@ 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.

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======================================================================
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 Interfaces Present in DU Side
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======================================================================
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eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    ether 64:9d:99:ff:f5:12 txqueuelen 1000 (Ethernet)
    RX packets 12849 bytes 3887135 (3.8 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 10981 bytes 1110956 (1.1 MB)
    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 485962 bytes 127803748 (127.8 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 479858 bytes 306057497 (306.0 MB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
    device interrupt 16 memory 0xb1400000-b1420000

eth0.453: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.170.85 netmask 255.255.255.0 broadcast 192.168.170.255
    inet6 fe80::669d:99ff:feff:f512 prefixlen 64 scopeid 0x20<link>
    ether 64:9d:99:ff:f5:12 txqueuelen 1000 (Ethernet)
    RX packets 12054 bytes 3645370 (3.6 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 10916 bytes 1071836 (1.0 MB)
    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 11346 bytes 1433911 (1.4 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 11346 bytes 1433911 (1.4 MB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

===

DHCP Status

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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 Fri 2022-11-25 12:42:29 IST; 4min 27s ago

   Docs: man:dhcpd(8)

 Main PID: 10811 (dhcpd)

   Tasks: 1 (limit: 4915)

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

  dhcpd -user dhcpd -group dhcpd -f -4 -pf /run/dhcp-server/dhcpd.pid -cf /etc/dhcp/dhcpd.conf eth0.453

Nov 25 12:42:29 vvdn sh[10811]: Sending on   Socket/fallback/fallback-net

Nov 25 12:42:29 vvdn dhcpd[10811]: Sending on   LPF/eth0.453/64:9d:99:ff:f5:12/192.168.170.0/24

Nov 25 12:42:29 vvdn dhcpd[10811]: Sending on   Socket/fallback/fallback-net

Nov 25 12:42:29 vvdn dhcpd[10811]: Server starting service.

Nov 25 12:46:09 vvdn dhcpd[10811]: reuse_lease: lease age 571 (secs) under 25% threshold, reply with unaltered, existing lease for 192.168.170.38

Nov 25 12:46:09 vvdn dhcpd[10811]: DHCPDISCOVER from 98:ae:71:00:8a:c2 (mcb1) via eth0.453

Nov 25 12:46:10 vvdn dhcpd[10811]: DHCPOFFER on 192.168.170.38 to 98:ae:71:00:8a:c2 (mcb1) via eth0.453

Nov 25 12:46:10 vvdn dhcpd[10811]: reuse_lease: lease age 572 (secs) under 25% threshold, reply with unaltered, existing lease for 192.168.170.38

Nov 25 12:46:10 vvdn dhcpd[10811]: DHCPREQUEST for 192.168.170.38 (192.168.170.85) from 98:ae:71:00:8a:c2 (mcb1) via eth0.453

Nov 25 12:46:10 vvdn dhcpd[10811]: DHCPACK on 192.168.170.38 to 98:ae:71:00:8a:c2 (mcb1) via eth0.453

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Pinging

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PING 192.168.170.38 (192.168.170.38) 56(84) bytes of data.

64 bytes from 192.168.170.38: icmp_seq=1 ttl=64 time=0.196 ms

64 bytes from 192.168.170.38: icmp_seq=2 ttl=64 time=0.198 ms

64 bytes from 192.168.170.38: icmp_seq=3 ttl=64 time=0.201 ms

64 bytes from 192.168.170.38: icmp_seq=4 ttl=64 time=0.191 ms

64 bytes from 192.168.170.38: icmp_seq=5 ttl=64 time=0.194 ms

--- 192.168.170.38 ping statistics ---

5 packets transmitted, 5 received, 0% packet loss, time 4094ms

rtt min/avg/max/mdev = 0.191/0.196/0.201/0.003 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:192.168.170.38' 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.

> listen --ssh --login operator

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    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.

===
SYSTEM LOGS
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Oct 29 23:04:28 mcb1 daemon.info netopeer2-server[980]: Trying to connect via IPv4 to 192.168.170.85:4334.

Oct 29 23:04:28 mcb1 daemon.info netopeer2-server[980]: getsockopt() error (Connection refused).

Oct 29 23:04:29 mcb1 daemon.info netopeer2-server[980]: Trying to connect via IPv4 to 192.168.170.85:4334.

Oct 29 23:04:29 mcb1 daemon.info netopeer2-server[980]: getsockopt() error (Connection refused).

Oct 29 23:04:30 mcb1 daemon.info netopeer2-server[980]: Trying to connect via IPv4 to 192.168.170.85:4334.

Oct 29 23:04:30 mcb1 daemon.info netopeer2-server[980]: getsockopt() error (Connection refused).

Oct 29 23:04:31 mcb1 daemon.info netopeer2-server[980]: Trying to connect via IPv4 to 192.168.170.85:4334.

Oct 29 23:04:31 mcb1 daemon.info netopeer2-server[980]: getsockopt() error (Connection refused).

Oct 29 23:04:32 mcb1 daemon.info netopeer2-server[980]: Trying to connect via IPv4 to 192.168.170.85:4334.

Oct 29 23:04:32 mcb1 daemon.info netopeer2-server[980]: getsockopt() error (Connection refused).

Oct 29 23:04:33 mcb1 daemon.info netopeer2-server[980]: Trying to connect via IPv4 to 192.168.170.85:4334.

Oct 29 23:04:33 mcb1 daemon.info netopeer2-server[980]: getsockopt() error (Connection refused).

Oct 29 23:04:34 mcb1 daemon.info netopeer2-server[980]: Trying to connect via IPv4 to 192.168.170.85:4334.

Oct 29 23:04:34 mcb1 daemon.info netopeer2-server[980]: Successfully connected to 192.168.170.85:4334 over IPv4.

Oct 29 23:04:34 mcb1 daemon.info netopeer2-server[980]: Session 83 (user "root", CID 1) created.

Oct 29 23:04:34 mcb1 daemon.err netopeer2-server[980]: Communication SSH socket unexpectedly closed.

Oct 29 23:04:35 mcb1 daemon.info netopeer2-server[980]: Trying to connect via IPv4 to 192.168.170.85:4334.

Oct 29 23:04:35 mcb1 daemon.info netopeer2-server[980]: Successfully connected to 192.168.170.85:4334 over IPv4.

Oct 29 23:04:35 mcb1 daemon.info netopeer2-server[980]: Session 84 (user "root", CID 1) created.

Oct 29 23:04:35 mcb1 daemon.err netopeer2-server[980]: Communication SSH socket unexpectedly closed.

Oct 29 23:04:36 mcb1 daemon.info netopeer2-server[980]: Trying to connect via IPv4 to 192.168.170.85:4334.

Oct 29 23:04:36 mcb1 daemon.info netopeer2-server[980]: Successfully connected to 192.168.170.85:4334 over IPv4.

Oct 29 23:04:36 mcb1 daemon.info netopeer2-server[980]: Session 85 (user "root", CID 1) created.

Oct 29 23:04:36 mcb1 daemon.err netopeer2-server[980]: Communication SSH socket unexpectedly closed.

Oct 29 23:04:37 mcb1 daemon.info netopeer2-server[980]: Trying to connect via IPv4 to 192.168.170.85:4334.

Oct 29 23:04:37 mcb1 daemon.info netopeer2-server[980]: Successfully connected to 192.168.170.85:4334 over IPv4.

Oct 29 23:04:37 mcb1 daemon.info netopeer2-server[980]: Session 86 (user "root", CID 1) created.

Oct 29 23:04:37 mcb1 daemon.err netopeer2-server[980]: Communication SSH socket unexpectedly closed.

Oct 29 23:04:38 mcb1 daemon.info netopeer2-server[980]: Trying to connect via IPv4 to 192.168.170.85:4334.

Oct 29 23:04:38 mcb1 daemon.info netopeer2-server[980]: Successfully connected to 192.168.170.85:4334 over IPv4.

Oct 29 23:04:38 mcb1 daemon.info netopeer2-server[980]: Session 87 (user "root", CID 1) created.

Oct 29 23:04:38 mcb1 daemon.err netopeer2-server[980]: Communication SSH socket unexpectedly closed.

Oct 29 23:04:38 mcb1 auth.info sshd[2551]: Accepted password for operator from 192.168.170.85 port 53808 ssh2

Oct 29 23:04:38 mcb1 authpriv.info sshd[2551]: 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.

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


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

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