@ FILE NAME: M_CTC_ID_002.txt

@ TEST SCOPE: M PLANE O-RAN CONFORMANCE

@ Software Release for MCB1:   v1.0.1

This scenario validates that the O-RU properly executes the session establishment procedure with VLANs and a DHCPv4 server. This test is applicable to IPv4 environments. Two negative flows are included in this test:

The TER NETCONF Client does not trigger a SSH session establishment in reaction to Call Home initiated by THE O-RU NETCONF Server.

===
Interfaces Present in DU Side
===

eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    ether 64:9d:99:ff:f5:12 txqueuelen 1000 (Ethernet)
    RX packets 1735 bytes 330935 (330.9 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 560 bytes 57019 (57.0 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

eth1: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500
    ether 64:9d:99:ff:f5:13 txqueuelen 1000 (Ethernet)
    RX packets 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 0 bytes 0 (0.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

eth2: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 172.25.96.163 netmask 255.255.254.0 broadcast 172.25.97.255
    inet6 fe80::a7de:bea9:9091:a5f0 prefixlen 64 scopeid 0x20<link>
    ether b4:2e:99:60:73:8c txqueuelen 1000 (Ethernet)
    RX packets 90060 bytes 116550538 (116.5 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 35588 bytes 12434590 (12.4 MB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
    device interrupt 16 memory 0xb1400000-b1420000

eth0.458: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.156.187 netmask 255.255.255.0 broadcast 192.168.156.255
    inet6 fe80::669d:99ff:feff:f512 prefixlen 64 scopeid 0x20<link>
    ether 64:9d:99:ff:f5:12 txqueuelen 1000 (Ethernet)
    RX packets 476 bytes 80373 (80.3 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 508 bytes 48739 (48.7 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 7884 bytes 611067 (611.0 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 7884 bytes 611067 (611.0 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

===
DHCP Status
===

===
DHCP Status
===

isc-dhcp-server.service - ISC DHCP IPv4 server

  Loaded: loaded (/lib/systemd/system/isc-dhcp-server.service; enabled; vendor preset: enabled)

  Active: active (running) since Mon 2022-11-28 10:32:22 IST; 4min 50s ago

   Docs: man:dhcpd(8)

 Main PID: 7017 (dhcpd)

   Tasks: 1 (limit: 4915)

  CGroup: /system.slice/isc-dhcp-server.service

  hcpd -user dhcpd -group dhcpd -f -4 -pf /run/dhcp-server/dhcpd.pid -cf /etc/dhcp/dhcpd.conf eth0.458

Nov 28 10:32:22 vvdn sh[7017]: Listening on LPF/eth0.458/64:9d:99:ff:f5:12/192.168.156.0/24

Nov 28 10:32:22 vvdn sh[7017]: Sending on   LPF/eth0.458/64:9d:99:ff:f5:12/192.168.156.0/24

Nov 28 10:32:22 vvdn sh[7017]: Sending on   Socket/fallback/fallback-net

Nov 28 10:32:22 vvdn dhcpd[7017]: Sending on   LPF/eth0.458/64:9d:99:ff:f5:12/192.168.156.0/24

Nov 28 10:32:22 vvdn dhcpd[7017]: Sending on   Socket/fallback/fallback-net

Nov 28 10:32:22 vvdn dhcpd[7017]: Server starting service.

Nov 28 10:32:39 vvdn dhcpd[7017]: DHCPDISCOVER from 98:ae:71:00:8a:c2 via eth0.458

Nov 28 10:32:40 vvdn dhcpd[7017]: DHCPOFFER on 192.168.156.37 to 98:ae:71:00:8a:c2 (mcb1) via eth0.458

Nov 28 10:32:40 vvdn dhcpd[7017]: DHCPREQUEST for 192.168.156.37 (192.168.156.187) from 98:ae:71:00:8a:c2 (mcb1) via eth0.458

Nov 28 10:32:40 vvdn dhcpd[7017]: DHCPACK on 192.168.156.37 to 98:ae:71:00:8a:c2 (mcb1) via eth0.458

===
Pinging
===

PING 192.168.156.37 (192.168.156.37) 56(84) bytes of data.

64 bytes from 192.168.156.37: icmp_seq=1 ttl=64 time=0.147 ms

64 bytes from 192.168.156.37: icmp_seq=2 ttl=64 time=0.136 ms

64 bytes from 192.168.156.37: icmp_seq=3 ttl=64 time=0.180 ms

64 bytes from 192.168.156.37: icmp_seq=4 ttl=64 time=0.202 ms

64 bytes from 192.168.156.37: icmp_seq=5 ttl=64 time=0.164 ms

--- 192.168.156.37 ping statistics ---

5 packets transmitted, 5 received, 0% packet loss, time 4090ms

rtt min/avg/max/mdev = 0.136/0.165/0.202/0.028 ms

===

The O-RU NETCONF Serve establishes TCP connection and performs a Call Home procedure towards the NETCONF Client and not establishes a SSH.

===

> listen --ssh --login operator

Waiting 60s for an SSH Call Home connection on port 4334...The authenticity of the host '::ffff:192.168.156.37' cannot be established.

ssh-rsa key fingerprint is 59:9e:90:48:f1:d7:6e:35:e8:d1:f6:1e:90:aa:a3:83:a0:6b:98:5a.

Are you sure you want to continue connecting (yes/no)? no

nc ERROR: Checking the host key failed.

cmd_listen: Receiving SSH Call Home on port 4334 as user "operator" failed.

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nc ERROR: Checking the host key failed.

cmd_listen: Receiving SSH Call Home on port 4334 as user "operator" failed.

==

############ SYSTEM LOGS #############

==

Oct 29 23:52:59 mcb1 daemon.info netopeer2-server[981]: Trying to connect via IPv4 to 192.168.156.187:4334.

Oct 29 23:52:59 mcb1 daemon.info netopeer2-server[981]: getsockopt() error (Connection refused).

Oct 29 23:53:00 mcb1 daemon.info netopeer2-server[981]: Trying to connect via IPv4 to 192.168.156.187:4334.

Oct 29 23:53:00 mcb1 daemon.info netopeer2-server[981]: getsockopt() error (Connection refused).

Oct 29 23:53:01 mcb1 daemon.info netopeer2-server[981]: Trying to connect via IPv4 to 192.168.156.187:4334.

Oct 29 23:53:01 mcb1 daemon.info netopeer2-server[981]: getsockopt() error (Connection refused).

Oct 29 23:53:02 mcb1 daemon.info netopeer2-server[981]: Trying to connect via IPv4 to 192.168.156.187:4334.

Oct 29 23:53:02 mcb1 daemon.info netopeer2-server[981]: getsockopt() error (Connection refused).

Oct 29 23:53:02 mcb1 user.notice wd_manager[1442]: Value is 1 for Xpath /vvdn_mcel-wdm:system-apps/fw_manager

Oct 29 23:53:02 mcb1 user.notice wd_manager[1442]: Value is 1 for Xpath /vvdn_mcel-wdm:system-apps/nw_manager

Oct 29 23:53:02 mcb1 user.notice wd_manager[1442]: Value is 1 for Xpath /vvdn_mcel-wdm:system-apps/operations_manager

Oct 29 23:53:02 mcb1 user.notice wd_manager[1442]: Value is 1 for Xpath /vvdn_mcel-wdm:system-apps/pm_manager

Oct 29 23:53:02 mcb1 user.notice wd_manager[1442]: Value is 1 for Xpath /vvdn_mcel-wdm:system-apps/um_manager

Oct 29 23:53:02 mcb1 user.notice wd_manager[1442]: Value is 1 for Xpath /vvdn_mcel-wdm:system-apps/sys_monitor

Oct 29 23:53:02 mcb1 user.notice wd_manager[1442]: Value is 1 for Xpath /vvdn_mcel-wdm:system-apps/fault_manager

Oct 29 23:53:02 mcb1 user.notice wd_manager[1442]: Value is 1 for Xpath /vvdn_mcel-wdm:system-apps/file_manager

Oct 29 23:53:02 mcb1 user.notice wd_manager[1442]: Value is 1 for Xpath /vvdn_mcel-wdm:system-apps/supervision

Oct 29 23:53:02 mcb1 user.notice wd_manager[1442]: Value is 1 for Xpath /vvdn_mcel-wdm:system-apps/sync_manager

Oct 29 23:53:02 mcb1 user.notice wd_manager[1442]: Value is 1 for Xpath /vvdn_mcel-wdm:system-apps/ald_controller

Oct 29 23:53:02 mcb1 user.notice wd_manager[1442]: Value is 1 for Xpath /vvdn_mcel-wdm:system-apps/log_manager

Oct 29 23:53:03 mcb1 user.notice wd_manager[1442]: Value is 1 for Xpath /vvdn_mcel-wdm:system-apps/radio_manager

Oct 29 23:53:03 mcb1 user.notice wd_manager[1442]: Value is 1 for Xpath /vvdn_mcel-wdm:system-apps/cli_manager

Oct 29 23:53:03 mcb1 daemon.info netopeer2-server[981]: Trying to connect via IPv4 to 192.168.156.187:4334.

Oct 29 23:53:03 mcb1 daemon.info netopeer2-server[981]: getsockopt() error (Connection refused).

Oct 29 23:53:04 mcb1 daemon.info netopeer2-server[981]: Trying to connect via IPv4 to 192.168.156.187:4334.

Oct 29 23:53:04 mcb1 daemon.info netopeer2-server[981]: getsockopt() error (Connection refused).

Oct 29 23:53:05 mcb1 daemon.info netopeer2-server[981]: Trying to connect via IPv4 to 192.168.156.187:4334.

Oct 29 23:53:05 mcb1 daemon.info netopeer2-server[981]: Successfully connected to 192.168.156.187:4334 over IPv4.

Oct 29 23:53:05 mcb1 daemon.info netopeer2-server[981]: Session 92 (user "root", CID 1) created.

Oct 29 23:53:05 mcb1 daemon.err netopeer2-server[981]: Communication SSH socket unexpectedly closed.

Oct 29 23:53:06 mcb1 daemon.info netopeer2-server[981]: Trying to connect via IPv4 to 192.168.156.187:4334.

Oct 29 23:53:06 mcb1 daemon.info netopeer2-server[981]: Successfully connected to 192.168.156.187:4334 over IPv4.

Oct 29 23:53:06 mcb1 daemon.info netopeer2-server[981]: Session 93 (user "root", CID 1) created.

Oct 29 23:53:06 mcb1 daemon.err netopeer2-server[981]: Communication SSH socket unexpectedly closed.

Oct 29 23:53:07 mcb1 daemon.info netopeer2-server[981]: Trying to connect via IPv4 to 192.168.156.187:4334.

Oct 29 23:53:07 mcb1 daemon.info netopeer2-server[981]: Successfully connected to 192.168.156.187:4334 over IPv4.

Oct 29 23:53:07 mcb1 daemon.info netopeer2-server[981]: Session 94 (user "root", CID 1) created.

Oct 29 23:53:08 mcb1 daemon.err netopeer2-server[981]: Communication SSH socket unexpectedly closed.

Oct 29 23:53:09 mcb1 daemon.info netopeer2-server[981]: Trying to connect via IPv4 to 192.168.156.187:4334.

Oct 29 23:53:09 mcb1 daemon.info netopeer2-server[981]: Successfully connected to 192.168.156.187:4334 over IPv4.

Oct 29 23:53:09 mcb1 daemon.info netopeer2-server[981]: Session 95 (user "root", CID 1) created.

Oct 29 23:53:09 mcb1 daemon.err netopeer2-server[981]: Communication SSH socket unexpectedly closed.

Oct 29 23:53:10 mcb1 daemon.info netopeer2-server[981]: Trying to connect via IPv4 to 192.168.156.187:4334.

Oct 29 23:53:10 mcb1 daemon.info netopeer2-server[981]: Successfully connected to 192.168.156.187:4334 over IPv4.

Oct 29 23:53:10 mcb1 daemon.info netopeer2-server[981]: Session 96 (user "root", CID 1) created.

Oct 29 23:53:10 mcb1 daemon.err netopeer2-server[981]: Communication SSH socket unexpectedly closed.

Oct 29 23:53:10 mcb1 auth.info sshd[5521]: Accepted password for operator from 192.168.156.187 port 53210 ssh2

Oct 29 23:53:10 mcb1 authpriv.info sshd[5521]: pam_unix(sshd:session): session opened for user operator by (uid=0)

Expected Result : The TER NETCONF Client and O-RU NETCONF Server exchange capabilities through NETCONF <hello> messages.

```
=========================================================================
  **************** Actual Result *****************
=========================================================================


=========================================================================
```

Transport and Handshake in IPv4 Environment (negative case: refuse SSH Connection)   = SUCCESS

```
=========================================================================
```