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ParnassusData Advanced Oracle Service

ORACLE 数据库紧急救援报告

Parnassus
诗 檀

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1. 服务简介

本文为诗檀软件对客户 Oracle 数据库服务进行紧急维修后所做报告总结。

1.1 服务范围

本次服务包括以下内容:

救援数据库中数据文件并使将其相关业务数据成功取出。

1.2 服务结果

诗檀软件工程师于 2014 年 11 月 26 日通过修正文件中的坏块。成功从原数据库中救出数据文件，并操作诗檀公司救援工具 PRM 从数据文件中抽取出客户业务数据。所得数据已经倒入到临时数据库 ORCL1 中，以方便用户查询验证。

由于数据文件内部的坏块量较少，因此保证了 90% 以上的业务数据可成功抽取，完成任务。

2. 服务过程简介

2.1 现场处理

现场 ORCL 数据库采用 11.2.0.1.0 版本单节点，数据存储使用普通文件存储模式，其操作平台为 Windows Server。

当时数据库情况

1. Alert Log 历史追溯

通过追溯日志发现，于 2014 年 1 月 5 日已出现坏块读取错误。

```
Sun Jan 05 06:00:48 2014
GATHER_STATS_JOB encountered errors.  Check the trace
file.
Errors in file
d:\app\administrator\diag\rdbms\orcl\orcl\trace\orcl_j00
3_192.trc:
ORA-01115: IO error reading block from file (block #)
ORA-01110: data file 2:
'G:\APP\ADMINISTRATOR\ORADATA\ORCL\SYSAUX0
1.DBF'
ORA-27070: async read/write failed
OSD-04006: ReadFile() 失败, 无法读取文件
O/S-Error: (OS 23) 数据错误(循环冗余检查)。
```

然后这种坏块现象也蔓延到 System 表空间文件。

```
Mon Feb 17 02:00:00 2014
Clearing Resource Manager plan via parameter
Errors in file
d:\app\administrator\diag\rdbms\orcl\orcl\trace\orcl_dbr
m_3016.trc:
ORA-00604: error occurred at recursive SQL level 1
ORA-01115: IO error reading block from file (block #)
ORA-01110: data file 1:
'G:\APP\ADMINISTRATOR\ORADATA\ORCL\SYSTEM0
1.DBF'
```

```
ORA-27070: async read/write failed
OSD-04006: ReadFile() 失败, 无法读取文件
O/S-Error: (OS 23) 数据错误(循环冗余检查)。
Unable to restore resource manager plan to "":
ORA-02097: parameter cannot be modified because specified
value is invalid
ORA-00604: error occurred at recursive SQL level 1
ORA-01115: IO error reading block from file (block #)
ORA-01110: data file 1:
'G:\APP\ADMINISTRATOR\ORADATA\ORCL\SYSTEM0
1.DBF'
ORA-27070: async read/write failed
OSD-04006: ReadFile() 失败,
```

并开始出现内部错误：

```
Mon Feb 24 11:37:36 2014
Exception [type: ACCESS_VIOLATION,
UNABLE_TO_READ] [ADDR:0xD4A0000] [PC:0x6D17E20,
_kgghash()+686]
Errors in file
d:\app\administrator\diag\rdbms\orcl\orcl\trace\orcl_ora
_5432.trc (incident=9762):
ORA-07445: 出现异常错误: 核心转储 [kgghash()+686]
[ACCESS_VIOLATION] [ADDR:0xD4A0000] [PC:0x6D17E20]
[UNABLE_TO_READ] []
Incident details in:
d:\app\administrator\diag\rdbms\orcl\orcl\incident\incdi
r_9762\orcl_ora_5432_i9762.trc
```

之后此类错误陆续出现在 REDO log 以及 TEMP 文件，甚至在用户业务文件.ORA 中也出现了坏块。

```
Sat May 24 08:27:46 2014
Errors in file
d:\app\administrator\diag\rdbms\orcl\orcl\trace\orcl_m0
00_5072.trc (incident=9763):
ORA-00603: ORACLE server session terminated by fatal error
```

```
ORA-01115: IO error reading block from file (block # )
ORA-01110: data file 3:
'G:\APP\ADMINISTRATOR\ORADATA\ORCL\UNDOTB
S01.DBF'
ORA-27070: async read/write failed
OSD-04006: ReadFile() 失败, 无法读取文件
O/S-Error: (OS 23) 数据错误(循环冗余检查)。
ORA-01115: IO error reading block from file (block # )
ORA-01110: data file 3:
'G:\APP\ADMINISTRATOR\ORADATA\ORCL\UNDOTB
S01.DBF'
ORA-27070: async read/write failed
OSD-04006: ReadFile() 失败, 无法读取文件
O/S-Error: (OS 23) 数据错误(循环冗余检查)。
ORA-01115: IO error reading block from file (block # )
ORA-01110: data file 3:
'G:\APP\ADMINISTRATOR\ORADATA\ORCL\UNDOTB
S01.DBF'
ORA-27070: async read/write failed
OSD-04006: ReadFile() 失败, 无法读取文件
O/S-Error: (OS 23) 数据错误(循环冗余检查)。
ORA-01115: IO error reading block from file (block # )
ORA-01110: data file 2:
'G:\APP\ADMINISTRATOR\ORADATA\ORCL\SYSAUX0
1.DBF'
ORA-27070: async read/write failed
OSD-04006: ReadFile() 失败, 无法读取文件
O/S-Error: (OS 23) 数据错误(循环冗余检查)。
Incident details in:
d:\app\administrator\diag\rdbms\orcl\orcl\incident\incdi
r_9763\orcl_m000_5072_i9763.trc
opidrv aborting process M000 ospid (5072) as a result of
ORA-603

Thu Sep 11 22:02:02 2014
Errors in file
```

```
d:\app\administrator\diag\rdbms\orcl\orcl\trace\orcl_j00_4392.trc:
ORA-12012: error on auto execute of job 128120
ORA-01115: IO error reading block from file (block #)
ORA-01110: data file 6:
'G:\APP\ADMINISTRATOR\ORADATA\ORCL\BJ_ZCGL.ORA'
ORA-27070: async read/write failed
OSD-04006: ReadFile() 失败, 无法读取文件
O/S-Error: (OS 23) 数据错误(循环冗余检查)。
ORA-06512: at "SYS.DBMS_ADVISOR", line 201
ORA-06512: at "SYS.DBMS_SPACE", line 1798
ORA-06512: at "SYS.DBMS_SPACE", line 1871
```

由于最终坏块蔓延到控制文件，最终导致宕机。

```
Thu Oct 09 21:49:52 2014
Errors in file
d:\app\administrator\diag\rdbms\orcl\orcl\trace\orcl_m00_4676.trc:
ORA-00202: control file:
'G:\APP\ADMINISTRATOR\ORADATA\ORCL\CONTROL01.CTL'
ORA-27070: async read/write failed
OSD-04006: ReadFile() 失败, 无法读取文件
O/S-Error: (OS 23) 数据错误(循环冗余检查)。
Errors in file
d:\app\administrator\diag\rdbms\orcl\orcl\trace\orcl_m00_4676.trc:
ORA-00204: error in reading (block 22, # blocks 1) of control file
ORA-00202: control file:
'G:\APP\ADMINISTRATOR\ORADATA\ORCL\CONTROL01.CTL'
ORA-27070: async read/write failed
OSD-04006: ReadFile() 失败, 无法读取文件
```



```
O/S-Error: (OS 23) 数据错误(循环冗余检查)。  
Thu Oct 09 21:54:01 2014  
Errors in file  
d:\app\administrator\diag\rdbms\orcl\orcl\trace\orcl_lgw  
r_3036.trc:  
ORA-00202: control file:  
'G:\APP\ADMINISTRATOR\ORADATA\ORCL\CONTRO  
L01.CTL'  
ORA-27070: async read/write failed  
OSD-04006: ReadFile() 失败, 无法读取文件  
O/S-Error: (OS 23) 数据错误(循环冗余检查)。  
Errors in file  
d:\app\administrator\diag\rdbms\orcl\orcl\trace\orcl_lgw  
r_3036.trc:  
ORA-00204: error in reading (block 22, # blocks 1) of control  
file  
ORA-00202: control file:  
'G:\APP\ADMINISTRATOR\ORADATA\ORCL\CONTRO  
L01.CTL'  
ORA-27070: async read/write failed  
OSD-04006: ReadFile() 失败, 无法读取文件  
O/S-Error: (OS 23) 数据错误(循环冗余检查)。  
LGWR (ospid: 3036): terminating the instance due to error 204
```

之后客户及第三方服务机构曾多次尝试打开数据库失败。

由于数据库文件坏块已基本蔓延至所有数据文件。一旦数据库崩溃后，即便修复了控制文件（据日志观察，10月31日对控制文件进行过修复），由于系统文件无法通过自检，数据库打开失败也就成了必然事件。

```
Wed Nov 19 11:37:05 2014  
SMON: Restarting fast_start parallel rollback  
Errors in file  
d:\app\administrator\diag\rdbms\orcl\orcl\trace\orcl_ora  
_3568.trc:  
ORA-00604: 递归 SQL 级别 1 出现错误
```

```

ORA-01115: 从文件  读取块时出现 IO 错误 (块 #)
ORA-01110: 数据文件 1:
'G:\APP\ADMINISTRATOR\ORADATA\ORCL\SYSTEM0
1.DBF'
ORA-27070: 异步读取/写入失败
OSD-04006: ReadFile() 失败, 无法读取文件
O/S-Error: (OS 23) 数据错误(循环冗余检查)。
Errors in file
d:\app\administrator\diag\rdbms\orcl\orcl\trace\orcl_ora
_3568.trc:
ORA-00604: 递归 SQL 级别 1 出现错误
ORA-01115: 从文件  读取块时出现 IO 错误 (块 #)
ORA-01110: 数据文件 1:
'G:\APP\ADMINISTRATOR\ORADATA\ORCL\SYSTEM0
1.DBF'
ORA-27070: 异步读取/写入失败
OSD-04006: ReadFile() 失败, 无法读取文件
O/S-Error: (OS 23) 数据错误(循环冗余检查)。
Error 604 happened during db open, shutting down database
USER (ospid: 3568): terminating the instance due to error 604
    
```

用户曾试图将相关数据文件 copy 到其他无坏块盘，但由于无法完成坏块读取，导致操作失败。

2. 数据库配置

```

Oracle Database 11g Enterprise Edition Release 11.2.0.1.0 -
Production
With the Partitioning, OLAP, Data Mining and Real
Application Testing options.
Using parameter settings in server-side spfile
D:\APP\ADMINISTRATOR\PRODUCT\11.2.0\DBHOME_
1\DATABASE\SPFILEORCL.ORA
System parameters with non-default values:
  processes                = 150
  memory_target            = 1232M
  control_files            =
    
```

```
"G:\APP\ADMINISTRATOR\ORADATA\ORCL\CONTROL01.CTL"
control_files =
"D:\APP\ADMINISTRATOR\FLASH_RECOVERY_AREA\ORCL\CONTROL02.CTL"
db_block_size = 8192
compatible = "11.2.0.0.0"
db_recovery_file_dest =
"D:\app\Administrator\flash_recovery_area"
db_recovery_file_dest_size= 3852M
undo_tablespace = "UNDOTBS1"
remote_login_passwordfile= "EXCLUSIVE"
db_domain = ""
dispatchers = "(PROTOCOL=TCP)
(SERVICE=orclXDB)"
audit_file_dest =
"D:\APP\ADMINISTRATOR\ADMIN\ORCL\ADUMP"
audit_trail = "DB"
db_name = "orcl"
open_cursors = 300
diagnostic_dest = "D:\APP\ADMINISTRATOR"
```

下图为数据库 Mount 后，数据文件情况：

```
ORACLE 例程已经启动。

Total System Global Area 778387456 bytes
Fixed Size 1374808 bytes
Variable Size 411043240 bytes
Database Buffers 360710144 bytes
Redo Buffers 5259264 bytes
数据库装载完毕。
SQL> select name from v$datafile;

NAME
-----
G:\APP\ADMINISTRATOR\ORADATA\ORCL\SYSTEM01.DBF
G:\APP\ADMINISTRATOR\ORADATA\ORCL\SYSAUX01.DBF
G:\APP\ADMINISTRATOR\ORADATA\ORCL\UNDOTBS01.DBF
G:\APP\ADMINISTRATOR\ORADATA\ORCL\USERS01.DBF
G:\APP\ADMINISTRATOR\ORADATA\ORCL\EXAMPLE01.DBF
G:\APP\ADMINISTRATOR\ORADATA\ORCL\BJ_ZCGL.ORA

已选择6行。
```

名称	大小	类型	修改日期	属性
BJ_ZCGL.ORA	512,008 KB	ORA 文件	2014-11-26 14:10	A
CONTROL01.CTL	9,520 KB	CTL 文件	2014-11-26 14:27	A
EXAMPLE01.DBF	102,408 KB	DBF 文件	2014-11-26 14:10	A
REDO01.LOG	51,201 KB	文本文档	2014-11-26 14:10	A
REDO02.LOG	51,201 KB	文本文档	2014-11-26 14:10	A
REDO03.LOG	51,201 KB	文本文档	2014-11-26 14:10	A
SYSAUX01.DBF	2,037,768 KB	DBF 文件	2014-11-26 14:10	A
SYSTEM01.DBF	2,641,928 KB	DBF 文件	2014-11-26 14:10	A
TEMP01.DBF	29,704 KB	DBF 文件	2014-10-09 21:54	A
UNDOTBS01.DBF	166,968 KB	DBF 文件	2014-11-26 14:10	A
USERS01.DBF	6,408 KB	DBF 文件	2014-11-26 14:10	A

数据库救援处理

诗檀工程师在分析其数据库情况后,按以下步骤进行数据库数据救援操作:

1. 首先使用文件修复拷贝工具将所有数据库文件 copy 至 I 盘 (磁盘为用户提供的无问题盘)。

System01.dbf

```

C:\Documents and Settings\Administrator>I:
I:\bb_copy_v2c\Dist>hhcopy -b 8192 -r 1 -f 'G:\app\Administrator\oradata\orcl\SYSTEM01.DBF' 'I:\SYSTEM01.DBF'
I:\bb_copy_v2c\Dist>hhcopy -b 8192 -r 1 -f 'G:\app\Administrator\oradata\orcl\SYSTEM01.DBF' 'I:\SYSTEM01.DBF'
Scratched File and Bad Block Copy utility v2.3 (c) by Alter, 2004-2014
Home site http://www.alter.org.ua
Can't open source file 'G:\app\Administrator\oradata\orcl\SYSTEM01.DBF'
exiting...

I:\bb_copy_v2c\Dist>hhcopy -b 8192 -r 1 -f G:\app\Administrator\oradata\orcl\SYSTEM01.DBF I:\SYSTEM01.DBF
Scratched File and Bad Block Copy utility v2.3 (c) by Alter, 2004-2014
Home site http://www.alter.org.ua
G:\app\Administrator\oradata\orcl\SYSTEM01.DBF -> I:\SYSTEM01.DBF
2705334272 bytes
 330241 blocks, physical block size 8192 bytes, I/O block size 65536 bytes
Starting from offset 0 bytes
to target at offset 0 bytes
    
```

```

C:\WINDOWS\system32\cmd.exe - bcopy -b 8192 -r 1 -f G:\app\Administrator\oradat...
G:\app\Administrator\oradata\orcl\SYSTEM01.DBF -> I:\SYSTEM01.DBF
2705334272 bytes
 330241 blocks, physical block size 8192 bytes, I/O block size 65536 bytes
Starting from offset 0 bytes
  to target at offset 0 bytes
.Can't read block (65536 bytes) at offset 19070976 (LBA 2328) error 23
.Can't read block (65536 bytes) at offset 19136512 (LBA 2336) error 23
.Can't read block (8192 bytes) at offset 19144704 (LBA 2337) error 23
.Can't read block (65536 bytes) at offset 19202048 (LBA 2344) error 23
.Can't read block (65536 bytes) at offset 20643840 (LBA 2520) error 23
.Can't read block (8192 bytes) at offset 20660224 (LBA 2522) error 23
.Can't read block (65536 bytes) at offset 23724032 (LBA 2896) error 23
.Can't read block (65536 bytes) at offset 26673152 (LBA 3256) error 23
.Can't read block (65536 bytes) at offset 26804224 (LBA 3272) error 23
.Can't read block (65536 bytes) at offset 31391744 (LBA 3832) error 23
.Can't read block (65536 bytes) at offset 32112640 (LBA 3920) error 23
.Can't read block (65536 bytes) at offset 32178176 (LBA 3928) error 23
.....*.Can't read block (65536 bytes) at offset 691863552 (LBA 84456) error
 23
.Can't read block (65536 bytes) at offset 694812672 (LBA 84816) error 23
.Can't read block (65536 bytes) at offset 697892864 (LBA 85192) error 23
.....*.Can't read block (65536 bytes) at offset 1306263552 (LBA 159456) err
 or 23
.Can't read block (65536 bytes) at offset 1307705344 (LBA 159632) error 23

```

```

C:\WINDOWS\system32\cmd.exe
.Can't read block (8192 bytes) at offset 20660224 (LBA 2522) error 23
.Can't read block (65536 bytes) at offset 23724032 (LBA 2896) error 23
.Can't read block (65536 bytes) at offset 26673152 (LBA 3256) error 23
.Can't read block (65536 bytes) at offset 26804224 (LBA 3272) error 23
.Can't read block (65536 bytes) at offset 31391744 (LBA 3832) error 23
.Can't read block (65536 bytes) at offset 32112640 (LBA 3920) error 23
.Can't read block (65536 bytes) at offset 32178176 (LBA 3928) error 23
.....*.Can't read block (65536 bytes) at offset 691863552 (LBA 84456) error
 23
.Can't read block (65536 bytes) at offset 694812672 (LBA 84816) error 23
.Can't read block (65536 bytes) at offset 697892864 (LBA 85192) error 23
.....*.Can't read block (65536 bytes) at offset 1306263552 (LBA 159456) err
 or 23
.Can't read block (65536 bytes) at offset 1307705344 (LBA 159632) error 23
.Can't read block (65536 bytes) at offset 1308426240 (LBA 159720) error 23
.Can't read block (65536 bytes) at offset 1308491776 (LBA 159728) error 23
.Can't read block (65536 bytes) at offset 1311571968 (LBA 160104) error 23
.Can't read block (65536 bytes) at offset 1312292864 (LBA 160192) error 23
.Can't read block (65536 bytes) at offset 1313275904 (LBA 160312) error 23
.....*.....*.....*
Copied 2705334272 bytes (330241 blocks)
      0 unreliable (0 blocks)
    16384 in bad blocks (2 blocks)
I:\hb_copy_v2c\Dist>

```

SYSAUX01.dbf

```

C:\WINDOWS\system32\cmd.exe - bcopy -b 8192 -r 1 -f G:\app\Administrator\oradat...
I:\hb_copy_v2c\Dist>
I:\hb_copy_v2c\Dist>
I:\hb_copy_v2c\Dist>
I:\hb_copy_v2c\Dist>bcopy -b 8192 -r 1 -f G:\app\Administrator\oradata\orcl\SYS
AUX01.DBF I:\SYSAUX01.DBF
Scratched File and Bad Block Copy utility v2.3 (c) by Alter, 2004-2014
Home site http://www.alter.org.ua
G:\app\Administrator\oradata\orcl\SYSAUX01.DBF -> I:\SYSAUX01.DBF
2086674432 bytes
 254721 blocks, physical block size 8192 bytes, I/O block size 65536 bytes
Starting from offset 0 bytes
  to target at offset 0 bytes
.Can't read block (65536 bytes) at offset 3866624 (LBA 472) error 23
.Can't read block (65536 bytes) at offset 4456448 (LBA 544) error 23
.Can't read block (65536 bytes) at offset 4521984 (LBA 552) error 23
.Can't read block (65536 bytes) at offset 6750208 (LBA 824) error 23
.Can't read block (65536 bytes) at offset 11337728 (LBA 1384) error 23
.Can't read block (8192 bytes) at offset 11378688 (LBA 1389) error 23
.Can't read block (65536 bytes) at offset 11403264 (LBA 1392) error 23
.Can't read block (65536 bytes) at offset 12845056 (LBA 1568) error 23
.Can't read block (65536 bytes) at offset 13041664 (LBA 1592) error 23
.Can't read block (65536 bytes) at offset 14352384 (LBA 1752) error 23
.Can't read block (65536 bytes) at offset 25034752 (LBA 3056) error 23
.Can't read block (65536 bytes) at offset 25100288 (LBA 3064) error 23

```

```

C:\WINDOWS\system32\cmd.exe - bbcopy -b 8192 -r 1 -f G:\app\Administrator\oradat...
Can't read block (65536 bytes) at offset 13041664 (LBA 1592) error 23
Can't read block (65536 bytes) at offset 14352384 (LBA 1752) error 23
Can't read block (65536 bytes) at offset 25034752 (LBA 3056) error 23
Can't read block (65536 bytes) at offset 25100288 (LBA 3064) error 23
Can't read block (65536 bytes) at offset 31064064 (LBA 3792) error 23
Can't read block (65536 bytes) at offset 31129600 (LBA 3800) error 23
Can't read block (65536 bytes) at offset 31260672 (LBA 3816) error 23
.....*Can't read block (65536 bytes) at offset 379650048 (LBA 46344) error 23

Can't read block (65536 bytes) at offset 379715584 (LBA 46352) error 23
Can't read block (65536 bytes) at offset 379781120 (LBA 46360) error 23
Can't read block (65536 bytes) at offset 380370944 (LBA 46432) error 23
Can't read block (8192 bytes) at offset 380411904 (LBA 46437) error 23
Can't read block (65536 bytes) at offset 380567552 (LBA 46456) error 23
Can't read block (65536 bytes) at offset 381157376 (LBA 46528) error 23
Can't read block (65536 bytes) at offset 381943808 (LBA 46624) error 23
....Can't read block (65536 bytes) at offset 563216384 (LBA 68752) error 23
Can't read block (65536 bytes) at offset 569376768 (LBA 69504) error 23
Can't read block (65536 bytes) at offset 582483968 (LBA 71104) error 23
.Can't read block (65536 bytes) at offset 593166336 (LBA 72408) error 23
Can't read block (65536 bytes) at offset 594018304 (LBA 72512) error 23
Can't read block (65536 bytes) at offset 609288192 (LBA 74376) error 23
***

```

```

C:\WINDOWS\system32\cmd.exe
Can't read block (65536 bytes) at offset 31129600 (LBA 3800) error 23
Can't read block (65536 bytes) at offset 31260672 (LBA 3816) error 23
.....*Can't read block (65536 bytes) at offset 379650048 (LBA 46344) error 23

Can't read block (65536 bytes) at offset 379715584 (LBA 46352) error 23
Can't read block (65536 bytes) at offset 379781120 (LBA 46360) error 23
Can't read block (65536 bytes) at offset 380370944 (LBA 46432) error 23
Can't read block (8192 bytes) at offset 380411904 (LBA 46437) error 23
Can't read block (65536 bytes) at offset 380567552 (LBA 46456) error 23
Can't read block (65536 bytes) at offset 381157376 (LBA 46528) error 23
Can't read block (65536 bytes) at offset 381943808 (LBA 46624) error 23
....Can't read block (65536 bytes) at offset 563216384 (LBA 68752) error 23
Can't read block (65536 bytes) at offset 569376768 (LBA 69504) error 23
Can't read block (65536 bytes) at offset 582483968 (LBA 71104) error 23
.Can't read block (65536 bytes) at offset 593166336 (LBA 72408) error 23
Can't read block (65536 bytes) at offset 594018304 (LBA 72512) error 23
Can't read block (65536 bytes) at offset 609288192 (LBA 74376) error 23
....Can't read block (65536 bytes) at offset 755695616 (LBA 92248) error 23
Can't read block (65536 bytes) at offset 769523712 (LBA 93936) error 23
*.....*.....*.....*
Copied 2086674432 bytes (254721 blocks)
      0 unreliable (0 blocks)
      16384 in bad blocks (2 blocks)
I:\bb_copy_v2c\Dist>

```

USER01.dbf

```

C:\WINDOWS\system32\cmd.exe
Scratched File and Bad Block Copy utility v2.3 (c) by Alter, 2004-2014
Home site http://www.alter.org.ua
G:\app\Administrator\oradata\orcl\USERS01.DBF -> I:\USERS01.DBF
6561792 bytes
  801 blocks, physical block size 8192 bytes, I/O block size 65536 bytes
Starting from offset 0 bytes
  to target at offset 0 bytes
.....Can't read block (65536 bytes) at offset 1048576 (LBA 128) error 23
*...Can't read block (65536 bytes) at offset 1638400 (LBA 200) error 23
Can't read block (65536 bytes) at offset 1703936 (LBA 208) error 23
Can't read block (8192 bytes) at offset 1720320 (LBA 210) error 23
Can't read block (8192 bytes) at offset 1736704 (LBA 212) error 23
.Can't read block (65536 bytes) at offset 1769472 (LBA 216) error 23
Can't read block (8192 bytes) at offset 1785856 (LBA 218) error 23
Can't read block (8192 bytes) at offset 1794048 (LBA 219) error 23
Can't read block (8192 bytes) at offset 1802240 (LBA 220) error 23
Can't read block (65536 bytes) at offset 1835008 (LBA 224) error 23
.Can't read block (65536 bytes) at offset 1900544 (LBA 232) error 23
*...Can't read block (65536 bytes) at offset 3276800 (LBA 400) error 23
*.....*.....*
Copied 6561792 bytes (801 blocks)
      0 unreliable (0 blocks)
      40960 in bad blocks (5 blocks)
I:\bb_copy_v2c\Dist>

```

TEMP01.dbf

```
I:\bh_copy_v2e\Dist>hhcopy -b 8192 -r 1 -f G:\app\Administrator\oradata\orc1\TEMP01.DBF I:\TEMP01.DBF
Scatched File and Bad Block Copy utility v2.3 (c) by Alter, 2004-2014
Home site http://www.alter.org.ua
G:\app\Administrator\oradata\orc1\TEMP01.DBF -> I:\TEMP01.DBF
30416896 bytes
 3713 blocks, physical block size 8192 bytes, I/O block size 65536 bytes
Starting from offset 0 bytes
 to target at offset 0 bytes
..Can't read block (65536 bytes) at offset 1114112 (LBA 136) error 23
.Can't read block (65536 bytes) at offset 1769472 (LBA 216) error 23
.Can't read block (65536 bytes) at offset 1835008 (LBA 224) error 23
.....*.....*.....*.....*.....*
Copied 30416896 bytes (3713 blocks)
 0 unreliable (0 blocks)
 0 in bad blocks (0 blocks)
```

UNDOBS01.dbf

```
G:\app\Administrator\oradata\orc1\UNDOTBS01.DBF -> I:\UNDOTBS01.DBF
173023232 bytes
21121 blocks, physical block size 8192 bytes, I/O block size 65536 bytes
Starting from offset 0 bytes
 to target at offset 0 bytes
.....Can't read block (65536 bytes) at offset 24182784 (LBA 2952) error 23
.Can't read block (65536 bytes) at offset 24969216 (LBA 3048) error 23
Can't read block (65536 bytes) at offset 25624576 (LBA 3128) error 23
Can't read block (65536 bytes) at offset 25690112 (LBA 3136) error 23
Can't read block (65536 bytes) at offset 25886720 (LBA 3160) error 23
.*.Can't read block (65536 bytes) at offset 34930688 (LBA 4264) error 23
Can't read block (65536 bytes) at offset 35651584 (LBA 4352) error 23
Can't read block (65536 bytes) at offset 35717120 (LBA 4360) error 23
.Can't read block (65536 bytes) at offset 38731776 (LBA 4728) error 23
Can't read block (8192 bytes) at offset 38764544 (LBA 4732) error 23
.Can't read block (65536 bytes) at offset 42532864 (LBA 5192) error 23
Can't read block (8192 bytes) at offset 42565632 (LBA 5196) error 23
Can't read block (8192 bytes) at offset 42573824 (LBA 5197) error 23
Can't read block (8192 bytes) at offset 42582016 (LBA 5198) error 23
Can't read block (65536 bytes) at offset 44761088 (LBA 5464) error 23
.Can't read block (65536 bytes) at offset 45547520 (LBA 5560) error 23
Can't read block (65536 bytes) at offset 46268416 (LBA 5648) error 23
Can't read block (65536 bytes) at offset 47054848 (LBA 5744) error 23
Can't read block (65536 bytes) at offset 47841280 (LBA 5840) error 23
```

```
C:\WINDOWS\system32\cmd.exe
Can't read block (65536 bytes) at offset 35717120 (LBA 4360) error 23
.Can't read block (65536 bytes) at offset 38731776 (LBA 4728) error 23
Can't read block (8192 bytes) at offset 38764544 (LBA 4732) error 23
.Can't read block (65536 bytes) at offset 42532864 (LBA 5192) error 23
Can't read block (8192 bytes) at offset 42565632 (LBA 5196) error 23
Can't read block (8192 bytes) at offset 42573824 (LBA 5197) error 23
Can't read block (8192 bytes) at offset 42582016 (LBA 5198) error 23
Can't read block (65536 bytes) at offset 44761088 (LBA 5464) error 23
.Can't read block (65536 bytes) at offset 45547520 (LBA 5560) error 23
Can't read block (65536 bytes) at offset 46268416 (LBA 5648) error 23
Can't read block (65536 bytes) at offset 47054848 (LBA 5744) error 23
Can't read block (65536 bytes) at offset 47841280 (LBA 5840) error 23
Can't read block (8192 bytes) at offset 47890432 (LBA 5846) error 23
.Can't read block (65536 bytes) at offset 49414144 (LBA 6032) error 23
.Can't read block (65536 bytes) at offset 52428800 (LBA 6400) error 23
...*.Can't read block (65536 bytes) at offset 71106560 (LBA 8680) error 23
...Can't read block (65536 bytes) at offset 86376448 (LBA 10544) error 23
...Can't read block (65536 bytes) at offset 98631680 (LBA 12040) error 23
Can't read block (65536 bytes) at offset 99352576 (LBA 12128) error 23
*.....*.....*
Copied 173023232 bytes (21121 blocks)
 0 unreliable (0 blocks)
 40960 in bad blocks (5 blocks)

I:\bh_copy_v2e\Dist>
```

REDO01.log

```

C:\WINDOWS\system32\cmd.exe
I:\hb_copy_v2c\Dist>hbcopy -b 8192 -r 1 -f G:\app\Administrator\oradata\orcl\RED
001.LOG I:\RED001.LOG
Scratched File and Bad Block Copy utility v2.3 (c) by Alter, 2004-2014
Home site http://www.alter.org.ua
G:\app\Administrator\oradata\orcl\RED001.LOG -> I:\RED001.LOG
52429312 bytes
 6400 blocks, physical block size 8192 bytes, I/O block size 65536 bytes
Starting from offset 0 bytes
  to target at offset 0 bytes
.....*.....*.....*.....*.....*.....*.....*.....*.....*.....*.....*.....*
..Can't read block (65536 bytes) at offset 25559040 (LBA
3120) error 23
..Can't read block (65536 bytes) at offset 27983872 (LBA 3416) error 23
..*Can't read block (65536 bytes) at offset 30867456 (LBA 3768) error 23
Can't read block (65536 bytes) at offset 30932992 (LBA 3776) error 23
..Can't read block (65536 bytes) at offset 32440320 (LBA 3960) error 23
Can't read block (8192 bytes) at offset 32481280 (LBA 3965) error 23
.....*.....*.....*.....*.....*.....*.....*.....*.....*.....*.....*.....*
..Can't read block (65536 bytes) at offset 50790400 (LBA 6200) error 23
*Can't read block (65536 bytes) at offset 51511296 (LBA 6288) error 23

Copied 52429312 bytes (6400 blocks)
  0 unreliable (0 blocks)
 8192 in bad blocks (1 blocks)
    
```

REDO02.log

```

I:\hb_copy_v2c\Dist>hbcopy -b 8192 -r 1 -f G:\app\Administrator\oradata\orcl\RED
002.LOG I:\RED002.LOG
Scratched File and Bad Block Copy utility v2.3 (c) by Alter, 2004-2014
Home site http://www.alter.org.ua
G:\app\Administrator\oradata\orcl\RED002.LOG -> I:\RED002.LOG
52429312 bytes
 6400 blocks, physical block size 8192 bytes, I/O block size 65536 bytes
Starting from offset 0 bytes
  to target at offset 0 bytes
.....*.....*.....*.....*.....*.....*.....*.....*.....*.....*.....*.....*
Copied 52429312 bytes (6400 blocks)
  0 unreliable (0 blocks)
  0 in bad blocks (0 blocks)

I:\hb_copy_v2c\Dist>
    
```

REDO03.log

```

I:\hb_copy_v2c\Dist>hbcopy -b 8192 -r 1 -f G:\app\Administrator\oradata\orcl\RED
003.LOG I:\RED003.LOG
Scratched File and Bad Block Copy utility v2.3 (c) by Alter, 2004-2014
Home site http://www.alter.org.ua
G:\app\Administrator\oradata\orcl\RED003.LOG -> I:\RED003.LOG
52429312 bytes
 6400 blocks, physical block size 8192 bytes, I/O block size 65536 bytes
Starting from offset 0 bytes
  to target at offset 0 bytes
.....*.....*.....*.....*.....*.....*.....*.....*.....*.....*.....*.....*
Copied 52429312 bytes (6400 blocks)
  0 unreliable (0 blocks)
  0 in bad blocks (0 blocks)

I:\hb_copy_v2c\Dist>
    
```

Control file

```

I:\hb_copy_v2c\Dist>hbcopy -b 8192 -r 1 -f D:\app\Administrator\flash_recovery_a
rea\orcl\CONTROL02.CTL I:\CONTROL02.CTL
Scratched File and Bad Block Copy utility v2.3 (c) by Alter, 2004-2014
Home site http://www.alter.org.ua
D:\app\Administrator\flash_recovery_area\orcl\CONTROL02.CTL -> I:\CONTROL02.CTL
9748480 bytes
 1190 blocks, physical block size 8192 bytes, I/O block size 65536 bytes
Starting from offset 0 bytes
  to target at offset 0 bytes
.....*.....*.....*.....*.....*.....*.....*.....*.....*.....*.....*.....*
Copied 9748480 bytes (1190 blocks)
  0 unreliable (0 blocks)
  0 in bad blocks (0 blocks)

I:\hb_copy_v2c\Dist>
    
```

2. 工程师使用 PRM-DUL 工具打开了对应数据库文件：

- 1) 打开 prm.bat
- 2) 使用字典模式并倒入数据文件:
SYSTEM01.DBF
SYSAUX01.DBF
BJ_ZCGL.ORA
EXAMPLE01.DBF
USERS01.DBF
- 3) 通过观察发现需要导出 Schema 下的数据

4. 使用 PRM-DUL DataBridge 方式将用户业务数据抽取并成功倒入到临时数据库 ORCL1 中。



2.2 建议及总结

1. 由于坏块使得重新将客户系统恢复已无意义。建议第三方重新部署软件相应数据库应用设置并将救援出的客户数据重新导入。
2. 用户的数据库无备份，无归档。并缺少相应数据库专业人员进行维护及日志检查。
数据库出现问题在初期未能及时解决，使得坏块扩散，最终造成客户损失。
建议：开启备份和日志归档，派遣数据库相关人员做定期健康检查。

其他问题

未解决的问题

问题号	问题描述	解决方案	日期

已解决的问题

问题号	问题描述	解决方案	解决日期

最后



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