#ANSIBLEFEST2019

Troubleshooting Tips and Tricks with Ansible Tower

Michelle Perz and Gabe Muniz

Share your automation story

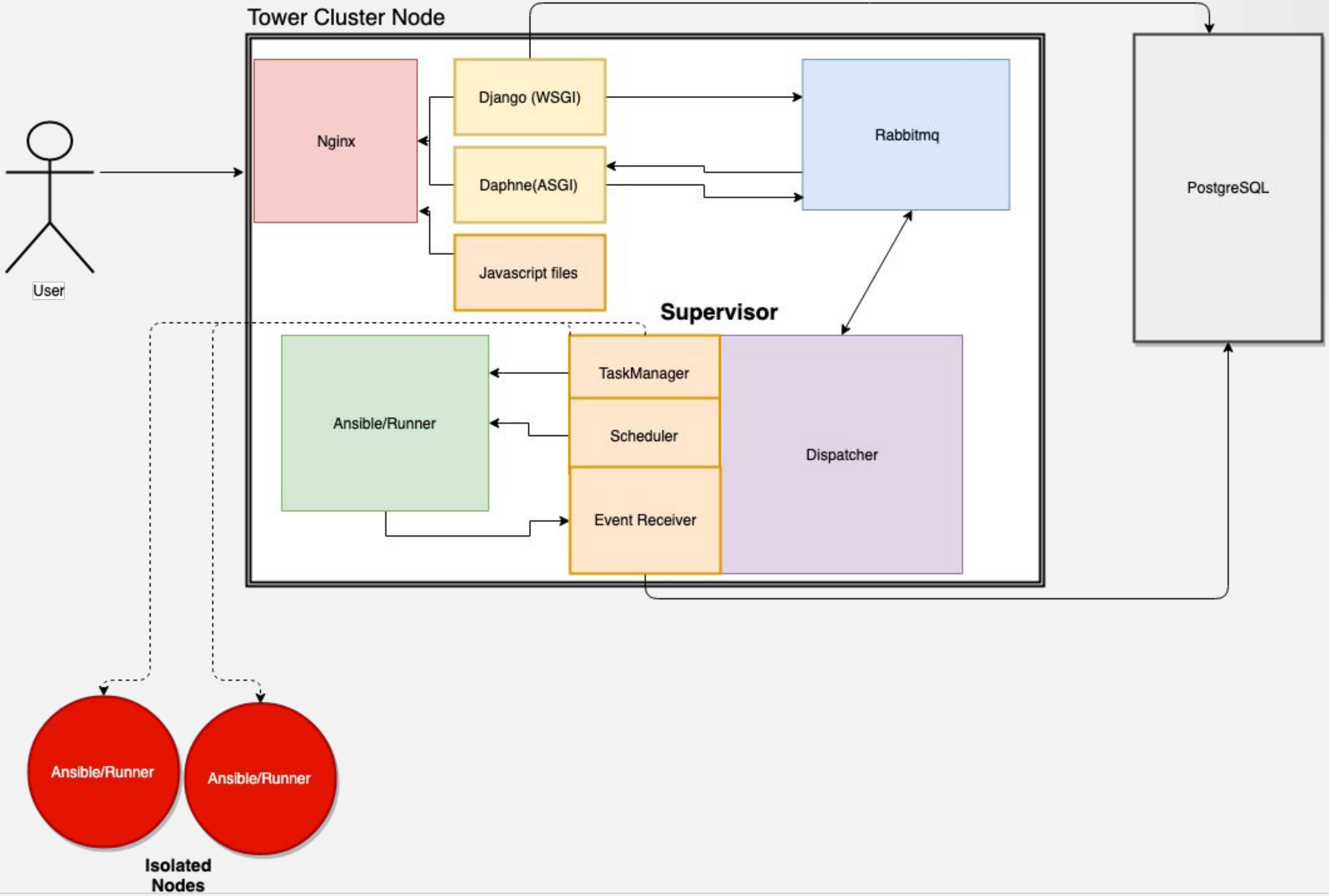
1. How did you get started with Ansible?

2. How long have you been using it?

3. What's your favorite thing to do when you Ansible?

AGENDA

- Ansible Tower Overview
- Component Deep Dive:
  - PostgreSQL
  - RabbitMQ
  - Dispatcher
- Clustering Options:
  - Isolated Nodes
- Questions


Tower Cluster Node
User
Nginx
Django (WSGI)
Daphne(ASGI)
Javascript files
Rabbitmq
PostgreSQL
Supervisor
Ansible/Runner
TaskManager
Scheduler
Event Receiver
Dispatcher
Ansible/Runner
Ansible/Runner
Isolated Nodes

PostgreSQL

Installation Considerations:

- Internal (as part of a standalone Tower installation)
- External (managed by the Tower installer)
- External (self-managed)

```
./roles/postgres/templates/postgresql.conf.j2
```

```
max_connections = {{ max_postgres_connections }}
shared_buffers = {{ postgres_shared_memory_size }}MB
work_mem = {{ postgres_work_mem }}MB
maintenance_work_mem = {{ postgres_maintenance_work_mem }}MB
```

PostgreSQL

Symptoms in Tower Operations:

- Slow running jobs

```
ERROR    awx.main.commands.run_callback_receiver Database Error Saving Job
Event, retry #2 in 60 seconds:
Traceback (most recent call last):
  File "/lib/python2.7/site-packages/awx/main/dispatch/worker/callback.py",
line 107, in perform_work
[...]
    self.connection = self.get_new_connection(conn_params)
  File
"/var/lib/awx/venv/awx/lib/python2.7/site-packages/django/db/backends/postgres
ql/base.py", line 176, in get_new_connection
    connection = Database.connect(**conn_params)
  File
"/var/lib/awx/venv/awx/lib/python2.7/site-packages/psycopg2/__init__.py", line
130, in connect
    conn = _connect(dsn, connection_factory=connection_factory, **kwasync)
OperationalError: FATAL:  remaining connection slots are reserved for
non-replication superuser connections
```

```
OperationalError: FATAL:  sorry,
too many clients already
```

PostgreSQL

Potential Mitigation:

- Increase max_connections value. Default for a Tower-managed external DB is 1024.

```
SHOW max_connections;
 max_connections
-----------------
 100
(1 row)
```

PostgreSQL

Symptoms in Tower Operations:

- No stdout for jobs

```
< 2019-01-08 12:01:01.885 UTC >FATAL:
could not map anonymous shared memory:
Cannot allocate memory
< 2019-01-08 12:01:01.885 UTC >HINT:
This error usually means that
PostgreSQL's request for a shared memory
segment exceeded available memory, swap
space, or huge pages. To reduce the
request size (currently 867672064 bytes),
reduce PostgreSQL's shared memory usage,
perhaps by reducing shared_buffers or
max_connections.
```

```
< 2019-01-17 05:20:04.131 UTC >FATAL:  the database system
is in recovery mode
< 2019-01-17 05:20:04.579 UTC >LOG:  database system was
not properly shut down; automatic recovery in progress
< 2019-01-17 05:20:04.590 UTC >LOG:  redo starts at
28/A1EEB688
< 2019-01-17 05:20:04.957 UTC >LOG:  invalid record length
at 28/A39D10A0: wanted 24, got 0
< 2019-01-17 05:20:04.957 UTC >LOG:  redo done at
28/A39D1078
< 2019-01-17 05:20:04.957 UTC >LOG:  last completed
transaction was at log time 2019-01-17 05:19:57.877475+00
< 2019-01-17 05:20:05.069 UTC >LOG:  MultiXact member
wraparound protections are now enabled
< 2019-01-17 05:20:05.073 UTC >LOG:  database system is
ready to accept connections
< 2019-01-17 05:20:05.073 UTC >LOG:  autovacuum launcher
started
< 2019-01-17 05:37:26.907 UTC >LOG:  server process (PID
44020) was terminated by signal 9: Killed
```

PostgreSQL

Potential Mitigation:

- Increase mem* settings. Default work_mem is 3% of physical memory and shared_memory is 30%.

```
show work_mem ;
work_mem
----------
4765MB
(1 row)

show shared_buffers ;
shared_buffers
----------------
4765MB
(1 row)
```

PostgreSQL

Symptoms in Tower Operations:

- Navigating to specific pages in the UI extremely slow

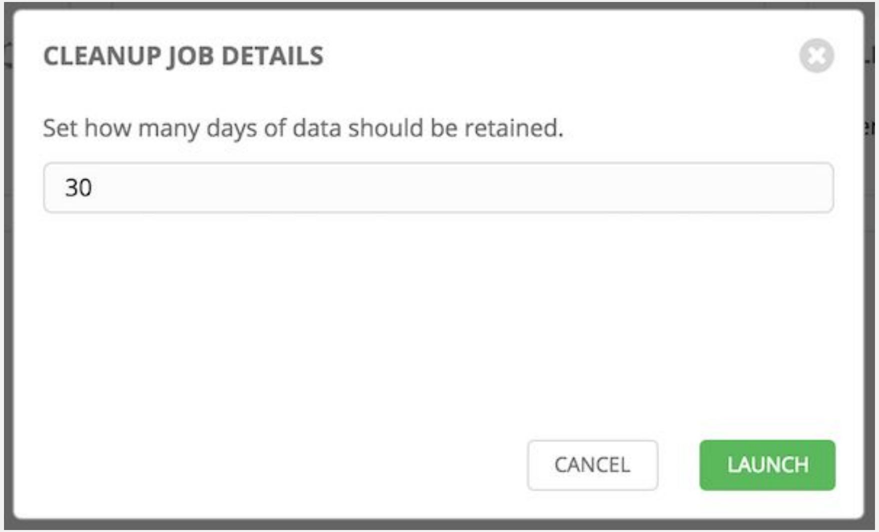
```
tower=> \timing on
Timing is on.
tower=> SELECT COUNT(*) FROM main_jobevent;
 count
----------
35440776
(1 row)

Time: 112119.895
```

PostgreSQL

Potential Mitigation:

- Use profile_sql to identify potential source of slowness during peak traffic times.
- Run cleanup jobs to lower total job event count in the database.

```
awx-manage profile_sql --threshold=1.5
--minutes=5
```



CLEANUP JOB DETAILS

Set how many days of data should be retained.

30

rabbitMQ

Symptoms in Tower Operations:

- One node consistently not executing projects or jobs

Potential Mitigation:

- Ensure time is synced across the cluster nodes with NTP/Chrony

```
2019-08-12 13:02:49,893 WARNING
awx.main.tasks Rejoining the cluster as
instance 1.1.1.1
2019-08-12 13:03:47,681 WARNING
awx.main.tasks Rejoining the cluster as
instance 1.1.1.1
2019-08-12 13:04:47,994 WARNING
awx.main.tasks Rejoining the cluster as
instance 1.1.1.1
```

rabbitMQ

Symptoms in Tower Operations:

- All jobs failing with “Task was marked as running in Tower but was not present in the job queue, so it has been marked as failed.”
- Multiple cluster nodes not executing jobs. One node may be under abnormally heavy use.

```
rabbitmqctl cluster_status
Cluster status of node rabbitmq@node1.example.com
...
[{nodes,
     [{disc,
          ['rabbitmq@node1.example.com',
           'rabbitmq@node2.example.com',
           'rabbitmq@node3.example.com']}]},
{running_nodes,['rabbitmq@node1.example.com']},
{cluster_name,<<"rabbitmq@node1.example.com">>},
 {partitions,
     [{'rabbitmq@node1.example.com',
          ['rabbitmq@node2.example.com',
           'rabbitmq@node3.example.com']}]},
{alarms,[{'rabbitmq@node1.example.com',[]}]}]
```

```
=ERROR REPORT==== DD-Mon-YYYY::HR:Mi:SS ===
Mnesia('rabbitmq@{{rabbitmq_host}}'): ** ERROR **
mnesia_event got {inconsistent_database,
running_partitioned_network,
'rabbitmq@{{other_rabbitmq_host}}'}
```

rabbitMQ

Potential Mitigation:

- Correct the partition by rejoining the problem nodes to the cluster.
- Clear mnesia DB and rerun the installer (typically only needed as a last resort)

```
rabbitmqctl stop_app
rabbitmqctl force_reset
rabbitmqctl forget_cluster_node #run on a healthy node
rabbitmqctl join_cluster rabbitmq@node2.example.com
rabbitmqctl start_app
```

```
ansible-tower-service stop
rm -rf /var/lib/rabbitmq/mnesia/*
./setup.sh
```

rabbitMQ

Symptoms in Tower Operations:

- Intermittent job or project update failures.

```
UI Error: Failed updating job
undefined with variables.
POST returned: 504
```

```
[info] Mirrored queue
'node1.example.com' in vhost
'tower': Slave
<rabbitmq@node2.example.com> saw
deaths of mirrors
<rabbitmq@node1.example.com>
```

rabbitMQ

Potential Mitigation:

- Ensure that cluster nodes are geographically collocated with low-latency between the nodes.

```
cluster.example.com | CHANGED | rc=0 >>
PING cluster.example.com (1.1.1.1) 56(84)
bytes of data.
64 bytes from cluster.example.com
(1.1.1.1): icmp_seq=1 ttl=64 time=0.012 ms
64 bytes from cluster.example.com
(1.1.1.1): icmp_seq=2 ttl=64 time=0.030 ms
64 bytes from cluster.example.com
(1.1.1.1): icmp_seq=3 ttl=64 time=0.019 ms
64 bytes from cluster.example.com
(1.1.1.1): icmp_seq=4 ttl=64 time=0.024 ms
64 bytes from cluster.example.com
(1.1.1.1): icmp_seq=5 ttl=64 time=0.034 ms
```

Dispatcher

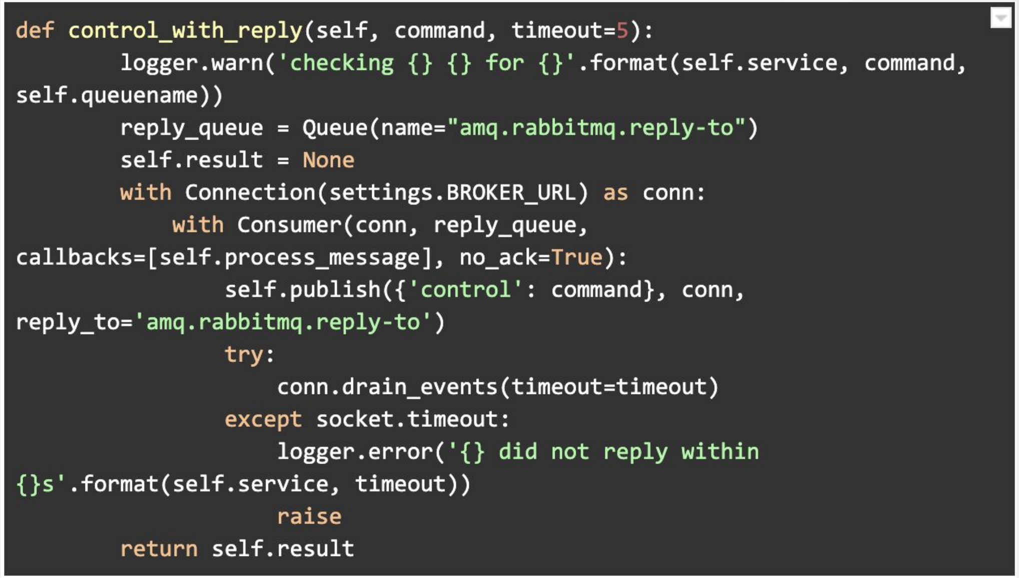
Symptoms in Tower Operations:

- UI may take upwards of five minutes or longer to display minimal or blank output for running any type of job.

```
awx-dispatcher.log
[ERROR/Process-1] beat: Connection
error: [Errno 111] Connection refused.
Trying again in 2.0 seconds..
```

```
awx-manage run_dispatcher --status
```

```
File
"/lib/python2.7/site-packages/awx/main/dispatch/c
ontrol.py", line 46, in control_with_reply
socket.timeout: timed out
```



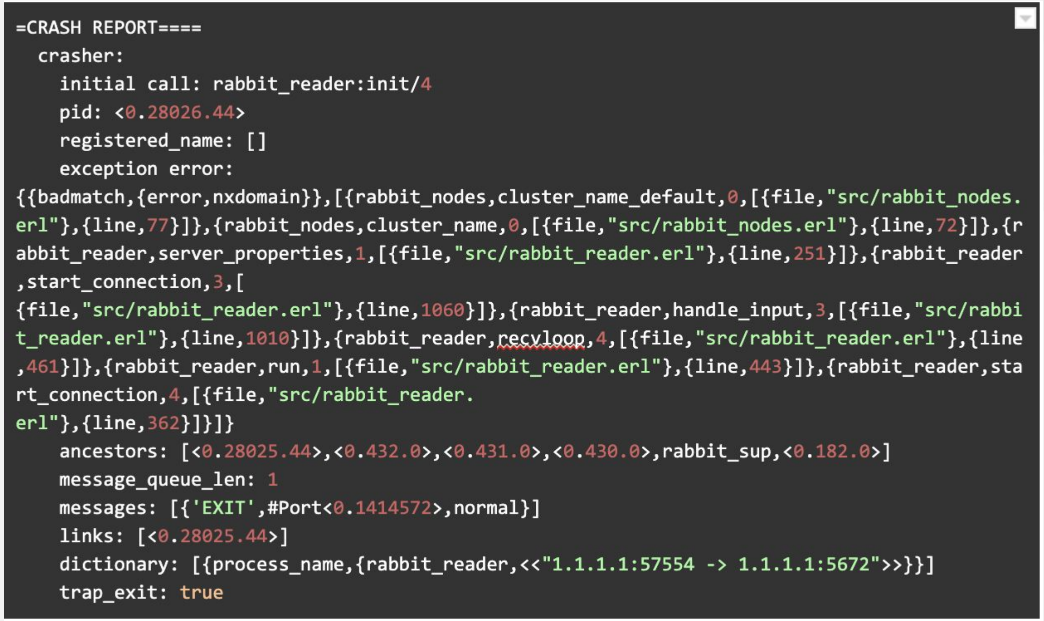
```
def control_with_reply(self, command, timeout=5):
        logger.warn('checking {} {} for {}'.format(self.service, command,
self.queuename))
        reply_queue = Queue(name="amq.rabbitmq.reply-to")
        self.result = None
        with Connection(settings.BROKER_URL) as conn:
            with Consumer(conn, reply_queue,
callbacks=[self.process_message], no_ack=True):
                self.publish({'control': command}, conn,
reply_to='amq.rabbitmq.reply-to')
                try:
                    conn.drain_events(timeout=timeout)
                except socket.timeout:
                    logger.error('{} did not reply within
{}s'.format(self.service, timeout))
                    raise
        return self.result
```

Dispatcher

Symptoms in Tower Operations:

- Jobs Failing when submitted via API/tower-cli/cURL

```
$ tower-cli job launch --job-template=111
Error: The Tower server sent back a server error.
Please try again later.
```



```
=CRASH REPORT====
  crasher:
    initial call: rabbit_reader:init/4
    pid: <0.28026.44>
    registered_name: []
    exception error:
{{badmatch,{error,nxdomain}},[{rabbit_nodes,cluster_name_default,0,[{file,"src/rabbit_nodes.
erl"},{line,77}]},{rabbit_nodes,cluster_name,0,[{file,"src/rabbit_nodes.erl"},{line,72}]},{r
abbit_reader,server_properties,1,[{file,"src/rabbit_reader.erl"},{line,251}]},{rabbit_reader
,start_connection,3,[
{file,"src/rabbit_reader.erl"},{line,1060}]},{rabbit_reader,handle_input,3,[{file,"src/rabbi
t_reader.erl"},{line,1010}]},{rabbit_reader,recvloop,4,[{file,"src/rabbit_reader.erl"},{line
,461}]},{rabbit_reader,run,1,[{file,"src/rabbit_reader.erl"},{line,443}]},{rabbit_reader,sta
rt_connection,4,[{file,"src/rabbit_reader.
erl"},{line,362}]}]}]}
    ancestors: [<0.28025.44>,<0.432.0>,<0.431.0>,<0.430.0>,rabbit_sup,<0.182.0>]
    message_queue_len: 1
    messages: [{'EXIT',#Port<0.1414572>,normal}]
    links: [<0.28025.44>]
    dictionary: [{process_name,{rabbit_reader,<<"1.1.1.1:57554 -> 1.1.1.1:5672">>}}]
    trap_exit: true
```

Dispatcher

Potential Mitigation:

- Check DNS
- Check DNS again
- It’s 100% DNS: let’s check it
- Did you change the hosts file?
- Did you change resolv.conf?
- Fix the above 2
- Profit

Isolated Nodes

Symptoms in Tower Operations:

- Isolated Node not receiving jobs and is displaying an older version of Tower than other nodes.

```
Traceback (most recent call last):
  File "/usr/bin/ansible-runner", line 5, in
<module>
    from pkg_resources import load_entry_point
ImportError: cannot import name load_entry_point
non-zero return code
/usr/lib/python2.7/site-packages/
```

```
#!/usr/bin/python
# EASY-INSTALL-ENTRY-SCRIPT:
'ansible-runner==1.3.4','console_scripts','ansible
-runner'
__requires__ = 'ansible-runner==1.3.4'
import sys
from pkg_resources import load_entry_point

if __name__ == '__main__':
    sys.exit(
        load_entry_point('ansible-runner==1.3.4',
'console_scripts', 'ansible-runner')()
    )
```

Isolated Nodes

Potential Mitigation:

- Correct filesystem permissions on /usr/lib/python2.7/site-packages/ and/or six directories

```
  ls -lthr /usr/lib/python2.7/site-packages/
total 2.1M
-rw-r--r--.  1 root root  87K Feb 27  2010 configobj.py
-rw-r--r--.  1 root root  51K Apr 12  2011 IPy.py
-rw-r--r--.  1 root root  11K Oct 18  2012 decorator.py
-rw-r--r--.  1 root root  99K Jul 15  2013 pkg_resources.py
-rw-r--r--.  1 root root  126 Jul 15  2013 easy_install.py
-rw-r--r--.  1 root root 1.1K Jun  9  2014
iniparse-0.4-py2.7.egg-info
-rw-r--r--.  2 root root 146K Jun  9  2014 pyparsing.pyo
-rw-r--r--.  2 root root 146K Jun  9  2014 pyparsing.pyc
-rw-r--r--.  1 root root 152K Jun  9  2014 pyparsing.py
-rw-r--r--.  1 root root  670 Jun  9  2014
pyparsing-1.5.6-py2.7.egg-info
```

```
drwxr-xr-x.  3 root root 4.0K Jun
12 17:04 jinja2
```

Isolated Nodes

Symptoms in Tower Operations:

- Unable to add new isolated nodes--new nodes continually go offline.

```
{"changed": false, "module_stderr": "Shared connection to x.x.x.x
closed.\r\n", "module_stdout": "Traceback (most recent call last):\r\n
File
\"/tmp/.ansible-awx/tmp/ansible-tmp-1555822397.2-92081285507069/AnsiballZ_a
wx_capacity.py\", line 113, in <module>\r\n    _ansiballz_main()\r\n  File
\"/tmp/.ansible-awx/tmp/ansible-tmp-1555822397.2-92081285507069/AnsiballZ_a
wx_capacity.py\", line 105, in _ansiballz_main\r\n
invoke_module(zipped_mod, temp_path, ANSIBALLZ_PARAMS)\r\n  File
\"/tmp/.ansible-awx/tmp/ansible-tmp-1555822397.2-92081285507069/AnsiballZ_a
wx_capacity.py\", line 48, in invoke_module\r\n
imp.load_module('__main__', mod, module, MOD_DESC)\r\n  File
\"/tmp/ansible_awx_capacity_payload_DfKGCK/__main__.py\", line 74, in
<module>\r\n  File
\"/tmp/ansible_awx_capacity_payload_DfKGCK/__main__.py\", line 60, in
main\r\n  File \"/tmp/ansible_awx_capacity_payload_DfKGCK/__main__.py\",
line 27, in get_cpu_capacity\r\nAttributeError: 'module' object has no
attribute 'cpu_count'\r\n", "msg": "MODULE FAILURE\nSee stdout/stderr for
the exact error", "rc": 1}
```

```python
def get_cpu_capacity():
    env_forkcpu = os.getenv('SYSTEM_TASK_FORKS_CPU',
None)
    cpu = psutil.cpu_count()

    if env_forkcpu:
        forkcpu = int(env_forkcpu)
    else:
        forkcpu = 4
    return (cpu, cpu * forkcpu)
```

Isolated Nodes

Potential Mitigation:

- Ensure psutil package is up to date on the isolated node.

```
(ansible) [root@exampleNode ~]# pip list
| grep psutil
psutil                              5.4.3
```

Isolated Nodes

Symptoms in Tower Operations:

- Unable to connect to isolated node to run jobs.

```
awx-manage test_isolated_connection
--hostname=ip-172-31-9-188.us-west-2.compute.internal
ip-172-31-9-188.us-west-2.compute.internal |
UNREACHABLE! => {
    "changed": false,
    "msg": "Failed to connect to the host via ssh:
Warning: Permanently added
'ip-172-31-9-188.us-west-2.compute.internal,172.31.
9.188' (ECDSA) to the list of known
hosts.\r\nPermission denied
(publickey,gssapi-keyex,gssapi-with-mic).",
    "unreachable": true}
```

Isolated Nodes

Potential Mitigation:

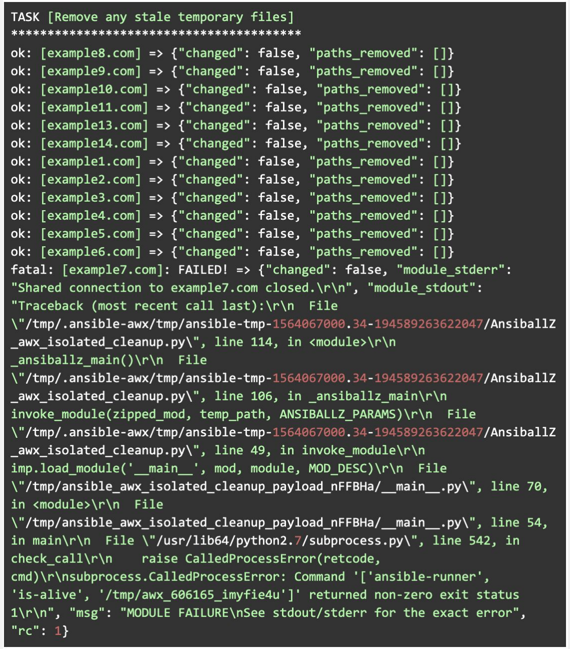
- Verify SSH connectivity from the control node(s) to the isolated node.

```
awx-manage test_isolated_connection
ip-172-31-9-188.us-west-2.compute.intern
al | CHANGED | rc=0 >>
1.3.4
```

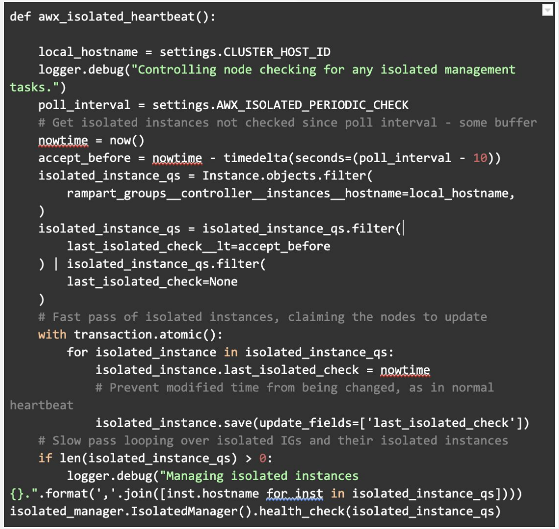
Isolated Nodes

Symptoms in Tower Operations:

- Heartbeat not updating for single isolated node.



```
TASK [Remove any stale temporary files]
***************************************
ok: [example8.com] => {"changed": false, "paths_removed": []}
ok: [example9.com] => {"changed": false, "paths_removed": []}
ok: [example10.com] => {"changed": false, "paths_removed": []}
ok: [example11.com] => {"changed": false, "paths_removed": []}
ok: [example13.com] => {"changed": false, "paths_removed": []}
ok: [example14.com] => {"changed": false, "paths_removed": []}
ok: [example1.com] => {"changed": false, "paths_removed": []}
ok: [example2.com] => {"changed": false, "paths_removed": []}
ok: [example3.com] => {"changed": false, "paths_removed": []}
ok: [example4.com] => {"changed": false, "paths_removed": []}
ok: [example5.com] => {"changed": false, "paths_removed": []}
ok: [example6.com] => {"changed": false, "paths_removed": []}
fatal: [example7.com]: FAILED! => {"changed": false, "module_stderr":
"Shared connection to example7.com closed.\r\n", "module_stdout":
"Traceback (most recent call last):\r\n  File
\"/tmp/.ansible-awx/tmp/ansible-tmp-1564067000.34-194589263622047/AnsiballZ
_awx_isolated_cleanup.py\", line 114, in <module>\r\n
_ansiballz_main()\r\n  File
\"/tmp/.ansible-awx/tmp/ansible-tmp-1564067000.34-194589263622047/AnsiballZ
_awx_isolated_cleanup.py\", line 106, in _ansiballz_main\r\n
invoke_module(zipped_mod, temp_path, ANSIBALLZ_PARAMS)\r\n  File
\"/tmp/.ansible-awx/tmp/ansible-tmp-1564067000.34-194589263622047/AnsiballZ
_awx_isolated_cleanup.py\", line 49, in invoke_module\r\n
imp.load_module('__main__', mod, module, MOD_DESC)\r\n  File
\"/tmp/ansible_awx_isolated_cleanup_payload_nFFBHa/__main__.py\", line 70,
in <module>\r\n  File
\"/tmp/ansible_awx_isolated_cleanup_payload_nFFBHa/__main__.py\", line 54,
in main\r\n  File \"/usr/lib64/python2.7/subprocess.py\", line 542, in
check_call\r\n    raise CalledProcessError(retcode,
cmd)\r\nsubprocess.CalledProcessError: Command '['ansible-runner',
'is-alive', '/tmp/awx_606165_imyfie4u']' returned non-zero exit status
1\r\n", "msg": "MODULE FAILURE\nSee stdout/stderr for the exact error",
"rc": 1}
```



```
def awx_isolated_heartbeat():

    local_hostname = settings.CLUSTER_HOST_ID
    logger.debug("Controlling node checking for any isolated management
tasks.")
    poll_interval = settings.AWX_ISOLATED_PERIODIC_CHECK
    # Get isolated instances not checked since poll interval - some buffer
    nowtime = now()
    accept_before = nowtime - timedelta(seconds=(poll_interval - 10))
    isolated_instance_qs = Instance.objects.filter(
        rampart_groups__controller__instances__hostname=local_hostname,
    )
    isolated_instance_qs = isolated_instance_qs.filter(
        last_isolated_check__lt=accept_before
    ) | isolated_instance_qs.filter(
        last_isolated_check=None
    )
    # Fast pass of isolated instances, claiming the nodes to update
    with transaction.atomic():
        for isolated_instance in isolated_instance_qs:
            isolated_instance.last_isolated_check = nowtime
            # Prevent modified time from being changed, as in normal
heartbeat
            isolated_instance.save(update_fields=['last_isolated_check'])
    # Slow pass looping over isolated IGs and their isolated instances
    if len(isolated_instance_qs) > 0:
        logger.debug("Managing isolated instances
{}.".format(','.join([inst.hostname for inst in isolated_instance_qs])))
isolated_manager.IsolatedManager().health_check(isolated_instance_qs)
```

Isolated Nodes

Potential Mitigation:

- Ensure that there are no left over /tmp/awx_* files left over from pre-upgraded Isolated nodes
- Space out controller node responsibilities across multiple to prevent one group causing issues.

Questions?

#ANSIBLEFEST2019

THANK YOU

youtube.com/AnsibleAutomation

facebook.com/ansibleautomation

linkedin.com/company/Red-Hat

twitter.com/ansible