



@ FILE NAME: M\_CTC\_ID\_020\_.txt

@ TEST SCOPE: M PLANE O-RAN CONFORMANCE

@ Software Release for Garuda\_RevD: v5.0.0

**Test Description :** This scenario is **MANDATORY** for an O-RU supporting the Hybrid M-plane architecture model.

**This test validates that the O-RU correctly implements NETCONF Access Control user privileges.**

**The scenario corresponds to the following chapters in [3]:**

**3.4 NETCONF Access Control**

```
=====
***** Initial Get *****
=====
```

```
> connect --ssh --host 192.168.4.46 --port 830 --login operator
```

```
Interactive SSH Authentication
```

```
Type your password:
```

```
Password:
```

```
=====
> get --filter-xpath /o-ran-usermgmt:users/user
=====
```

```
<?xml version="1.0" ?>
<data xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" xmlns:nc="urn:ietf:params:xml:ns:netconf:base:1.0">
<users xmlns="urn:o-ran:user-mgmt:1.0">
<user>
<name>oranuser</name>
<account-type>PASSWORD</account-type>
<enabled>true</enabled>
</user>
<user>
<name>operator</name>
<account-type>PASSWORD</account-type>
<enabled>true</enabled>
</user>
<user>
<name>observer</name>
<account-type>PASSWORD</account-type>
<enabled>true</enabled>
</user>
<user>
<name>installer</name>
<account-type>PASSWORD</account-type>
<enabled>true</enabled>
</user>
<user>
<name>operator5310619424927220</name>
<account-type>PASSWORD</account-type>
<enabled>true</enabled>
</user>
<user>
<name>operator42009256600399182198</name>
<account-type>PASSWORD</account-type>
<enabled>true</enabled>
</user>
<user>
<name>operator900036241939705</name>
```

```
<account-type>PASSWORD</account-type>  
<enabled>true</enabled>  
</user>  
</users>  
</data>
```

\*\*\*\*\* Connect to the NETCONF Server \*\*\*\*\*

### STEP 1 TER NETCONF client establishes a connection using a user account with nms privileges.

```
> connect --ssh --host 192.168.4.46 --port 830 --login installer
```

Interactive SSH Authentication

Type your password:

Password:

```
> status
```

Current NETCONF session:

ID : 25

Host : 192.168.4.46

Port : 830

Transport : SSH

Capabilities:

urn:ietf:params:netconf:base:1.0 urn:ietf:params:netconf:base:1.1 urn:ietf:params:netconf:capability:writable-running:1.0  
urn:ietf:params:netconf:capability:candidate:1.0 urn:ietf:params:netconf:capability:rollback-on-error:1.0  
urn:ietf:params:netconf:capability:validate:1.1 urn:ietf:params:netconf:capability:startup:1.0 urn:ietf:params:netconf:capability:xpath:1.0  
urn:ietf:params:netconf:capability:with-defaults:1.0?basic-mode=explicit&also-supported=report-all,report-all-tagged,trim,explicit  
urn:ietf:params:netconf:capability:notification:1.0 urn:ietf:params:netconf:capability:interleave:1.0  
urn:ietf:params:xml:ns:yang:ietf-yang-metadata?module=ietf-yang-metadata&revision=2016-08-05  
urn:ietf:params:xml:ns:yang:1?module=yang&revision=2017-02-20  
urn:ietf:params:xml:ns:yang:ietf-inet-types?module=ietf-inet-types&revision=2013-07-15  
urn:ietf:params:xml:ns:yang:ietf-yang-types?module=ietf-yang-types&revision=2013-07-15  
urn:ietf:params:netconf:capability:yang-library:1.1?revision=2019-01-04&content-id=61  
urn:sysrepo:plugind?module=sysrepo-plugind&revision=2020-12-10  
urn:ietf:params:xml:ns:yang:ietf-netconf-acm?module=ietf-netconf-acm&revision=2018-02-14  
urn:ietf:params:xml:ns:netconf:base:1.0?module=ietf-netconf&revision=2013-09-29&features=writable-running,candidate,rollback-on-error,validate,startup,url,xpath urn:ietf:params:xml:ns:yang:ietf-netconf-with-defaults?module=ietf-netconf-with-defaults&revision=2011-06-01  
urn:ietf:params:xml:ns:yang:ietf-netconf-notifications?module=ietf-netconf-notifications&revision=2012-02-06  
urn:ietf:params:xml:ns:yang:ietf-netconf-monitoring?module=ietf-netconf-monitoring&revision=2010-10-04  
urn:ietf:params:xml:ns:netconf:notification:1.0?module=notifications&revision=2008-07-14  
urn:ietf:params:xml:ns:netmod:notification?module=nc-notifications&revision=2008-07-14  
urn:ietf:params:xml:ns:yang:ietf-x509-cert-to-name?module=ietf-x509-cert-to-name&revision=2014-12-10  
urn:ietf:params:xml:ns:yang:iana-crypt-hash?module=iana-crypt-hash&revision=2014-08-06 urn:notification\_history?module=notification\_history  
urn:ietf:params:xml:ns:yang:iana-if-type?module=iana-if-type&revision=2017-01-19

```
>subscribe
```

Ok

=====  
**Step 2 TER NETCONF client attempts to configure a new user/password.**  
=====

=====  
**> edit-config --target running --config --defop merge**  
=====

=====  
**\*\*\*\*\* Replace with below xml \*\*\*\*\***  
=====

```
<config xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">
  <users xmlns="urn:o-ran:user-mgmt:1.0">
    <user>
      <name>operator10278181201839665173</name>
      <account-type>PASSWORD</account-type>
      <password>pzI_eXht2(q0210dkPhkSs7M3P7$pn8zyPt[w9CgldJxVXi)J){mr{ZZb6</password>
      <enabled>true</enabled>
    </user>
  </users>
</config>
```

=====  
**Step 3 NETCONF server replies rejecting the protocol operation with an 'access-denied' error**  
=====

### ERROR

type	:	protocol
tag	:	access-denied
severity	:	error
path	:	/o-ran-usermgmt:users/user
message	:	Access to the data model "o-ran-usermgmt" is denied because "installer" NACM authorization failed.

## =====

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

=====

Aug 2 18:47:54 garuda daemon.info netopeer2-server[846]: Session 23: thread 3 event new RPC.

Aug 2 18:47:54 garuda daemon.info netopeer2-server[846]: Session 23: thread 3 event session terminated.

Aug 2 18:47:54 garuda daemon.info netopeer2-server[846]: There are no subscribers for "ietf-netconf-notifications" notifications.

Aug 2 18:47:54 garuda daemon.info netopeer2-server[846]: Generated new event (netconf-session-end).

Aug 2 18:47:54 garuda daemon.info netopeer2-server[846]: Accepted a connection on :::830.

Aug 2 18:47:54 garuda daemon.info netopeer2-server[846]: Session 1791 (user "root", CID 1) created.

Aug 2 18:47:54 garuda daemon.info netopeer2-server[846]: Received an SSH message "request-service" of subtype "ssh-userauth".

Aug 2 18:47:54 garuda daemon.info netopeer2-server[846]: Received an SSH message "request-auth" of subtype "password".

Aug 2 18:47:54 garuda daemon.info netopeer2-server[846]: User "operator" authenticated.

Aug 2 18:47:54 garuda daemon.info netopeer2-server[846]: Received an SSH message "request-channel-open" of subtype "session".

Aug 2 18:47:54 garuda daemon.info netopeer2-server[846]: Received an SSH message "request-channel" of subtype "subsystem".

Aug 2 18:47:54 garuda daemon.info netopeer2-server[846]: Session 1792 (user "root", CID 1) created.

Aug 2 18:47:54 garuda daemon.info netopeer2-server[846]: There are no subscribers for "ietf-netconf-notifications" notifications.

Aug 2 18:47:54 garuda daemon.info netopeer2-server[846]: Generated new event (netconf-session-start).

Aug 2 18:47:54 garuda daemon.info netopeer2-server[846]: Resolving unresolved data nodes and their constraints...

Aug 2 18:47:54 garuda daemon.info netopeer2-server[846]: All data nodes and constraints resolved.

Aug 2 18:47:54 garuda daemon.info netopeer2-server[846]: Resolving unresolved data nodes and their constraints...

Aug 2 18:47:54 garuda daemon.info netopeer2-server[846]: All data nodes and constraints resolved.

Aug 2 18:47:54 garuda daemon.info netopeer2-server[846]: Published event "rpc" "/ietf-netconf:get" with ID 769 priority 0 for 1 subscribers.

Aug 2 18:47:54 garuda daemon.info netopeer2-server[846]: Processing "/ietf-netconf:get" "rpc" event with ID 769 priority 0 (remaining 1 subscribers).

Aug 2 18:47:54 garuda daemon.info netopeer2-server[846]: Successful processing of "rpc" event with ID 769 priority 0 (remaining 0 subscribers).

Aug 2 18:47:54 garuda daemon.info netopeer2-server[846]: Event "rpc" with ID 769 priority 0 succeeded.

Aug 2 18:47:54 garuda daemon.info netopeer2-server[846]: Resolving unresolved data nodes and their constraints...

Aug 2 18:47:54 garuda daemon.info netopeer2-server[846]: All data nodes and constraints resolved.

Aug 2 18:47:54 garuda daemon.info netopeer2-server[846]: Session 24: thread 3 event new RPC.

Aug 2 18:47:54 garuda daemon.info netopeer2-server[846]: Session 24: thread 3 event new RPC.

Aug 2 18:47:54 garuda daemon.info netopeer2-server[846]: Session 24: thread 3 event session terminated.

Aug 2 18:47:54 garuda daemon.info netopeer2-server[846]: There are no subscribers for "ietf-netconf-notifications" notifications.

Aug 2 18:47:54 garuda daemon.info netopeer2-server[846]: Generated new event (netconf-session-end).

Aug 2 18:47:54 garuda daemon.info netopeer2-server[846]: Trying to connect via IPv4 to 192.168.4.15:4334.

Aug 2 18:47:54 garuda daemon.info netopeer2-server[846]: getsockopt() error (Connection refused).

Aug 2 18:47:55 garuda daemon.info netopeer2-server[846]: Trying to connect via IPv4 to 192.168.4.15:4334.

Aug 2 18:47:55 garuda daemon.info netopeer2-server[846]: getsockopt() error (Connection refused).

Aug 2 18:47:56 garuda daemon.info netopeer2-server[846]: Trying to connect via IPv4 to 192.168.4.15:4334.

Aug 2 18:47:56 garuda daemon.info netopeer2-server[846]: getsockopt() error (Connection refused).

Aug 2 18:47:57 garuda daemon.info netopeer2-server[846]: Trying to connect via IPv4 to 192.168.4.15:4334.

Aug 2 18:47:57 garuda daemon.info netopeer2-server[846]: getsockopt() error (Connection refused).

Aug 2 18:47:58 garuda daemon.info netopeer2-server[846]: Trying to connect via IPv4 to 192.168.4.15:4334.

Aug 2 18:47:58 garuda daemon.info netopeer2-server[846]: getsockopt() error (Connection refused).

Aug 2 18:47:59 garuda daemon.info netopeer2-server[846]: Accepted a connection on :::830.

Aug 2 18:47:59 garuda daemon.info netopeer2-server[846]: Session 1794 (user "root", CID 1) created.

Aug 2 18:47:59 garuda daemon.info netopeer2-server[846]: Received an SSH message "request-service" of subtype "ssh-userauth".

Aug 2 18:47:59 garuda daemon.info netopeer2-server[846]: Received an SSH message "request-auth" of subtype "password".

Aug 2 18:47:59 garuda daemon.info netopeer2-server[846]: User "installer" authenticated.

Aug 2 18:47:59 garuda daemon.info netopeer2-server[846]: Received an SSH message "request-channel-open" of subtype "session".

Aug 2 18:47:59 garuda daemon.info netopeer2-server[846]: Received an SSH message "request-channel" of subtype "subsystem".

Aug 2 18:47:59 garuda daemon.info netopeer2-server[846]: Session 1795 (user "root", CID 1) created.

Aug 2 18:47:59 garuda daemon.info netopeer2-server[846]: There are no subscribers for "ietf-netconf-notifications" notifications.

Aug 2 18:47:59 garuda daemon.info netopeer2-server[846]: Generated new event (netconf-session-start).

Aug 2 18:47:59 garuda daemon.info netopeer2-server[846]: Trying to connect via IPv4 to 192.168.4.15:4334.

Aug 2 18:47:59 garuda daemon.info netopeer2-server[846]: getsockopt() error (Connection refused).

Aug 2 18:47:59 garuda daemon.info netopeer2-server[846]: Resolving unresolved data nodes and their constraints...

Aug 2 18:47:59 garuda daemon.info netopeer2-server[846]: All data nodes and constraints resolved.

Aug 2 18:47:59 garuda daemon.info netopeer2-server[846]: Resolving unresolved data nodes and their constraints...

Aug 2 18:47:59 garuda daemon.info netopeer2-server[846]: All data nodes and constraints resolved.

Aug 2 18:47:59 garuda daemon.info netopeer2-server[846]: Published event "rpc" "/notifications:create-subscription" with ID 5 priority 0 for 1 subscribers.

Aug 2 18:47:59 garuda daemon.info netopeer2-server[846]: Processing "/notifications:create-subscription" "rpc" event with ID 5 priority 0 (remaining 1 subscribers).

Aug 2 18:47:59 garuda daemon.info netopeer2-server[846]: Successful processing of "rpc" event with ID 5 priority 0 (remaining 0 subscribers).

Aug 2 18:47:59 garuda daemon.info netopeer2-server[846]: Event "rpc" with ID 5 priority 0 succeeded.

Aug 2 18:47:59 garuda daemon.info netopeer2-server[846]: Session 25: thread 3 event new RPC.

Aug 2 18:47:59 garuda daemon.info netopeer2-server[846]: Resolving unresolved data nodes and their constraints...

Aug 2 18:47:59 garuda daemon.info netopeer2-server[846]: All data nodes and constraints resolved.

Aug 2 18:47:59 garuda daemon.info netopeer2-server[846]: Resolving unresolved data nodes and their constraints...

Aug 2 18:47:59 garuda daemon.info netopeer2-server[846]: All data nodes and constraints resolved.

Aug 2 18:47:59 garuda daemon.info netopeer2-server[846]: Published event "rpc" "/ietf-netconf:edit-config" with ID 3 priority 0 for 1 subscribers.

Aug 2 18:47:59 garuda daemon.info netopeer2-server[846]: Processing "/ietf-netconf:edit-config" "rpc" event with ID 3 priority 0 (remaining 1 subscribers).

Aug 2 18:47:59 garuda daemon.info netopeer2-server[846]: edit-config error-option "stop-on-error" not supported, rollback-on-error will be performed.

Aug 2 18:47:59 garuda daemon.err netopeer2-server[846]: Access to the data model "o-ran-usermgmt" is denied because "installer" NACM authorization failed.

Aug 2 18:47:59 garuda daemon.info netopeer2-server[846]: Failed processing of "rpc" event with ID 3 priority 0 (remaining 1 subscribers).

Aug 2 18:47:59 garuda daemon.err netopeer2-server[846]: Access to the data model "o-ran-usermgmt" is denied because "installer" NACM authorization failed.

Aug 2 18:47:59 garuda daemon.warn netopeer2-server[846]: Event "rpc" with ID 3 priority 0 failed (User callback failed).

Aug 2 18:47:59 garuda daemon.err netopeer2-server[846]: Failed to send an RPC (User callback failed).

Aug 2 18:47:59 garuda daemon.info netopeer2-server[846]: Session 25: thread 2 event new RPC.

Aug 2 18:47:59 garuda daemon.info netopeer2-server[846]: Session 25: thread 2 event reply error.

Aug 2 18:48:00 garuda daemon.info netopeer2-server[846]: Session 25: thread 2 event new RPC.

Aug 2 18:48:00 garuda daemon.info netopeer2-server[846]: Session 25: thread 2 event session terminated.

Aug 2 18:48:00 garuda daemon.info netopeer2-server[846]: There are no subscribers for "ietf-netconf-notifications" notifications.

Aug 2 18:48:00 garuda daemon.info netopeer2-server[846]: Generated new event (netconf-session-end).

Aug 2 18:48:00 garuda auth.info sshd[11310]: Accepted password for installer from 192.168.4.15 port 59744 ssh2

Aug 2 18:48:00 garuda authpriv.info sshd[11310]: pam\_unix(sshd:session): session opened for user installer by (uid=0)

**Expected Result : The NETCONF server replies rejecting the protocol operation with an "access-denied" error.**

=====

\*\*\*\*\* **Actual Result** \*\*\*\*\*

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<b>Access Control NMS (negative case)</b>	<b>=</b>	<b>SUCCESS</b>
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