Unit Test Debugging Utility

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Executing Testsuites

- OVS has different test suites to test features in different environments
  - make check  # Basic Checks
  - make check-system-userspace
  - make check-kmod
  - make check-dpdk
When a testsuite fails …

# ---------------------------------- ##
## openvswitch 2.16.90 test suite. ##
## ---------------------------------- ##
768: tunnel - Geneve option present FAILED (tunnel.at:936)

## --------------- ##
## Test results. ##
## --------------- ##

ERROR: 1 test was run, 1 failed unexpectedly.
## ----------------- ##
## testsuite.log was created. ##
## ----------------- ##

Please send `tests/testsuite.log` and all information you think might help:

To: <bugs@openvswitch.org>
Subject: [openvswitch 2.16.90] testsuite: 768 failed

You may investigate any problem if you feel able to do so, in which case the test suite provides a good starting point. Its output may be found below `tests/testsuite.dir`. 
What’s next

– Log files at test execution directory
  – For example: _build-gcc/tests/testsuite.dir/0768

– Examine artifacts to reconstruct the problem

– Difficulties in debugging a failure
  – Testsuite exits and tears down setup on failure
  – No easy way to examine the system in failed state
  – Difficult to run gdb to debug the problem
  – Recreate test setup manually
Pause on Failure – OVS_PAUSE_TEST

– Environment variable to control pause-on-failure
  – Via make
    – $ OVS_PAUSE_TEST=1 make check TESTSUITEFLAGS='--v 768'
  – Via run
    – $ cd _build-gcc/tests/testsuite.dir/0768
    – $ OVS_PAUSE_TEST=1 ./run

– Examine the switch in a different terminal
  – $ export OVS_RUNDIR=/home/vdasari/Developer/ovs/_build-gcc/tests/testsuite.dir/0768

– Once done resume the testcase for completion from the main window
$ OVS_PAUSE_TEST=1 make check TESTSUITEFLAGS='--v 768'
Making check in datapath
Making check in linux
RTNETLINK answers: Operation not permitted
Cannot find device "veth0"
Cannot find device "veth0"
Cannot find device "veth0"
## -------------------------------
##
## openvswitch 2.16.90 test suite. ##
## -------------------------------

768. tunnel.at:905: testing tunnel - Geneve option present ...
../../../tests/tunnel.at:906: ovsdb-tool create conf.db
$abs_top_srcdir/vswitchd/vswitch.ovsschema.

Set following environment variable to use various ovs utilities
export OVS_RUNDIR=/opt/vasari/Developer/ovs/_build-gcc/tests/testsuite.dir/0768
Press ENTER to continue:
Inspect switch

$ export OVS_RUNDIR=/opt/vdasari/Developer/ovs/_build-gcc/tests/testsuite.dir/0768
$ ovs-ofctl dump-flows br0
  cookie=0x0, duration=1.172s, table=0, n_packets=0, n_bytes=0, priority=3, tun_metadata2=0 actions=drop
  cookie=0x0, duration=1.172s, table=0, n_packets=0, n_bytes=0, priority=2, tun_metadata1 actions=IN_PORT
  cookie=0x0, duration=1.172s, table=0, n_packets=0, n_bytes=0, priority=1, tun_metadata0 actions=output:p2
$ ovs-vsctl show
8693786e-15ed-4b62-a753-8b4a16a2f45f
  Bridge br0
    fail_mode: secure
    datapath_type: dummy
  Port br0
    Interface br0
      type: internal
  Port p2
    Interface p2
      type: dummy
  Port p1
    Interface p1
      type: geneve
      options: {remote_ip="1.1.1.1"}
$ ovs-appctl ofproto/list-tunnels
  port 6081: p1 (geneve: ::->1.1.1.1, key=0, legacy_l2, dp port=6081, ttl=64)
More Debug Options

- Run gdb on daemons in failed state
  - `sudo gdb `which ovs-vswitchd` `pidof ovs-vswitchd``
- Inspect and execute commands from namespaces created
  - `ip netns list`
  - `sudo ip netns exec at.fp0 ping 10.1.1.100 -c`
- Run appctl commands for packet tracing
  - `ovs-appctl ofproto/trace ovs-dummy
    'tunnel(tun_id=0x0,ipv6_src=2001:cafe::1,ipv6_dst=2001:cafe::2,ttl=64),in_port(4789)``
Resume testcase – Press ENTER

==================================================================== export
OVS_RUNDIR=/opt/vdasari/Developer/ovs/_build-gcc/tests/testsuite.dir/0768
Press ENTER to continue:

768. tunnel.at:905: FAILED (tunnel.at:936)

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In summary …

– Enables easy and iterative development process
– Enables Test Driven Development model
– OVS Documentation
  – [https://docs.openvswitch.org/en/latest/topics/testing/?highlight=testing#testing](https://docs.openvswitch.org/en/latest/topics/testing/?highlight=testing#testing)