



@ FILE NAME: M_CTC_ID_002.txt

@ TEST SCOPE: M PLANE O-RAN CONFORMANCE

@ Software Release for LPRU: v1.0.16

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

inet 172.17.95.65 netmask 255.255.240.0 broadcast 172.17.95.255

inet6 fe80::5fdb:64ba:ee9e:366c prefixlen 64 scopeid 0x20<link>

ether 4c:d9:8f:69:23:2b txqueuelen 1000 (Ethernet)

RX packets 221560 bytes 45601449 (45.6 MB)

RX errors 0 dropped 0 overruns 0 frame 0

TX packets 48130 bytes 29817514 (29.8 MB)

TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

device interrupt 17

eth1: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500

ether 4c:d9:8f:69:23:2c 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

device interrupt 18

eth2: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500

inet 192.168.4.15 netmask 255.255.255.0 broadcast 192.168.4.255

inet6 3ffe:501:cafe::a001:1012 prefixlen 64 scopeid 0x0<global>

inet6 fe80::f702:9f88:c704:4f3d prefixlen 64 scopeid 0x20<link>

ether 64:9d:99:b1:7e:62 txqueuelen 1000 (Ethernet)

RX packets 13170 bytes 2774149 (2.7 MB)

RX errors 0 dropped 0 overruns 0 frame 0

TX packets 16101 bytes 4341739 (4.3 MB)

TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

eth3: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500

ether 64:9d:99:b1:7e:63 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

eth2.6: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500

inet 192.168.98.88 netmask 255.255.255.0 broadcast 192.168.98.255

inet6 fe80::669d:99ff:feb1:7e62 prefixlen 64 scopeid 0x20<link>

ether 64:9d:99:b1:7e:62 txqueuelen 1000 (Ethernet)

RX packets 3276 bytes 494563 (494.5 KB)

RX errors 0 dropped 0 overruns 0 frame 0

TX packets 2956 bytes 3224806 (3.2 MB)

TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

eth2.124: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500

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inet 192.168.3.15 netmask 255.255.255.0 broadcast 192.168.3.255
inet6 fe80::669d:99ff:feb1:7e62 prefixlen 64 scopeid 0x20<link>
ether 64:9d:99:b1:7e:62 txqueuelen 1000 (Ethernet)
RX packets 47 bytes 12940 (12.9 KB)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 243 bytes 43325 (43.3 KB)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
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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 11321 bytes 1765144 (1.7 MB)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 11321 bytes 1765144 (1.7 MB)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

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 Sat 2023-01-21 18:14:11 IST; 25min ago

Docs: man:dhcpd(8)

Main PID: 14085 (dhcpd)

Tasks: 1 (limit: 4915)

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

5 dhcpd -user dhcpd -group dhcpd -f -4 -pf /run/dhcp-server/dhcpd.pid -cf /etc/dhcp/dhcpd.conf eth2.6

Jan 21 18:14:12 vvdn sh[14085]: Sending on Socket/fallback/fallback-net

Jan 21 18:14:12 vvdn dhcpd[14085]: Sending on LPF/eth2.6/64:9d:99:b1:7e:62/192.168.98.0/24

Jan 21 18:14:12 vvdn dhcpd[14085]: Sending on Socket/fallback/fallback-net

Jan 21 18:14:12 vvdn dhcpd[14085]: Server starting service.

Jan 21 18:14:26 vvdn dhcpd[14085]: DHCPREQUEST for 192.168.174.37 from 98:ae:71:01:91:87 via eth2.6: ignored (not authoritative).

Jan 21 18:14:33 vvdn dhcpd[14085]: DHCPREQUEST for 192.168.174.37 from 98:ae:71:01:91:87 via eth2.6: ignored (not authoritative).

Jan 21 18:14:46 vvdn dhcpd[14085]: DHCPDISCOVER from 98:ae:71:01:91:87 via eth2.6

Jan 21 18:14:47 vvdn dhcpd[14085]: DHCPOFFER on 192.168.98.37 to 98:ae:71:01:91:87 (vvdn_lpru) via eth2.6

Jan 21 18:14:47 vvdn dhcpd[14085]: DHCPREQUEST for 192.168.98.37 (192.168.98.88) from 98:ae:71:01:91:87 (vvdn_lpru) via eth2.6

Jan 21 18:14:47 vvdn dhcpd[14085]: DHCPACK on 192.168.98.37 to 98:ae:71:01:91:87 (vvdn_lpru) via eth2.6

Pinging

PING 192.168.98.37 (192.168.98.37) 56(84) bytes of data.

64 bytes from 192.168.98.37: icmp_seq=1 ttl=64 time=0.157 ms

64 bytes from 192.168.98.37: icmp_seq=2 ttl=64 time=0.169 ms

64 bytes from 192.168.98.37: icmp_seq=3 ttl=64 time=0.169 ms

64 bytes from 192.168.98.37: icmp_seq=4 ttl=64 time=0.170 ms

64 bytes from 192.168.98.37: icmp_seq=5 ttl=64 time=0.168 ms

--- 192.168.98.37 ping statistics ---

5 packets transmitted, 5 received, 0% packet loss, time 4079ms

rtt min/avg/max/mdev = 0.157/0.166/0.170/0.014 ms

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

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> listen --ssh --login observer

Waiting 60s for an SSH Call Home connection on port 4334...The authenticity of the host '::ffff:192.168.98.37' cannot be established.

ssh-rsa key fingerprint is c0:7c:63:5d:4b:85:e7:27:e0:7e:f0:44:38:4e:ab:83.

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 "observer" failed.

> listen --ssh --login operator

Waiting 60s for an SSH Call Home connection on port 4334...The authenticity of the host '::ffff:192.168.98.37' cannot be established.

ssh-rsa key fingerprint is c0:7c:63:5d:4b:85:e7:27:e0:7e:f0:44:38:4e:ab:83.

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 installer

Waiting 60s for an SSH Call Home connection on port 4334...The authenticity of the host '::ffff:192.168.98.37' cannot be established.

ssh-rsa key fingerprint is c0:7c:63:5d:4b:85:e7:27:e0:7e:f0:44:38:4e:ab:83.

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 "installer" failed.

> listen --ssh --login installer

Waiting 60s for an SSH Call Home connection on port 4334...The authenticity of the host '::ffff:192.168.98.37' cannot be established.

ssh-rsa key fingerprint is c0:7c:63:5d:4b:85:e7:27:e0:7e:f0:44:38:4e:ab:83.

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 "installer" failed.

> listen --ssh --login operator

Waiting 60s for an SSH Call Home connection on port 4334...The authenticity of the host '::ffff:192.168.98.37' cannot be established.

ssh-rsa key fingerprint is c0:7c:63:5d:4b:85:e7:27:e0:7e:f0:44:38:4e:ab:83.

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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SYSTEM LOGS

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Nov 4 00:26:29 vvdn_lpru daemon.info netopeer2-server[858]: Trying to connect via IPv4 to 192.168.98.88:4334.

Nov 4 00:26:29 vvdn_lpru daemon.info netopeer2-server[858]: getsockopt() error (Connection refused).

Nov 4 00:26:30 vvdn_lpru daemon.info netopeer2-server[858]: Trying to connect via IPv4 to 192.168.98.88:4334.

Nov 4 00:26:30 vvdn_lpru daemon.info netopeer2-server[858]: getsockopt() error (Connection refused).

Nov 4 00:26:31 vvdn_lpru daemon.info netopeer2-server[858]: Trying to connect via IPv4 to 192.168.98.88:4334.

Nov 4 00:26:31 vvdn_lpru daemon.info netopeer2-server[858]: getsockopt() error (Connection refused).

Nov 4 00:26:32 vvdn_lpru daemon.info netopeer2-server[858]: Trying to connect via IPv4 to 192.168.98.88:4334.

Nov 4 00:26:32 vvdn_lpru daemon.info netopeer2-server[858]: getsockopt() error (Connection refused).

Nov 4 00:26:33 vvdn_lpru daemon.info netopeer2-server[858]: Trying to connect via IPv4 to 192.168.98.88:4334.

Nov 4 00:26:33 vvdn_lpru daemon.info netopeer2-server[858]: getsockopt() error (Connection refused).

Nov 4 00:26:34 vvdn_lpru daemon.info netopeer2-server[858]: Trying to connect via IPv4 to 192.168.98.88:4334.

Nov 4 00:26:34 vvdn_lpru daemon.info netopeer2-server[858]: getsockopt() error (Connection refused).

Nov 4 00:26:34 vvdn_lpru user.notice SYNCMNGR[1174]: Received message from S-Plane

Nov 4 00:26:35 vvdn_lpru daemon.info netopeer2-server[858]: Trying to connect via IPv4 to 192.168.98.88:4334.

Nov 4 00:26:35 vvdn_lpru daemon.info netopeer2-server[858]: Successfully connected to 192.168.98.88:4334 over IPv4.

Nov 4 00:26:35 vvdn_lpru daemon.info netopeer2-server[858]: Session 168 (user "root", CID 1) created.

Nov 4 00:26:36 vvdn_lpru daemon.err netopeer2-server[858]: Communication SSH socket unexpectedly closed.

Nov 4 00:26:37 vvdn_lpru daemon.info netopeer2-server[858]: Trying to connect via IPv4 to 192.168.98.88:4334.

Nov 4 00:26:37 vvdn_lpru daemon.info netopeer2-server[858]: Successfully connected to 192.168.98.88:4334 over IPv4.

Nov 4 00:26:37 vvdn_lpru daemon.info netopeer2-server[858]: Session 169 (user "root", CID 1) created.

Nov 4 00:26:37 vvdn_lpru daemon.err netopeer2-server[858]: Communication SSH socket unexpectedly closed.

Nov 4 00:26:38 vvdn_lpru daemon.info netopeer2-server[858]: Trying to connect via IPv4 to 192.168.98.88:4334.

Nov 4 00:26:38 vvdn_lpru daemon.info netopeer2-server[858]: Successfully connected to 192.168.98.88:4334 over IPv4.

Nov 4 00:26:38 vvdn_lpru daemon.info netopeer2-server[858]: Session 170 (user "root", CID 1) created.

Nov 4 00:26:39 vvdn_lpru daemon.err netopeer2-server[858]: Communication SSH socket unexpectedly closed.

Nov 4 00:26:40 vvdn_lpru daemon.info netopeer2-server[858]: Trying to connect via IPv4 to 192.168.98.88:4334.

Nov 4 00:26:40 vvdn_lpru daemon.info netopeer2-server[858]: Successfully connected to 192.168.98.88:4334 over IPv4.

Nov 4 00:26:40 vvdn_lpru daemon.info netopeer2-server[858]: Session 171 (user "root", CID 1) created.

Nov 4 00:26:41 vvdn_lpru daemon.err netopeer2-server[858]: Communication SSH socket unexpectedly closed.

Nov 4 00:26:42 vvdn_lpru daemon.info netopeer2-server[858]: Trying to connect via IPv4 to 192.168.98.88:4334.

Nov 4 00:26:42 vvdn_lpru daemon.info netopeer2-server[858]: Successfully connected to 192.168.98.88:4334 over IPv4.

Nov 4 00:26:42 vvdn_lpru daemon.info netopeer2-server[858]: Session 172 (user "root", CID 1) created.

Nov 4 00:26:43 vvdn_lpru daemon.err netopeer2-server[858]: Communication SSH socket unexpectedly closed.

Nov 4 00:26:43 vvdn_lpru authpriv.debug sshd[22076]: pam_unix(sshd:account): account operator has password changed in future

Nov 4 00:26:43 vvdn_lpru auth.info sshd[22076]: Accepted password for operator from 192.168.98.88 port 52508 ssh2

Nov 4 00:26:43 vvdn_lpru authpriv.info sshd[22076]: 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 *****

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

SUCCESS

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