7 ways to crash Postgres

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to
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Postgres

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PostgreSQL Project
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1 Don't Apply Updates

1. ignore update announcements

2. keep running version X.X.0 or X.X.1

3. wait for disaster to strike

9. 2. 2

9. 2.③

E.1. Release 9.2.2

Release Date: 2012-12-06

This release contains a variety of fixes from 9.2.1. For information about new features in the 9.2 major release, see Section E.3.

E.1.1. Migration to Version 9.2.2

A dump/restore is not required for those running 9.2.X.

However, you may need to perform REINDEX operations to correct problems in concurrently-built indexes, as described in the first changelog item below.

Also, if you are upgrading from version 9.2.0, see the release notes for 9.2.1.

E.1.2. Changes

- Fix multiple bugs associated with CREATE/DROP INDEX CONCURRENTLY

9.2.2:
Prevent database-wide crash and restart when a new child process is unable to create a pipe for its latch.

9.1.6:
Fix misbehavior when default_transaction_isolation is set to serializable. Symptoms include crashes at process start on Windows, and crashes in hot standby operation.

Upgrade!

EOL after 5 years

2 Out of Disk Space

1. install DB on volume which is 80% full

2. don't monitor disk space usage

3. let database grow

```
ERROR: could not write
block 31840050 of
temporary file: No space
left on device

PANIC:  could not write
to file
"pg_xlog/xlogtemp.49680"
: No space left on
device
```

2a Out of Disk Space Archiving Edition

1. set up transaction log archiving to a standby

2. stop file use/deletion on the standby

3. don't monitor

4. disk on the standby fills up with archive logs

5. disk on the master fills up with archive logs

6. failover impossible

freeing up space takes more space

- VACUUM FULL
- REINDEX
- DELETE
- pg_reorg

DROP TABLE;
DROP DATABASE;

3 Deleting Stuff

```
base                pg_snapshots
cold                pg_stat_tmp
global              pg_subtrans
hot                 pg_tblspc
pg_clog             pg_twophase
pg_hba.conf         PG_VERSION
pg_ident.conf       pg_xlog
pg_log              postgresql.conf
pg_multixact
pg_notify           postmaster.opts
pg_serial
```

```
base                  pg_snapshots
cold                  pg_stat_tmp
global                pg_subtrans
hot                   pg_tblspc
pg_clog               pg_twophase
pg_hba.conf           PG_VERSION
pg_ident.conf         pg_xlog
pg_log                postgresql.conf
pg_multixact
pg_notify             postmaster.opts
pg_serial
```

```
2012-09-25 08:27:03 UTC
ERROR:  could not access
status of transaction
500185903

2012-09-25 08:27:03 UTC
DETAIL:  Could not open file
"pg_clog/01DD": No such file
or directory.
```

4 Out of Memory

1. set shared_buffers to 80% of RAM

2. set work_mem to 1GB

3. ramp up to 1000 connections

1. run Postgres on cloud server

2. add a JVM

3. add Apache/mod_php

4. add MySQL

5. add a second Postgres version

0. run server with default Linux memory management settings

```
kernel: postgres invoked
oom-killer: gfp_mask=0x201d2,
order=0, oomkilladj=0

LOG:  background writer
process (PID 22999) was
terminated by signal 9:
Killed

LOG:  terminating any other
active server processes
```

5 Bad Hardware

1. buy brand-new hardware

2. install PostgreSQL

3. don't test

4. deploy in production

1. deploy production hardware

2. don't monitor SMART

3. don't monitor syslog

4. run for a couple years

```
ERROR:  could not read block
1 in file "base/18511/13872":
read only 0 of 8192 bytes

FATAL: failed to re-find
parent key in index
"257969064" for split pages
8366/12375
```

6 Too Many Connections

1. build application with ad-hoc DB connections

2. no connection pooling

3. program auto-reconnect on timeout

4. raise max_connections to 2000

CRITICAL: server postgres2 is
not accepting connections

7 Zombie Locks

1. program application so it forgets to close transactions

2. run for a few hours or days

3. watch the locks pile up

```
DBI ERROR timeout after
300 seconds: "UPDATE
sessions SET last_seen =
now()WHERE session_key =
'a16g32b12cd0';"
```

1. no updates

2. out of disk space

3. deleting stuff

4. out of RAM

5. bad hardware

6. too many connections

7. zombie locks

more elephants

- Postgres Pizza BOF:
  - Wed Night, 8:30PM, B&G Snooker Hall
- pgDay Melbourne: Feb 5th
  - 2013.pgday.org.au
- pgCon May 21-24 Ottawa
- me: www.databasesoup.com
  - josh@postgresql.org