

(053第3章) Rman catalog

当没有恢复目录时，RMAN相关的备份信息，比如归档文件路径、备份集路径等均存储在目标数据库的控制文件中，
不过考虑到控制文件并不能无限增长，而且控制文件也不仅仅是用来存储与备份相关的信息，
因此RMAN也有一个专门的备份信息存储地，这就是恢复目录了。
当待备份的数据库注册到恢复目录之后，RMAN相关的信息除了保存在控制文件中外（控制文件实际上只保存一部分），
更加详细的信息就都被存储在恢复目录中。

查询数据库控制文件备份信息保存天数的参数是：

```
SQL> show parameter control_file_record_keep_time
```

NAME	TYPE	VALUE
------	------	-------

--

control_file_record_keep_time	integer	7
-------------------------------	---------	----------

默认保存7天

一、创建恢复目录数据并注册数据库的步骤：

(1)在恢复目录数据中创建一个独立的表空间：

```
SQL>connect sys/oracle@rcdb as sysdba;
```

```
SQL>create tablespace rmantbs datafile  
'/u01/app/oradata/rcdb/rmantbs01.dbf' size 50m autoextend on;
```

Tablespace created.

注意千万不要将恢复目录创建在要备份的目录数据库。

由于恢复目录通常不会太大，这里数据文件仅分配了50MB的空间,但可以打开自动扩展。

(2) 创建一个独立的 SCHEMA ，用来记录备份信息，并授予相关权限：

```
SQL>create user rcusr identified by rcusr default tablespace rmantbs  
quota unlimited on rmantbs;
```

```
SQL>grant recovery_catalog_owner to rcusr;
```

Grant succeeded.

(3) 通过RMAN连接到新创建的恢复目录中：

```
F:\oracle>rman catalog rcusr/rcusr@rcdb
```

Recovery Manager: Release 10.2.0.1.0 - Production on Fri Apr 24

11:11:06 2009

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connected to recovery catalog database

(4) 在RMAN中创建 CATALOG :

```
RMAN>create catalog;  
recovery catalog created
```

这样恢复目录就算创建完了，一个恢复目录数据库可以同时为多个目标数据库提供服务，不过要使用恢复目录执行备份操作前，

需要在恢复目录中注册该数据库，注册也非常简单，一条命令即可，步骤如下：

首先以CATALOG模式连接到目标数据库和恢复目录（连接恢复目录只需要在连接时指定CATALOG参数即可）：

```
F:\oracle>rman target / catalog rcusr/rcusr@rcdb          --需要在目标数  
据库上执行，而非catalog 数据库。
```

```
Recovery Manager: Release 10.2.0.1.0 - Production on Fri Apr 24  
11:16:36 2009
```

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connected to target database: JSSBOOK (DBID=1419729528)

connected to recovery catalog database

可以通过如下命令注册数据库：

```
RMAN> register database;  
database registered in recovery catalog  
starting full resync of recovery catalog  
full resync complete
```

可以通过如下查询该catalog服务器上所管理的所有数据库信息：

```
RMAN> list db_unique_name all;  
List of Databases  
DB Key  DB Name  DB ID          Database Role  Db_unique_name  
-----  
1       SZTECH1  3253410194     PRIMARY       SZTECH1
```

这之后进行的操作，比如创建备份等操作信息都会存入恢复目录中。

对于注册到恢复目录，是否就必须或者只能以CATALOG模式进行备份或恢复操作了呢？

当然不是，恢复目录只是RMAN中的一个可选项，而不是必选项，备份信息是否记入CATALOG取决于执行RMAN操作时是否连接到了

CATALOG ,

也就是说，即使目标数据库已经注册到恢复目录中，但连接时没有以CATALOG模式连接，

则备份信息仍然是只存入目标端数据库的控制文件，相当于NOCATALOG模式。

另外，已经注册到 CATALOG 中的数据库希望取消注册怎么办呢？使用 UNREGISTER 命令即可：

```
RMAN>unregister database;
database name is "JSSBOOK" and DBID is 1419729528
Do you really want to unregister the database (enter YES or NO)? yes
database unregistered from the recovery catalog
```

可以通过如下命令同步恢复信息：

```
RMAN> resync catalog;
starting full resync of recovery catalog
full resync complete
```

创建RMAN LOCAL脚本（供当前的target数据库使用）：

```
RMAN> create script scpt_backupdf {
allocate channel c1 type disk;
backup datafile 4;
sql 'alter system switch logfile';
}
```

创建RMAN global脚本(供catalog中管理的所有数据库使用)：

```
RMAN> create global script scpt_backupdb {
allocate channel c1 type disk;
allocate channel c2 type disk;
backup database;
sql 'alter system switch logfile';
backup archivelog all delete input;
backup current controlfile;
}
```

执行脚本：

```
run { execute script scpt_backupdb ;}
```

显示所有脚本：

list script name;

显示脚本内容：

print script scpt_backupdb;

删除脚本:

delete script scpt_backupdb;

不使用 catalog要执行rman脚本时，一般方法如下：

rman target / cmdfile=/home/oracle/rman.sql

如果DBA要管理的Oracle数据库较多，那么对于这些数据库的备份，建议使用恢复目录统一管理，

这样既方便备份和恢复操作，而且安全性也相对比较高

（执行完备份操作后，单独备份恢复目录数据库即可，无须担心被备份的数据库控制文件丢失可能造成的影响）。

不过如果DBA仅管理一个或者数个Oracle数据库，那么我想NOCATALOG模式操作起来会更加方便。

注意：EM中执行备份时要同步到catalog中时，需要单独到EM中进行配置，否则无法使用CATALOG。

加入原控制文件中不存在的备份信息：

```
catalog archivelog|backuppiece| backup|  
controlfilecopy|datafilecopy|db_recovery_file_dest| device|recovery| start ...
```

二、合并恢复目录

在遇到原恢复目录数据库需要硬件升级或者版本升级时，可以将恢复目录数据库合并或者转移到另一个恢复目录数据库中。

1.在新的恢复目录数据库中创建表空间、用户、授予用户 recovery_catalog_owner 的权限。

```
create tablespace ts_cat datafile  
'/u01/app/oracle/oradata/sztech1/ts_cat01.dbf' size 50m autoextend on;
```

```
create user catuser identified by catuser default tablespace ts_cat quota
unlimited on ts_cat;
grant recovery_catalog_owner to catuser;
```

2. 登录新的恢复目录数据库

```
[oracle@dbserver ~]$ rman catalog catuser/catuser
Recovery Manager: Release 11.2.0.4.0 - Production on Fri Jul 21 15:22:35
2017
```

```
Copyright (c) 1982, 2011, Oracle and/or its affiliates. All rights reserved.
connected to recovery catalog database
```

3. 创建恢复目录

```
RMAN> create catalog;
recovery catalog created
```

4.1 转移源恢复目录数据库到当前新的恢复目录数据库，源恢复目录中的注册信息将会清除。

```
[oracle@dbserver ~]$ rman catalog catuser/catuser
RMAN> import catalog rman/rman@192.168.132.120:1521/sztech2;
Starting import catalog at 21-JUL-17
connected to source recovery catalog database
import validation complete
database unregistered from the source recovery catalog
Finished import catalog at 21-JUL-17
```

查询新恢复目录数据库中的注册数据信息

```
RMAN> list db_unique_name all;
```

List of Databases

DB Key	DB Name	DB ID	Database Role	Db_unique_name
1671	SZTECH1	3253410194	PRIMARY	SZTECH1

查询源恢复目录数据库中的注册数据信息（已清空所有注册信息）

```
[oracle@dbserver ~]$ rman catalog rman/rman
Recovery Manager: Release 11.2.0.4.0 - Production on Fri Jul 21 15:30:53
2017
```

```
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connected to recovery catalog database
```

```
RMAN> list db_unique_name all;
RMAN>
```

4.2 合并源恢复目录数据库到当前新的恢复目录数据库，源恢复目录中的注册信息不会清除。

RMAN> **import catalog rman/rman@192.168.132.120:1521/sztech2 no
unregister;**

Starting import catalog at 21-JUL-17
connected to source recovery catalog database
import validation complete
Finished import catalog at 21-JUL-17

查询新恢复目录数据库中的注册数据信息

RMAN> **list db_unique_name all;**

List of Databases

DB Key	DB Name	DB ID	Database Role	Db_unique_name
2157	SZTECH1	3253410194	PRIMARY	SZTECH1

查询源恢复目录数据库中的注册数据信息（原有注册信息仍然保留）

[oracle@dbserver ~]\$ **rman catalog rman/rman**

Recovery Manager: Release 11.2.0.4.0 - Production on Fri Jul 21 15:30:53
2017

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connected to recovery catalog database

RMAN> **list db_unique_name all ;**

DB Key	DB Name	DB ID	Database Role	Db_unique_name
2156	SZTECH1	3253410194	PRIMARY	SZTECH1

三、创建连接到虚拟私有恢复目录的用户

1.在恢复目录数据库中创建登录到虚拟私有恢复目录的用户并授予
recovery_catalog_owner的权限

[oracle@dbserver ~]\$ **sqlplus / as sysdba**

SQL*Plus: Release 11.2.0.4.0 Production on Fri Jul 21 15:38:56 2017

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Connected to:

Oracle Database 11g Enterprise Edition Release 11.2.0.4.0 - Production
With the Partitioning, OLAP, Data Mining and Real Application Testing

options

SQL> **create user vpc1 identified by vpc1;**

User created.

SQL> **create user vpc2 identified by vpc2;**

User created.

SQL> **grant recovery_catalog_owner to vpc1;**

Grant succeeded.

SQL> **grant recovery_catalog_owner to vpc2;**

Grant succeeded.

2.在恢复目录数据库中为用户赋予register database的权限

[oracle@dbserver ~]\$ **rman catalog catuser/catuser**

Recovery Manager: Release 11.2.0.4.0 - Production on Fri Jul 21 15:44:57

2017

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connected to recovery catalog database

RMAN> **grant register database to vpc1;**

Grant succeeded.

RMAN> **grant register database to vpc2;**

Grant succeeded.

3.在恢复目录数据库中为用户创建虚拟恢复目录

[oracle@dbserver ~]\$ **rman catalog vpc1/vpc1**

Recovery Manager: Release 11.2.0.4.0 - Production on Fri Jul 21 15:48:18

2017

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connected to recovery catalog database

RMAN> **create virtual catalog;**

found eligible base catalog owned by CATUSER

created virtual catalog against base catalog owned by CATUSER

[oracle@dbserver ~]\$ **rman catalog vpc2/vpc2**

Recovery Manager: Release 11.2.0.4.0 - Production on Fri Jul 21 15:48:18

2017

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connected to recovery catalog database

RMAN> **create virtual catalog;**

found eligible base catalog owned by CATUSER

created virtual catalog against base catalog owned by CATUSER

4.使用虚拟私有恢复目录

登录用户VPC1到虚拟私有恢复目录数据库中注册数据库（当前数据库

为**192.168.132.120:1521/sztech2**)

[oracle@dbserver ~]\$ **rman target / catalog**

vpc1/vpc1@192.168.132.121:1521/sztech1

Recovery Manager: Release 11.2.0.4.0 - Production on Fri Jul 21 15:51:29

2017

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connected to target database: SZTECH2 (DBID=3051956888)
connected to recovery catalog database

注册当前数据库到恢复目录

RMAN> **register database;**

database registered in recovery catalog

starting full resync of recovery catalog

full resync complete

查询注册信息 (VPC1只能查询自己注册的数据库, 无法看到用户VPC2注册的数据库)

```
RMAN> list db_unique_name all;
```

List of Databases

DB Key	DB Name	DB ID	Database Role	Db_unique_name
2647	SZTECH2	3051956888	PRIMARY	SZTECH2

使用恢复目录备份当前数据库

```
RMAN> backup datafile 4;
```

Starting backup at 21-JUL-17

.....

Finished backup at 21-JUL-17

登录用户VPC2到虚拟私有恢复目录数据库中注册数据库 (当前数据库为192.168.132.121:1520/sztech1)

```
[oracle@dbserver ~]$ rman target / catalog
```

```
vpc2/vpc1@192.168.132.121:1521/sztech1
```

```
Recovery Manager: Release 11.2.0.4.0 - Production on Fri Jul 21 15:51:29 2017
```

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connected to target database: SZTECH2 (DBID=3051956888)

connected to recovery catalog database

注册当前数据库到恢复目录

```
RMAN> register database;
```

database registered in recovery catalog

starting full resync of recovery catalog

full resync complete

查询注册信息 (VPC2只能查询自己注册的数据库, 无法看到用户VPC1注册的数据库)

```
RMAN> list db_unique_name all;
```

List of Databases

DB Key	DB Name	DB ID	Database Role	Db_unique_name
1671	SZTECH1	3253410194	PRIMARY	SZTECH1

可以在恢复目录数据库中通过登录catuser来查看所有注册数据库信息

```
[oracle@dbserver ~]$ rman catalog catuser/catuser
```

connected to recovery catalog database

```
RMAN> list db_unique_name all;
```

List of Databases

DB Key	DB Name	DB ID	Database Role	Db_unique_name
--------	---------	-------	---------------	----------------

2647	SZTECH2	3051956888	PRIMARY	SZTECH2
2689	SZTECH1	3253410194	PRIMARY	SZTECH1