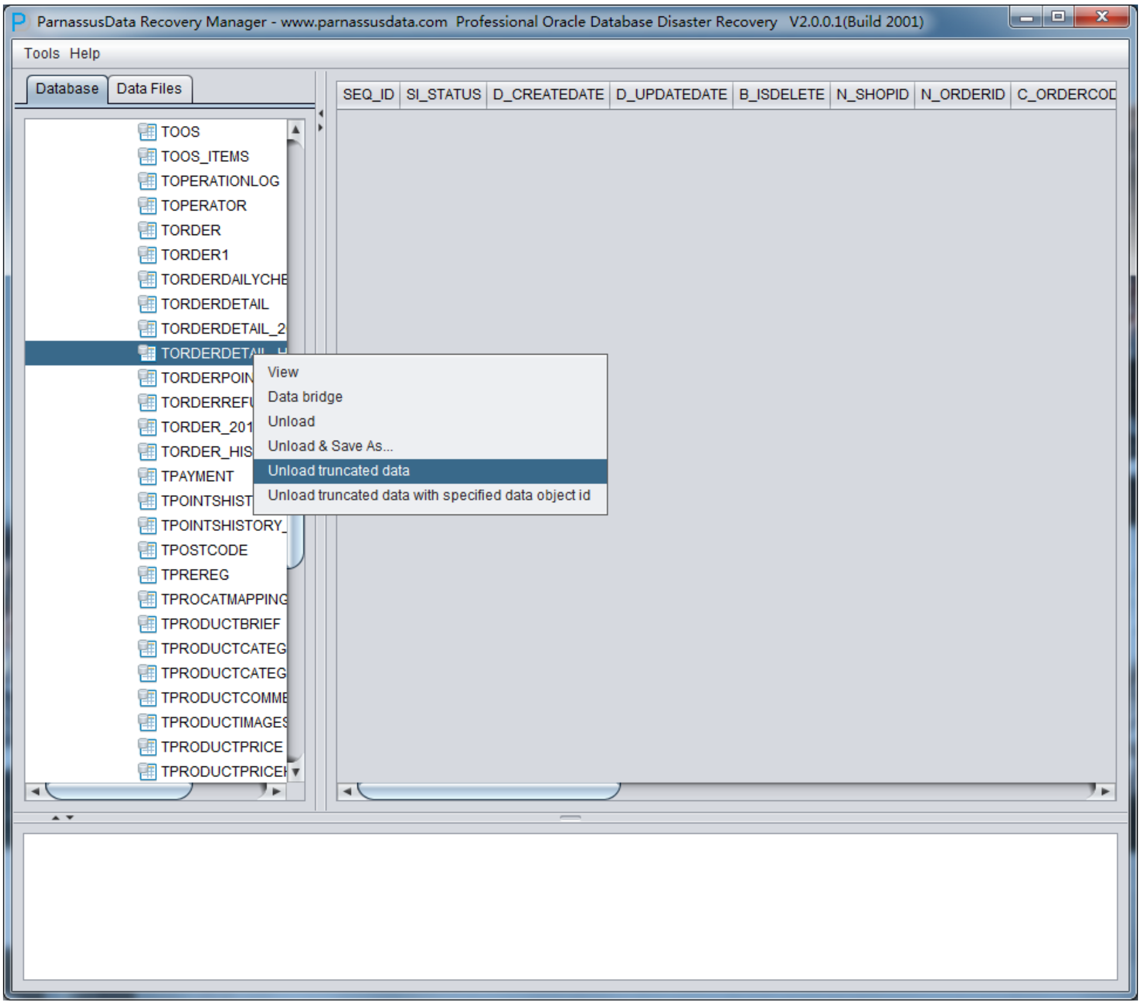
```
[oracle@mlab2 log]$ rpm -qa | grep chinese
fonts-chinese-3.02-12.el5
```

After loading, in PRM GUI, it displayed database tree diagram by database users.

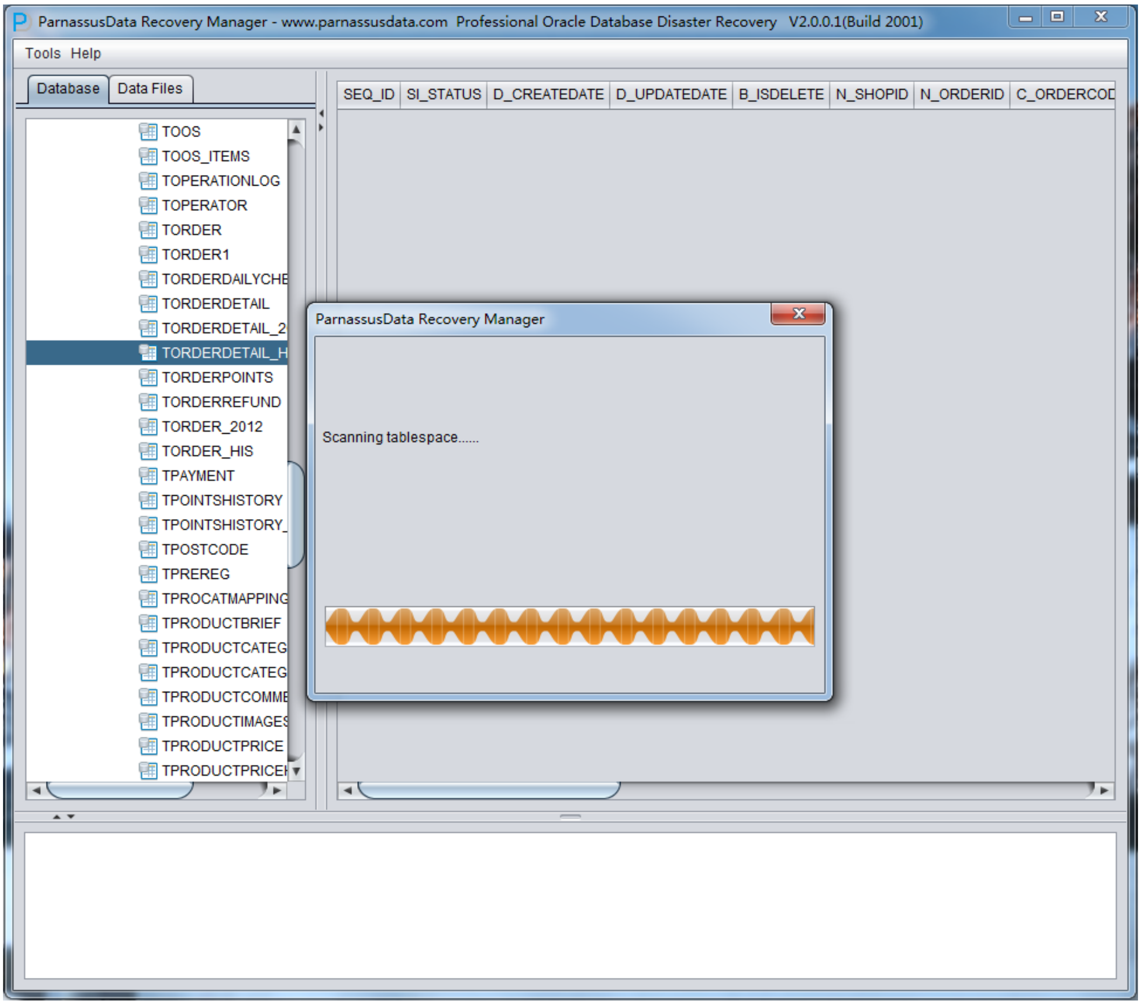
Click Users, you can find more users, for example, if user want to recover a table under PARNASSUSDATA SCHEMA, click PARNASSUSDATA, and double click that table:



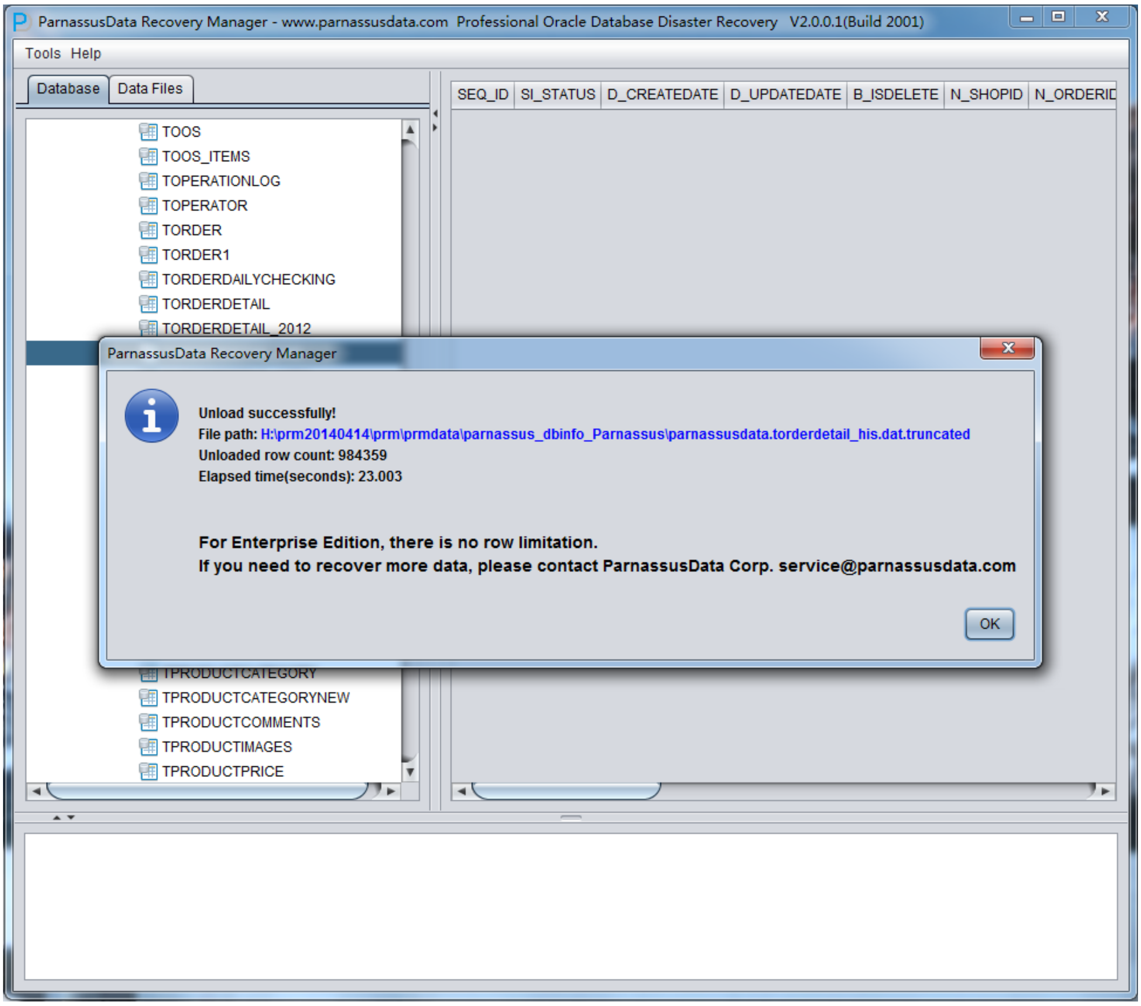
Previously TORDERDETAIL_HIS had been truncated, so it won't show any data . Please select unload truncated Data:


ParnassusData Recovery Manager - www.parnassusdata.com Professional Oracle Database Disaster Recovery V2.0.0.1(Build 2001)
Tools
Help
Database
Data Files
TOOS
TOOS_ITEMS
TOPERATIONLOG
TOPERATOR
TORDER
TORDER1
TORDERDAILYCHE
TORDERDETAIL
TORDERDETAIL_2
TORDERDETAIL_H
TORDERPOIN
TORDERREFU
TORDER_201
TORDER_HIS
TPAYMENT
TPOINTSHIST
TPOINTSHISTORY_
TPOSTCODE
TPREREG
TPROCATMAPPING
TPRODUCTBRIEF
TPRODUCTCATEG
TPRODUCTCATEG
TPRODUCTCOMME
TPRODUCTIMAGES
TPRODUCTPRICE
TPRODUCTPRICEI
View
Data bridge
Unload
Unload & Save As...
Unload truncated data
Unload truncated data with specified data object id
SEQ_ID
SI_STATUS
D_CREATEDATE
D_UPDATEDATE
B_ISDELETE
N_SHOPID
N_ORDERID
C_ORDERCOD

PRM will scan the tablespace and extract data from truncated table.



Scanning tablespace......



Unload successfully!
File path: H:\prm20140414\prm\prmdata\parnassus_dbinfo_Parnassus\parnassusdata.torderdetail_his.dat.truncated
Unloaded row count: 984359
Elapsed time(seconds): 23.003

For Enterprise Edition, there is no row limitation.
If you need to recover more data, please contact ParnassusData Corp. service@parnassusdata.com

As in the above picture, the truncated TORDERDETAIL_HIS had exported 984359 record, and saved to specified falt file.

In addition, it generated SQLLDR control file for text data importing

```
$ cd /home/oracle/prm/prmdata/parnassus_dbinfo_PARNASSUSDATA/

$ ls -l ParnassusData*
-rw-r--r-- 1 oracle oinstall 495 Jan 18 08:31 ParnassusData.torderdetail_his.ctl
-rw-r--r-- 1 oracle oinstall 191164826 Jan 18 08:32 ParnassusData.torderdetail_his.dat.truncated

$ cat ParnassusData.torderdetail_his.ctl
LOAD DATA
```

```
INFILE   'ParnassusData.torderdetail_his.dat.truncated'
APPEND
INTO TABLE ParnassusData.torderdetail_his
FIELDS TERMINATED BY ' '
OPTIONALLY ENCLOSED BY '"'
TRAILING NULLCOLS (
"SEQ_ID" ,
"SI_STATUS" ,
"D_CREATEDATE" ,
"D_UPDATEDATE" ,
"B_ISDELETE" ,
"N_SHOPID" ,
"N_ORDERID" ,
"C_ORDERCODE" ,
"N_MEMBERID" ,
"N_SKUID" ,
"C_PROMOTION" ,
"N_AMOUNT" ,
"N_UNITPRICE" ,
"N_UNITSELLINGPRICE" ,
"N_QTY" ,
"N_QTYFREE" ,
"N_POINTSGET" ,
"N_OPERATOR" ,
"C_TIMESTAMP" ,
"H_SEQID" ,
"N_RETQTY" ,
"N_QTYPOS"
)
```

When you import data to original table, ParnassusData strongly recommends you to modify SQLLDR table name as a temp table, it would not impact your previous environment.

```
                $ sqlldr control=ParnassusData.torderdetail_his.ctl direct=y
                Username:/ as sysdba
//user SQLLDR to import data



//Minus can be used for data comparing
select * from ParnassusData.torderdetail_his minus select * from
parnassus.torderdetail_his;

                no rows selected
```

After diffing, there is no difference between original data and PRM exported data.

PRM successfully recovered the truncated table

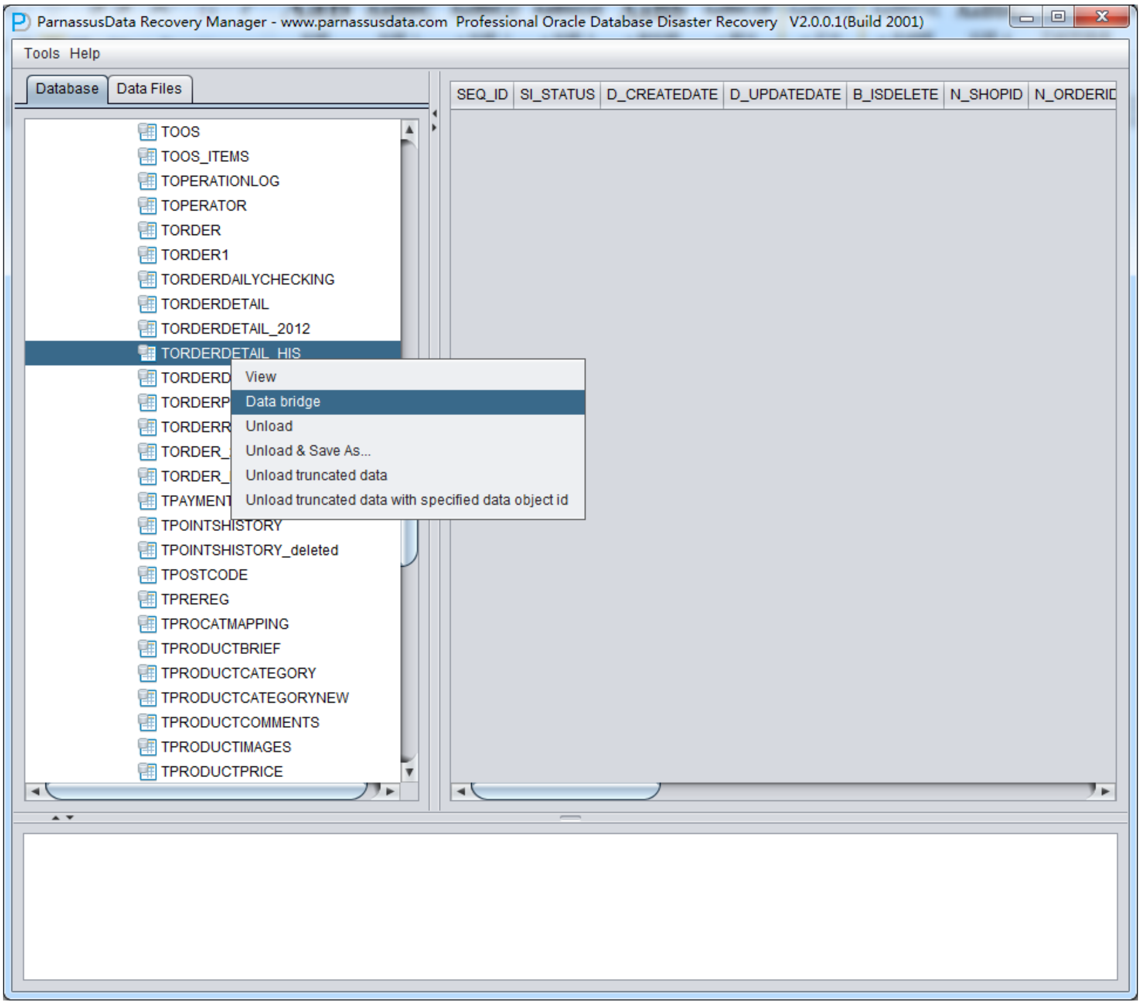
CASE 2: Recovery MIS-truncated table by DataBridge

In Case 1, we use traditional unload+sqlldr for data recovery, but actually ParnassusData would like to strongly recommend using DataBridge Feature for recovering.

Why use DataBridge?

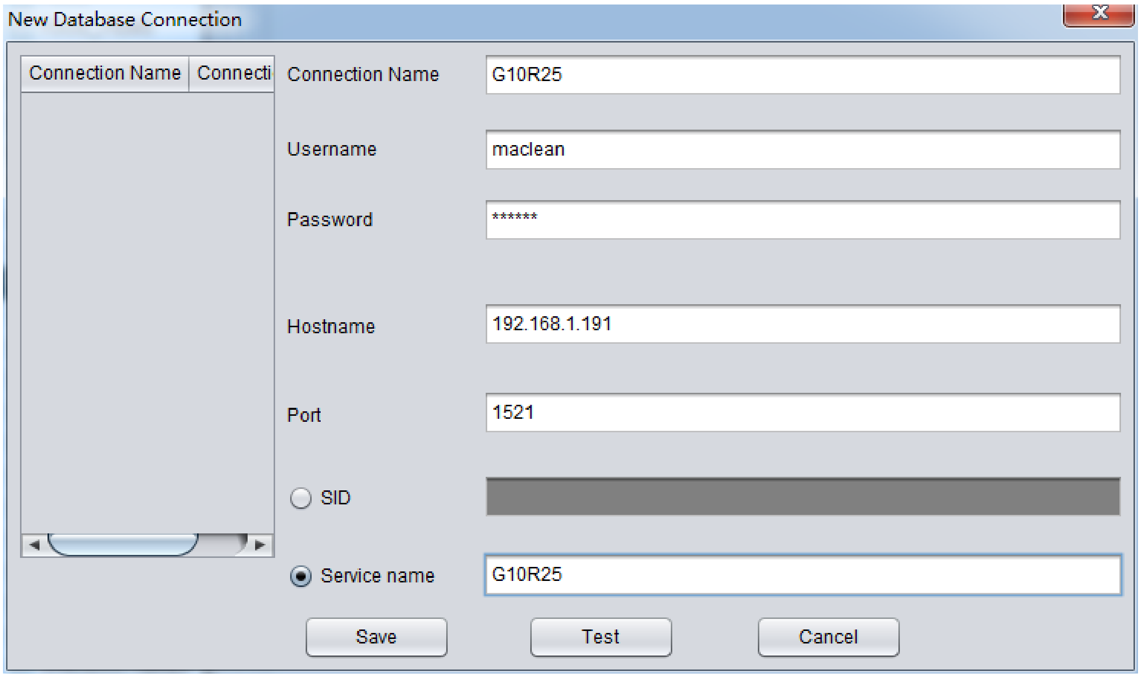
- Traditional unload+sqlldr means a copy of data needs to be saved as flat file on filesystem first, data has to be loaded into Unicode text file and then inserted into destination database by sqlldr, this will take double storage and double time.
- DataBridge can extract data from source DB and export to destination DB without any intermediary.
- Once the data arrived destination DB, user can begin to validate them.
- If source and destination database located on different servers, then read/write IO will be balanced on two servers , MTTR will be saved.
- If DataBridge is used in truncated table recovery, it is very convenient that truncated data can be exported back to problem database directly.

DataBridge is very simple and convenient. Right click the table on the left side, and select DataBridge:



As the first time to use DataBridge, DB connection information is necessary, which is similar with SQL Developer connection, including: DB host, Port, Service_Name and Account information.

Attention: DataBridge will save data to the specified schema given in the DB connection.



Connection Name: G10R25

Username: maclean

Password: ******

Hostname: 192.168.1.191

Port: 1521

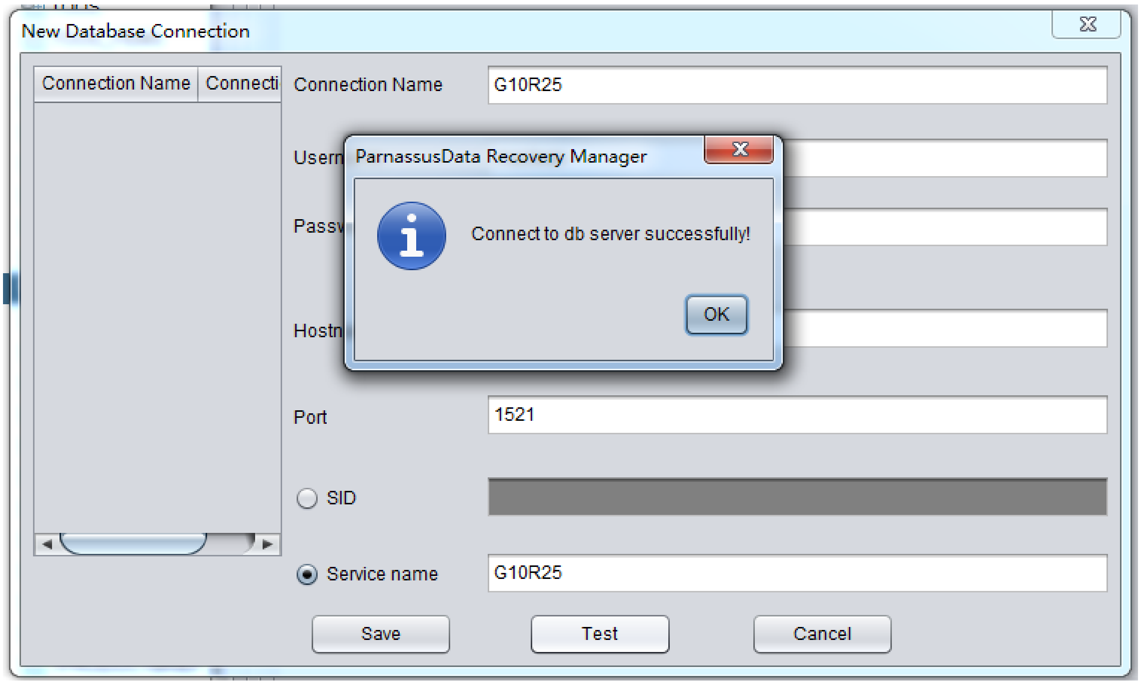
○ SID

● Service name: G10R25

AS above G10R25 connection, user is maclean, and the corresponding Oracle Easy Connection is

192.168.1.191:1521/G10R25。

After inputting the account/connection information, you can use test for connection testing. If return message is “ Connect to DB server successfully “, the connection is done and click to save.



New Database Connection

Connection Name: G10R25

Port: 1521

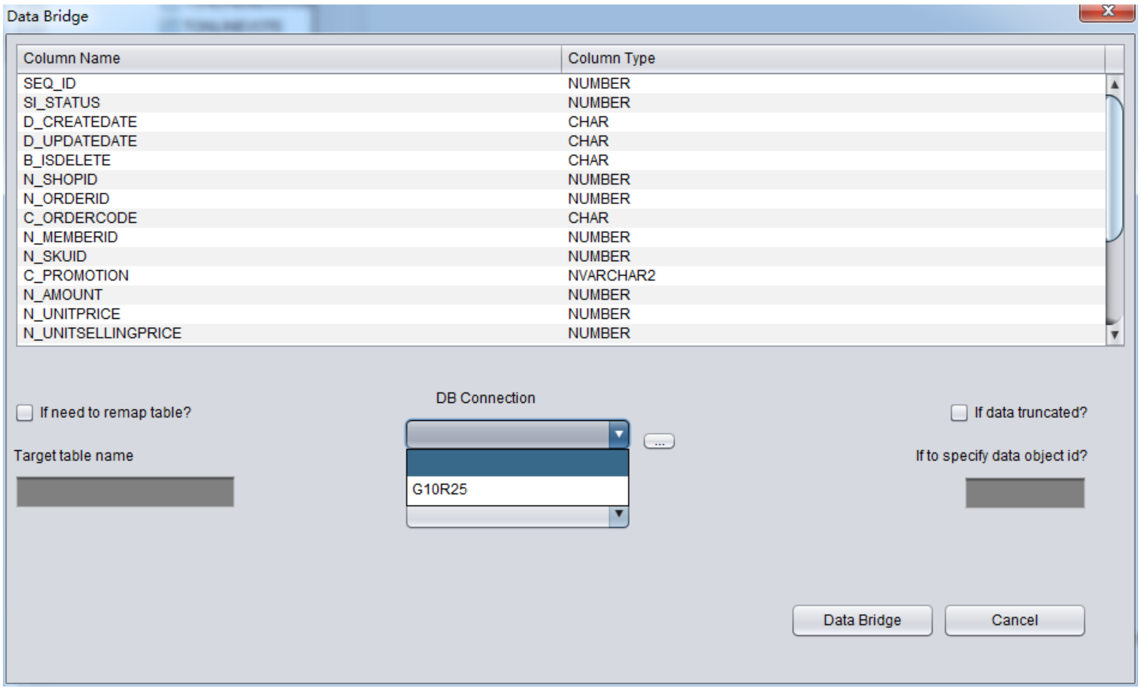
○ SID

● Service name: G10R25

ParnassusData Recovery Manager

Connect to db server successfully!

After saving connection and go to DataBridge window, please select Connection G10R25 at the drop down list.



Data Bridge

Column Name	Column Type
SEQ_ID	NUMBER
SI_STATUS	NUMBER
D_CREATEDATE	CHAR
D_UPDATEDATE	CHAR
B_ISDELETE	CHAR
N_SHOPID	NUMBER
N_ORDERID	NUMBER
C_ORDERCODE	CHAR
N_MEMBERID	NUMBER
N_SKUID	NUMBER
C_PROMOTION	NVARCHAR2
N_AMOUNT	NUMBER
N_UNITPRICE	NUMBER
N_UNITSELLINGPRICE	NUMBER

□ If need to remap table?

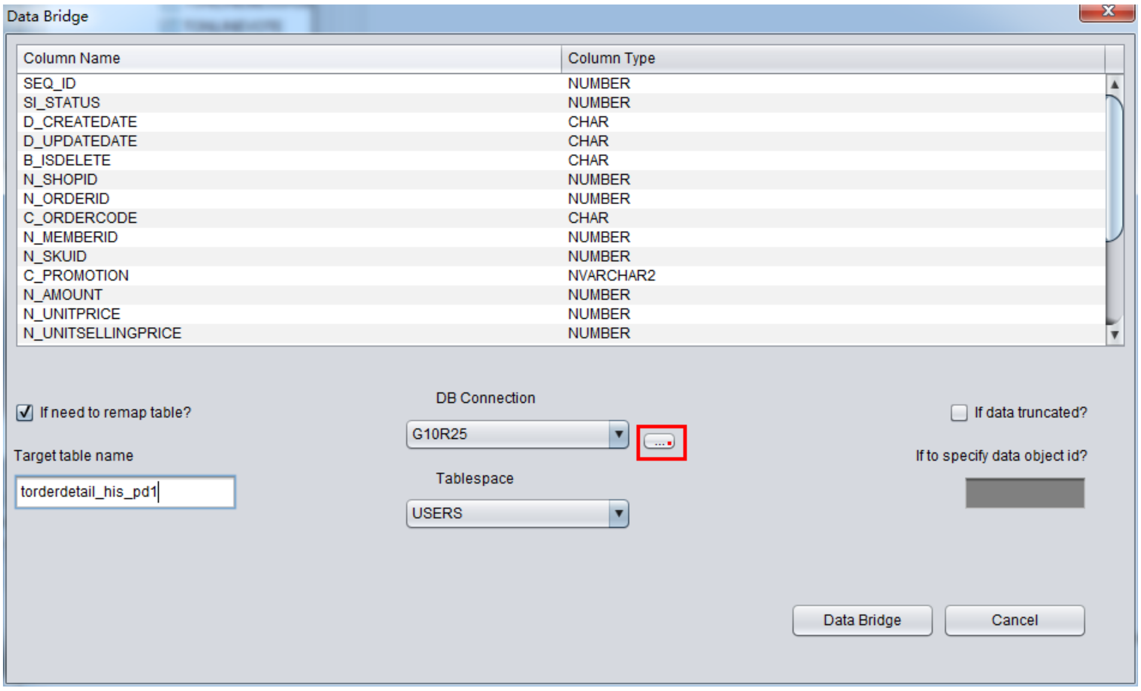
Target table name

DB Connection: G10R25

□ If data truncated?

If to specify data object id?

If your DB connection is not in the drop down list, please click DB connection Button, which is highlighted in red.



Column Name	Column Type
SEQ_ID	NUMBER
SI_STATUS	NUMBER
D_CREATEDATE	CHAR
D_UPDATEDATE	CHAR
B_ISDELETE	CHAR
N_SHOPID	NUMBER
N_ORDERID	NUMBER
C_ORDERCODE	CHAR
N_MEMBERID	NUMBER
N_SKUID	NUMBER
C_PROMOTION	NVARCHAR2
N_AMOUNT	NUMBER
N_UNITPRICE	NUMBER
N_UNITSELLINGPRICE	NUMBER

☑ If need to remap table?

Target table name: torderdetail_his_pd1

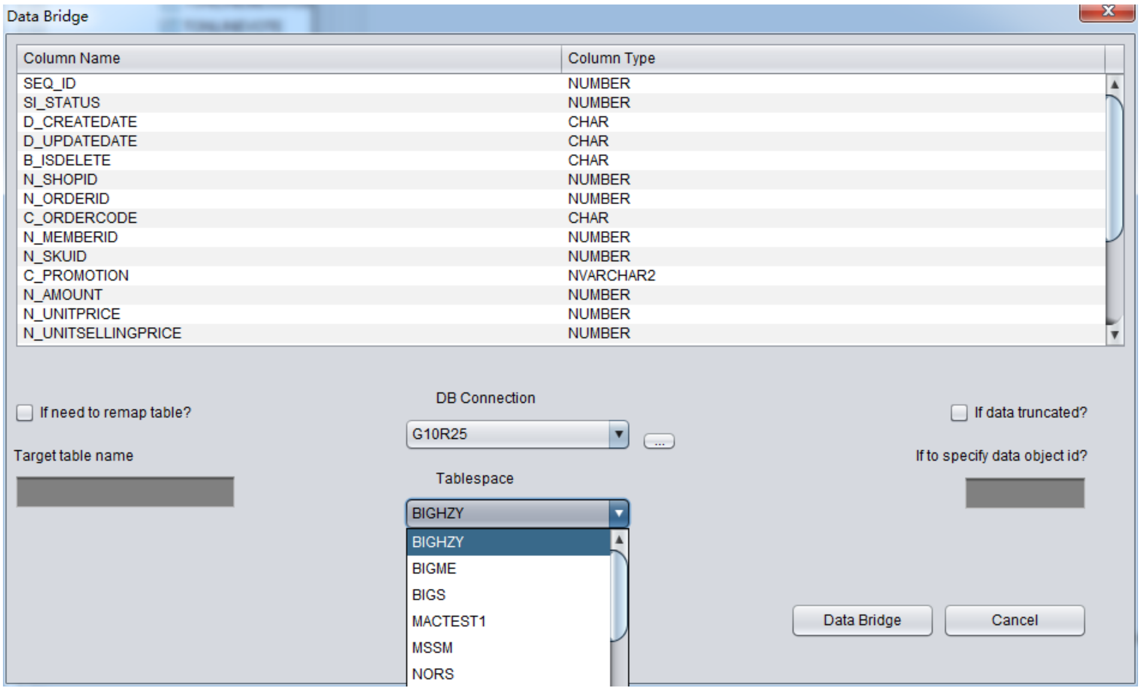
DB Connection: G10R25

Tablespace: USERS

☐ If data truncated?

If to specify data object id?

After selecting DB Connection, Tablespace dropdown list will be selectable:



Column Name	Column Type
SEQ_ID	NUMBER
SI_STATUS	NUMBER
D_CREATEDATE	CHAR
D_UPDATEDATE	CHAR
B_ISDELETE	CHAR
N_SHOPID	NUMBER
N_ORDERID	NUMBER
C_ORDERCODE	CHAR
N_MEMBERID	NUMBER
N_SKUID	NUMBER
C_PROMOTION	NVARCHAR2
N_AMOUNT	NUMBER
N_UNITPRICE	NUMBER
N_UNITSELLINGPRICE	NUMBER

☐ If need to remap table?

Target table name

DB Connection: G10R25

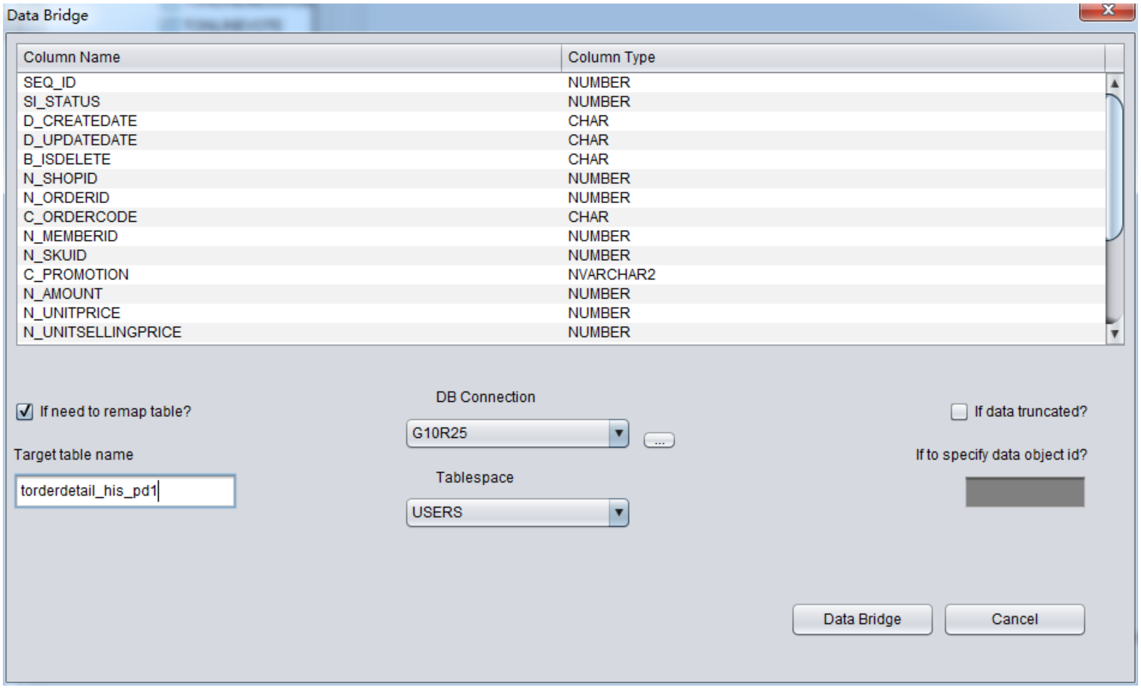
Tablespace: BIGHZY

☐ If data truncated?

If to specify data object id?

Attention on DataBridge recovering truncated/dropped table: when you recovering truncated/dropped and insert data back to source DB, users should choose another tablespace which diffs from the original tablespace. If export data into same tablespace, oracle will reuse space which stores truncated/dropped table, and can make data overwritten, we will lose the last resort to recover the data.

For example, we truncated a table and would like to user DataBridge to recover data back to source database, but we would like to use another table name. Original table name is torderdetail_his, and user can select "if need to remap table" and input proper destination name, as below:



Column Name	Column Type
SEQ_ID	NUMBER
SI_STATUS	NUMBER
D_CREATEDATE	CHAR
D_UPDATEDATE	CHAR
B_ISDELETE	CHAR
N_SHOPID	NUMBER
N_ORDERID	NUMBER
C_ORDERCODE	CHAR
N_MEMBERID	NUMBER
N_SKUID	NUMBER
C_PROMOTION	NVARCHAR2
N_AMOUNT	NUMBER
N_UNITPRICE	NUMBER
N_UNITSELLINGPRICE	NUMBER

☑ If need to remap table?

Target table name: torderdetail_his_pd1

DB Connection: G10R25

Tablespace: USERS

☐ If data truncated?

If to specify data object id?

Attention: 1) For destination DB which already had the same table name, PRM will not recreate a table but append all recovered data. 2) For destination DB which did not have source table name, PRM would try to create table and recover the data.

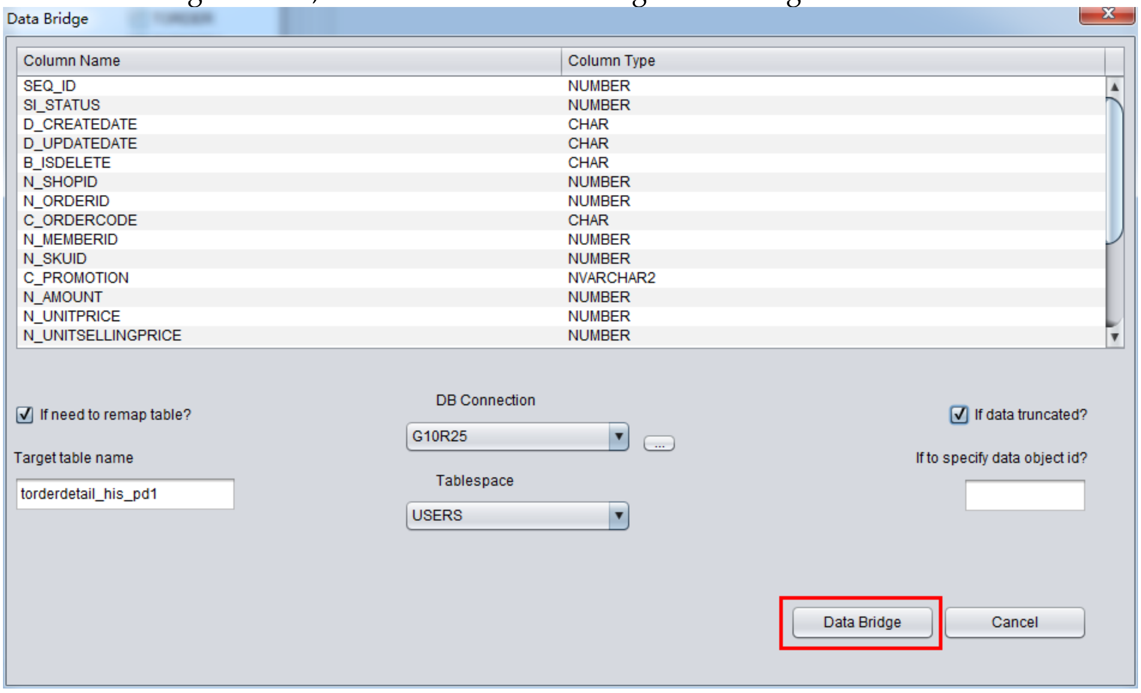
In this case, we would recover Truncated data, therefore, please select "if data truncated?" checkbox, Or, PRM would do regular data extraction, but not Truncated data.

Truncate recovery methodology is: Oracle will only update table DATA_OBJECT_ID in data dictionary and segment header. Therefore, the real data will not be overwritten. Due to the difference between dictionary and DATA_OBJECT_ID, Oracle server process will not read truncated data while scanning table. But, the real data is still there.

PRM will try to scan 10M-bytes blocks which are behind of the table's segment header, if some blocks with smaller DATA_OBJECT_ID than the object's current DATA_OBJECT_ID, then PRM thinks it find something useful.

There is a blank input field called "if to specify data object id", which let user input Data Object ID. Usually, you don't need to input any value, unless the recovery does not work. We suggest user to contact ParnassusData for help.

Click DataBridge button ,then it will start extracting if the configuration is done.



Column Name	Column Type
SEQ_ID	NUMBER
SI_STATUS	NUMBER
D_CREATEDATE	CHAR
D_UPDATEDATE	CHAR
B_ISDELETE	CHAR
N_SHOPID	NUMBER
N_ORDERID	NUMBER
C_ORDERCODE	CHAR
N_MEMBERID	NUMBER
N_SKUID	NUMBER
C_PROMOTION	NVARCHAR2
N_AMOUNT	NUMBER
N_UNITPRICE	NUMBER
N_UNITSELLINGPRICE	NUMBER

☑ If need to remap table?

Target table name: torderdetail_his_pd1

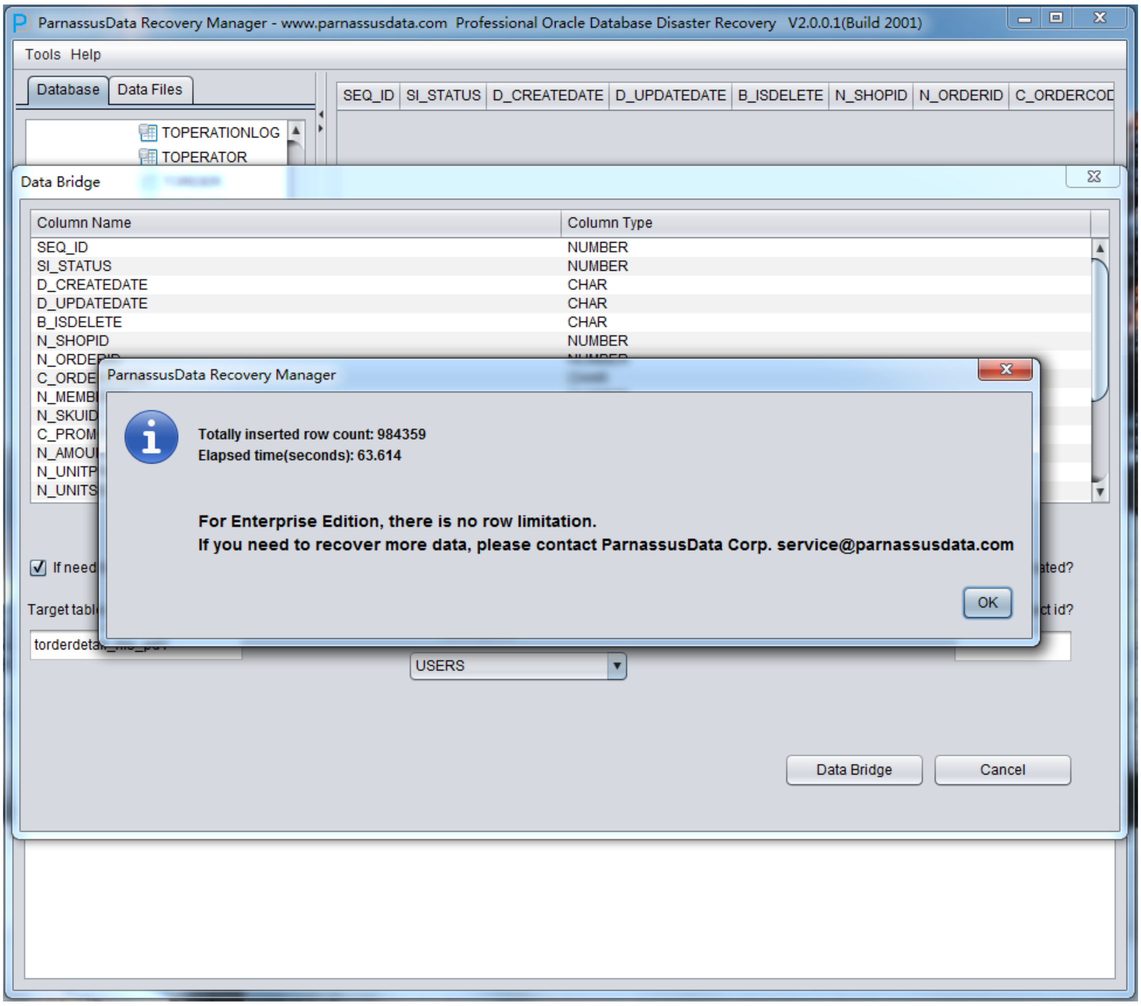
DB Connection: G10R25

Tablespace: USERS

☑ If data truncated?

If to specify data object id?

DataBridge will display the successfully rescued rows and elapsed time.


ParnassusData Recovery Manager - www.parnassusdata.com Professional Oracle Database Disaster Recovery   V2.0.0.1(Build 2001)
Tools Help
Database Data Files
TOPERATIONLOG
TOPERATOR
SEQ_ID SI_STATUS D_CREATEDATE D_UPDATEDATE B_ISDELETE N_SHOPID N_ORDERID C_ORDERCOD
Data Bridge
If need
Target tabl
torderdeta
USERS
ated?
ct id?
Data Bridge
Cancel
ParnassusData Recovery Manager
OK

Column Name	Column Type
SEQ_ID	NUMBER
SI_STATUS	NUMBER
D_CREATEDATE	CHAR
D_UPDATEDATE	CHAR
B_ISDELETE	CHAR
N_SHOPID	NUMBER
N_ORDER	
C_ORDE	
N_MEMB	
N_SKUID	
C_PROM	
N_AMOU	
N_UNITP	
N_UNITS	

Totally inserted row count: 984359
Elapsed time(seconds): 63.614

For Enterprise Edition, there is no row limitation.
If you need to recover more data, please contact ParnassusData Corp. service@parnassusdata.com

Case 3: Oracle Dictionary Corrupted, DB can not be open

DBA of company D deleted SYS.TS$ (A bootstrap Table) by mistake, this cause Oracle DB can not be open

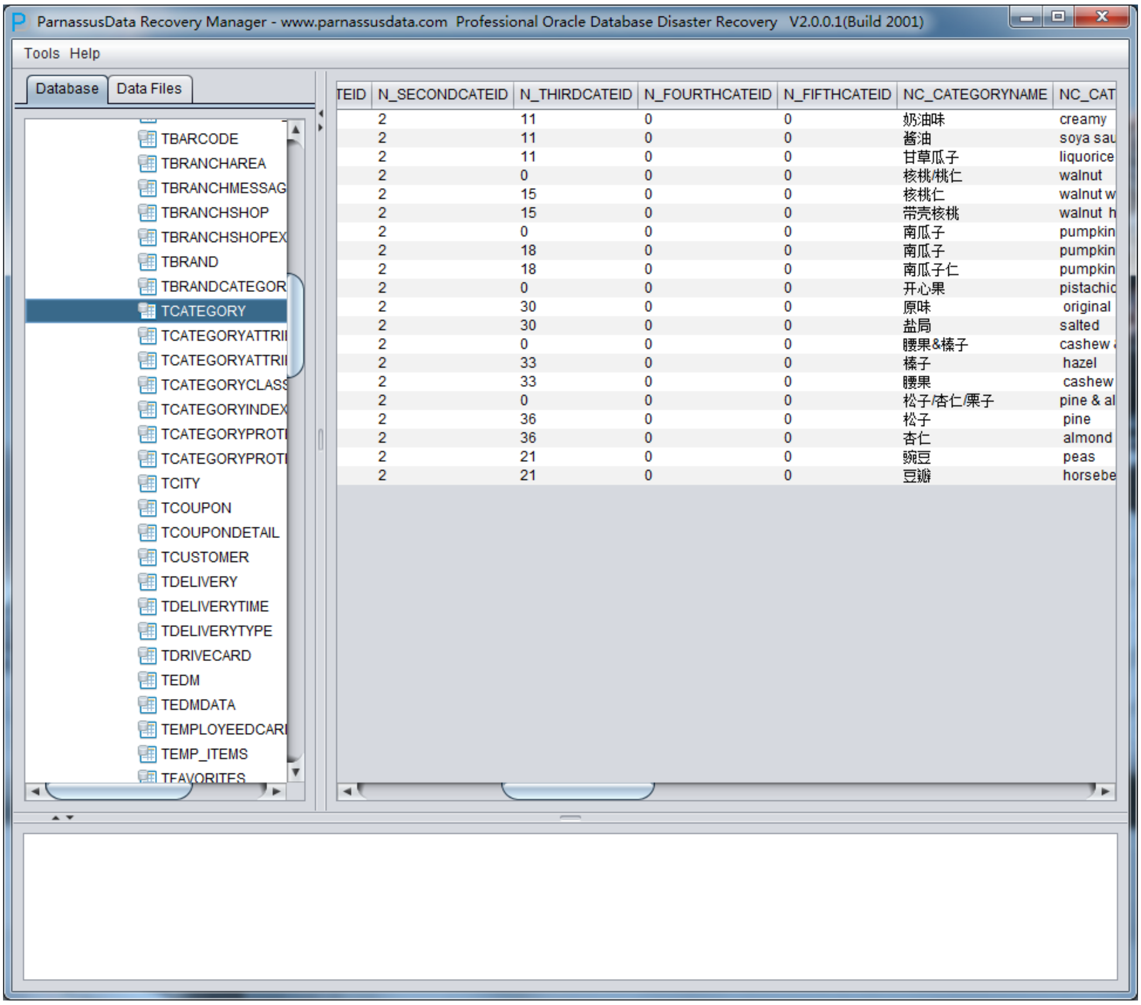
```
Oracle Database 11g Enterprise Edition Release 11.2.0.3.0 - 64bit Production
With the Partitioning, Automatic Storage Management, OLAP, Data Mining
and Real Application Testing options



INSTANCE_NAME
----------------
ASMME

SQL>
SQL>
SQL> select count(*) from sys.ts$;

  COUNT(*)
----------
         5

SQL> delete ts$;

5 rows deleted.

SQL> commit;

Commit complete.

SQL> shutdown immediate;
Database closed.
Database dismounted.
ORACLE instance shut down.
```

```
Database mounted.
ORA-01092: ORACLE instance terminated. Disconnection forced
ORA-01405: fetched column value is NULL
Process ID: 5270
Session ID: 10 Serial number: 3

Undo initialization errored: err:1405 serial:0 start:3126020954 end:3126020954 diff:0 (0 seconds)
Errors in file /s01/diag/rdbms/asmme/ASMME/trace/ASMME_ora_5270.trc:
ORA-01405: fetched column value is NULL
Errors in file /s01/diag/rdbms/asmme/ASMME/trace/ASMME_ora_5270.trc:
ORA-01405: fetched column value is NULL
Error 1405 happened during db open, shutting down database
USER (ospid: 5270): terminating the instance due to error 1405
Instance terminated by USER, pid = 5270
ORA-1092 signalled during: ALTER DATABASE OPEN...
opiodr aborting process unknown ospid (5270) as a result of ORA-1092
```

In this circumstance, data dictionary had been damaged; therefore it would be very hard to open the database.

Then, we can use PRM rescue data in DB. Following processes as below:

1. Recovery Wizard
2. Select Data Dictionary Mode
3. Choose Big or Little Endian , and input DB NAME
4. Click Load for database loading
5. Extract Tables

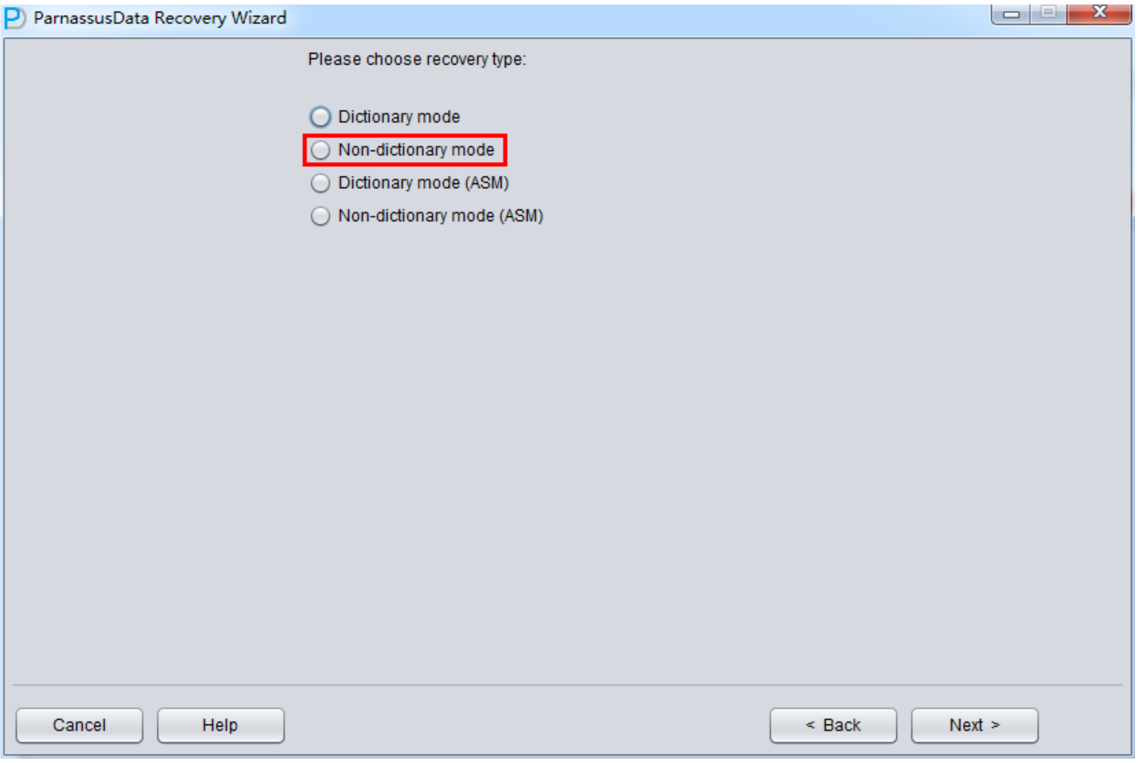


TEID	N_SECONDCATEID	N_THIRDCATEID	N_FOURTHCATEID	N_FIFTHCATEID	NC_CATEGORYNAME	NC_CAT
	2	11	0	0	奶油味	creamy
	2	11	0	0	酱油	soya sau
	2	11	0	0	甘草瓜子	liquorice
	2	0	0	0	核桃/桃仁	walnut
	2	15	0	0	核桃仁	walnut w
	2	15	0	0	带壳核桃	walnut h
	2	0	0	0	南瓜子	pumpkin
	2	18	0	0	南瓜子	pumpkin
	2	18	0	0	南瓜子仁	pumpkin
	2	0	0	0	开心果	pistachic
	2	30	0	0	原味	original
	2	30	0	0	盐局	salted
	2	0	0	0	腰果&榛子	cashew
	2	33	0	0	榛子	hazel
	2	33	0	0	腰果	cashew
	2	0	0	0	松子/杏仁/栗子	pine & al
	2	36	0	0	松子	pine
	2	36	0	0	杏仁	almond
	2	21	0	0	豌豆	peas
	2	21	0	0	豆瓣	horsebe

Case 4: Deleted SYSTEM tablespace by mistake

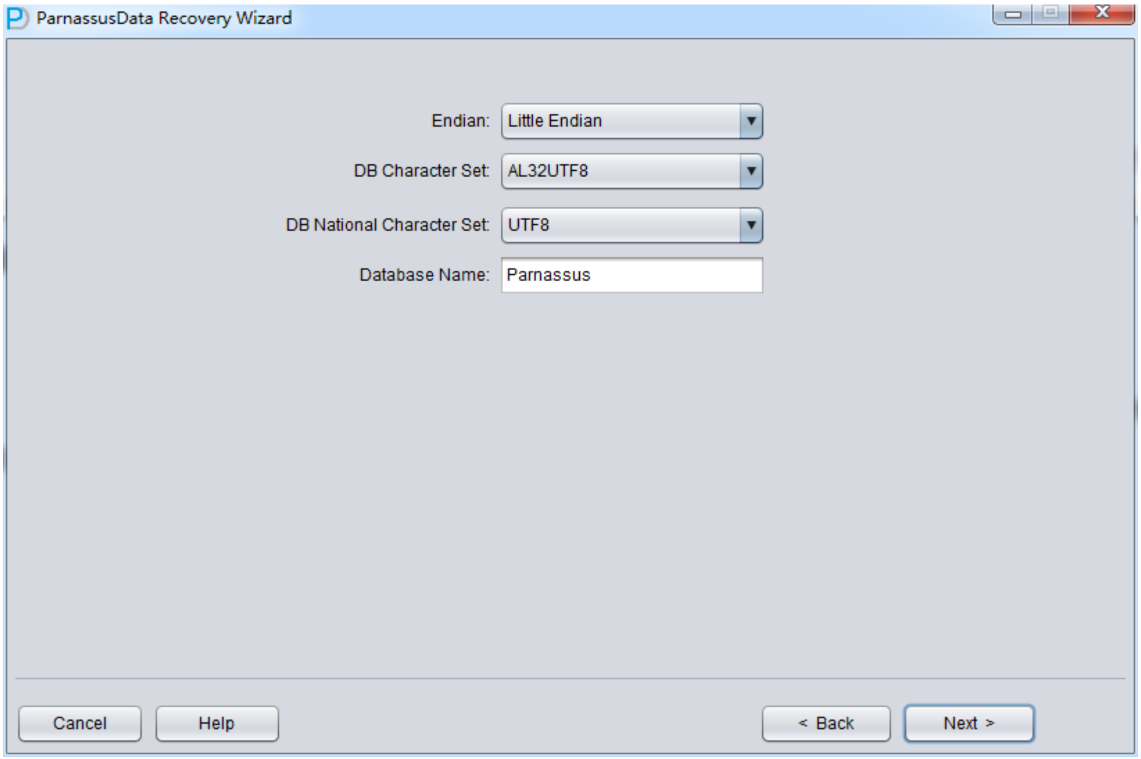
A System Administrator of company D who deleted SYSTEM tablespace by mistake and make DB can not be open. Unfortunately, there is no RMAN backup available. Therefore, for company D try to use PRM to recover all data.

In this circumstance, run PRM and go into Recovery Wizard. Select “Non-Dictionary mode”:



Please choose recovery type:

○ Dictionary mode
○ Non-dictionary mode
○ Dictionary mode (ASM)
○ Non-dictionary mode (ASM)



Endian: Little Endian

DB Character Set: AL32UTF8

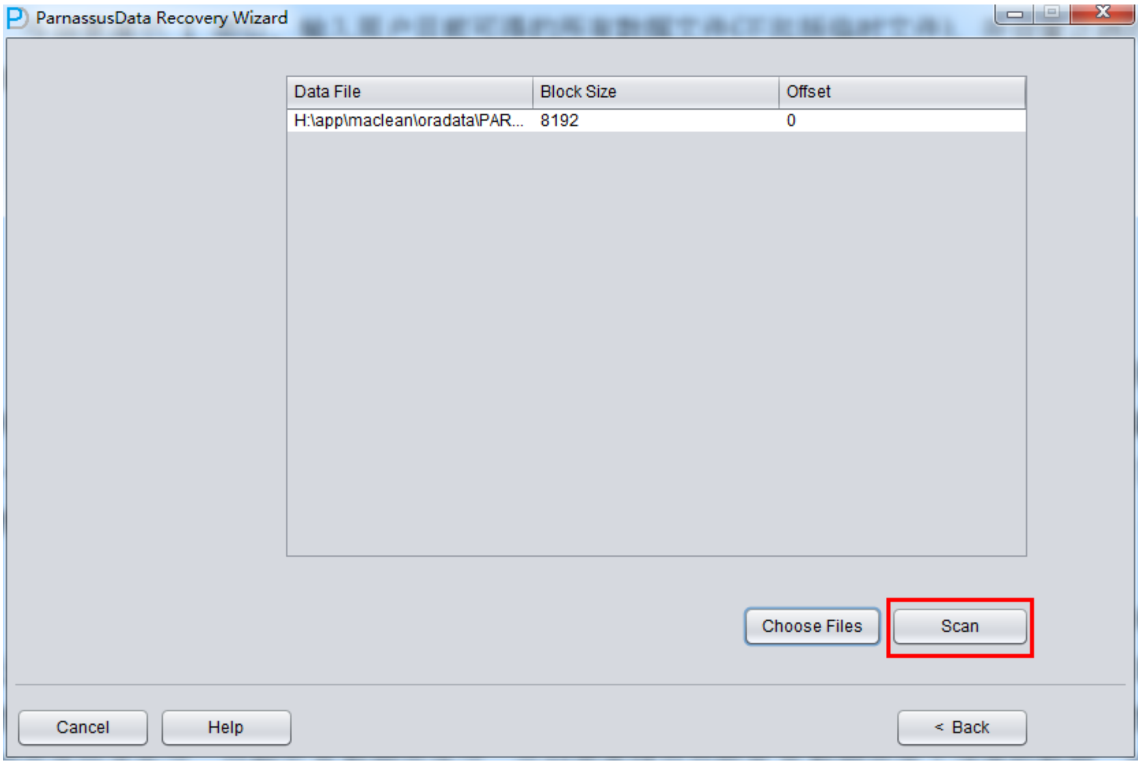
DB National Character Set: UTF8

Database Name: Parnassus

In No-dictionary mode, we have to select DB Character Set and DB National Character

Set. Because of while losing SYSTEM tablespace, database cannot find character set information.

Similarly as case 1, select all data (not including temp file), and correct Block Size and OFFSET



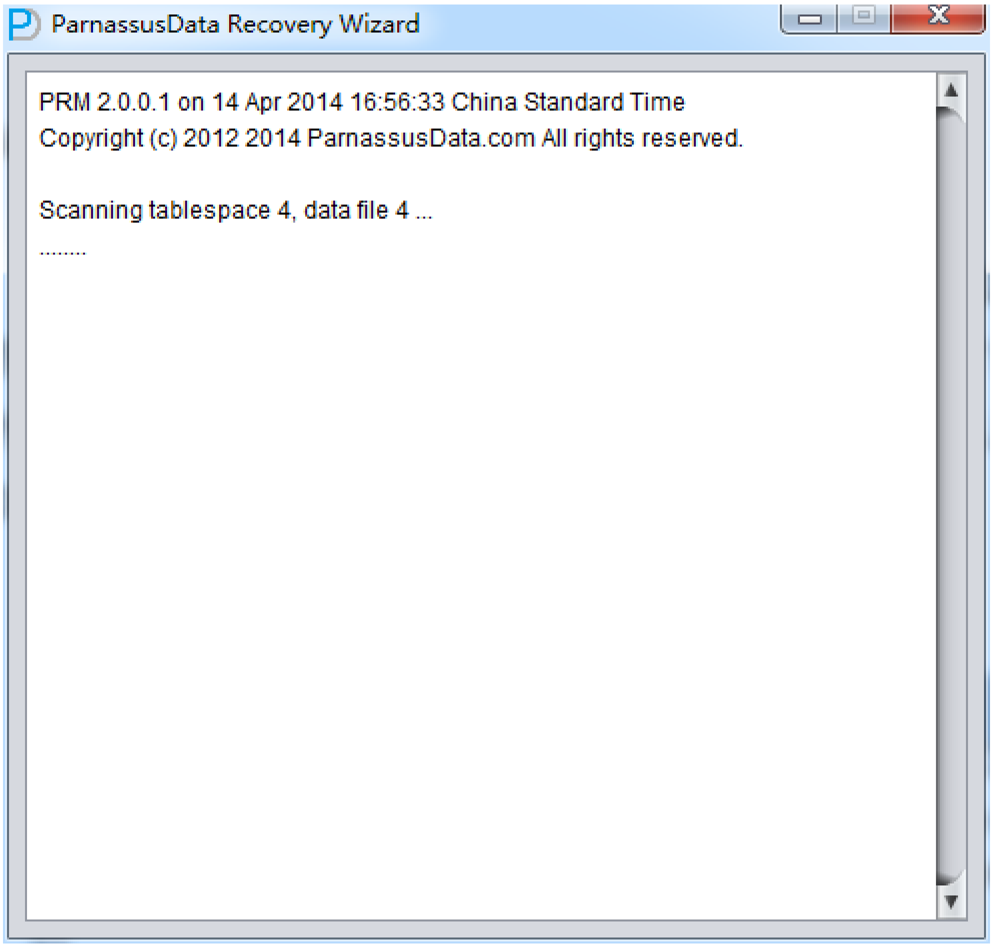
Data File	Block Size	Offset
H:\app\maclean\oradata\PAR...	8192	0

Then click scan button. Then PRM will scan all segment header and extents in datafile, and record it into SEG$.DAT and EXT$.DAT. In Oracle, each partition table or non-partition table has a segment header. Once we find segment header, we could find the whole table extent map information. Via extent map, we can get all record.

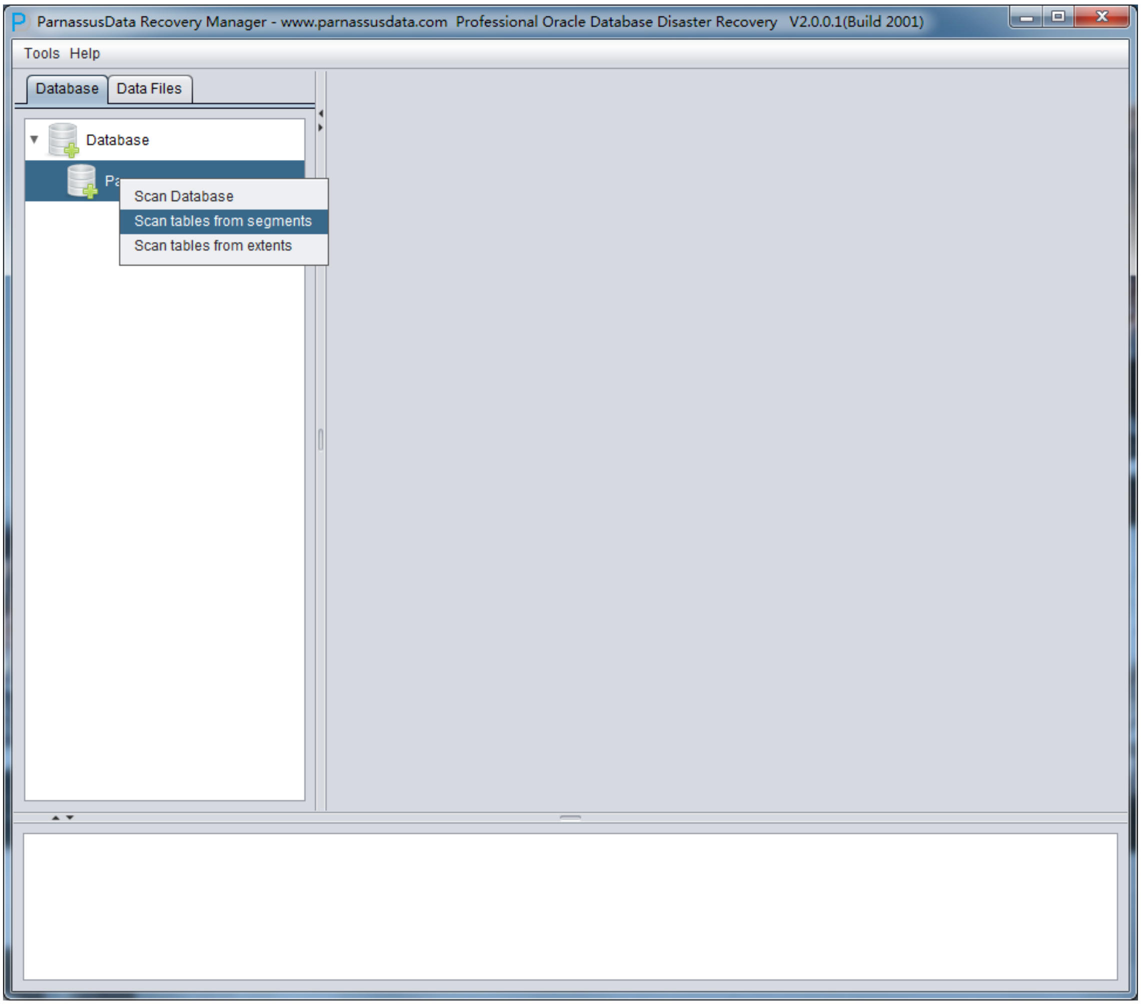
There is one exception, for example, there is one non-partition table that is stored in two database files. The segment header and half data are stored in datafile A, and the others are on datafile B. While system tablespace and datafile A are lost, PRM couldn't find segment header associated with problem table, but it can scan datafile B and get the rest extent map.

In order to recover data via segment header and extent map in no-dictionary mode.

PRM will create two files: SEG$.DAT(stores segment header info) and EXT$.DAT(stores extent info) ,which is also recorded in PRM embedded database.



```
PRM 2.0.0.1 on 14 Apr 2014 16:56:33 China Standard Time
Copyright (c) 2012 2014 ParnassusData.com All rights reserved.

Scanning tablespace 4, data file 4 ...
........
```


ParnassusData Recovery Manager - www.parnassusdata.com Professional Oracle Database Disaster Recovery V2.0.0.1(Build 2001)
Tools Help
Database
Data Files
Database
Pa
Scan Database
Scan tables from segments
Scan tables from extents

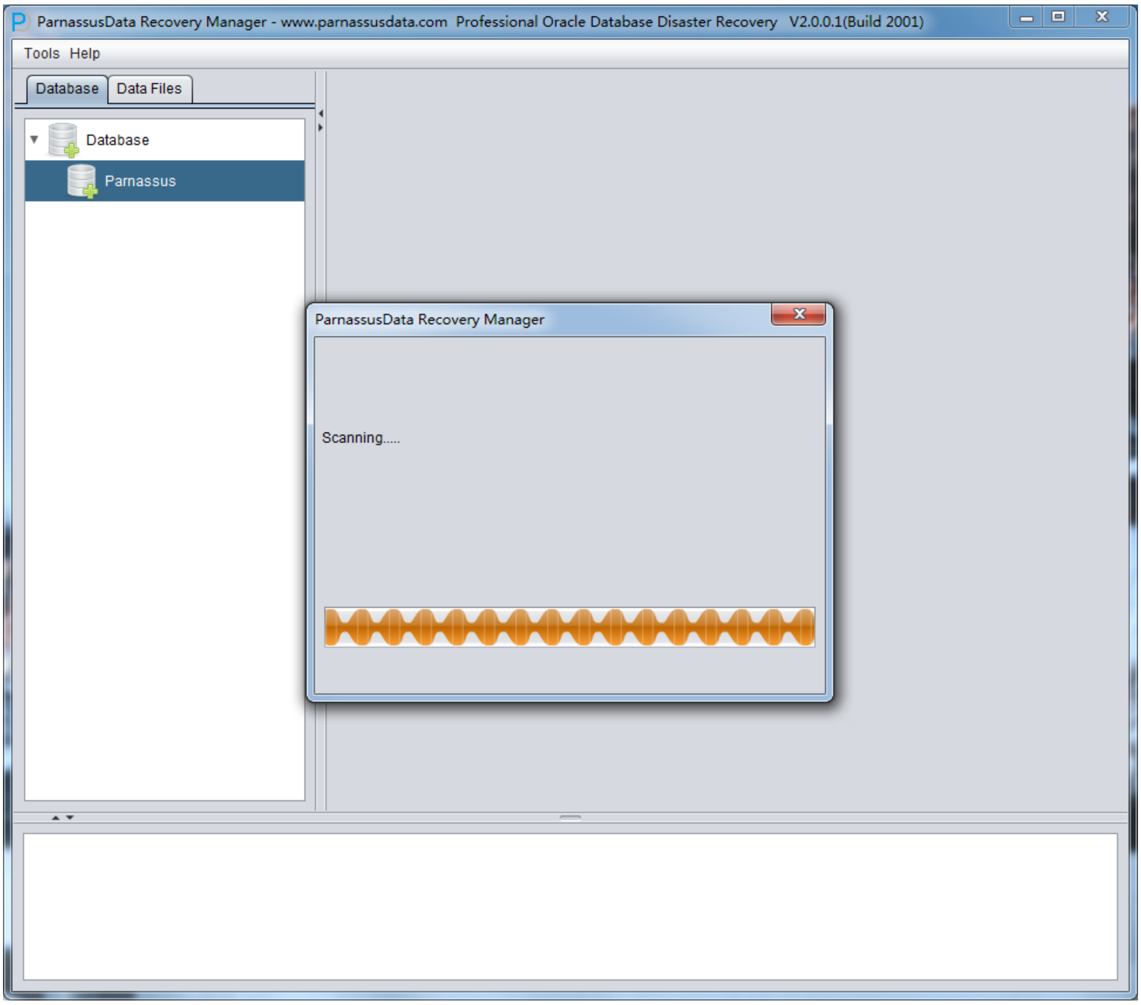
After scan, there is database icon on the left.

Meanwhile, there are 2 option:

1、 Scan Tables From Segments:
   - System tablespace lost, but user tablespace datafiles are there
2、 Scan Tables From Extents
   - Only used when truncated data can not be recovered by Dictionary-Mode
   - Both system tablespace and segment header are lost

It is not necessary to use mode “Scan Tables From Extents” at the first time, unless you can’t find your data by “Scan Tables From Segment”.

Scan tables From segments should be your first choice.



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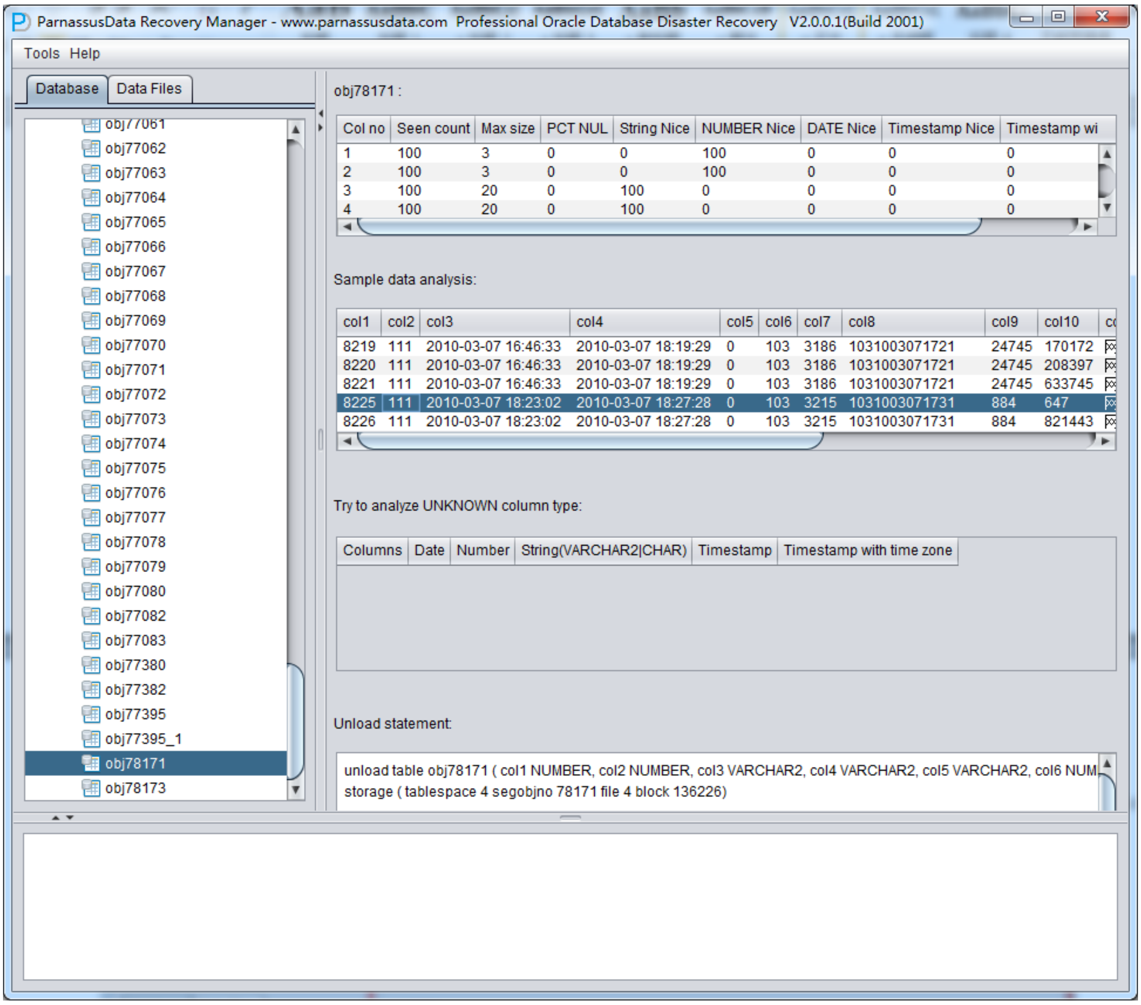
Tools Help
Database
Data Files
Database
Parnassus
ParnassusData Recovery Manager

Scanning.....

After scanning tables from segments, there will be a tree diagram on the left.



obj78171 :

Col no	Seen count	Max size	PCT NUL	String Nice	NUMBER Nice	DATE Nice	Timestamp Nice	Timestamp wi
1	100	3	0	0	100	0	0	0
2	100	3	0	0	100	0	0	0
3	100	20	0	100	0	0	0	0
4	100	20	0	100	0	0	0	0

Sample data analysis:

col1	col2	col3	col4	col5	col6	col7	col8	col9	col10	co
8219	111	2010-03-07 16:46:33	2010-03-07 18:19:29	0	103	3186	1031003071721	24745	170172	☒
8220	111	2010-03-07 16:46:33	2010-03-07 18:19:29	0	103	3186	1031003071721	24745	208397	☒
8221	111	2010-03-07 16:46:33	2010-03-07 18:19:29	0	103	3186	1031003071721	24745	633745	☒
8225	111	2010-03-07 18:23:02	2010-03-07 18:27:28	0	103	3215	1031003071731	884	647	☒
8226	111	2010-03-07 18:23:02	2010-03-07 18:27:28	0	103	3215	1031003071731	884	821443	☒

Try to analyze UNKNOWN column type:

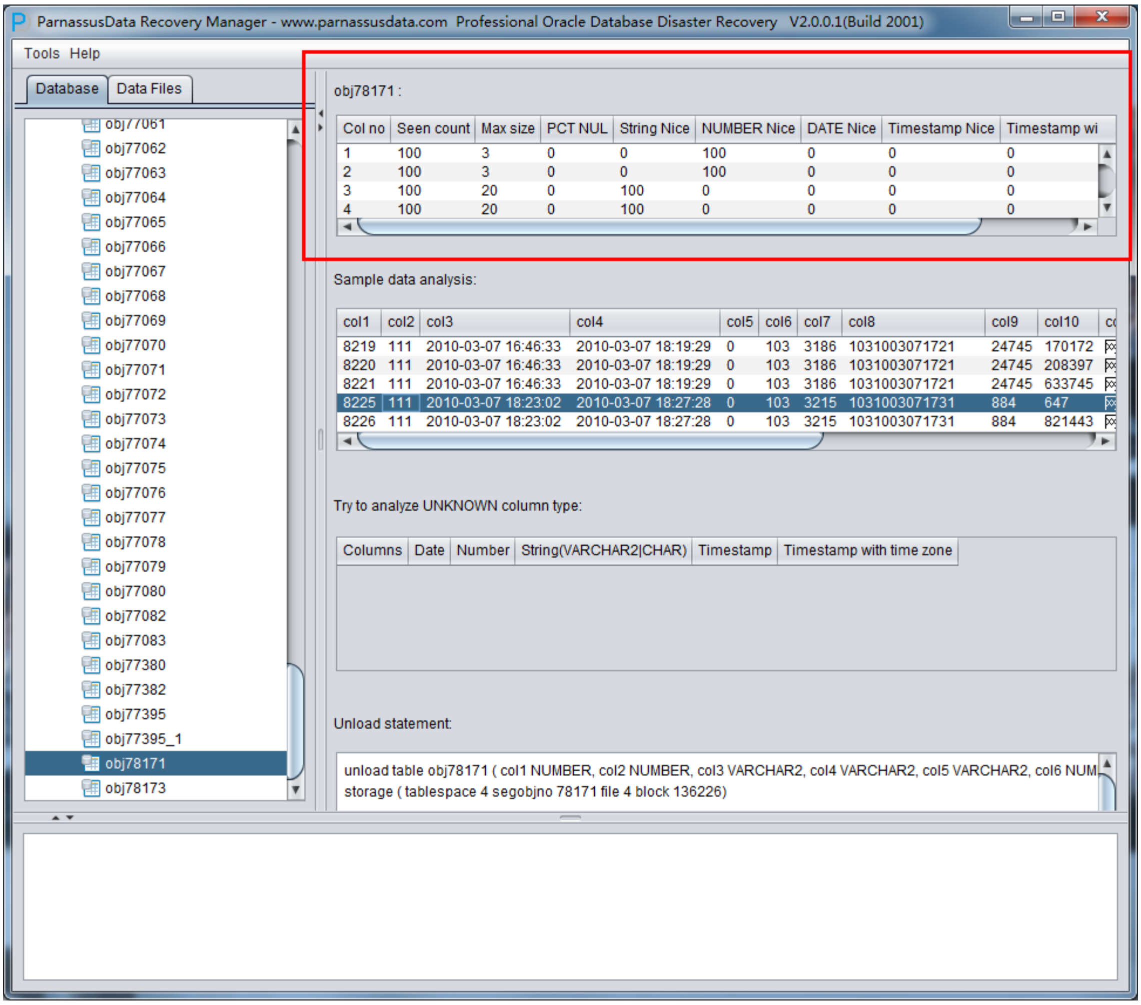
Columns	Date	Number	String(VARCHAR2|CHAR)	Timestamp	Timestamp with time zone

Unload statement:

```
unload table obj78171 ( col1 NUMBER, col2 NUMBER, col3 VARCHAR2, col4 VARCHAR2, col5 VARCHAR2, col6 NUM
storage ( tablespace 4 segobjno 78171 file 4 block 136226)
```

Scan Tables is for constructing the data based on segment header in SEG$. The name of each node in the diagram is named by obj+ DATA OBJECT ID.

Click on node and check right side:



obj78171 :

Col no	Seen count	Max size	PCT NUL	String Nice	NUMBER Nice	DATE Nice	Timestamp Nice	Timestamp wi
1	100	3	0	0	100	0	0	0
2	100	3	0	0	100	0	0	0
3	100	20	0	100	0	0	0	0
4	100	20	0	100	0	0	0	0

Sample data analysis:

col1	col2	col3	col4	col5	col6	col7	col8	col9	col10	c
8219	111	2010-03-07 16:46:33	2010-03-07 18:19:29	0	103	3186	1031003071721	24745	170172	☒
8220	111	2010-03-07 16:46:33	2010-03-07 18:19:29	0	103	3186	1031003071721	24745	208397	☒
8221	111	2010-03-07 16:46:33	2010-03-07 18:19:29	0	103	3186	1031003071721	24745	633745	☒
8225	111	2010-03-07 18:23:02	2010-03-07 18:27:28	0	103	3215	1031003071731	884	647	☒
8226	111	2010-03-07 18:23:02	2010-03-07 18:27:28	0	103	3215	1031003071731	884	821443	☒

Try to analyze UNKNOWN column type:

Columns	Date	Number	String(VARCHAR2|CHAR)	Timestamp	Timestamp with time zone

Unload statement:

```
unload table obj78171 ( col1 NUMBER, col2 NUMBER, col3 VARCHAR2, col4 VARCHAR2, col5 VARCHAR2, col6 NUM
storage ( tablespace 4 segobjno 78171 file 4 block 136226)
```

Intelligence on Data Analysis

Because of SYSTEM tablespace lost, there is not data structure information available in NO-Dictionary mode. The column information includes column name and data type. All these are storage in dictionary but not in table. Therefore, PRM need to guess the data type. PRM has a JAVA pre analysis algorithm, and has the ability to analysis more than 10 kinds of types.、

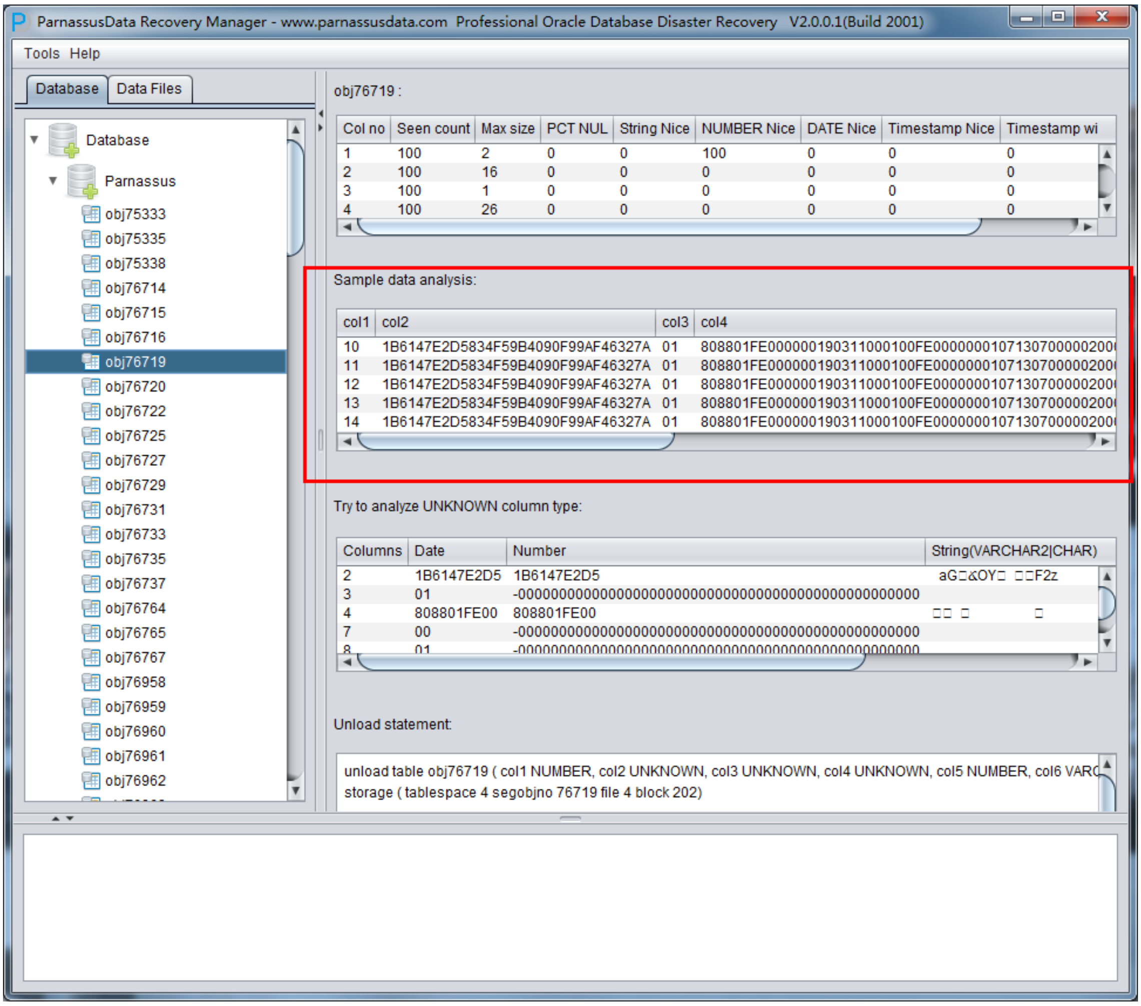
Intelligence analysis can successfully guess 90% of columns in most of circumstances

On the right side, the meaning of columns:

- Col1 no
- Seen Count

- MAX SIZE
- PCT NULL
- String Nice
- Number Nice
- Date Nice
- Timestamp Nice
- Timestamp with timezone Nice

Sample Data Analysis:



obj76719 :

Col no	Seen count	Max size	PCT NUL	String Nice	NUMBER Nice	DATE Nice	Timestamp Nice	Timestamp wi
1	100	2	0	0	100	0	0	0
2	100	16	0	0	0	0	0	0
3	100	1	0	0	0	0	0	0
4	100	26	0	0	0	0	0	0

Sample data analysis:

col1	col2	col3	col4
10	1B6147E2D5834F59B4090F99AF46327A	01	808801FE000000190311000100FE0000000107130700000200
11	1B6147E2D5834F59B4090F99AF46327A	01	808801FE000000190311000100FE0000000107130700000200
12	1B6147E2D5834F59B4090F99AF46327A	01	808801FE000000190311000100FE0000000107130700000200
13	1B6147E2D5834F59B4090F99AF46327A	01	808801FE000000190311000100FE0000000107130700000200
14	1B6147E2D5834F59B4090F99AF46327A	01	808801FE000000190311000100FE0000000107130700000200

Try to analyze UNKNOWN column type:

Columns	Date	Number	String(VARCHAR2|CHAR)
2	1B6147E2D5	1B6147E2D5	aG□&OY□ □□F2z
3	01	-0000000000000000000000000000000000000000000000000	
4	808801FE00	808801FE00	□□ □ □
7	00	-0000000000000000000000000000000000000000000000000	
8	01	-0000000000000000000000000000000000000000000000000	

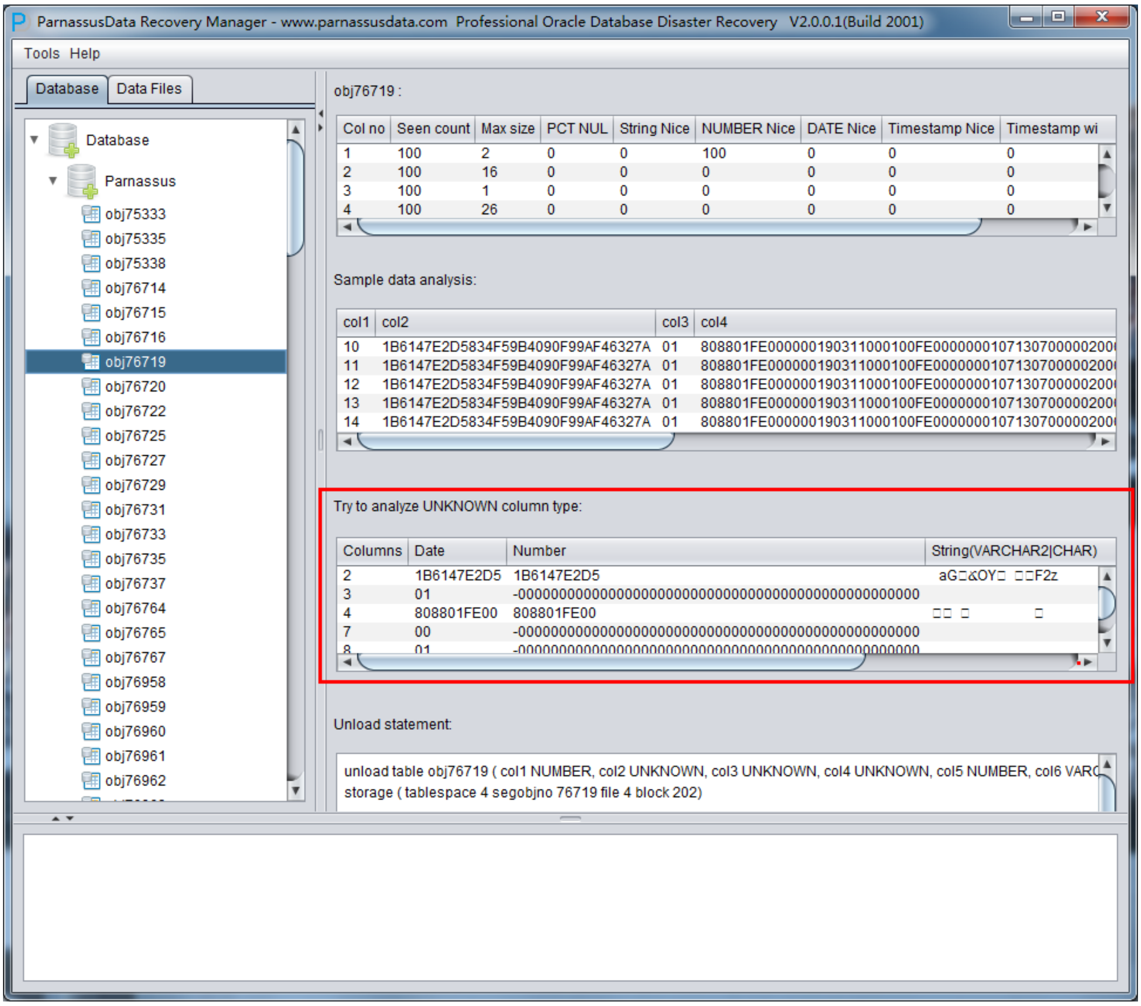
Unload statement:

```
unload table obj76719 ( col1 NUMBER, col2 UNKNOWN, col3 UNKNOWN, col4 UNKNOWN, col5 NUMBER, col6 VARC
storage ( tablespace 4 segobjno 76719 file 4 block 202)
```

Intelligence Analysis will analyze 10 records and display the results. These results will help client to know the column information.

As in the picture, the there are 10 records which had been displayed all.

TRY TO ANALYZE UNKNOWN column type:



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obj76719 :

Col no	Seen count	Max size	PCT NUL	String Nice	NUMBER Nice	DATE Nice	Timestamp Nice	Timestamp wi
1	100	2	0	0	100	0	0	0
2	100	16	0	0	0	0	0	0
3	100	1	0	0	0	0	0	0
4	100	26	0	0	0	0	0	0

Sample data analysis:

col1	col2	col3	col4
10	1B6147E2D5834F59B4090F99AF46327A	01	808801FE00000019031100010 0FE00000001071307000002000
11	1B6147E2D5834F59B4090F99AF46327A	01	808801FE000000190311000100FE0000000107130700000200
12	1B6147E2D5834F59B4090F99AF46327A	01	808801FE000000190311000100FE0000000107130700000200
13	1B6147E2D5834F59B4090F99AF46327A	01	808801FE000000190311000100FE0000000107130700000200
14	1B6147E2D5834F59B4090F99AF46327A	01	808801FE000000190311000100FE0000000107130700000200

Try to analyze UNKNOWN column type:

Columns	Date	Number	String(VARCHAR2|CHAR)
2	1B6147E2D5	1B6147E2D5	aG□&OY□ □□F2z
3	01	-00000000000000000000000000000000000000000000000000	
4	808801FE00	808801FE00	□□ □ □
7	00	-00000000000000000000000000000000000000000000000000	
8	01	-00000000000000000000000000000000000000000000000000	

Unload statement:

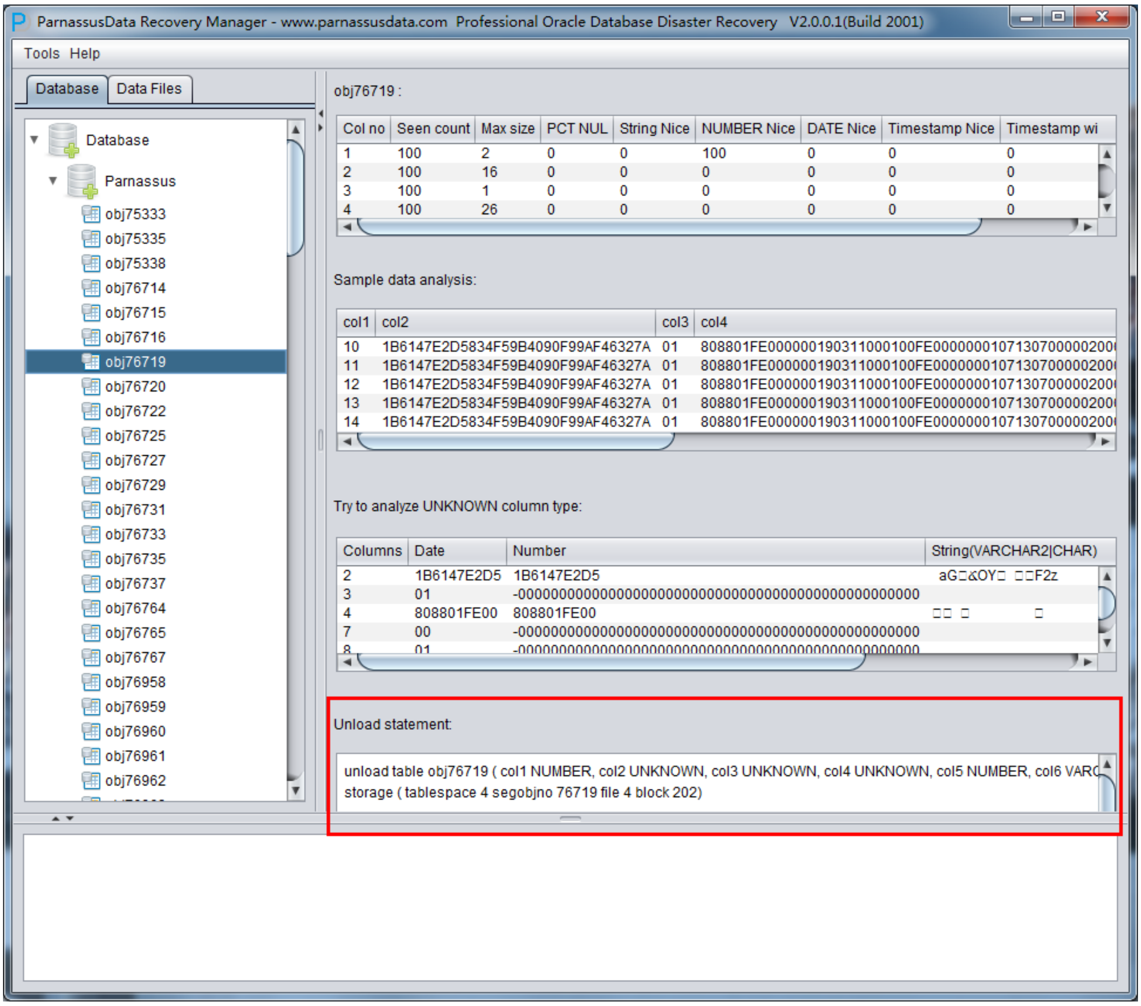
```
unload table obj76719 ( col1 NUMBER, col2 UNKNOWN, col3 UNKNOWN, col4 UNKNOWN, col5 NUMBER, col6 VARC
storage ( tablespace 4 segobjno 76719 file 4 block 202)
```

If PRM cannot recognize the column's data type , you can specify data type by yourself.

So far, PRM does not support below types:
XDB.XDB$RAW_LIST_T、XMLTYPE、Customized TYPE

Unload Statement:

PRM generated unload scripts, and these scripts can be only used by PRM support engineers.



obj76719 :

Col no	Seen count	Max size	PCT NUL	String Nice	NUMBER Nice	DATE Nice	Timestamp Nice	Timestamp wi
1	100	2	0	0	100	0	0	0
2	100	16	0	0	0	0	0	0
3	100	1	0	0	0	0	0	0
4	100	26	0	0	0	0	0	0

Sample data analysis:

col1	col2	col3	col4
10	1B6147E2D5834F59B4090F99AF46327A	01	808801FE000000190311000100FE0000000107130700000200
11	1B6147E2D5834F59B4090F99AF46327A	01	808801FE000000190311000100FE0000000107130700000200
12	1B6147E2D5834F59B4090F99AF46327A	01	808801FE000000190311000100FE0000000107130700000200
13	1B6147E2D5834F59B4090F99AF46327A	01	808801FE000000190311000100FE0000000107130700000200
14	1B6147E2D5834F59B4090F99AF46327A	01	808801FE000000190311000100FE0000000107130700000200

Try to analyze UNKNOWN column type:

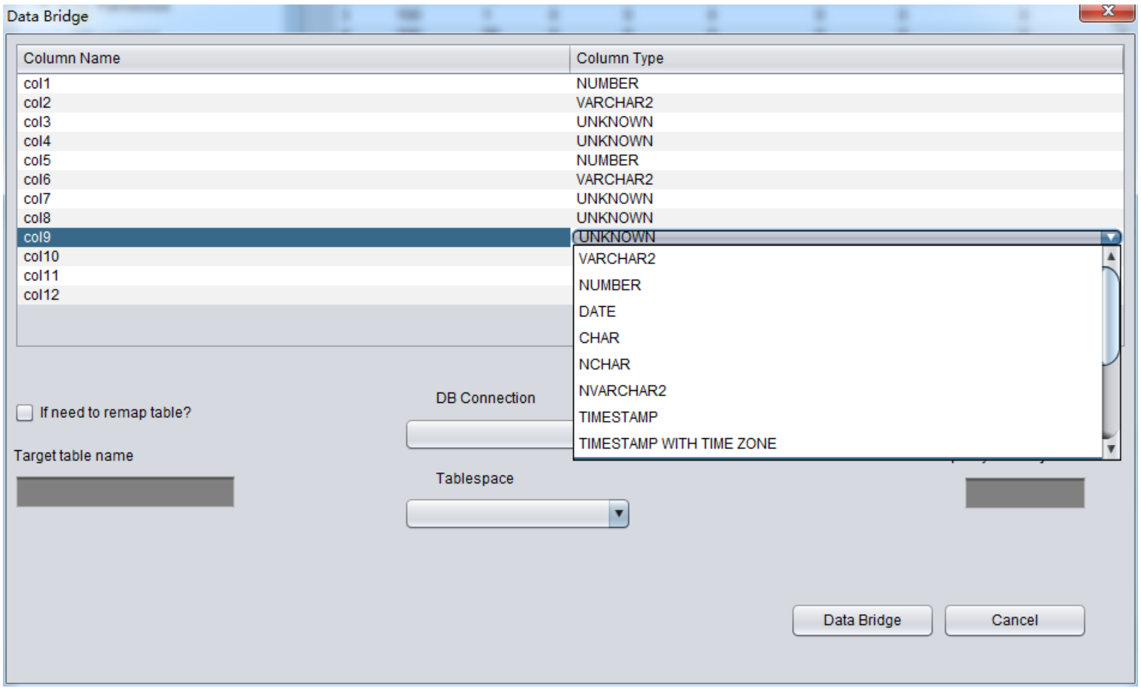
Columns	Date	Number	String(VARCHAR2|CHAR)
2	1B6147E2D5	1B6147E2D5	aG□&OY□ □□F2z
3	01	-0000000000000000000000000000000000000000000000000	
4	808801FE00	808801FE00	□□ □ □
7	00	-0000000000000000000000000000000000000000000000000	
8	01	-0000000000000000000000000000000000000000000000000	

Unload statement:

```
unload table obj76719 ( col1 NUMBER, col2 UNKNOWN, col3 UNKNOWN, col4 UNKNOWN, col5 NUMBER, col6 VARC
storage ( tablespace 4 segobjno 76719 file 4 block 202)
```

In "Non-Dictionary Mode", Data Bridge is also applicable. Comparing " Dictionary Mode", the manger difference that the user can define the type in data transferring. As below picture, the column type is UNKNOW. These types might be PRM unsupported types for example: XML and etc.

If the user know the data type in this table (from schema design documents), it is necessary to specify the correct types manually.



Column Name	Column Type
col1	NUMBER
col2	VARCHAR2
col3	UNKNOWN
col4	UNKNOWN
col5	NUMBER
col6	VARCHAR2
col7	UNKNOWN
col8	UNKNOWN
col9	UNKNOWN
col10	
col11	
col12	

CASE 5:deleted System Tablespace and Part of User tablespace datafile by mistake

User D deleted the system tablespace and part of user tablespace datafile by mistake.

In this circumstance, part of user data table was deleted, and this might includes datafile which stored segment header. Therefore it is better to use “Scan Tables From Extents” than” Scan Tables From Segment Header”.

Steps as Below:

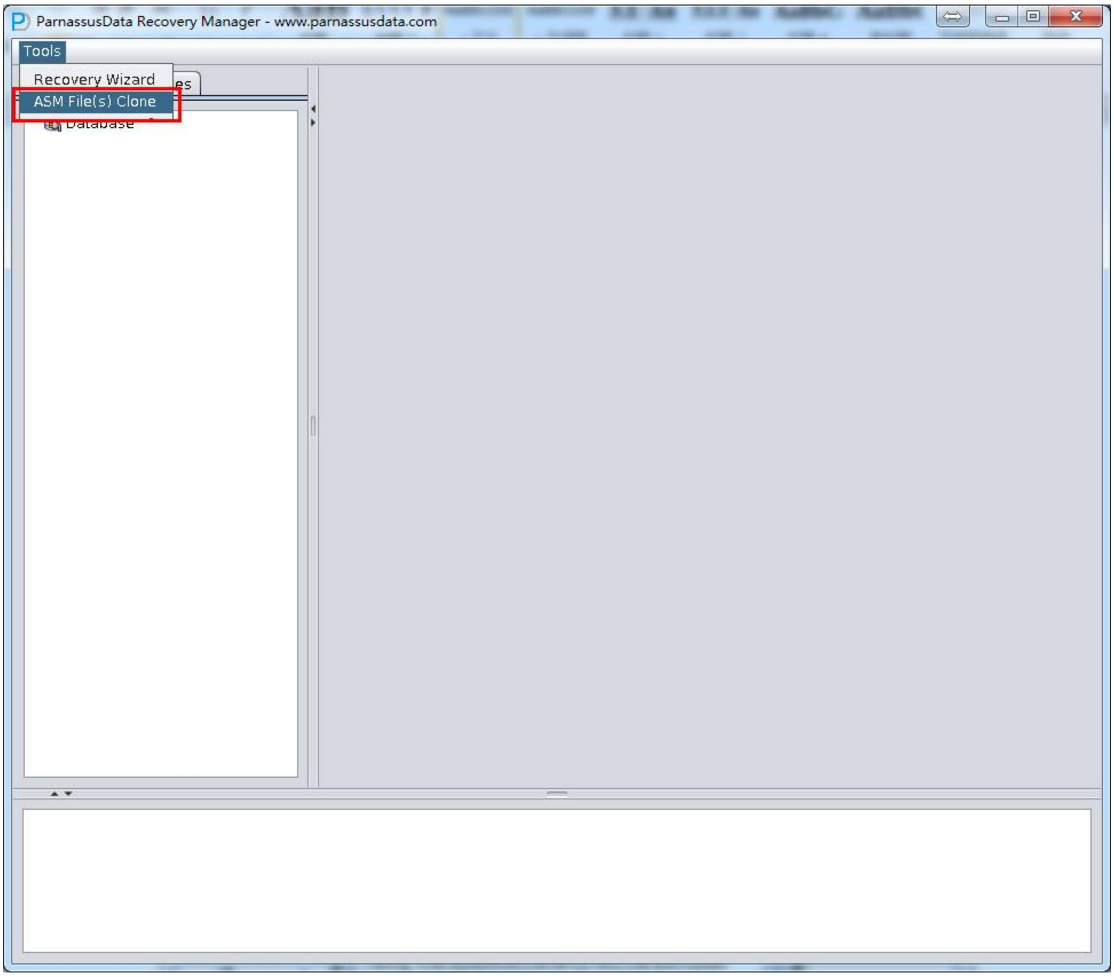
1. Go to Recovery Wizard, select No-Dictionary mode , and added all usable data file. Then process them to scan database.
2. Select database, and right click Scan Tables From Extents
3. Analyze the data and implement data extraction and Data Bright
4. Following steps are the same with Case 4

CASE 6: rescue datafile from damaged diskgroup which can't be mounted

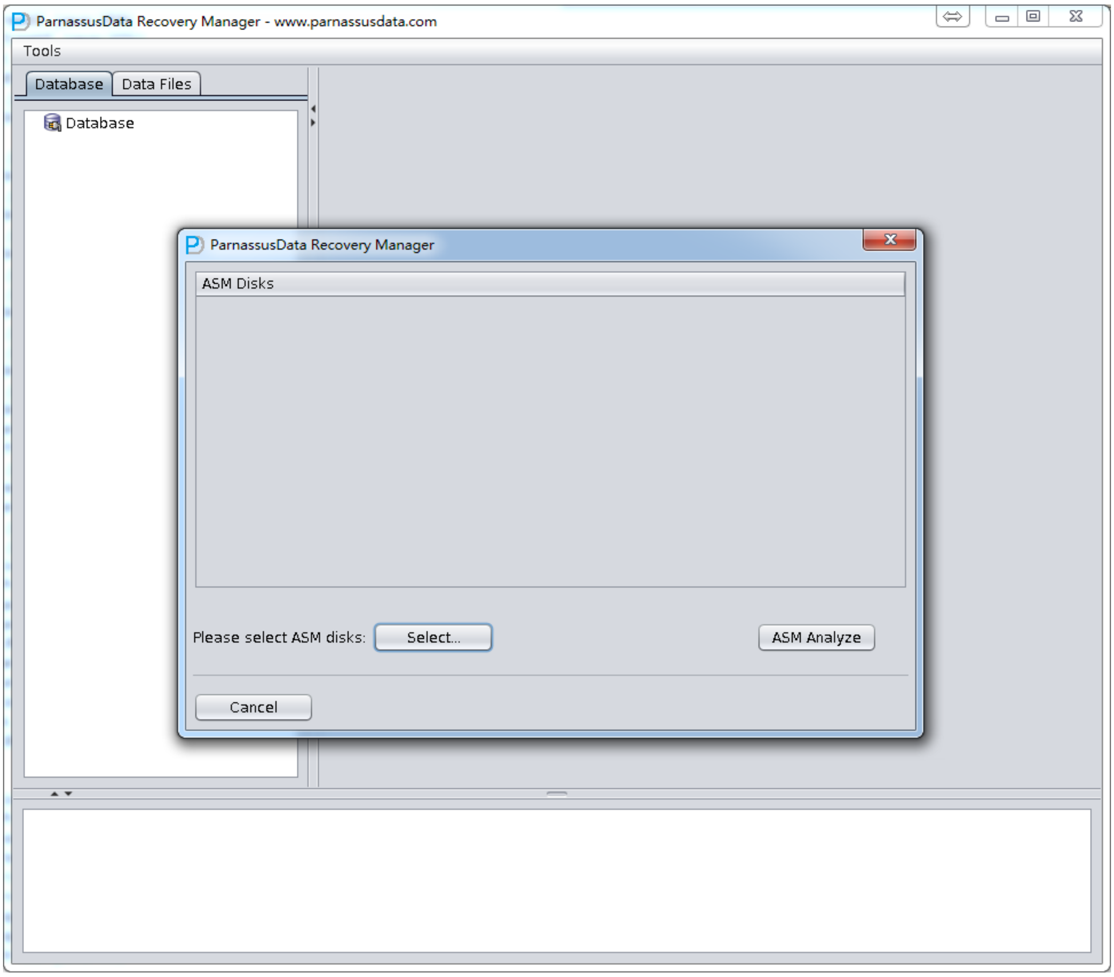
User D chooses ASM instead of other filesystem. Since there are many bugs in version 11.2.0.1, it may happen that ASM DISKGROUP cannot be mounted or it does not work after repairing ASM Disk Header.

In this circumstance, user can use ASM Files Clone feature of PRM to rescue datafile from damaged ASM DiskGroup directly.

1. Open main interface, and select ASM File(s) Clone:



2. Enter ASM Disks Window, and click SELECt…to add ASM Disks. For example: /dev/asm-disk5(linux). And click ASM analyze.



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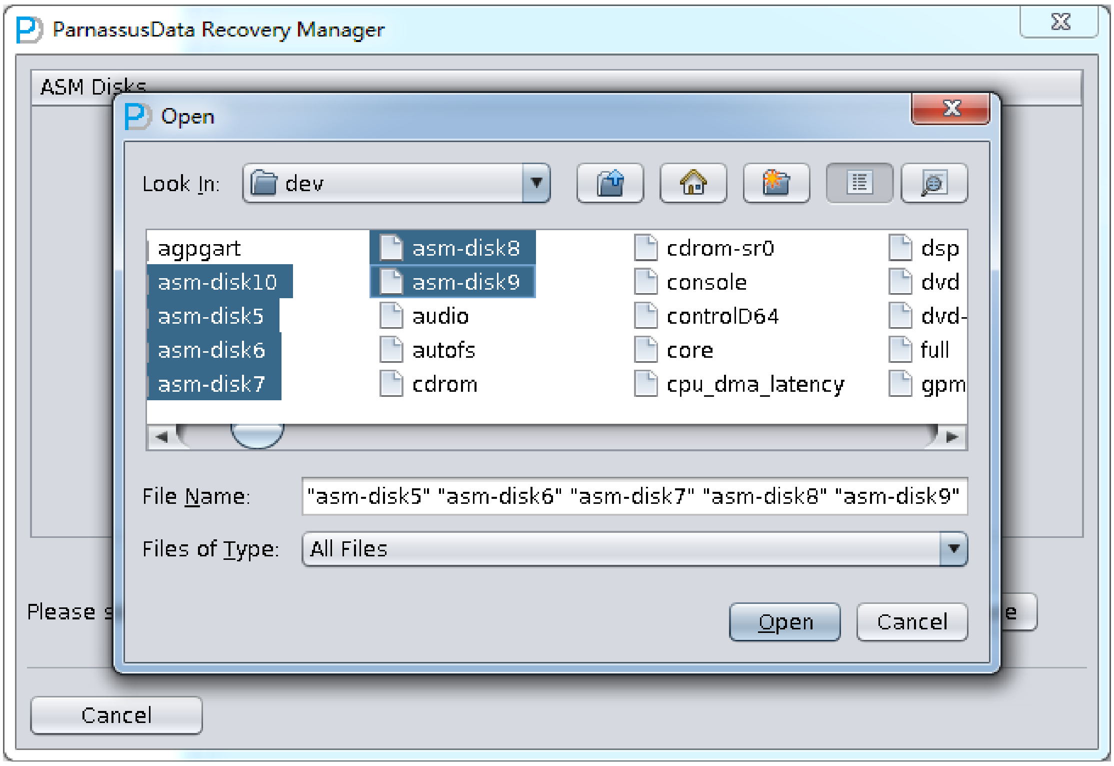
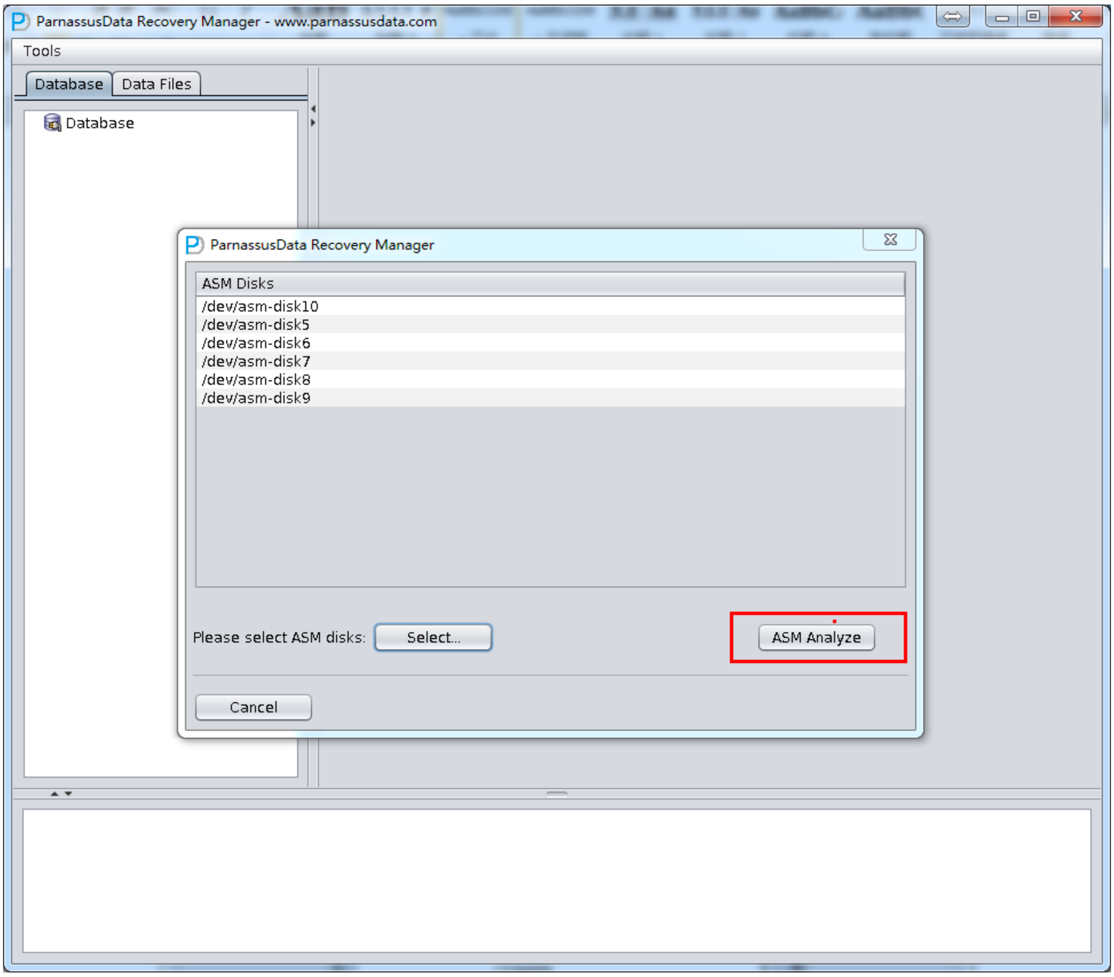
Tools
Database
Data Files
Database
ParnassusData Recovery Manager
ASM Disks
Please select ASM disks:
Select...
ASM Analyze
Cancel



File Name: "asm-disk5" "asm-disk6" "asm-disk7" "asm-disk8" "asm-disk9"

Files of Type: All Files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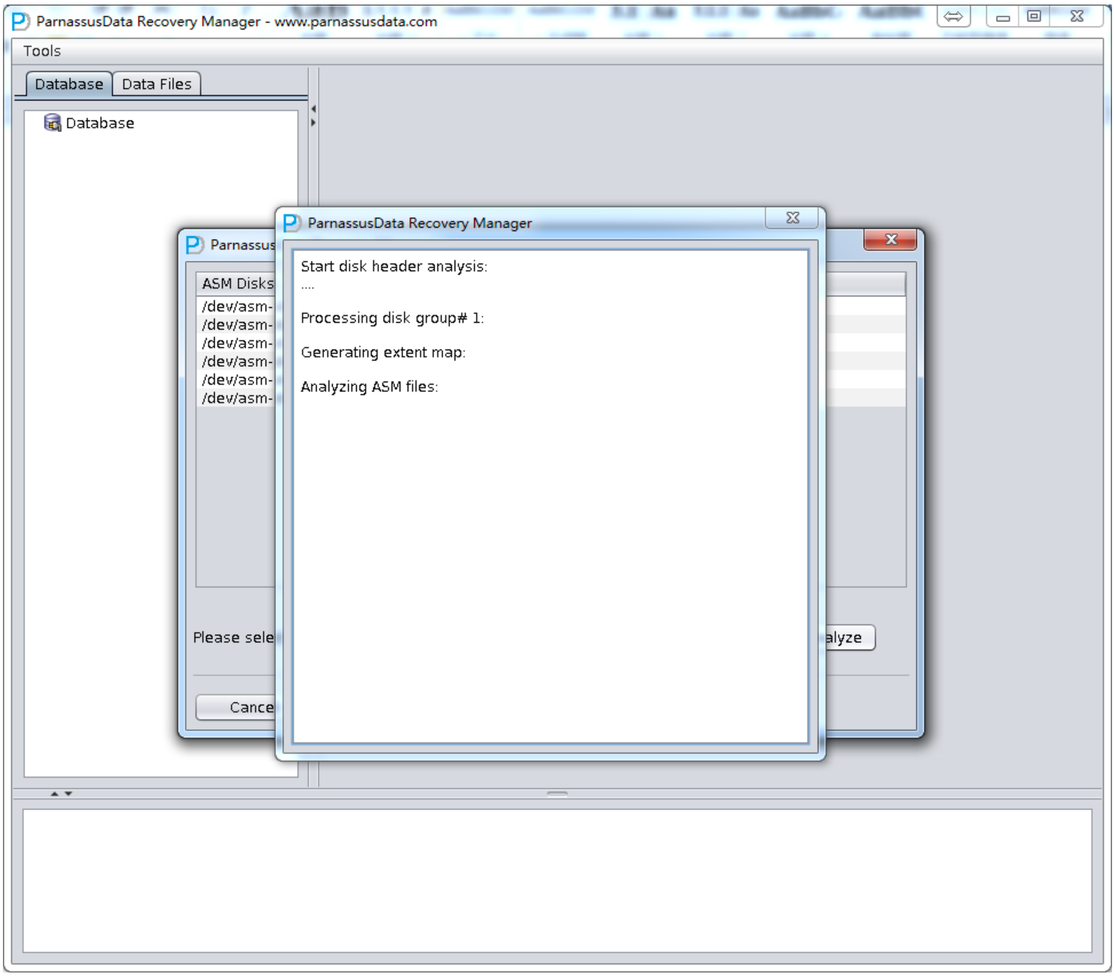
Tools
Database
Data Files
Database
ParnassusData Recovery Manager

ASM Disks
/dev/asm-disk10
/dev/asm-disk5
/dev/asm-disk6
/dev/asm-disk7
/dev/asm-disk8
/dev/asm-disk9

Please select ASM disks:
Select...
ASM Analyze
Cancel

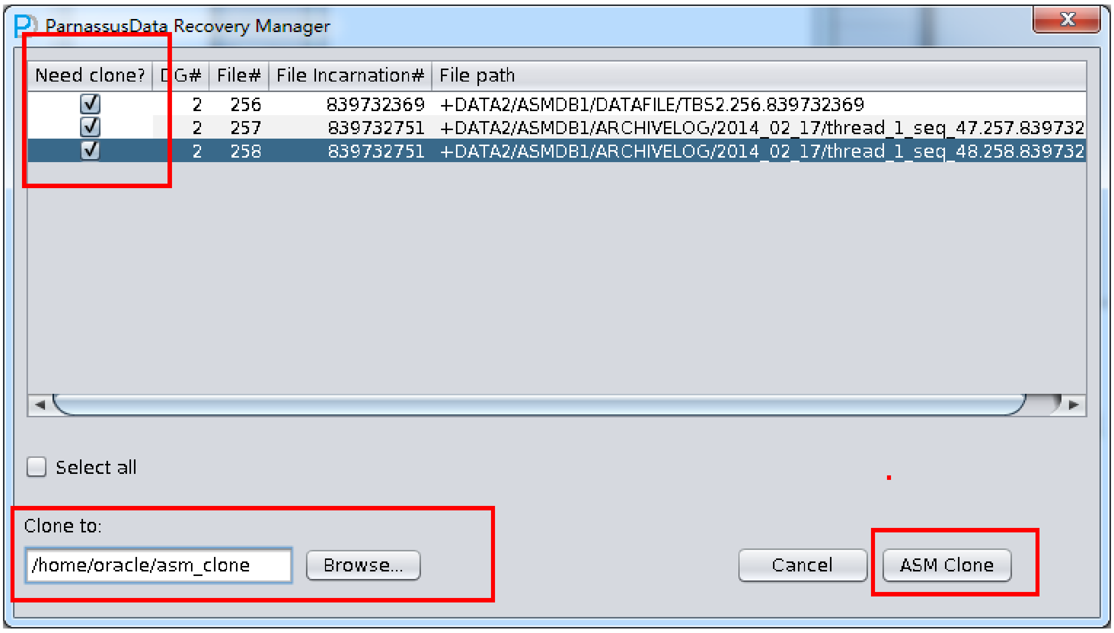
3. ASM Files Clone feature will analyze ASM Disk header, in order to finding Disk group file and File Extent Map. All the information is recorded into PRM embedded database. PRM can collect all Metadata, and analyze to show diagram.



```
Start disk header analysis:
....
Processing disk group# 1:
Generating extent map:
Analyzing ASM files:
```

4. After analysis of ASM Analyze, PRM will find the file list in Disk groups. Users can select the datafile/archivelog which need to be cloned to destination folder.

Click ASM Clone to start…

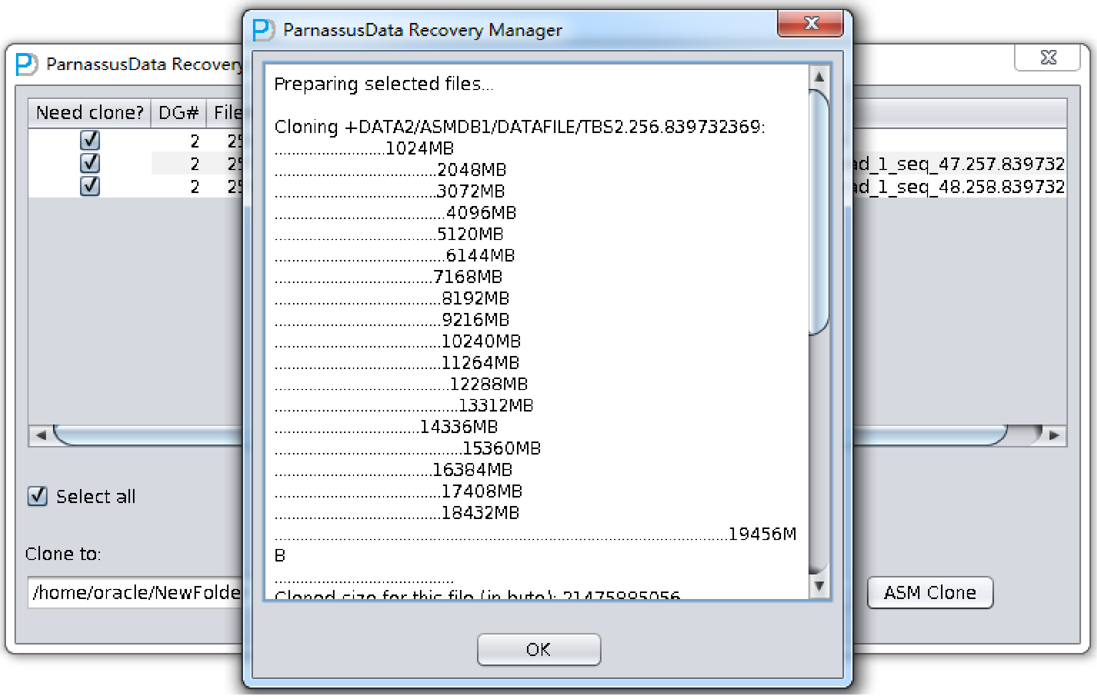


Need clone?	DG#	File#	File Incarnation#	File path
☑	2	256	839732369	+DATA2/ASMDB1/DATAFILE/TBS2.256.839732369
☑	2	257	839732751	+DATA2/ASMDB1/ARCHIVELOG/2014_02_17/thread_1_seq_47.257.839732
☑	2	258	839732751	+DATA2/ASMDB1/ARCHIVELOG/2014_02_17/thread_1_seq_48.258.839732

☐ Select all

Clone to: /home/oracle/asm_clone

There is progress bar while file cloning.



Need clone?	DG#	File
☑	2	25
☑	2	25
☑	2	25

```
Preparing selected files...

Cloning +DATA2/ASMDB1/DATAFILE/TBS2.256.839732369:
..........................1024MB
......................................2048MB
......................................3072MB
........................................4096MB
......................................5120MB
........................................6144MB
.....................................7168MB
.......................................8192MB
.......................................9216MB
.......................................10240MB
.......................................11264MB
.........................................12288MB
............................................13312MB
..................................14336MB
............................................15360MB
.....................................16384MB
.......................................17408MB
.......................................18432MB
......................................................................................................19456M
B
......................................
Cloned size for this file (in byte): 21475885056
```

☑ Select all

Clone to: /home/oracle/NewFolde

ASM File Clone log as below:

```
Preparing selected files...

Cloning +DATA2/ASMDB1/DATAFILE/TBS2.256.839732369:
..........................1024MB
......................................2048MB
......................................3072MB
........................................4096MB
......................................5120MB
........................................6144MB
.....................................7168MB
.......................................8192MB
.......................................9216MB
.......................................10240MB
.......................................11264MB
.........................................12288MB
...........................................13312MB
..................................14336MB
............................................15360MB
.....................................16384MB
.......................................17408MB
.......................................18432MB
..........................................................................................................19456MB
..........................................
Cloned size for this file (in byte): 21475885056

Cloned successfully!


Cloning
+DATA2/ASMDB1/ARCHIVELOG/2014_02_17/thread_1_seq_47.257.839732751:
......
Cloned size for this file (in byte): 29360128

Cloned successfully!


Cloning
+DATA2/ASMDB1/ARCHIVELOG/2014_02_17/thread_1_seq_48.258.839732751:
......
Cloned size for this file (in byte): 1048576

Cloned successfully!




All selected files were cloned done.
```

5. It is necessary to validate cloned data via “dbv” or “rman validate”, for example:

```
rman target /


RMAN> catalog datafilecopy '/home/oracle/asm_clone/TBS2.256.839732369.dbf';

cataloged datafile copy
datafile copy file name=/home/oracle/asm_clone/TBS2.256.839732369.dbf RECID=2
STAMP=839750901

RMAN> validate datafilecopy '/home/oracle/asm_clone/TBS2.256.839732369.dbf';

Starting validate at 17-FEB-14
using channel ORA_DISK_1
channel ORA_DISK_1: starting validation of datafile
channel ORA_DISK_1: including datafile copy of datafile 00016 in backup set
input file name=/home/oracle/asm_clone/TBS2.256.839732369.dbf
channel ORA_DISK_1: validation complete, elapsed time: 00:03:35
List of Datafile Copies
=======================
File Status Marked Corrupt Empty Blocks Blocks Examined High SCN
---- ------ -------------- ------------ --------------- ----------
16   OK     0              2621313      2621440         1945051
  File Name: /home/oracle/asm_clone/TBS2.256.839732369.dbf
  Block Type Blocks Failing Blocks Processed
  ---------- -------------- ----------------
  Data       0              0
  Index      0              0
  Other      0              127

Finished validate at 17-FEB-14
```

When using PRM in ASM of ASMLIB?

Simple and Clear: asmlib related ASM DISK is stored in OS as ll /dev/oracleasm/disks.

For example: Add files of /dev/oracleasm/disks into PRM ASM DISK

```
$ll /dev/oracleasm/disks
  total 0
  brw-rw----   1 oracle dba 8,   97 Apr 28 15:20 VOL001
  brw-rw----   1 oracle dba 8,   81 Apr 28 15:20 VOL002
  brw-rw----   1 oracle dba 8,   65 Apr 28 15:20 VOL003
  brw-rw----   1 oracle dba 8,   49 Apr 28 15:20 VOL004
  brw-rw----   1 oracle dba 8,   33 Apr 28 15:20 VOL005
  brw-rw----   1 oracle dba 8,   17 Apr 28 15:20 VOL006
```

```
    brw-rw----    1 oracle dba 8, 129 Apr 28 15:20 VOL007
    brw-rw----    1 oracle dba 8, 113 Apr 28 15:20 VOL008
```

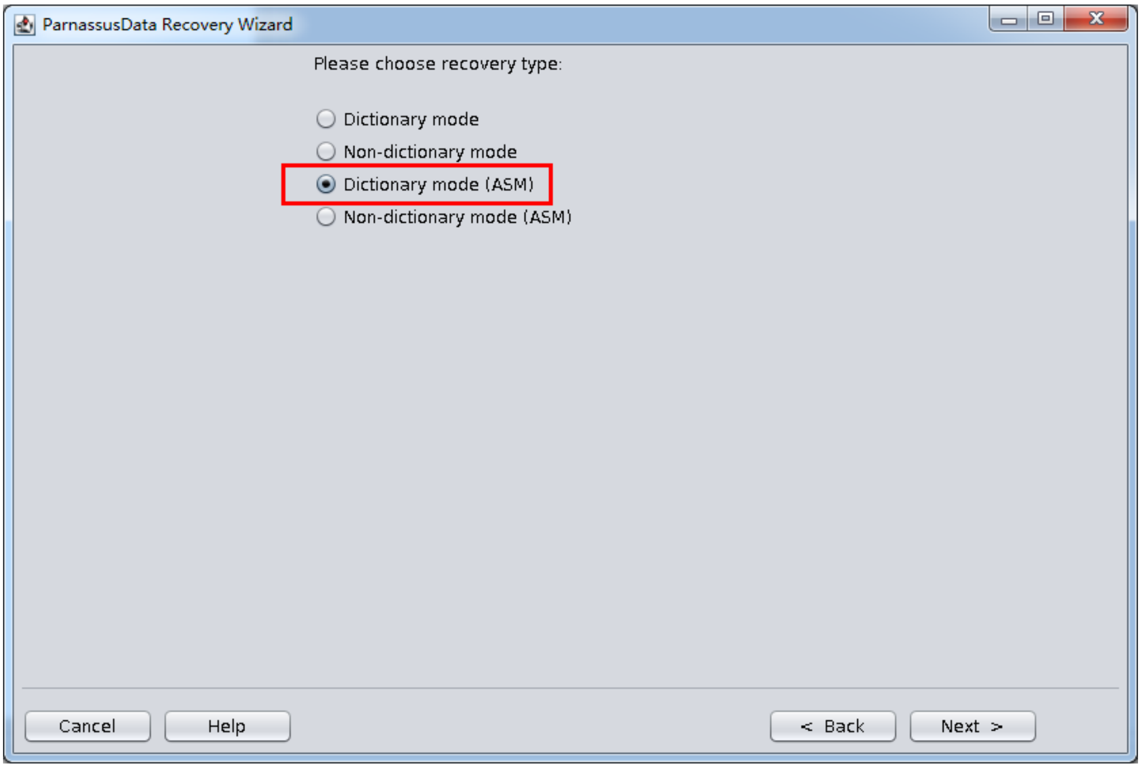
CASE 7: DB(stored in ASM) can not be opened

One of CRM database in company D can’t be opened due to adding disk which has I/O error into ASM diskgroup. This operation generated some corrupted block in datafile of system tablespace, and user failed to open DB any more.

In the circumstance, we can use PRM ASM Diskgroup to clone all datafile out of ASM.

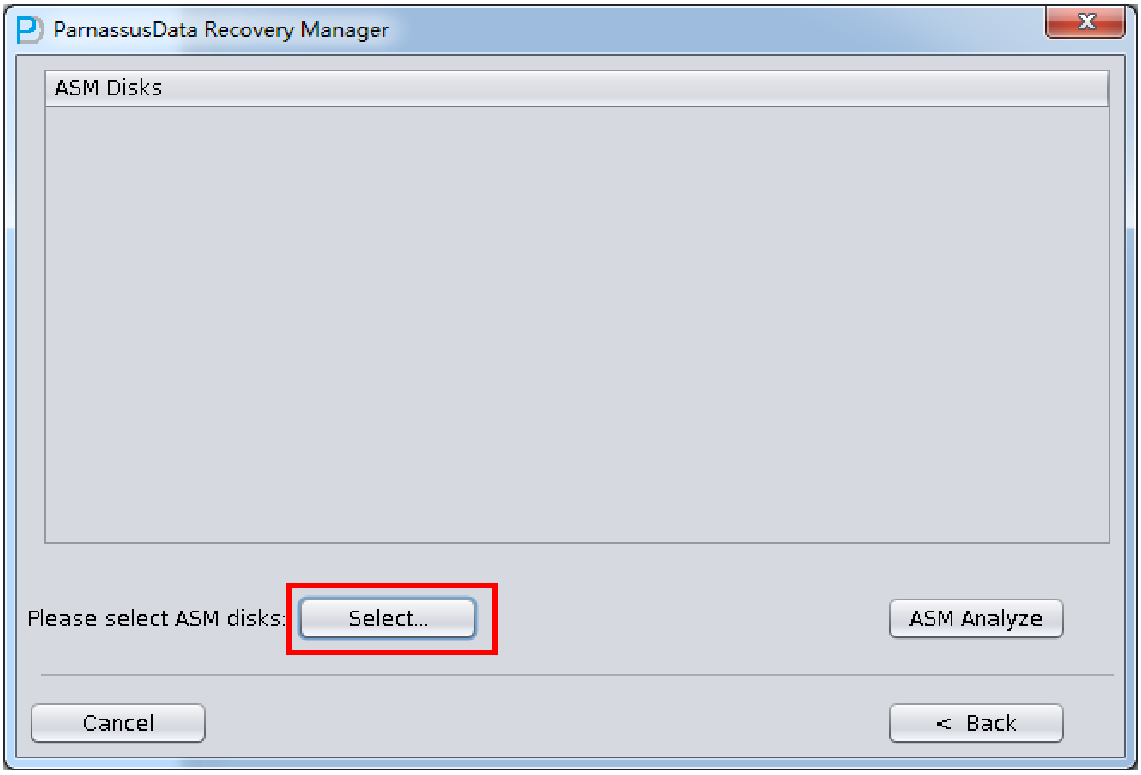
Or, user can also use “Dictionary Mode(ASM)” to recover data from this ASM environment . Steps as below:

1. Recovery Wizard
2. Dictionary Mode(ASM)
3. Add ASM DISK (all ASM DISK in your recovery disks)
4. Click ASM analyze
5. Select suitable Endian
6. In ASM analyze, it lists all database file, or click “select all”
7. Click “load”, following steps are the same with case3

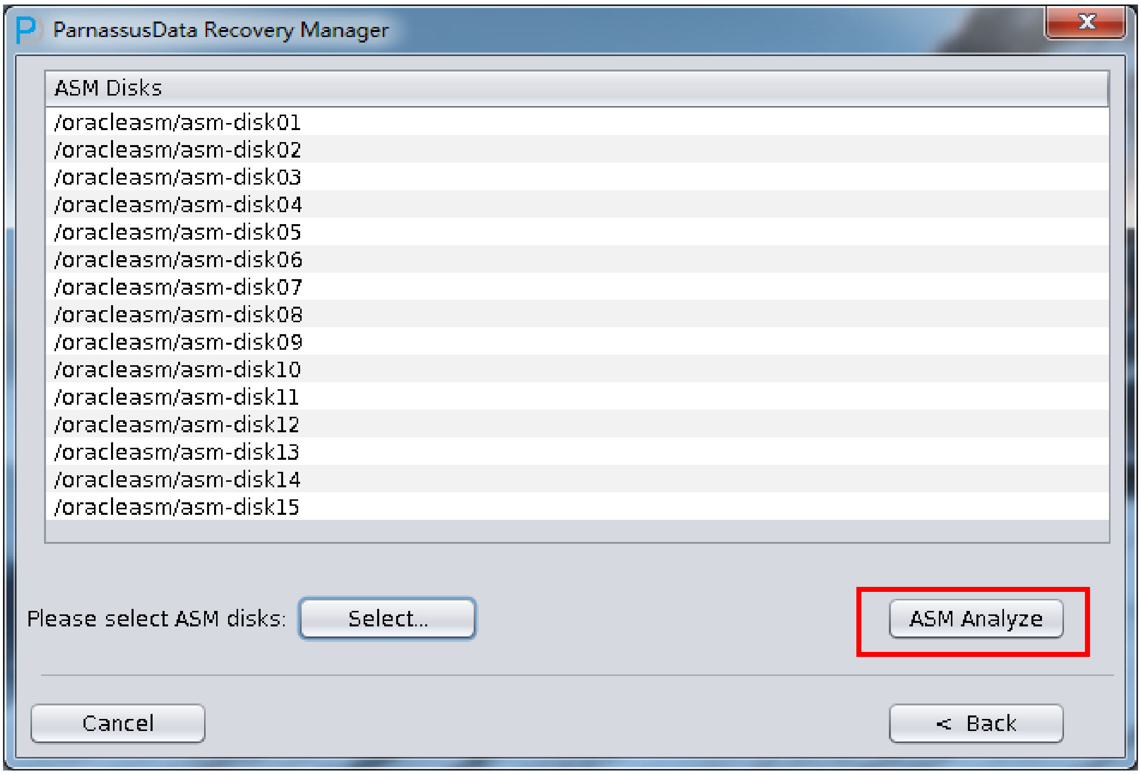


Please choose recovery type:

○ Dictionary mode
○ Non-dictionary mode
● Dictionary mode (ASM)
○ Non-dictionary mode (ASM)

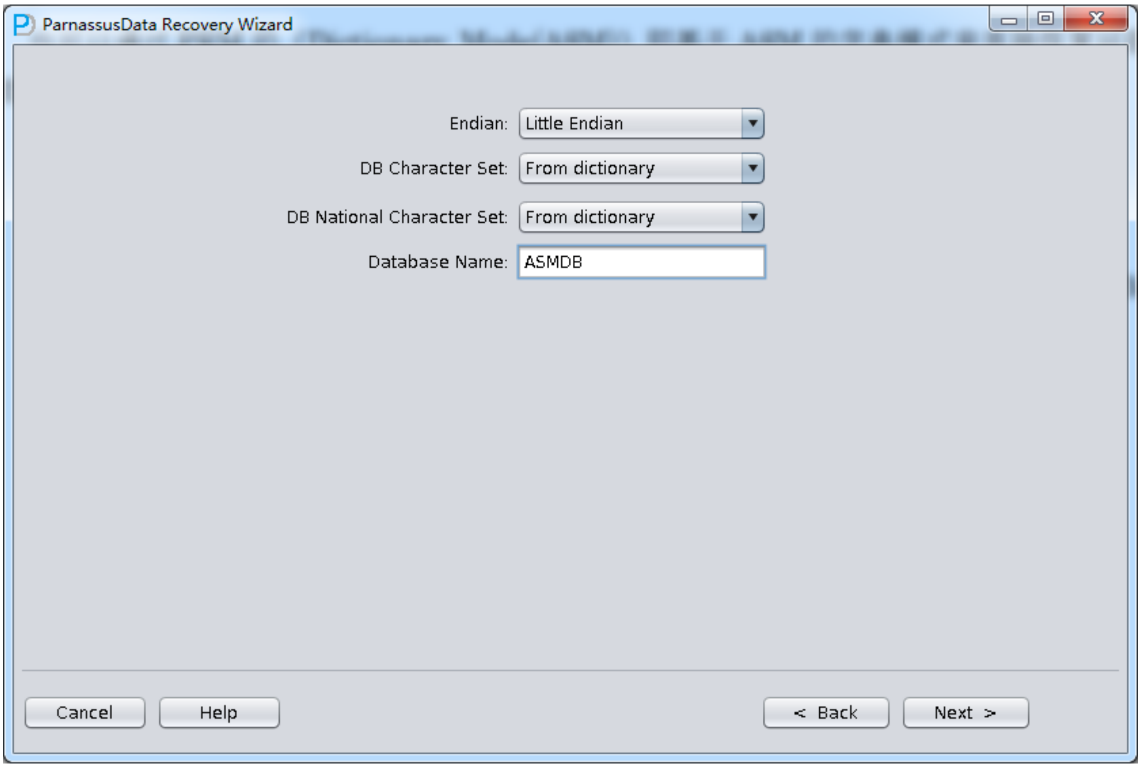


Please select ASM disks:



ASM Disks
/oracleasm/asm-disk01
/oracleasm/asm-disk02
/oracleasm/asm-disk03
/oracleasm/asm-disk04
/oracleasm/asm-disk05
/oracleasm/asm-disk06
/oracleasm/asm-disk07
/oracleasm/asm-disk08
/oracleasm/asm-disk09
/oracleasm/asm-disk10
/oracleasm/asm-disk11
/oracleasm/asm-disk12
/oracleasm/asm-disk13
/oracleasm/asm-disk14
/oracleasm/asm-disk15

Please select ASM disks:

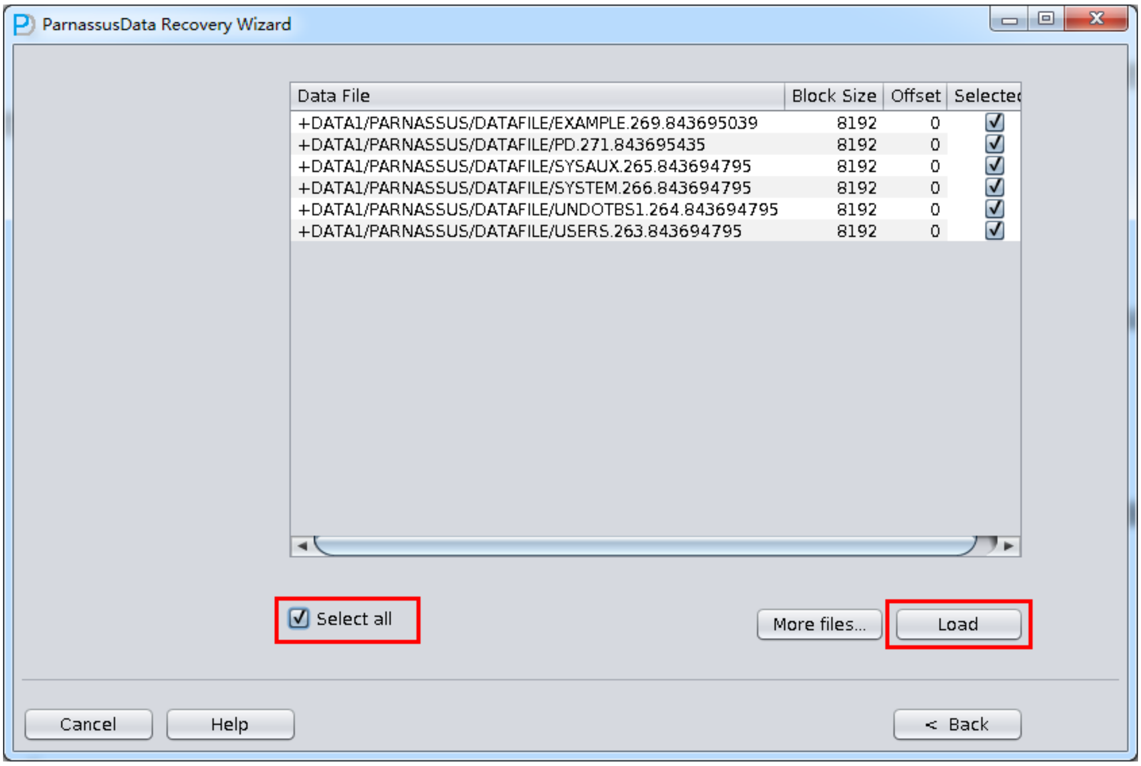


Endian: Little Endian

DB Character Set: From dictionary

DB National Character Set: From dictionary

Database Name: ASMDB



Data File	Block Size	Offset	Selected
+DATA1/PARNASSUS/DATAFILE/EXAMPLE.269.843695039	8192	0	☑
+DATA1/PARNASSUS/DATAFILE/PD.271.843695435	8192	0	☑
+DATA1/PARNASSUS/DATAFILE/SYSAUX.265.843694795	8192	0	☑
+DATA1/PARNASSUS/DATAFILE/SYSTEM.266.843694795	8192	0	☑
+DATA1/PARNASSUS/DATAFILE/UNDOTBS1.264.843694795	8192	0	☑
+DATA1/PARNASSUS/DATAFILE/USERS.263.843694795	8192	0	☑

☑ Select all

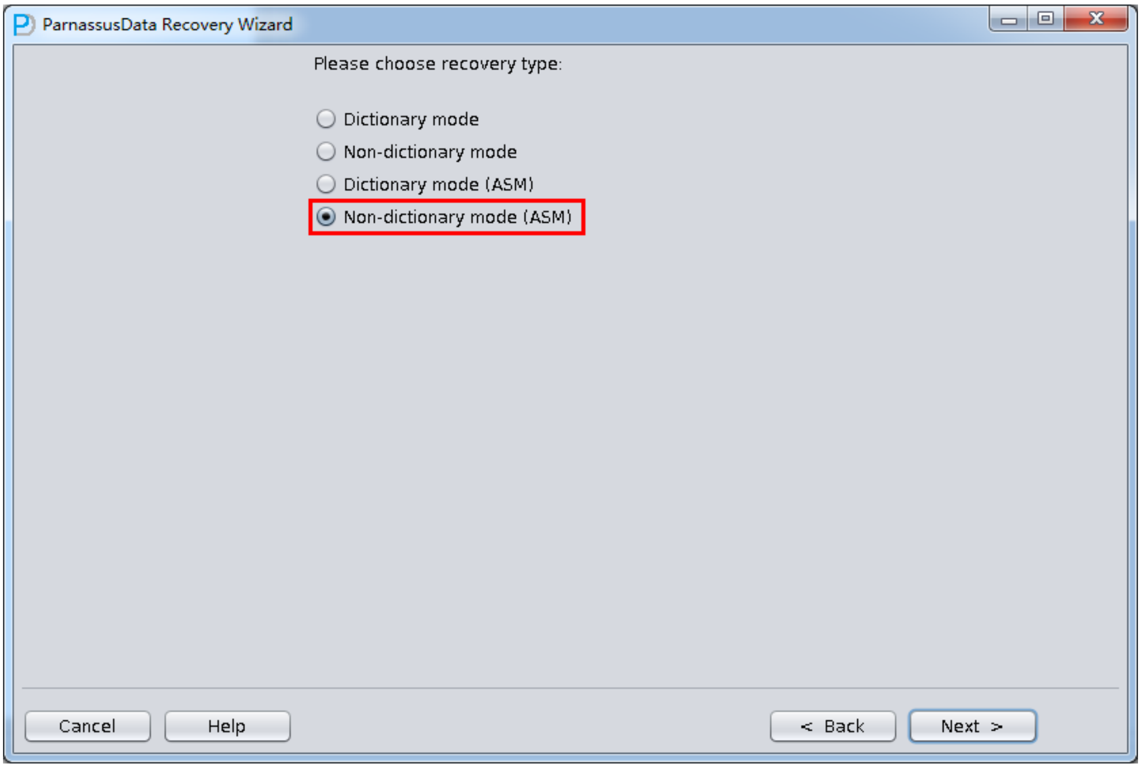
CASE 8: Recover Lost system tablespace in ASM

User D deleted system tablespace FILE#=1 datafile and user tablespace. This make alter database open failed.

In this circumstance, user can use” Non-Dictionary Mode (ASM)” to recover data.

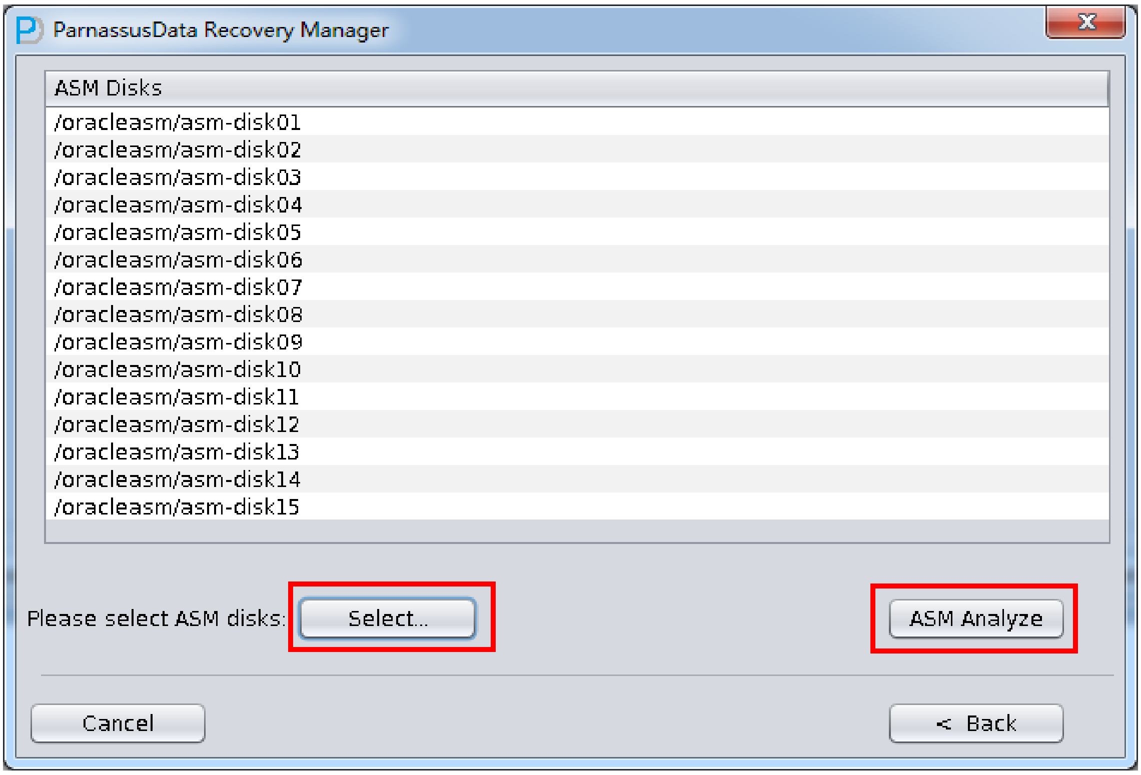
Steps as below:

1. Recovery Wizard
2. Non-Dictionary Mode (ASM)
3. Add necessary ASM Disk
4. Click ASM analyze
5. Select the suitable Endian and Character set. (Manually select character set due to Non-Dictionary Mode)
6. Select all data file, or click “Select all”
7. Click “scan”, following steps are the same with Case 3



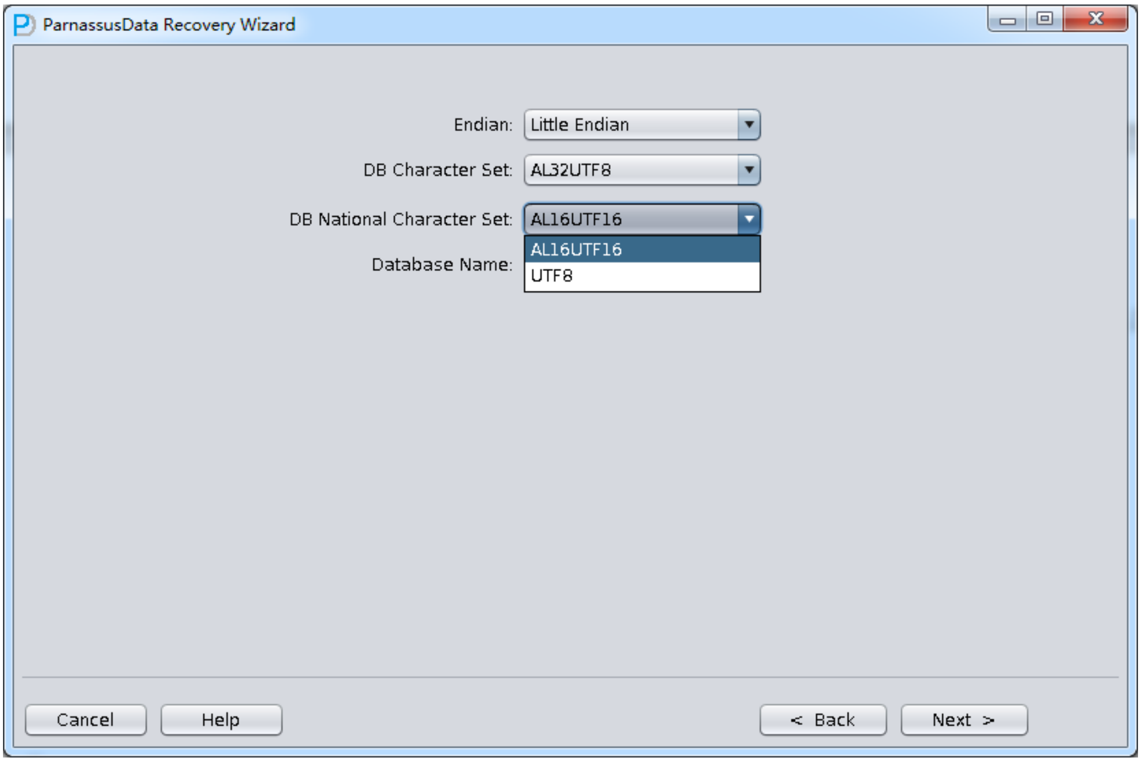
Please choose recovery type:

○ Dictionary mode
○ Non-dictionary mode
○ Dictionary mode (ASM)
● Non-dictionary mode (ASM)



ASM Disks
/oracleasm/asm-disk01
/oracleasm/asm-disk02
/oracleasm/asm-disk03
/oracleasm/asm-disk04
/oracleasm/asm-disk05
/oracleasm/asm-disk06
/oracleasm/asm-disk07
/oracleasm/asm-disk08
/oracleasm/asm-disk09
/oracleasm/asm-disk10
/oracleasm/asm-disk11
/oracleasm/asm-disk12
/oracleasm/asm-disk13
/oracleasm/asm-disk14
/oracleasm/asm-disk15

Please select ASM disks:

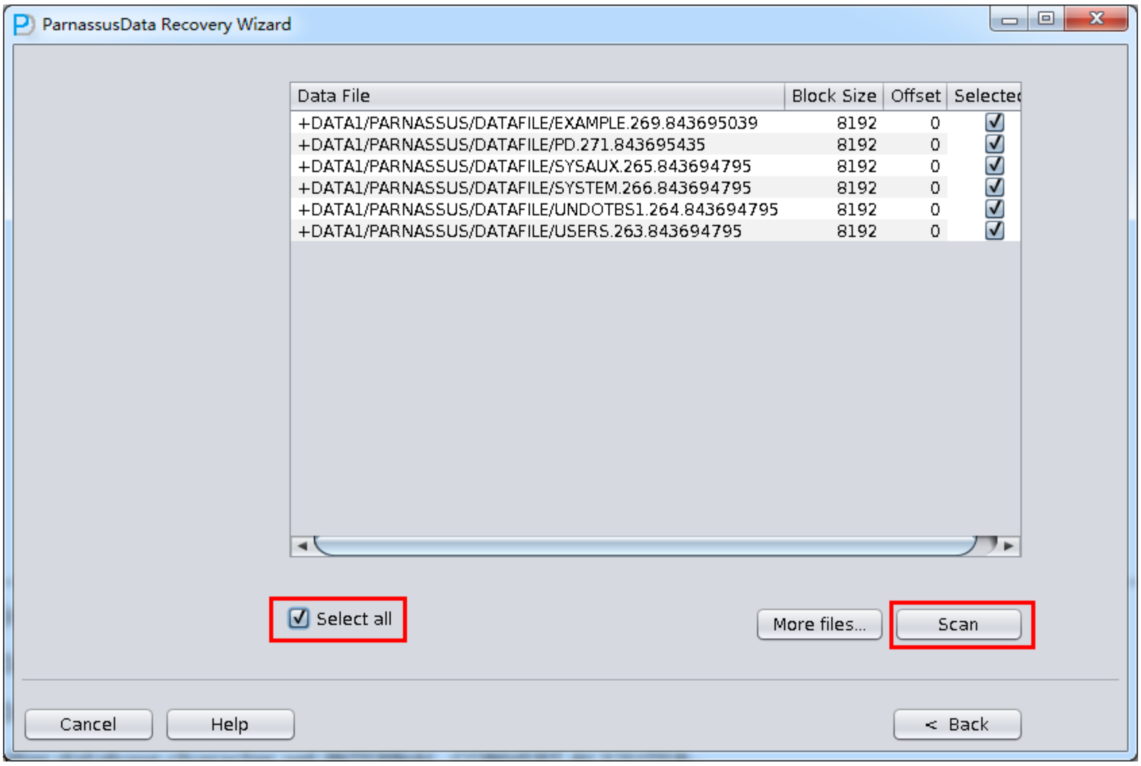


Endian: Little Endian

DB Character Set: AL32UTF8

DB National Character Set: AL16UTF16

Database Name:



Data File	Block Size	Offset	Selected
+DATA1/PARNASSUS/DATAFILE/EXAMPLE.269.843695039	8192	0	☑
+DATA1/PARNASSUS/DATAFILE/PD.271.843695435	8192	0	☑
+DATA1/PARNASSUS/DATAFILE/SYSAUX.265.843694795	8192	0	☑
+DATA1/PARNASSUS/DATAFILE/SYSTEM.266.843694795	8192	0	☑
+DATA1/PARNASSUS/DATAFILE/UNDOTBS1.264.843694795	8192	0	☑
+DATA1/PARNASSUS/DATAFILE/USERS.263.843694795	8192	0	☑

☑ Select all

CASE 9: Recover DROP TABLESPACE Data

User D dropped a tablespace(“DROP TABLESAPCE INCLUDING CONTENTS”) by mistake. They want to recover data resided in that tablespace, but there is no RMAN backup.

Therefore, we can use PRM No-Dictionary mode to recover data. In this way, we can extract most data. However, the data is not mapping to the dictionary. Users need to manually recognize the table. Since it changed data dictionary by DROPPING TABLE and deleted objects in OBJ$, we can not have the relationship between DATA_OBJECT_ID and OBJECT_NAME. Below is the instruction of getting mapping.

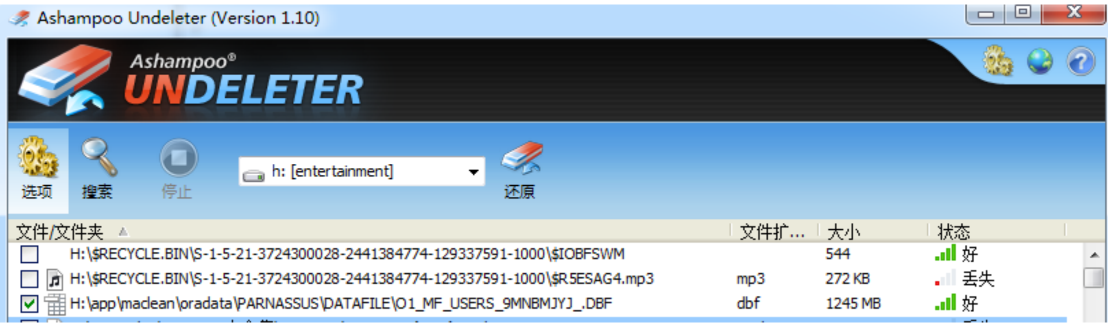
```
select tablespace_name,segment_type,count(*) from dba_segments where
owner='PARNASSUSDATA'  group by tablespace_name,segment_type;


TABLESPACE SEGMENT_TYPE        COUNT(*)
---------- --------------- ----------
USERS      TABLE                  126
USERS      INDEX                  136
```

```
SQL> select count(*) from obj$;

  COUNT(*)
----------
     75698



SQL> select current_scn, systimestamp from v$database;

CURRENT_SCN
-----------
SYSTIMESTAMP
---------------------------------------------------------------------------
    1895940
25-4 月 -14 09.18.00.628000 下午 +08:00




SQL> select file_name from dba_data_files where tablespace_name='USERS';

FILE_NAME
--------------------------------------------------------------------------------
H:¥PP¥MACLEAN¥ORADATA¥PARNASSUS¥DATAFILE¥O1_MF_USERS_9MNBMJYJ
_.DBF



SQL> drop tablespace users including contents;



C:¥Users¥maclean>dir
H:¥APP¥MACLEAN¥ORADATA¥PARNASSUS¥DATAFILE¥O1_MF_USERS_9MNBMJYJ
_.DBF

The volume is entertainment in drive H and SN is A87E-B792
```

H:¥APP¥MACLEAN¥ORADATA¥PARNASSUS¥DATAFILE

The drive can not find the file

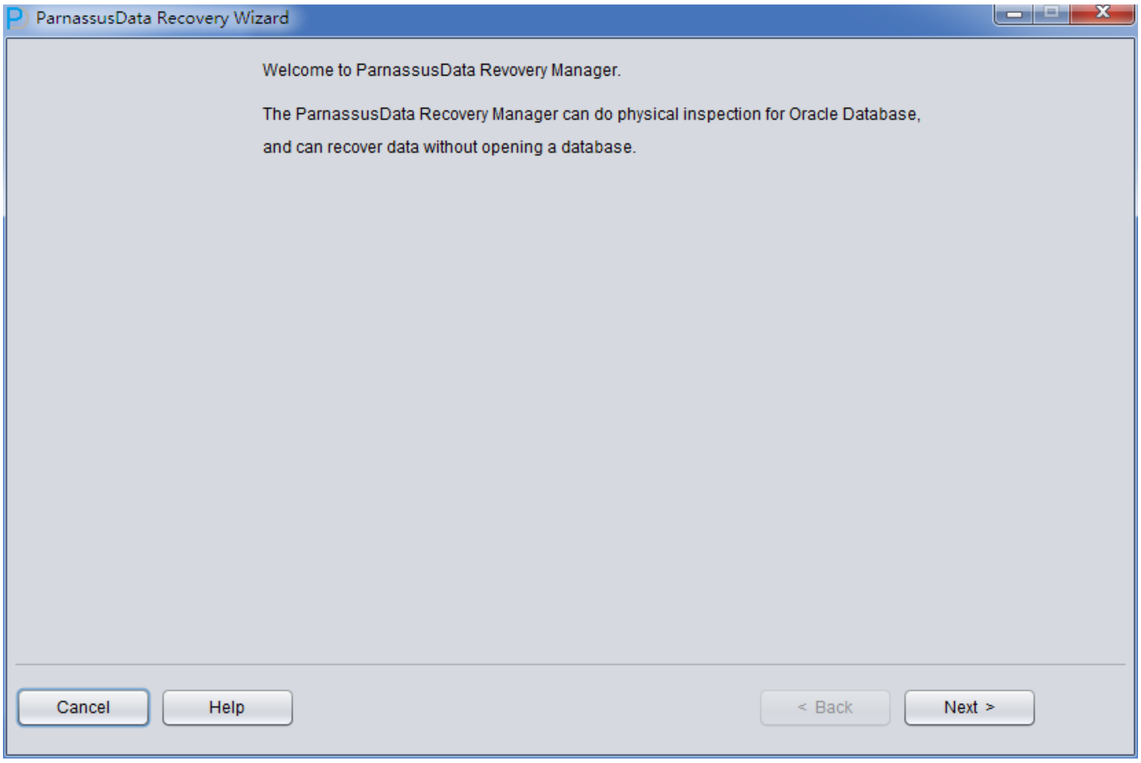
Here, we can use other file recovery tool for data file recovery, for example: Undeleter on Windows.



h: [entertainment]

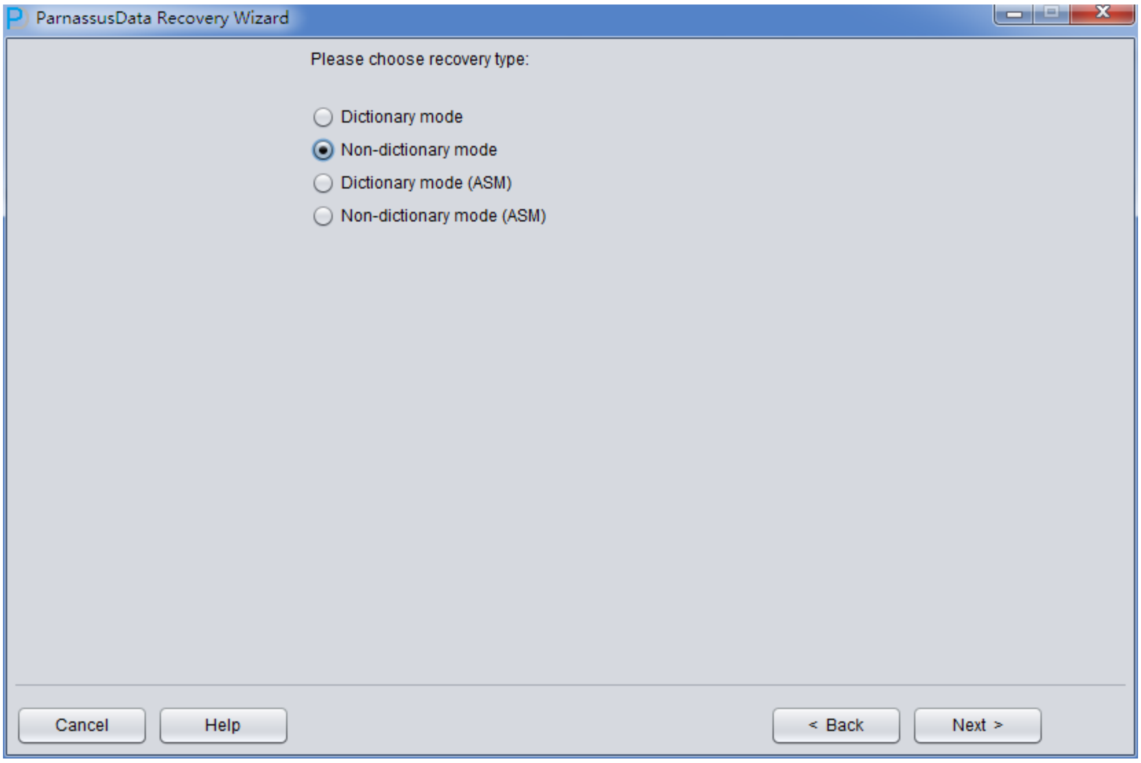
	文件/文件夹	文件扩...	大小	状态
□	H:\$RECYCLE.BIN\S-1-5-21-3724300028-2441384774-129337591-1000\$IOBFSWM		544	好
□	H:\$RECYCLE.BIN\S-1-5-21-3724300028-2441384774-129337591-1000\$R5ESAG4.mp3	mp3	272 KB	丢失
☑	H:\app\maclean\oradata\PARNASSUS\DATAFILE\O1_MF_USERS_9MNBMJYJ_.DBF	dbf	1245 MB	好

Startup PRM => recovery Wizard => No-Dictionary



Welcome to ParnassusData Revovery Manager.

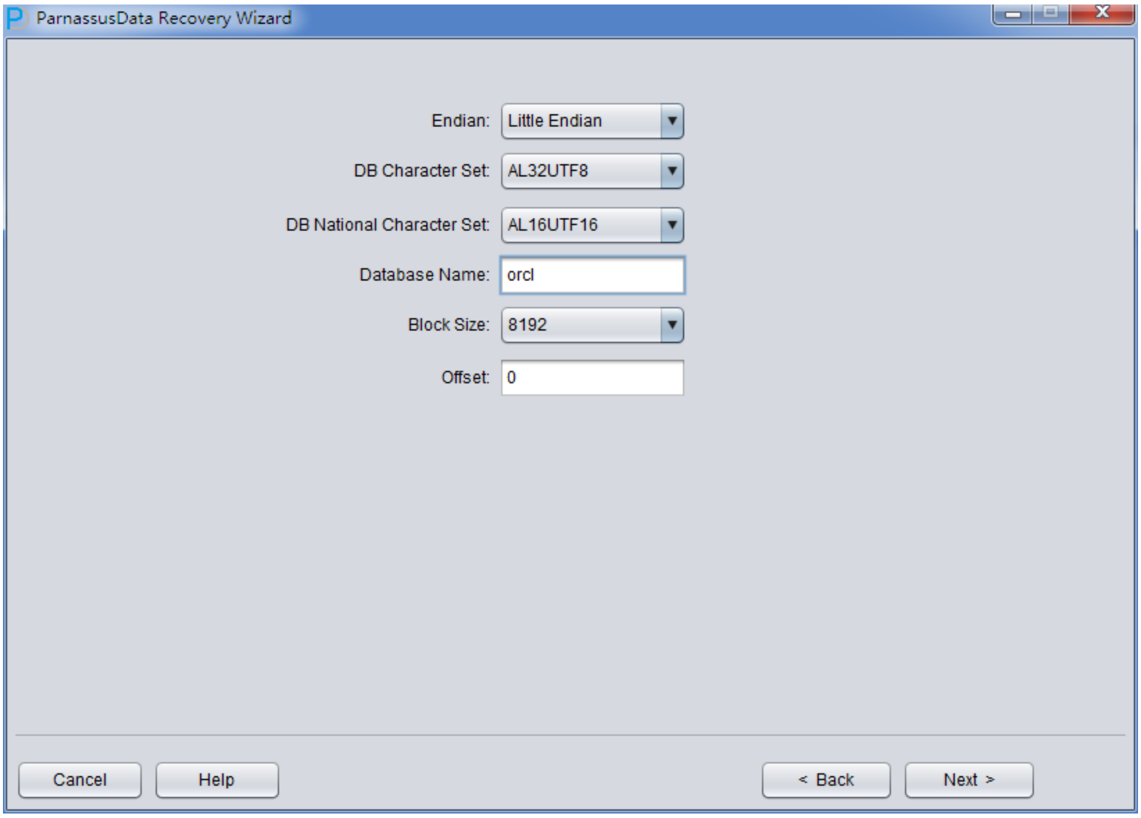
The ParnassusData Recovery Manager can do physical inspection for Oracle Database, and can recover data without opening a database.



Please choose recovery type:

○ Dictionary mode
● Non-dictionary mode
○ Dictionary mode (ASM)
○ Non-dictionary mode (ASM)

This is No-Dictionary mode, and please select correct character set



Endian: Little Endian

DB Character Set: AL32UTF8

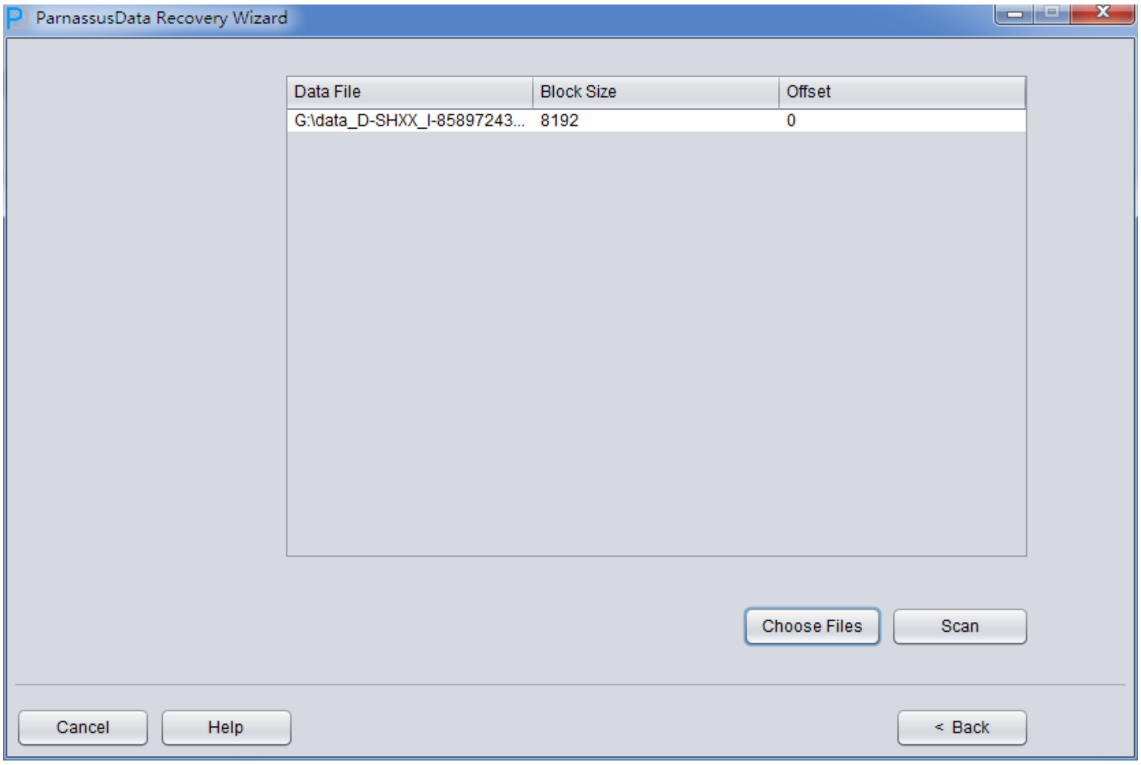
DB National Character Set: AL16UTF16

Database Name: orcl

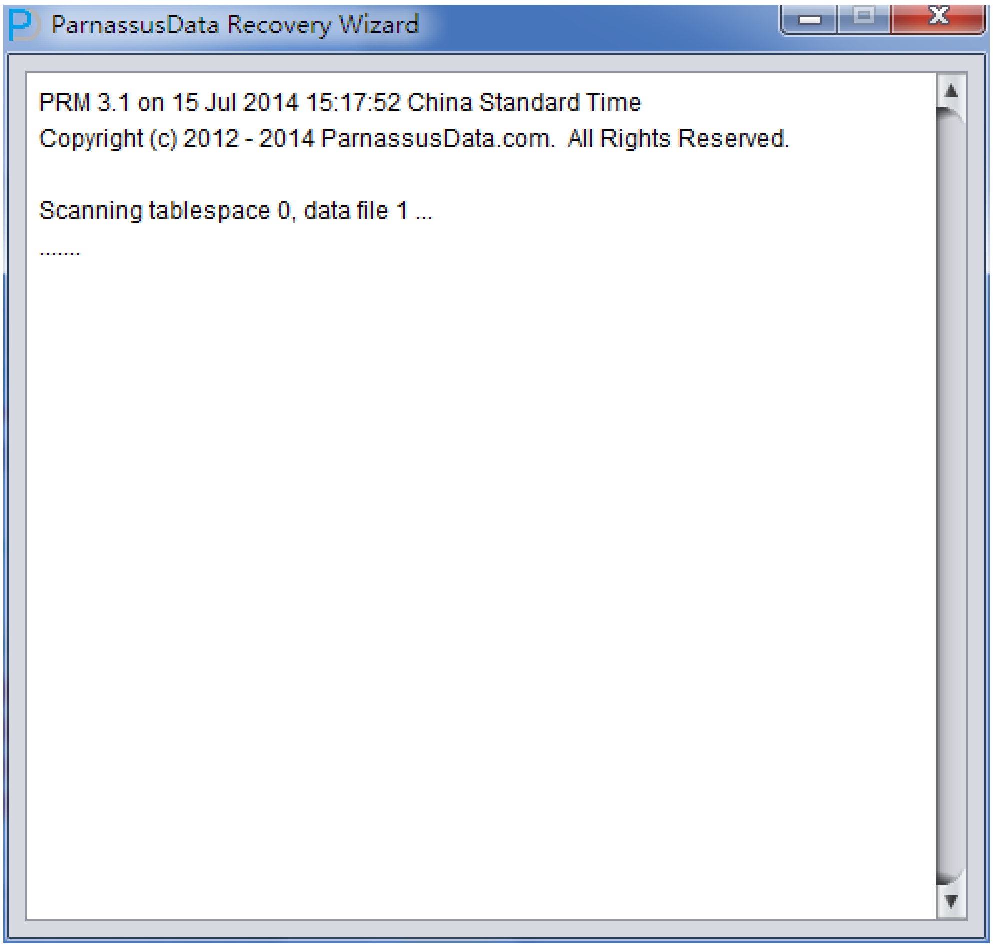
Block Size: 8192

Offset: 0

Add the files recovered and click scan

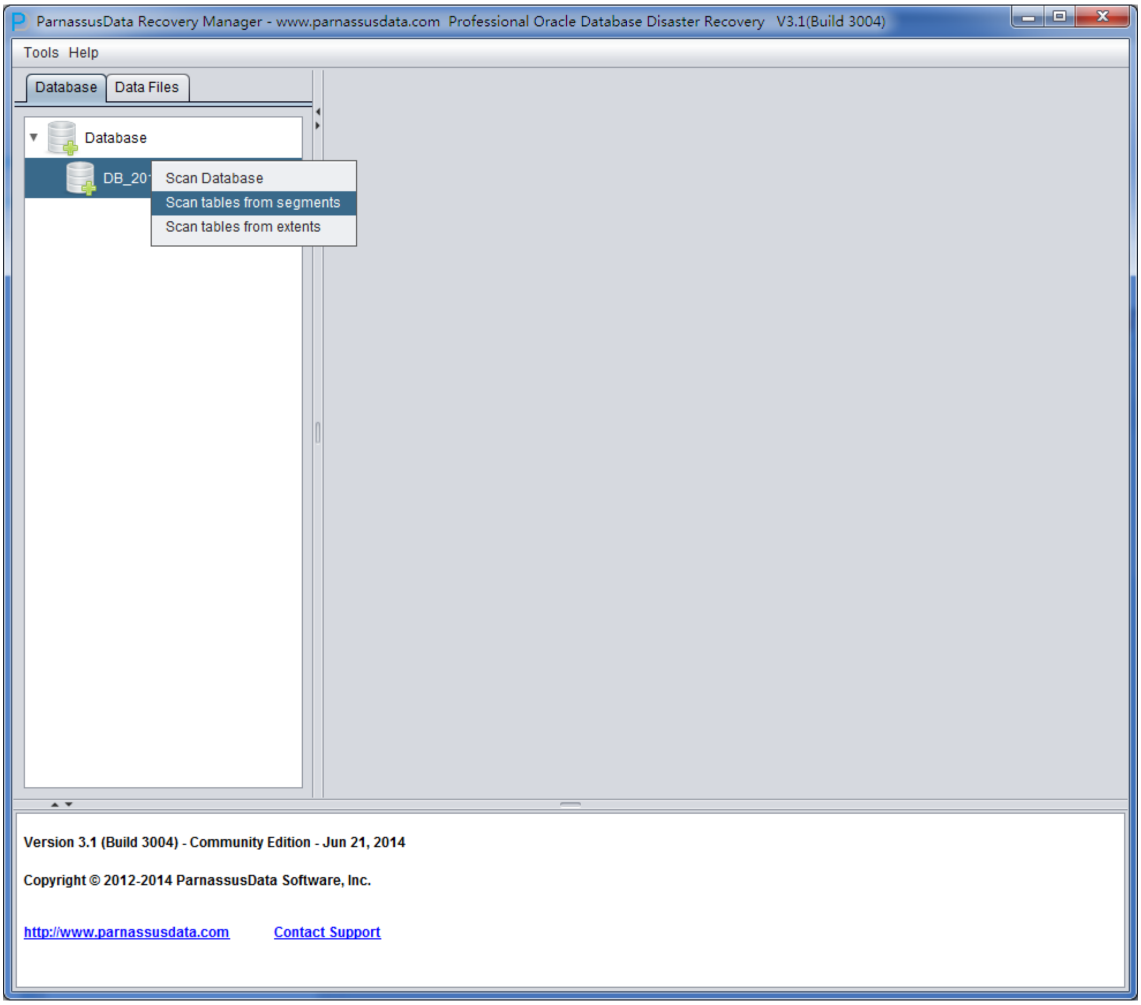


Data File	Block Size	Offset
G:\data_D-SHXX_I-85897243...	8192	0



```
PRM 3.1 on 15 Jul 2014 15:17:52 China Standard Time
Copyright (c) 2012 - 2014 ParnassusData.com.  All Rights Reserved.

Scanning tablespace 0, data file 1 ...
.......
```

Start from the head segments, if it can not find all table, try to use extend scan:



ParnassusData Recovery Manager - www.parnassusdata.com Professional Oracle Database Disaster Recovery V3.1(Build 3004)
Tools Help
Database
Data Files
Database
DB_20
Scan Database
Scan tables from segments
Scan tables from extents

Version 3.1 (Build 3004) - Community Edition - Jun 21, 2014

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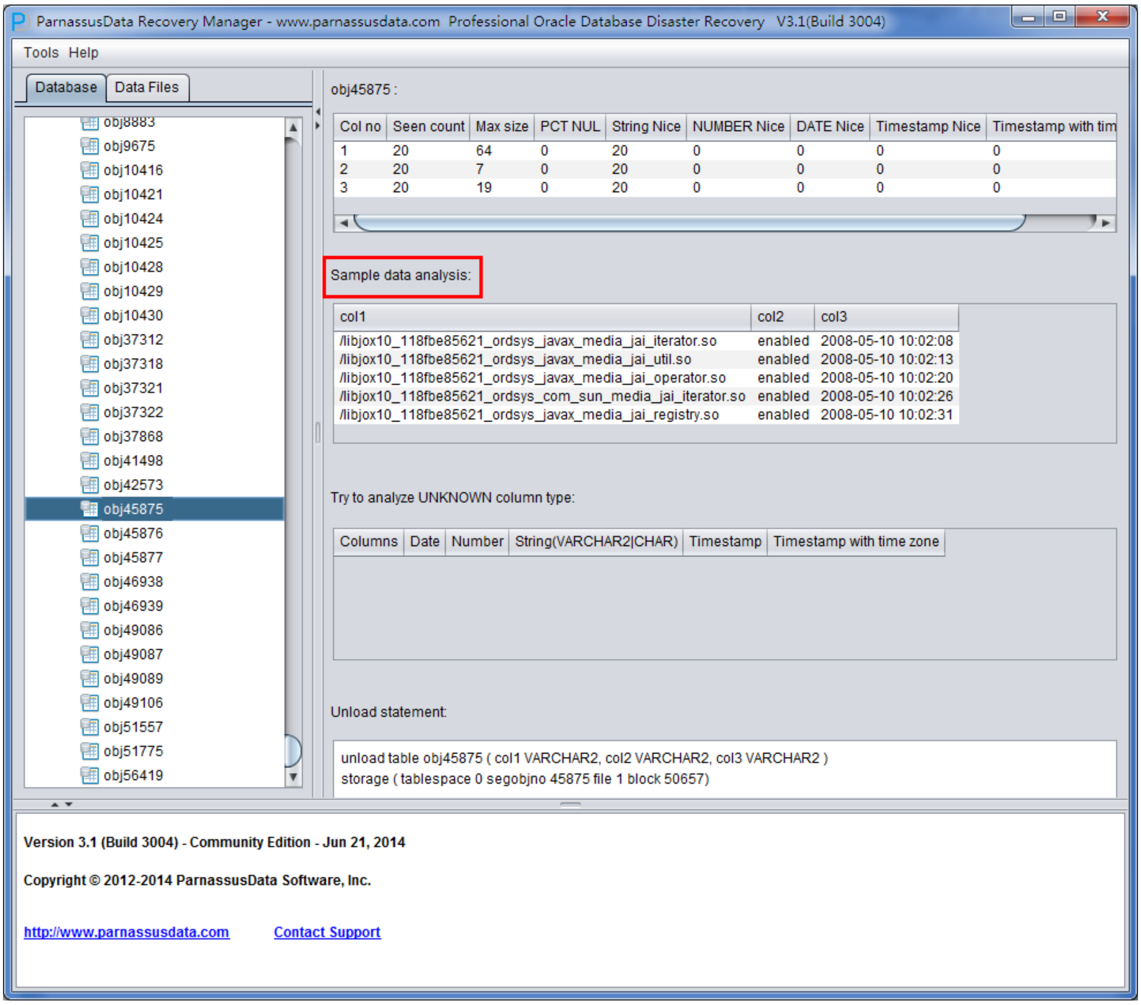
You can find lots of node named OBJXXXXX , this name is combination of "OBJ" and DATA_OBJECT_ID. We need some guy who is familiar with schema design and application data, he can clarify the relationship between data and table.



obj45875 :

Col no	Seen count	Max size	PCT NUL	String Nice	NUMBER Nice	DATE Nice	Timestamp Nice	Timestamp with tim
1	20	64	0	20	0	0	0	0
2	20	7	0	20	0	0	0	0
3	20	19	0	20	0	0	0	0

Sample data analysis:

col1	col2	col3
/libjox10_118fbe85621_ordsys_javax_media_jai_iterator.so	enabled	2008-05-10 10:02:08
/libjox10_118fbe85621_ordsys_javax_media_jai_util.so	enabled	2008-05-10 10:02:13
/libjox10_118fbe85621_ordsys_javax_media_jai_operator.so	enabled	2008-05-10 10:02:20
/libjox10_118fbe85621_ordsys_com_sun_media_jai_iterator.so	enabled	2008-05-10 10:02:26
/libjox10_118fbe85621_ordsys_javax_media_jai_registry.so	enabled	2008-05-10 10:02:31

Try to analyze UNKNOWN column type:

Columns	Date	Number	String(VARCHAR2|CHAR)	Timestamp	Timestamp with time zone

Unload statement:

```
unload table obj45875 ( col1 VARCHAR2, col2 VARCHAR2, col3 VARCHAR2 )
storage ( tablespace 0 segobjno 45875 file 1 block 50657)
```

Version 3.1 (Build 3004) - Community Edition - Jun 21, 2014

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If there is no body can clarify the relationship between data and table, try below methods:

In this case, only user tablespace had been dropped and Oracle still works, and to get the mapping of DATA_OBJECT_ID and table name by FLASHBACK QUERY.

```
SQL>   select count(*) from sys.obj$;

   COUNT(*)
----------
     75436
```

```
SQL> select count(*) from sys.obj$ as of scn 1895940;
select count(*) from sys.obj$ as of scn 1895940
                                   *
Error:
ORA-01555: Snapshot is too old,
```

Try to use DBA_HIST_SQL_PLAN of AWR and find the mapping between OBJECT# and OBJECT_NAME in recent 7 days.

```
SQL> desc DBA_HIST_SQL_PLAN
 NAME                                          NULL? TYPE
 ----------------------------------------- -------- ----------------------
 DBID                                      NOT NULL NUMBER
 SQL_ID                                    NOT NULL VARCHAR2(13)
 PLAN_HASH_VALUE                           NOT NULL NUMBER
 ID                                        NOT NULL NUMBER
 OPERATION                                          VARCHAR2(30)
 OPTIONS                                            VARCHAR2(30)
 OBJECT_NODE                                        VARCHAR2(128)
 OBJECT#                                            NUMBER
 OBJECT_OWNER                                       VARCHAR2(30)
 OBJECT_NAME                                        VARCHAR2(31)
 OBJECT_ALIAS                                       VARCHAR2(65)
 OBJECT_TYPE                                        VARCHAR2(20)
 OPTIMIZER                                          VARCHAR2(20)
 PARENT_ID                                          NUMBER
 DEPTH                                              NUMBER
 POSITION                                           NUMBER
 SEARCH_COLUMNS                                     NUMBER
 COST                                               NUMBER
 CARDINALITY                                        NUMBER
 BYTES                                              NUMBER
```

```
OTHER_TAG                                         VARCHAR2(35)
PARTITION_START                                   VARCHAR2(64)
PARTITION_STOP                                    VARCHAR2(64)
PARTITION_ID                                      NUMBER
OTHER                                             VARCHAR2(4000)
DISTRIBUTION                                      VARCHAR2(20)
CPU_COST                                          NUMBER
IO_COST                                           NUMBER
TEMP_SPACE                                        NUMBER
ACCESS_PREDICATES                                 VARCHAR2(4000)
FILTER_PREDICATES                                 VARCHAR2(4000)
PROJECTION                                        VARCHAR2(4000)
TIME                                              NUMBER
QBLOCK_NAME                                       VARCHAR2(31)
REMARKS                                           VARCHAR2(4000)
TIMESTAMP                                         DATE
OTHER_XML                                         CLOB
```

For exmaple：

```
select object_owner,object_name,object# from DBA_HIST_SQL_PLAN where
sql_id='avwjc02vb10j4'

OBJECT_OWNER                                      OBJECT_NAME
OBJECT#
-------------------- ---------------------------------------- ----------

PARNASSUSDATA                                     TORDERDETAIL_HIS
78688
```

Use below scrip for the mapping relationship between OBJECT_ID and OBJECT_NAME

```
  Select * from
  (select object_name,object# from DBA_HIST_SQL_PLAN
  UNION select object_name,object# from GV$SQL_PLAN) V1 where V1.OBJECT# IS
NOT NULL minus select name,obj# from sys.obj$;

  select obj#,dataobj#, object_name from WRH$_SEG_STAT_OBJ where object_name
not in (select name from sys.obJ$) order by object_name desc;



  another script：
  SELECT tab1.SQL_ID,
    current_obj#,
    tab2.sql_text
  FROM DBA_HIST_ACTIVE_SESS_HISTORY tab1,
    dba_hist_sqltext tab2
  WHERE tab1.current_obj# NOT IN
    (SELECT obj# FROM sys.obj$
    )
  AND current_obj#!=-1
  AND tab1.sql_id   =tab2.sql_id(+);
```

Attention: Since it relies on AWR repository, the mapping table is not that accurate and exact.

CASE 10: Recover Data after Dropping Table by mistake.

User D dropped one most important application table in ASM without any backup. Oracle introduced recyclebin feature in 10g. Please check whether the dropped table is in recyclebin by DBA_RECYCLEBINS view. If there is , try to recover data back by "flashback to before drop". Or, we can use PRM for recovery.

Recovery steps by PRM

1. OFFLINE the table space that the dropped table locates.
2. Find the DATA_OBJECT_ID of dropped table by query data dictionary or logminer. If not successfully, then user has to recognize this table in No-dictionary mode.
3. Start PRM, go to No-dictionary mode, and add all data files of dropped data file. Then SCAN DATABASE+SCAN TABLE from Extent MAP
4. Locate the data table by DATA_OBJECT_ID in object tress, and insert data back by DataBridge

```
SQL> select count(*) from "MACLEAN"."TORDERDETAIL_HIS";

  COUNT(*)
----------
    984359

SQL>
SQL> create table maclean.TORDERDETAIL_HIS1 as select * from maclean.TORDERDETAIL_HIS;

Table created.

SQL> drop table maclean.TORDERDETAIL_HIS;
```

```
Table dropped.
```

We can find the general DATA_OBJECT_ID by logminer or similar method in “CASE 9”

```
EXECUTE DBMS_LOGMNR.ADD_LOGFILE( LOGFILENAME => '/oracle/logs/log1.f',
OPTIONS => DBMS_LOGMNR.NEW);

EXECUTE DBMS_LOGMNR.ADD_LOGFILE( LOGFILENAME => '/oracle/logs/log2.f',
OPTIONS => DBMS_LOGMNR.ADDFILE);

Execute
DBMS_LOGMNR.START_LOGMNR(DBMS_LOGMNR.DICT_FROM_ONLINE_CATALO
G+DBMS_LOGMNR.COMMITTED_DATA_ONLY);

SELECT * FROM V$LOGMNR_CONTENTS ;

EXECUTE DBMS_LOGMNR.END_LOGMNR;
```

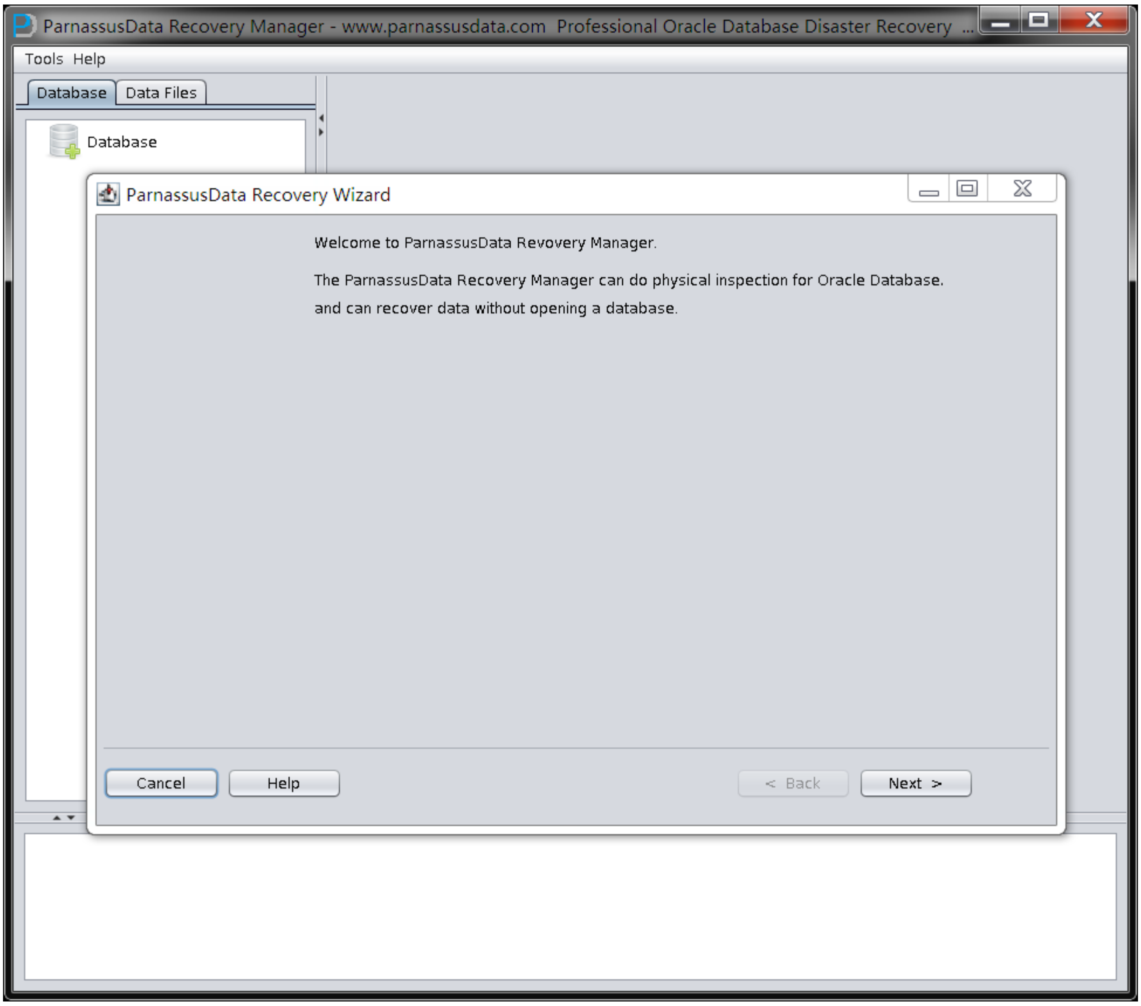
Although, there is no DATA_OBJECT_ID, if the table amount is not big, we can manually recognize the data table

OFFLINE table space of dropped table

```
SQL> select tablespace_name from dba_segments where segment_name='TPAYMENT';

TABLESPACE_NAME
------------------------------
USERS

SQL> select file_name from dba_data_files where tablespace_name='USERS';

FILE_NAME
```

```
------------------------------------------------------------
+DATA1/parnassus/datafile/users.263.843694795

SQL> alter tablespace users offline;

Tablespace altered.
```

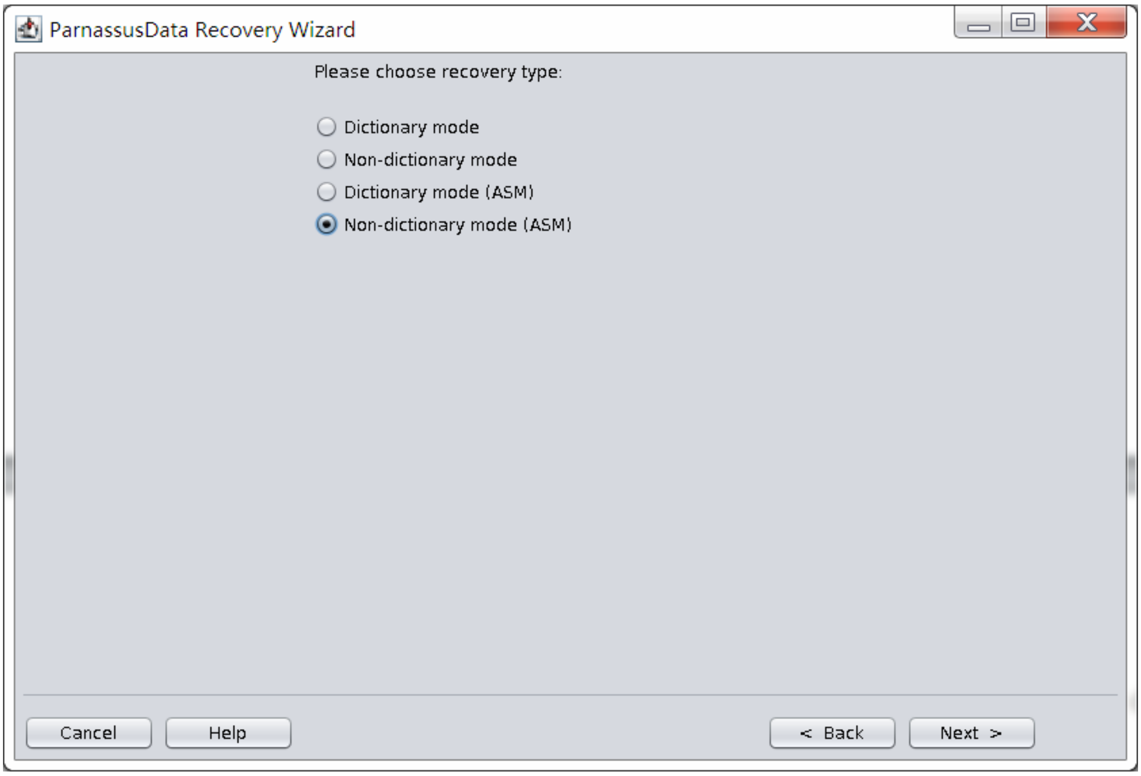
Start PRM in NON-DICT mode, and add all data to SCAN DATABASE+SCAN TABLE From Extents:


ParnassusData Recovery Manager - www.parnassusdata.com Professional Oracle Database Disaster Recovery ...
Tools Help
Database
Data Files
Database
ParnassusData Recovery Wizard

Welcome to ParnassusData Revovery Manager.

The ParnassusData Recovery Manager can do physical inspection for Oracle Database.
and can recover data without opening a database.

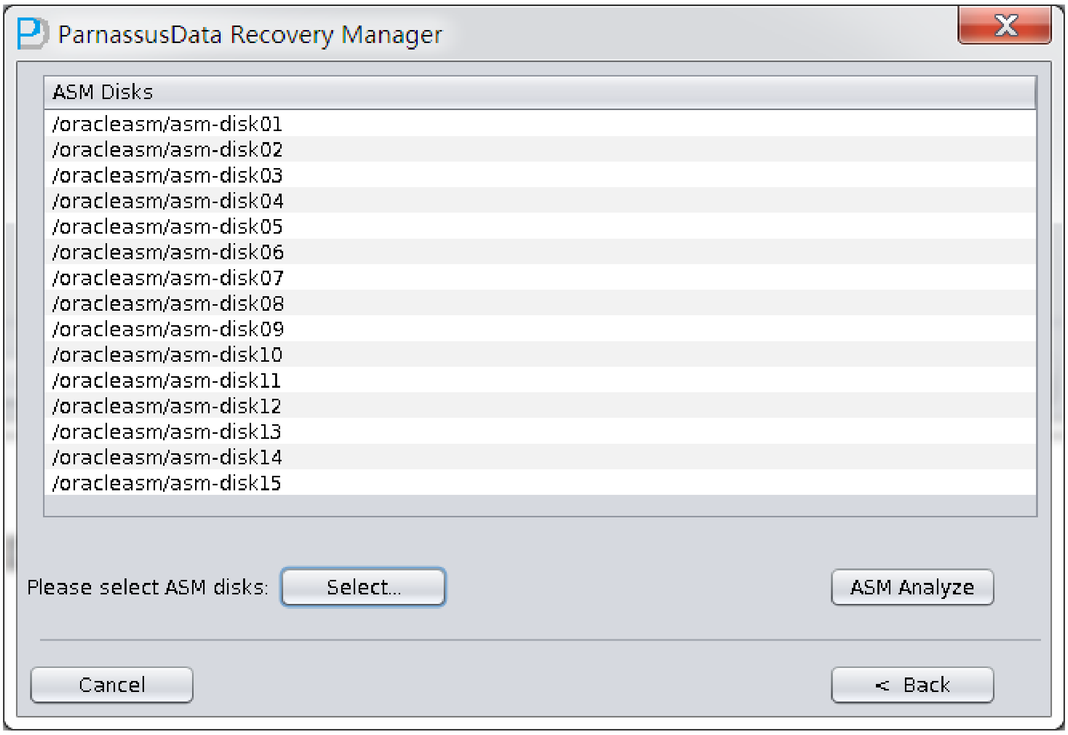
Cancel
Help
< Back
Next >



Please choose recovery type:

○ Dictionary mode
○ Non-dictionary mode
○ Dictionary mode (ASM)
● Non-dictionary mode (ASM)

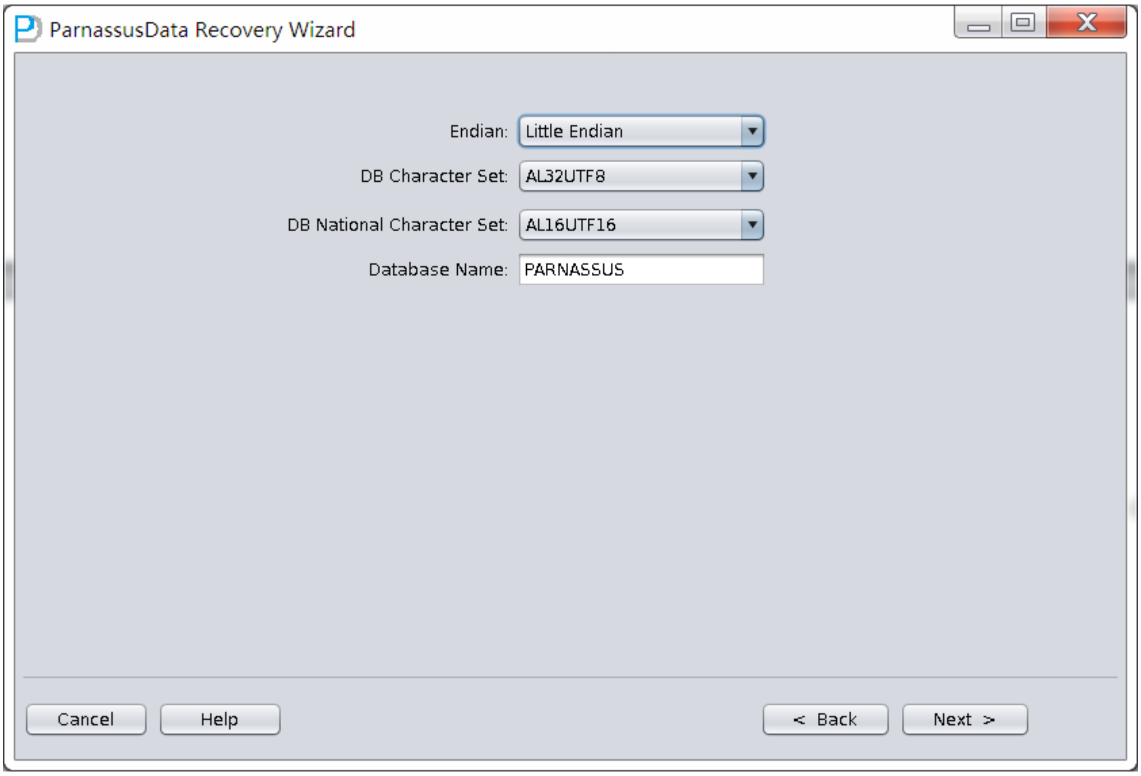
Add related ASM Disks and click ASM Analyze



ASM Disks
/oracleasm/asm-disk01
/oracleasm/asm-disk02
/oracleasm/asm-disk03
/oracleasm/asm-disk04
/oracleasm/asm-disk05
/oracleasm/asm-disk06
/oracleasm/asm-disk07
/oracleasm/asm-disk08
/oracleasm/asm-disk09
/oracleasm/asm-disk10
/oracleasm/asm-disk11
/oracleasm/asm-disk12
/oracleasm/asm-disk13
/oracleasm/asm-disk14
/oracleasm/asm-disk15

Please select ASM disks:

Select the character set in Non-Dict mode



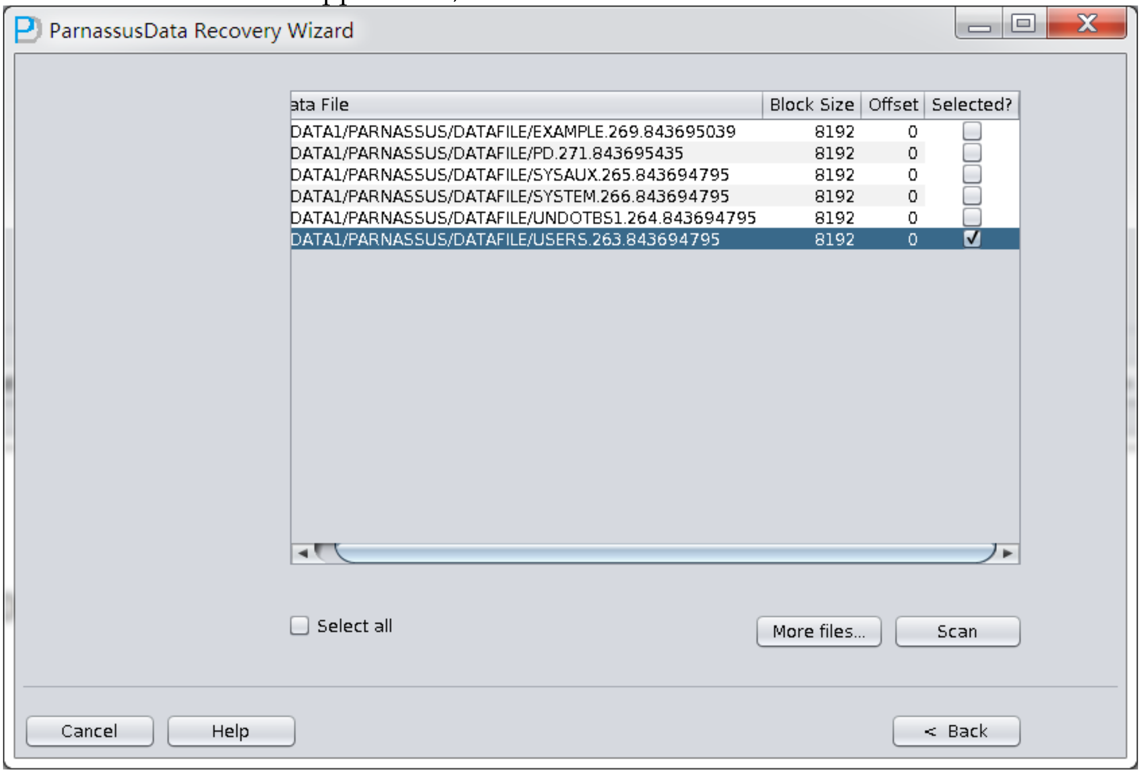
Endian: Little Endian

DB Character Set: AL32UTF8

DB National Character Set: AL16UTF16

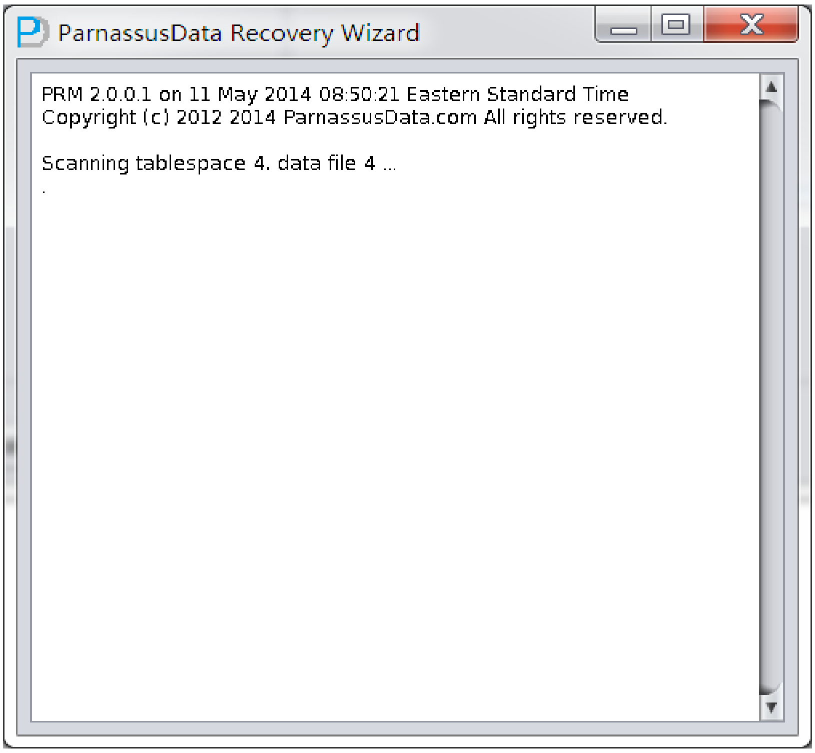
Database Name: PARNASSUS

Select the data files of dropped table, and click scan



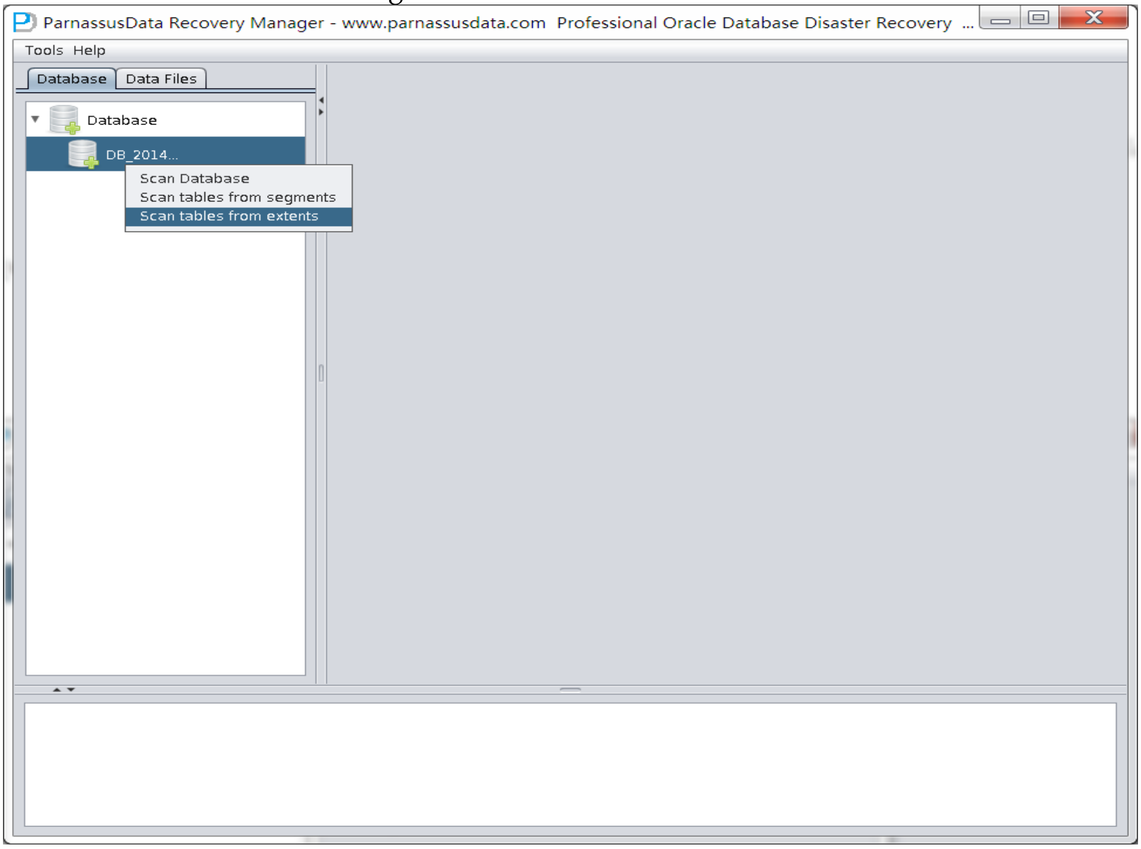
ata File	Block Size	Offset	Selected?
DATA1/PARNASSUS/DATAFILE/EXAMPLE.269.843695039	8192	0	□
DATA1/PARNASSUS/DATAFILE/PD.271.843695435	8192	0	□
DATA1/PARNASSUS/DATAFILE/SYSAUX.265.843694795	8192	0	□
DATA1/PARNASSUS/DATAFILE/SYSTEM.266.843694795	8192	0	□
DATA1/PARNASSUS/DATAFILE/UNDOTBS1.264.843694795	8192	0	□
DATA1/PARNASSUS/DATAFILE/USERS.263.843694795	8192	0	☑

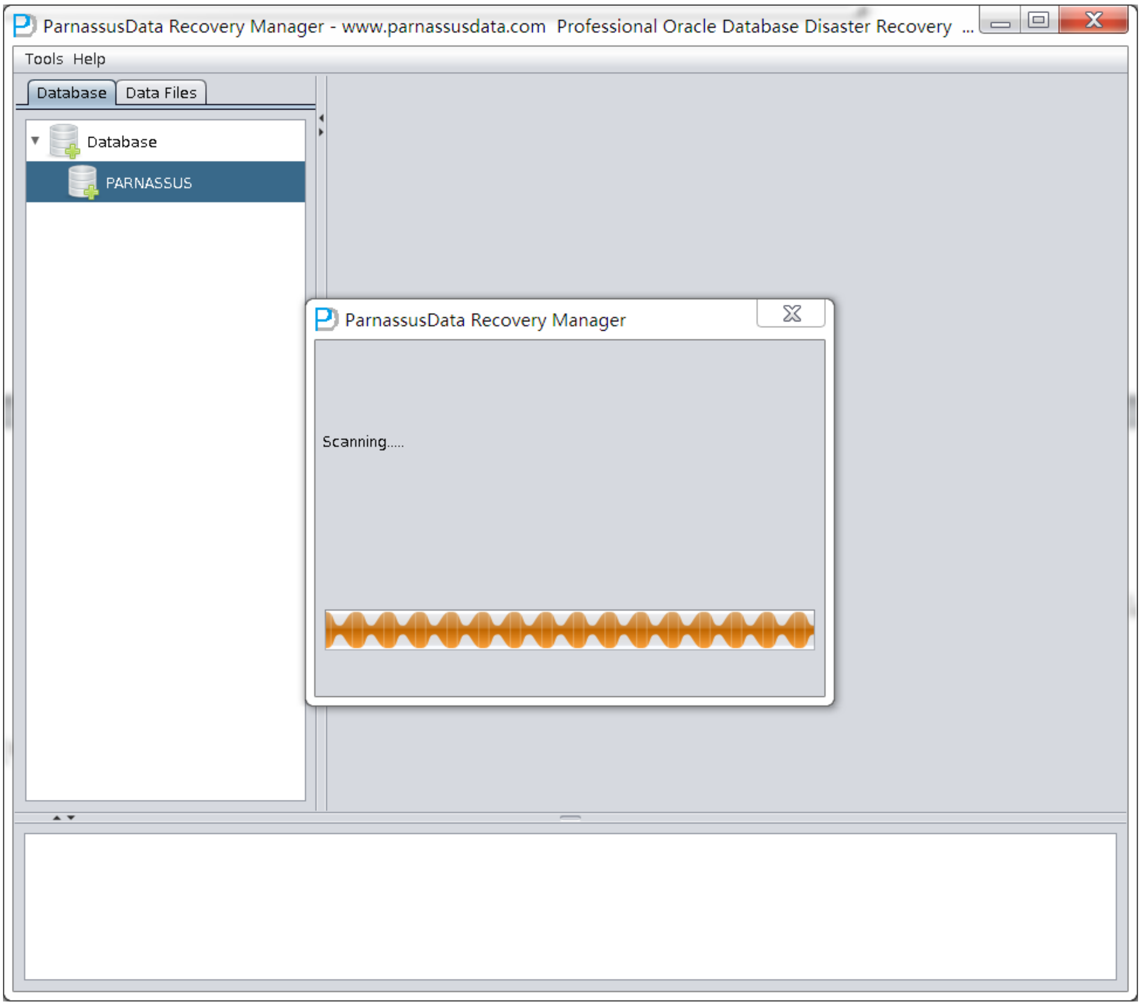
□ Select all



```
PRM 2.0.0.1 on 11 May 2014 08:50:21 Eastern Standard Time
Copyright (c) 2012 2014 ParnassusData.com All rights reserved.

Scanning tablespace 4. data file 4 ...
.
```

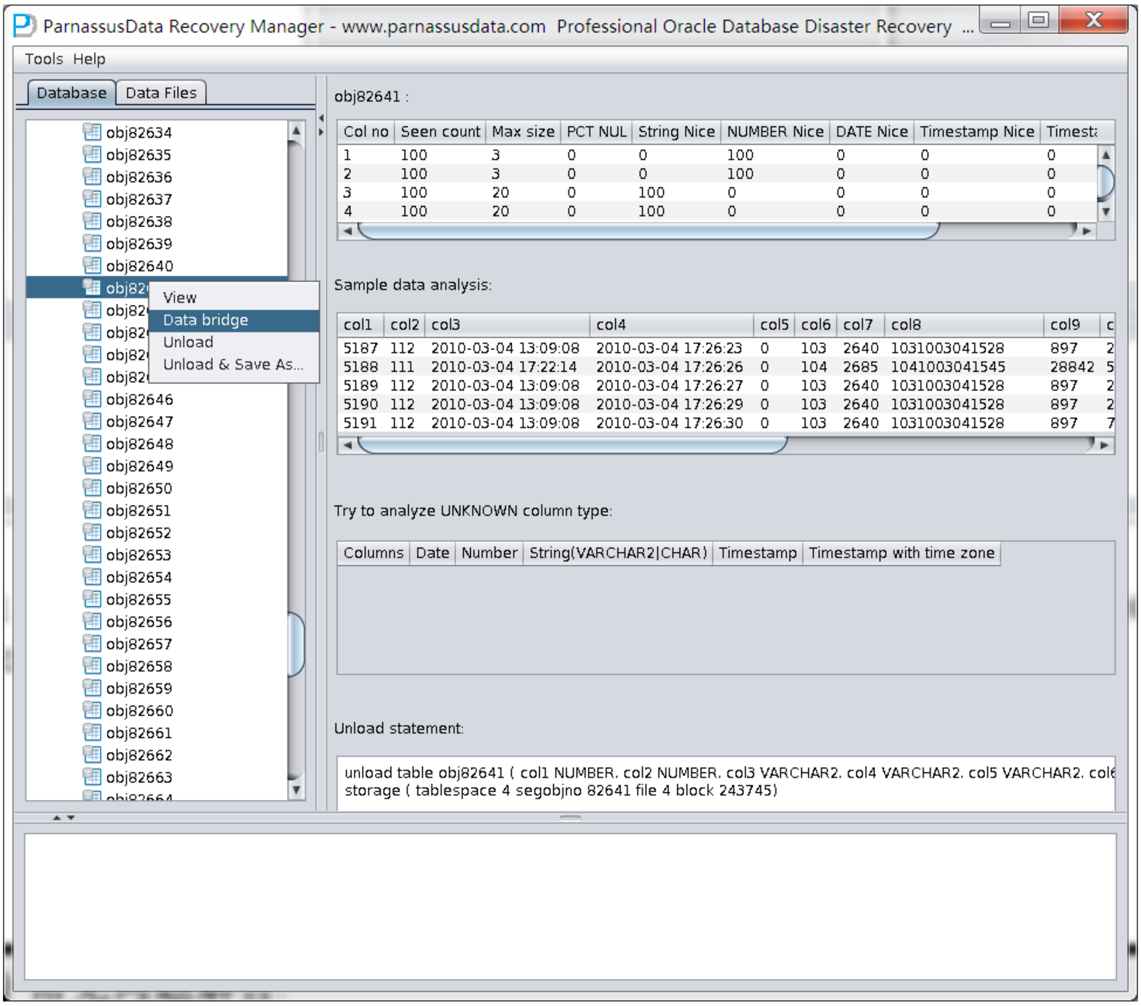
Generate database name and right click scan tables from extents:


ParnassusData Recovery Manager - www.parnassusdata.com Professional Oracle Database Disaster Recovery ...
Tools Help
Database
Data Files
Database
DB_2014...
Scan Database
Scan tables from segments
Scan tables from extents


ParnassusData Recovery Manager - www.parnassusdata.com Professional Oracle Database Disaster Recovery ...
Tools Help
Database
Data Files
Database
PARNASSUS
ParnassusData Recovery Manager

Scanning.....

Recognize TORDERDETAIL_HIS table which is mapped to DATA_OBJECT_ID=82641 manually and insert back to the database by DataBridge



obj82641 :

Col no	Seen count	Max size	PCT NUL	String Nice	NUMBER Nice	DATE Nice	Timestamp Nice	Timest:
1	100	3	0	0	100	0	0	0
2	100	3	0	0	100	0	0	0
3	100	20	0	100	0	0	0	0
4	100	20	0	100	0	0	0	0

Sample data analysis:

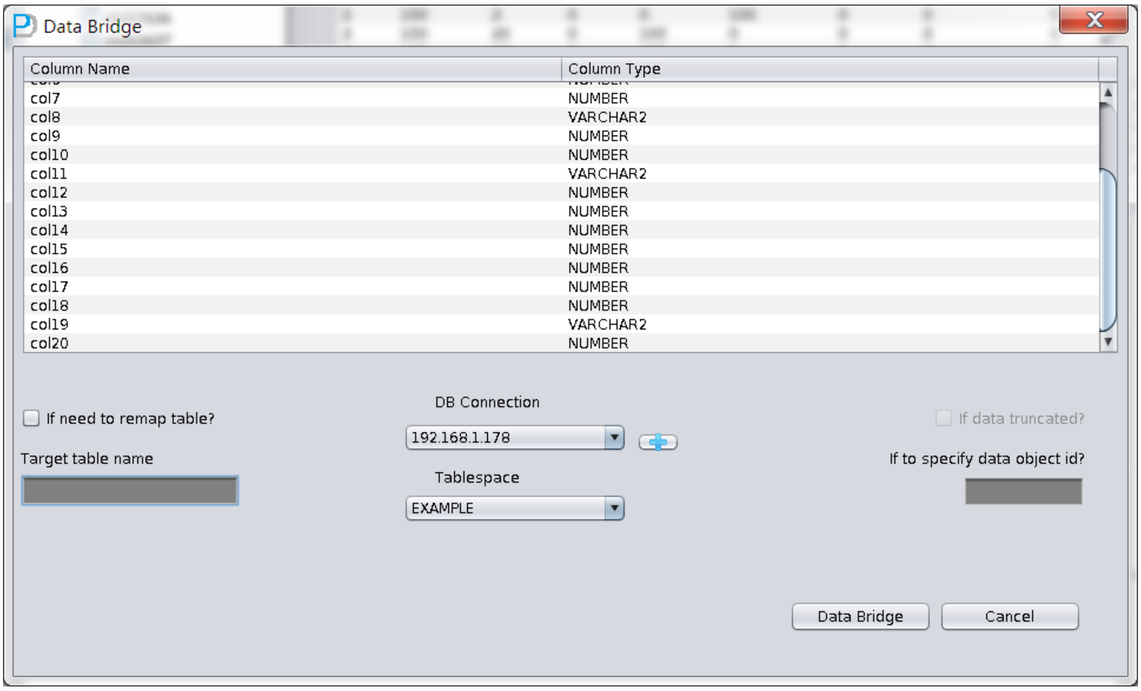
col1	col2	col3	col4	col5	col6	col7	col8	col9	c
5187	112	2010-03-04 13:09:08	2010-03-04 17:26:23	0	103	2640	1031003041528	897	2
5188	111	2010-03-04 17:22:14	2010-03-04 17:26:26	0	104	2685	1041003041545	28842	5
5189	112	2010-03-04 13:09:08	2010-03-04 17:26:27	0	103	2640	1031003041528	897	2
5190	112	2010-03-04 13:09:08	2010-03-04 17:26:29	0	103	2640	1031003041528	897	2
5191	112	2010-03-04 13:09:08	2010-03-04 17:26:30	0	103	2640	1031003041528	897	7

Try to analyze UNKNOWN column type:

Columns	Date	Number	String(VARCHAR2|CHAR)	Timestamp	Timestamp with time zone

Unload statement:

```
unload table obj82641 ( col1 NUMBER. col2 NUMBER. col3 VARCHAR2. col4 VARCHAR2. col5 VARCHAR2. col6
storage ( tablespace 4 segobjno 82641 file 4 block 243745)
```



Column Name	Column Type
col7	NUMBER
col8	VARCHAR2
col9	NUMBER
col10	NUMBER
col11	VARCHAR2
col12	NUMBER
col13	NUMBER
col14	NUMBER
col15	NUMBER
col16	NUMBER
col17	NUMBER
col18	NUMBER
col19	VARCHAR2
col20	NUMBER

□ If need to remap table?

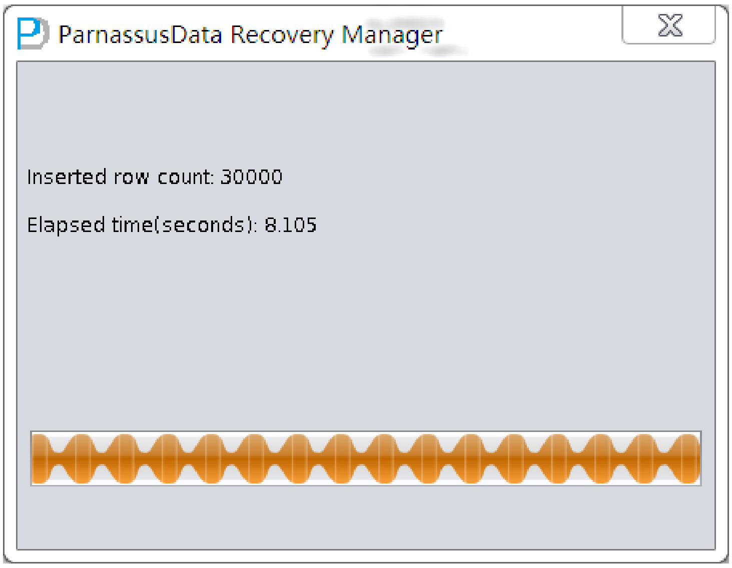
Target table name

DB Connection: 192.168.1.178

Tablespace: EXAMPLE

□ If data truncated?

If to specify data object id?



Inserted row count: 30000

Elapsed time(seconds): 8.105

FAQ

1. How to get database character set?

You can find your database character by Oracle Alert.log

```
[oracle@mlab2 trace]$ grep   -i character alert_Parnassus.log
Database Characterset is US7ASCII
Database Characterset is US7ASCII
alter database character set INTERNAL_CONVERT AL32UTF8
Updating character set in controlfile to AL32UTF8
Synchronizing connection with database character set information
Refreshing type attributes with new character set information
Completed: alter database character set INTERNAL_CONVERT AL32UTF8
alter database national character set INTERNAL_CONVERT UTF8
Completed: alter database national character set INTERNAL_CONVERT UTF8
Database Characterset is AL32UTF8
Database Characterset is AL32UTF8
Database Characterset is AL32UTF8
```

2. PRM failed with GC " gc warning: Repeated allocation of very large block (appr.size 512000)"

So far, most of problem is caused by not recommended Java environment. Especially, on Linux, default java environment is redhat gcj java. ParnassusData suggest Open JDK 1.6 for PRM, and use $JAVA_HOME/bin/java –jar prm.jar for PRM boot.

Open JDK For Linux download Link:

Open jdk x86_64 for Linux 5	http://pan.baidu.com/s/1qWO740O
Tzdata-java x86_64 for Linux 5	http://pan.baidu.com/s/1gdeiF6r
Open jdk x86_64 for Linux 6	http://pan.baidu.com/s/1mg0thXm
Open jdk x86_64 for Linux 6	http://pan.baidu.com/s/1sjQ7vjf
Open jdk x86 for Linux 5	http://pan.baidu.com/s/1kT1Hey7
Tzdata-java x86 for Linux 5	http://pan.baidu.com/s/1kT9iBAn
Open jdk x86 for Linux 6	http://pan.baidu.com/s/1sjQ7vjf

Tzdata-java x86 for Linux 6	http://pan.baidu.com/s/1kTE8u8n

JDK on Other platform downloads:

AIX JAVA SDK 7	http://pan.baidu.com/s/1i3JvAlv
JDK Windows x86	http://pan.baidu.com/s/1qW38LhM
JDK Windows x86-64	http://pan.baidu.com/s/1qWDcoOk
Solaris JDK 7 x86-64bit	http://pan.baidu.com/s/1gdzgSvh
Solaris JDK 7 x86-32bit	http://pan.baidu.com/s/1mgjxFlQ
Solaris JDK 7 Sparc	http://pan.baidu.com/s/1pJjX3Ft

Oracle JDK downloads:

http://www.oracle.com/technetwork/java/javasebusiness/downloads/java-archive-downloads-javase6-419409.html#jdk-6u45-oth-JPR

3. If you find PRM bug, how to report bug to ParnassusData?

ParnassusData recommend anyone to report bug, just send report_bugs@parnassusdata.com. Suggest submit bug environment, including Java environment and Oracle database Environment.

4. What should I do if it PRM failed with

   Error: no `server' JVM at `D:\Program Files (x86)\Java\jre1.5.0_22\bin\server\jvm.dll'.

If user just installed JAVA Runtime Environment JRE, no JDK, please start PRM without –server option. This option does not exist in the version before JRE 1.5, and there is supposed to have an error.

ParnassusData suggests Open JDK 1.6 or above

Below link to download JDK 1.6

http://www.oracle.com/technetwork/java/javasebusiness/downloads/java-archive-downloads-javase6-419409.html#jdk-6u45-oth-JPR

5. Why does PRM display Chinese as messy code?

So far, there are two reasons for Chinese encoding problem:

- The OS does not have Chinese language pack, PRM can not display Chinese correctly
- If OS have language package installed, please use Open JDK1.6 or above. There might be some problem in JDK1.4

6. Is there any forum for PRM?

Now we have Chinese forum for PRM, below is the link:
http://t.askmaclean.com/forum-24-1.html

Find More

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Conclusion

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