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OAC - Oracle DB Outage After AIX Upgrade


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Oracle DB Issue showing after upgrading to AIX 6.1 TL09 SP08 and 7.1 TL04 SP03

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Overview:

There is an issue with some versions of Oracle after upgrading AIX to a couple of specific TL-SP. The symptoms are ORA-600 memory related failures.

Please do NOT upgrade to the AIX SP's listed below if you are running an affected Oracle version.

If you have already upgraded, and you are running Oracle databases, please back out from the upgrade as soon as possible.

Severity:

High impact - Pervasive

Detailed description:

The latest AIX Service Packs can result in Oracle crashes and data corruption in the database.

The symptoms so far are ORA-600 memory related failures as in the examples below. Additionally, Redo log corruption has been observed in at least two cases.

The recommendation is to not install these latest Service Packs on Oracle servers until IBM makes a fix available.

What Platform/Software is Affected:

Oracle DB 11.2.0.3.x or 11.2.0.4.x on AIX platforms running the AIX levels listed below.

Also on Oracle PSU version 11.2.0.x.

The issue exists in the following AIX levels:

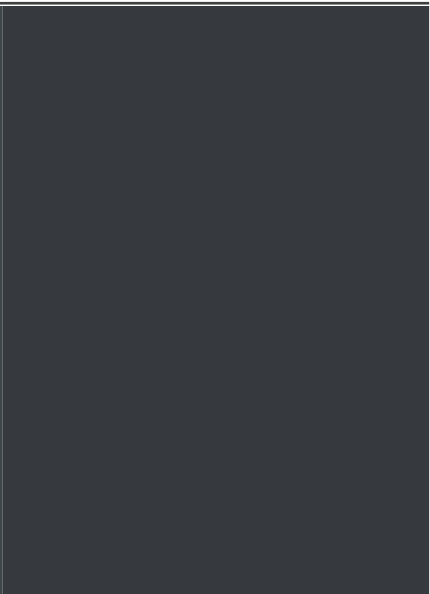
7100-04-03-1642
7100-04-03-1643

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6100-09-08-1642
6100-09-08-1643

Recommended Service Actions:

Do NOT install the listed AIX service packs on servers running Oracle databases.
If you have already upgraded to one of those levels, backout the upgrade.

Additional Information:

Oracle document describing the issue: [aixn2237498.pdf](#)
This document shows the ORA error messages you will find in the Alert.log

From the PDF Attachment:

ALERT: Database Corruption ORA-600 ORA-7445 errors after applying AIX SP patches - AIX 6.1.9.7 to SP08 or AIX 7.1.4.2 to SP03

APPLIES TO:

Oracle Database - Enterprise Edition - Version 11.2.0.3 to 11.2.0.4 [Release 11.2]
IBM AIX on POWER Systems (64-bit)

A problem has been discovered in the latest SP patches for IBM AIX 6.1 and 7.1 (SP 08 and SP 03) where 11.2.0.3 or 11.2.0.4 are running. ORA-600 errors and possible database corruption.

AIX 6.1.9.7 to SP08

AIX 7.1.4.2 to SP03

This is only known to impact Oracle 11.2.0.3.x or 11.2.0.4.x on AIX platforms. It has been observed on various Oracle PSU versions, but so far ONLY on 11.2.0.x

The symptoms observed so far are ORA-600 memory related failures with examples below. Additionally, Redo log corruption has been observed in at least two cases.

DESCRIPTION

Database Corruption and/or ORA-600 ORA-7445 errors after applying IBM AIX SP patches - AIX 6.1.9.7 to SP08 or AIX 7.1.4.2 to SP03

OCCURRENCE

The only changes were upgrades to the latest IBM SP patches.

AIX 6.1.9.7 to SP08

AIX 7.1.4.2 to SP03

To check for AIX patch levels that are exposed to this risk, run the following command and look for any of the following:

oslevel -s

If any of the following are listed, exposure to this problem exists:

7100-04-03-1642

7100-04-03-1643

6100-09-08-1642

6100-09-08-1643

SYMPTOMS

The following ORA-600 errors have been observed. Note that not all errors are needed, and not all customers have seen all these errors.

=====

ORA-00600: internal error code, arguments: [kkoipt:invalid aptyp], [0], [0], [], [], [], [], [], [], [], [], []

Optimizer - Maps the structures from memory

=====

ORA-00600: internal error code, arguments: [kghssgai2], [1], [32], [], [], [], [], [], [], [], []

--looks to be pga related allocations

Generic memory Heap manager -we can't have both a heap and an allocation function passed in to us

=====

ORA-00600: internal error code, arguments: [qkkAssignKey:1], [], [], [], [], [], [], [], [], [], []

qkkAssignKey - copy keys from source to destination key

=====

ORA-00600: internal error code, arguments: [kclgclks_3], [454], [2431642561], [], [], [], [], [], [], [], []

kclgclks - CR Server request

=====

ORA-00600: internal error code, arguments: [kkqvmRmViewFromLst1], [], [], [], [], [], [], [], [], [], []

View Merging - list management

=====

ORA-00600: internal error code, arguments: [kghstack_underflow_internal_1], [0x082024000], [rpi role space], [], [], [],

[], [], [], [], [], []

shared heap manager Stack segment underflow, failure to follow stack discipline.

assert no previous chunk in this segment

=====

ORA-00600: internal error code, arguments: [qerghFetch.y], [], [], [], [], [], [], [], [], [], []

Implements hash aggregation for query source

=====

ORA-00600: internal error code, arguments: [qeshQBNextLoad.1], [], [], [], [], [], [], [], [], [], [], []

Hash Table Infrastructure -get Next buffer during Load

=====

ORA-00600: internal error code, arguments: [qkshtQBGet:1], [], [], [], [], [], [], [], [], [], [], []

gets memory pointer for a query block.

Make sure the query block pointer is not NULL

=====

ORA-00600: internal error code, arguments: [qeshIHBuildOnPartition block missed], [], [], [], [], [], [], [], [], [], []

[], []

Hash Table Infrastructure

update the partition at the end.

=====

ORA-00600: internal error code, arguments: [kghssgfr2], [1]

=====

ORA-07445: exception encountered: core dump [PC:0x0] [SIGILL] [ADDR:0x0] [PC:0x0] [Illegal opcode]

=====

ORA-00600 [kkogbro: no kkoaptyp]

=====

ORA-00600: internal error code, arguments: [kewrose_1], [600]

Core dumps are also possible.

Redo log corruption with checksum error has also been observed.

Two known examples below:

example 1:

Alert.log messages:

ORA-00368: checksum error in redo log block

ORA-00353: log corruption near block 73804 change 8112409541614 time 12/07/2016 07:12:25

ORA-00334: archived log: '/dev/rredo13'

ORA-07445: exception encountered: core dump [pkrdi()+780] [SIGSEGV] [ADDR:0x0] [PC:0x10367B26C] [Invalid permissions for mapped

There have been also transient database block corruptions or control file block corruption with checksum errors in the database where a reread finds valid data.

example 2 (transient database block corruption with checksum error):

Corrupt block relative dba: 0x5a066b2f (file 360, block 420655)

Bad check value found during buffer read

Data in bad block:

type: 6 format: 2 rdba: 0x5a066b2f

last change scn: 0x00cc.6a826294 seq: 0x1 flg: 0x06

spare1: 0x0 spare2: 0x0 spare3: 0x0

consistency value in tail: 0x62940601

check value in block header: 0x9e7d

computed block checksum: 0x0 ---> 0x0 means that checksum is good when printing the error message (transient problem)

Reading datafile 'Datafile name' for corruption at rdba: 0x5a066b2f (file 360, block 420655)

Reread (file 360, block 420655) found valid data

Hex dump of (file 360, block 420655) in trace file

Repaired corruption at (file 360, block 420655)

example 3 (transient control file corruption with checksum error):

Hex dump of (file 0, block 1) in trace file ...

Corrupt block relative dba: 0x00000001 (file 0, block 1)

Bad check value found during control file header read

Data in bad block:

type: 21 format: 2 rdba: 0x00000001

last change scn: 0x0000.00000000 seq: 0x1 flg: 0x04

spare1: 0x0 spare2: 0x0 spare3: 0x0

consistency value in tail: 0x00001501

check value in block header: 0xca35

computed block checksum: 0x0 ---> 0x0 means that checksum is good when printing the error message (transient problem)

Errors in file ...:

ORA-00202: control file: '/oracle/dbs/control_01.ctl'

Errors in file ...

ORA-00227: corrupt block detected in control file: (block 1, # blocks 1)

ORA-00202: control file: '/oracle/dbs/control_01.ctl'

WORKAROUND

The current solution is to revert back to the previous SP patches on the AIX host.

PATCHES

This note will be updated when a final solution from IBM is available.

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