The Silliest Bugs a Support Guy Ever Reported

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THE SPEAKER

.. works as technical support for Satellite6
THE SPEAKER

HELLO I.T.

HAVE YOU TRIED TURNING IT OFF AND ON AGAIN?
THE SPEAKER

- when frontline support engineers get out of ideas..
- I start to be engaged..
- and sometimes I find bugs
- sometimes very silly bugs.
THE TALK

• to present the most silly/awkward/.. bugs I raised
THE TALK

- to present the most silly/awkward/.. bugs I raised

- to entertain you
THE TALK

- to present the most silly/awkward/.. bugs I raised

- to entertain you

- to provide feedback to you
THE DISCLAIMERS

• bug list is very subjective
  • from components I am involved in
THE DISCLAIMERS

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  - from components I am involved in

- I don’t want to taunt you/devels
THE DISCLAIMERS

- bug list is very subjective
  - from components I am involved in

- I don’t want to taunt you/devels

- I am not a developer
THE BUGS

- is your code (thread) safe?
THE BUGS

- is your code (thread) safe?
- when characters matter
THE BUGS

- is your code (thread) safe?
- when characters matter
- do you like dominos?
THE BUGS

- is your code (thread) safe?
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- to route or not to route
THE BUGS

- is your code (thread) safe?
- when characters matter
- do you like dominos?
- to route or not to route
- don’t (b)lock
THE BUGS

- is your code (thread) safe?
- when characters matter
- do you like dominos?
- to route or not to route
- don’t (b)lock
- corner case is also a case
IS YOUR CODE (THREAD) SAFE?

- customer problem in Satellite6:
  - installing a package to 6k systems via goferd
  - random goferd processes segfault..
  - .. causing some random installations fail
IS YOUR CODE (THREAD) SAFE?

- **customer problem in Satellite6:**
  - installing a package to 6k systems via goferd
  - random goferd processes segfault..
  - .. causing some random installations fail

- **our problem in gdb:**
  - backtraces didn’t follow method calls in code
IS YOUR CODE (THREAD) SAFE?

Satellite installing a package to a system

foreman

httpd/pulp

qpidd
queue

sends package install request

Remote system
goferd
IS YOUR CODE (THREAD) SAFE?

Satellite installing a package to a system

- **foreman**
- **httpd/pulp**

```
Satellite
```

```
goferd updating
package profile
```

```
yum fetching
all repos
```

```
Remote system
```

```
goferd
```

---

**Goferd**

**Remote system**

**Yum fetching all repos**

**Foreman**

**Httpd/pulp**

---

**Satellite installing a package to a system**
IS YOUR CODE (THREAD) SAFE?

- both goferd requests:
  - can be fired from two threads concurrently
IS YOUR CODE (THREAD) SAFE?

- both goferd requests:
  - can be fired from **two threads** concurrently
  - use **thread-unsafe** urlgrabber python library
IS YOUR CODE (THREAD) SAFE?

• RHBZ #1418557
  • goferd segfaults while pushing erratas to 1K clients

• lessons learned:
  • ensure no thread-unsafe library is used concurrently
IS YOUR CODE (THREAD) SAFE?
WHEN CHARACTERS MATTER

- customer problem in Satellite6:
  - wsgi script in httpd segfaults
  - httpd restart doesn't help
  - whole WebUI inaccessible
Satellite installing a package to a system

foreman

httpd/pulp

qpidd

queue

Remote system

goferd

sends package install request
Satellite installing a package to a system

- foreman
- httpd/pulp
- qpidd
- queue

`sends install outcome`

Remote system

- goferd
WHEN CHARACTERS MATTER

Satellite installing a package to a system

- foreman
- httpd/pulp
- qpidd
- queue

Remote system

“Erreur : Erreur du contrôle de transaction”
WHEN CHARACTERS MATTER

• underlying code:

```python
.. s.append('  exval: %s' % str(self.exval))
..```
WHEN CHARACTERS MATTER

Satellite installing a package to a system

foreman

httpd/pulp

qpidd

queue

Remote system

goferd

“Erreur : Erreur du contrôle de transaction”
WHEN CHARACTERS MATTER

- RHBZ #1353555
  - `wsgi:pulp` segfaults when parsing task output with nonASCII characters

- lessons learned:
  - treat any string in unicode
WHEN CHARACTERS MATTER
DO YOU LIKE DOMINOS?

- customers problem in Satellite6:
  - after upgrade to 6.2, major performance degradation
  - any request takes minutes
  - later on, whole Satellite unresponsive
DO YOU LIKE DOMINOS?

- httpd unresponsive b’cos passenger queue is full
DO YOU LIKE DOMINOS?

- httpd unresponsive b’cos passenger queue is full
- passenger queue is full of candlepin requests
DO YOU LIKE DOMINOS?

- httpd unresponsive b’cos passenger queue is full
- passenger queue is full of candlepin requests
- any candlepin request gets timeouted after 2minutes..
DO YOU LIKE DOMINOS?

• httpd unresponsive b’cos passenger queue is full

• passenger queue is full of candlepin requests

• any candlepin request gets timeouted after 2minutes..

• .. with an error “unable to send to qpidd”
DO YOU LIKE DOMINOS?

- httpd unresponsive b’cos passenger queue is full
- passenger queue is full of candlepin requests
- any candlepin request gets timeouted after 2 minutes..
- .. with an error “unable to send to qpidd”
- why qpidd rejects (some) messages?
DO YOU LIKE DOMINOS?

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- why qpidd rejects (some) messages?
- b’cos it has relevant queue (almost) full
DO YOU LIKE DOMINOS?

- why qpidd rejects (some) messages?
- b’cos it has relevant queue (almost) full
- but that queue is relevant to Sat6.1 only, its consumer was removed during the upgrade!
DO YOU LIKE DOMINOS?

• why qpidd rejects (some) messages?

• b’cos it has relevant queue (almost) full

• but that queue is relevant to Sat6.1 only, its consumer was removed during the upgrade!

• the removal forgot about something..
DO YOU LIKE DOMINOS?

Satellite and (relevant) components

- httpd
- passenger
- candlepin
- pulp
- foreman
- qpidd
- queue
- gutterball
DO YOU LIKE DOMINOS?

Satellite and (relevant) components

httpd
passenger

candlepin
pulp
foreman

qpidd
queue

gutterball
DO YOU LIKE DOMINOS?

Satellite and (relevant) components

- httpd
- passenger
- candlepin
- pulp
- foreman
- qpidd
  - 80%full queue
- gutterball
DO YOU LIKE DOMINOS?

Satellite and (relevant) components

- httpd
- passenger
- candlepin
- pulp
- foreman
- qpidd
  - 80% full queue

requests not responded and timeout after 2m

gutterball
DO YOU LIKE DOMINOS?

Satellite and (relevant) components

- httpd
- passenger
- pulp
- foreman
- candlepin
- qpidd

- passenger’s queue is full
- requests not responded and timeout after 2m
- 80% full queue
- gutterball
DO YOU LIKE DOMINOS?

Satellite and (relevant) components

- **httpd** returns 503
- **passenger**'s queue is full
- **candlepin**
  - Requests not responded and timeout after 2m
- **qpidd**
  - 80% full queue
- **gutterball**
DO YOU LIKE DOMINOS?

- RHBZ #1375659
  - upgrade to 6.2 does not delete $(fqdn):event queue what can end up in 503 error in WebUI

- lessons learned:
  - do a component removal thoroughly
  - prevent domino-effect of DoS
DO YOU LIKE DOMINOS?
TO ROUTE OR NOT TO ROUTE

- **customer problem in Satellite6:**
  - goferd fails to connect to qpidd
  - all intermediate processes running&connected
  - inability to install errata on systems
TO ROUTE OR NOT TO ROUTE

Satellite

qpidd

qdrouterd

Capsule

qdrouterd

System

goferd
TO ROUTE OR NOT TO ROUTE

- qdrouterd is just for *routing* messages
TO ROUTE OR NOT TO ROUTE

Satellite

qpidd

qdrouterd

Capsule

qdrouterd

System

goferd

Error: no-route-to-dest

Inter-connect me to qpidd
TO ROUTE OR NOT TO ROUTE

producer

qdrouterd

c1: addresses: ['qwerty*', 'asd*']
c2: addresses: []
c3: addresses: ['z*', '0*', '1*', '2*']

qdrouterd

c1

qdrouterd

c2

qdrouterd

c3

consumer

address: qwerty1

address: qwerty1
TO ROUTE OR NOT TO ROUTE

Producer

Qdrouterd

Address: qwerty1

C1: addresses: [ 'qwerty*', 'asd*' ]
C2: addresses: []
C3: addresses: [ '0*', '2*' ]

Qdrouterd

C1

Qdrouterd

C2

Qdrouterd

C3

Consumer

Address: qwerty1
TO ROUTE OR NOT TO ROUTE

• underlying code:

```python
def unmap_all_addresses(self):
    self.mobile_address_sequence = 0
    for addr in self.mobile_addresses:
        self.mobile_addresses.remove(addr)
```
TO ROUTE OR NOT TO ROUTE

• underlying code execution:

```python
$ python
...
>>> mobile_addresses = ['a', 'b', 'c', 'd']
>>> for addr in mobile_addresses:
...   mobile_addresses.remove(addr)
...
>>> mobile_addresses
['b', 'd']
>>> 
```
TO ROUTE OR NOT TO ROUTE

- RHBZ #1426242
  - `goferd disconnects with no route to destination node on client`

- lessons learned:
  - **don’t update list you are traversing**
TO ROUTE OR NOT TO ROUTE
DONT (B)LOCK

- customer problem with qdrouterd:
  - suddenly it stopped responding
  - restart didn’t help
DONT (B)LOCK

```c
sys_mutex_lock(qd_server→lock);
..
qdpn_listener_accept(..);

qdpn_connector_t *qdpn_listener_accept(..)
{
 ..
  if ((code = getnameinfo((struct sockaddr *)
                             &addr, ..)) || ..
```
DONT (B)LOCK

```c
sys_mutex_lock(qd_server->lock);
..
qdpn_listener_accept(..);

qdpn_connector_t *qdpn_listener_accept(..) {
  ..
  if ((code = getnameinfo((struct sockaddr *)
 &addr, ..)) || ..
```
DONT (B)LOCK

- RHBZ #1353458
  - qdrouterd stops responding on any connection while waiting for hung DNS PTR query

- lessons learned:
  - external calls can hang, your program shouldn’t
DONT (B)LOCK

Samuel Beckett's
WAITING FOR GODOT
CORNER CASE IS ALSO A CASE

- my problem with qdrouterd:
  - trying to reproduce something
  - sending a mgmt message to reconfigure router
  - segfault
CORNER CASE IS ALSO A CASE

• reproducer:

```python
conn = BlockingConnection("proton+amqp://localhost:5672")
conn.create_sender("$management", name=str(uuid4())).send(Message())
```
CORNER CASE IS ALSO A CASE

- no BZ
  - *segfault fixed in all relevant versions*

- lessons learned:
  - *on user input, don’t expect anything*
CORNER CASE IS ALSO A CASE
MAKE YOUR CODE BETTER..

- ensure no thread-unsafe library is used concurrently
- treat any string in unicode
- do a component removal thoroughly
- prevent domino-effect of DoS
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THANK YOU