



@ FILE NAME: M_CTC_ID_002.txt

@ TEST SCOPE: M PLANE O-RAN CONFORMANCE

@ Software Release for Garuda: v4.2.0

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 73547 bytes 60372456 (60.3 MB)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 46220 bytes 20674841 (20.6 MB)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
device interrupt 17

eth1: 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::5bb2:44e5:874e:988a prefixlen 64 scopeid 0x20<link>
ether 64:9d:99:b1:7e:62 txqueuelen 1000 (Ethernet)
RX packets 852 bytes 128926 (128.9 KB)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 1007 bytes 88878 (88.8 KB)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

eth2: 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

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

eth1.21: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
inet 192.168.208.15 netmask 255.255.255.0 broadcast 192.168.208.255
inet6 fe80::669d:99ff:feb1:7e62 prefixlen 64 scopeid 0x20<link>
ether 64:9d:99:b1:7e:62 txqueuelen 1000 (Ethernet)
RX packets 689 bytes 100105 (100.1 KB)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 708 bytes 61639 (61.6 KB)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536

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inet 127.0.0.1 netmask 255.0.0.0
inet6 ::1 prefixlen 128 scopeid 0x10<host>
loop txqueuelen 1000 (Local Loopback)
RX packets 5357 bytes 563017 (563.0 KB)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 5357 bytes 563017 (563.0 KB)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
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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 2022-12-02 16:54:44 IST; 4min 17s ago

Docs: man:dhcpcd(8)

Main PID: 11448 (dhcpcd)

Tasks: 1 (limit: 4915)

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

1448 dhcpcd -user dhcpcd -group dhcpcd -f -4 -pf /run/dhcp-server/dhcpcd.pid -cf /etc/dhcp/dhcpcd.conf eth1.21

Dec 02 16:54:44 vvdn sh[11448]: Listening on LPF/eth1.21/64:9d:99:b1:7e:62/192.168.208.0/24

Dec 02 16:54:44 vvdn sh[11448]: Sending on LPF/eth1.21/64:9d:99:b1:7e:62/192.168.208.0/24

Dec 02 16:54:44 vvdn sh[11448]: Sending on Socket/fallback/fallback-net

Dec 02 16:54:44 vvdn dhcpcd[11448]: Sending on LPF/eth1.21/64:9d:99:b1:7e:62/192.168.208.0/24

Dec 02 16:54:44 vvdn dhcpcd[11448]: Sending on Socket/fallback/fallback-net

Dec 02 16:54:44 vvdn dhcpcd[11448]: Server starting service.

Dec 02 16:55:00 vvdn dhcpcd[11448]: DHCPDISCOVER from 98:ae:71:01:64:d8 via eth1.21

Dec 02 16:55:01 vvdn dhcpcd[11448]: DHCPOFFER on 192.168.208.37 to 98:ae:71:01:64:d8 (garuda) via eth1.21

Dec 02 16:55:01 vvdn dhcpcd[11448]: DHCPREQUEST for 192.168.208.37 (192.168.208.15) from 98:ae:71:01:64:d8 (garuda) via eth1.21

Dec 02 16:55:01 vvdn dhcpcd[11448]: DHCPACK on 192.168.208.37 to 98:ae:71:01:64:d8 (garuda) via eth1.21

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Pinging

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PING 192.168.208.37 (192.168.208.37) 56(84) bytes of data.

64 bytes from 192.168.208.37: icmp_seq=1 ttl=64 time=0.106 ms

64 bytes from 192.168.208.37: icmp_seq=2 ttl=64 time=0.124 ms

64 bytes from 192.168.208.37: icmp_seq=3 ttl=64 time=0.128 ms

64 bytes from 192.168.208.37: icmp_seq=4 ttl=64 time=0.129 ms

64 bytes from 192.168.208.37: icmp_seq=5 ttl=64 time=0.193 ms

--- 192.168.208.37 ping statistics ---

5 packets transmitted, 5 received, 0% packet loss, time 4086ms

rtt min/avg/max/mdev = 0.106/0.136/0.193/0.029 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 operator

Waiting 60s for an SSH Call Home connection on port 4334...The authenticity of the host '::ffff:192.168.208.37' 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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Apr 14 05:33:04 garuda daemon.info netopeer2-server[860]: Trying to connect via IPv4 to 192.168.208.15:4334.
Apr 14 05:33:04 garuda daemon.info netopeer2-server[860]: getsockopt() error (Connection refused).
Apr 14 05:33:04 garuda daemon.info netopeer2-server[860]: Trying to connect via IPv4 to 192.168.208.15:4334.
Apr 14 05:33:04 garuda daemon.info netopeer2-server[860]: getsockopt() error (Connection refused).
Apr 14 05:33:05 garuda daemon.info netopeer2-server[860]: Trying to connect via IPv4 to 192.168.208.15:4334.
Apr 14 05:33:05 garuda daemon.info netopeer2-server[860]: getsockopt() error (Connection refused).
Apr 14 05:33:05 garuda daemon.info netopeer2-server[860]: Trying to connect via IPv4 to 192.168.208.15:4334.
Apr 14 05:33:05 garuda daemon.info netopeer2-server[860]: getsockopt() error (Connection refused).
Apr 14 05:33:06 garuda daemon.info netopeer2-server[860]: Trying to connect via IPv4 to 192.168.208.15:4334.
Apr 14 05:33:06 garuda daemon.info netopeer2-server[860]: getsockopt() error (Connection refused).
Apr 14 05:33:06 garuda daemon.info netopeer2-server[860]: Trying to connect via IPv4 to 192.168.208.15:4334.
Apr 14 05:33:06 garuda daemon.info netopeer2-server[860]: getsockopt() error (Connection refused).
Apr 14 05:33:07 garuda daemon.info netopeer2-server[860]: Trying to connect via IPv4 to 192.168.208.15:4334.
Apr 14 05:33:07 garuda daemon.info netopeer2-server[860]: getsockopt() error (Connection refused).
Apr 14 05:33:07 garuda user.notice SYNCMNGR[1183]: Received message from S-Plane
Apr 14 05:33:07 garuda daemon.info netopeer2-server[860]: Trying to connect via IPv4 to 192.168.208.15:4334.
Apr 14 05:33:07 garuda daemon.info netopeer2-server[860]: getsockopt() error (Connection refused).
Apr 14 05:33:08 garuda daemon.info netopeer2-server[860]: Trying to connect via IPv4 to 192.168.208.15:4334.
Apr 14 05:33:08 garuda daemon.info netopeer2-server[860]: getsockopt() error (Connection refused).
Apr 14 05:33:08 garuda daemon.info netopeer2-server[860]: Trying to connect via IPv4 to 192.168.208.15:4334.
Apr 14 05:33:08 garuda daemon.info netopeer2-server[860]: getsockopt() error (Connection refused).
Apr 14 05:33:09 garuda daemon.info netopeer2-server[860]: Trying to connect via IPv4 to 192.168.208.15:4334.
Apr 14 05:33:09 garuda daemon.info netopeer2-server[860]: getsockopt() error (Connection refused).
Apr 14 05:33:09 garuda daemon.info netopeer2-server[860]: Trying to connect via IPv4 to 192.168.208.15:4334.
Apr 14 05:33:09 garuda daemon.info netopeer2-server[860]: getsockopt() error (Connection refused).
Apr 14 05:33:10 garuda daemon.info netopeer2-server[860]: Trying to connect via IPv4 to 192.168.208.15:4334.
Apr 14 05:33:10 garuda daemon.info netopeer2-server[860]: getsockopt() error (Connection refused).
Apr 14 05:33:10 garuda daemon.info netopeer2-server[860]: Trying to connect via IPv4 to 192.168.208.15:4334.
Apr 14 05:33:10 garuda daemon.info netopeer2-server[860]: Successfully connected to 192.168.208.15:4334 over IPv4.
Apr 14 05:33:10 garuda daemon.info netopeer2-server[860]: Session 103 (user "root", CID 1) created.
Apr 14 05:33:11 garuda daemon.err netopeer2-server[860]: Communication SSH socket unexpectedly closed.
Apr 14 05:33:11 garuda daemon.info netopeer2-server[860]: Trying to connect via IPv4 to 192.168.208.15:4334.
Apr 14 05:33:11 garuda daemon.info netopeer2-server[860]: getsockopt() error (Connection refused).
Apr 14 05:33:12 garuda daemon.info netopeer2-server[860]: Trying to connect via IPv4 to 192.168.208.15:4334.
Apr 14 05:33:12 garuda daemon.info netopeer2-server[860]: Successfully connected to 192.168.208.15:4334 over IPv4.
Apr 14 05:33:12 garuda daemon.info netopeer2-server[860]: Session 104 (user "root", CID 1) created.
Apr 14 05:33:12 garuda daemon.err netopeer2-server[860]: Communication SSH socket unexpectedly closed.
Apr 14 05:33:12 garuda daemon.info netopeer2-server[860]: Trying to connect via IPv4 to 192.168.208.15:4334.
Apr 14 05:33:12 garuda daemon.info netopeer2-server[860]: getsockopt() error (Connection refused).
Apr 14 05:33:13 garuda daemon.info netopeer2-server[860]: Trying to connect via IPv4 to 192.168.208.15:4334.
Apr 14 05:33:13 garuda daemon.info netopeer2-server[860]: Successfully connected to 192.168.208.15:4334 over IPv4.
Apr 14 05:33:13 garuda daemon.info netopeer2-server[860]: Session 105 (user "root", CID 1) created.
Apr 14 05:33:13 garuda daemon.err netopeer2-server[860]: Communication SSH socket unexpectedly closed.
Apr 14 05:33:13 garuda daemon.info netopeer2-server[860]: Trying to connect via IPv4 to 192.168.208.15:4334.
Apr 14 05:33:13 garuda daemon.info netopeer2-server[860]: getsockopt() error (Connection refused).

Apr 14 05:33:14 garuda daemon.info netopeer2-server[860]: Trying to connect via IPv4 to 192.168.208.15:4334.
Apr 14 05:33:14 garuda daemon.info netopeer2-server[860]: Successfully connected to 192.168.208.15:4334 over IPv4.
Apr 14 05:33:14 garuda daemon.info netopeer2-server[860]: Session 106 (user "root", CID 1) created.
Apr 14 05:33:14 garuda daemon.err netopeer2-server[860]: Communication SSH socket unexpectedly closed.
Apr 14 05:33:14 garuda daemon.info netopeer2-server[860]: Trying to connect via IPv4 to 192.168.208.15:4334.
Apr 14 05:33:14 garuda daemon.info netopeer2-server[860]: getsockopt() error (Connection refused).
Apr 14 05:33:15 garuda daemon.info netopeer2-server[860]: Trying to connect via IPv4 to 192.168.208.15:4334.
Apr 14 05:33:15 garuda daemon.info netopeer2-server[860]: Successfully connected to 192.168.208.15:4334 over IPv4.
Apr 14 05:33:15 garuda daemon.info netopeer2-server[860]: Session 107 (user "root", CID 1) created.
Apr 14 05:33:15 garuda daemon.err netopeer2-server[860]: Communication SSH socket unexpectedly closed.
Apr 14 05:33:15 garuda daemon.info netopeer2-server[860]: Trying to connect via IPv4 to 192.168.208.15:4334.
Apr 14 05:33:15 garuda daemon.info netopeer2-server[860]: getsockopt() error (Connection refused).
Apr 14 05:33:15 garuda auth.info sshd[5846]: Accepted password for operator from 192.168.208.15 port 56668 ssh2
Apr 14 05:33:15 garuda authpriv.info sshd[5846]: 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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