



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

**@ TEST SCOPE: M PLANE O-RAN CONFORMANCE**

**@ Software Release for Garuda\_RevD: v5.0.2**

**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 192.168.4.40 --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>operator363904219774937034226</name>
      <account-type>PASSWORD</account-type>
      <enabled>true</enabled>
    </user>
    <user>
      <name>operator0534452414116716545446</name>
      <account-type>PASSWORD</account-type>
      <enabled>true</enabled>
    </user>
    <user>
      <name>operator6163823880175</name>
      <account-type>PASSWORD</account-type>
      <enabled>true</enabled>
    </user>
  </users>
</data>
</xml>
```

</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 192.168.4.40 --port 830 --login installer
```

```
Interactive SSH Authentication
```

```
Type your password:
```

```
Password:
```

```
> status
```

```
Current NETCONF session:
```

```
ID      : 25
```

```
Host    : 192.168.4.40
```

```
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,valid
ate,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>operator743866017966158045157</name>
      <account-type>PASSWORD</account-type>
      <password>p2+0+$$$mZx2zOOlWaC) YW5krQ+A% V~NirJdM]1RN$s.wL9(Ic{ TOdl5-%M~6J]$cfw</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 19 12:30:25 garuda daemon.info netopeer2-server[853]: Accepted a connection on :::830.

Aug 19 12:30:25 garuda daemon.info netopeer2-server[853]: Session 1660 (user "root", CID 1) created.

Aug 19 12:30:25 garuda daemon.info netopeer2-server[853]: Received an SSH message "request-service" of subtype "ssh-userauth".

Aug 19 12:30:25 garuda daemon.info netopeer2-server[853]: Received an SSH message "request-auth" of subtype "password".

Aug 19 12:30:25 garuda daemon.info netopeer2-server[853]: User "operator" authenticated.

Aug 19 12:30:25 garuda daemon.info netopeer2-server[853]: Received an SSH message "request-channel-open" of subtype "session".

Aug 19 12:30:25 garuda daemon.info netopeer2-server[853]: Received an SSH message "request-channel" of subtype "subsystem".

Aug 19 12:30:25 garuda daemon.info netopeer2-server[853]: Session 1661 (user "root", CID 1) created.

Aug 19 12:30:25 garuda daemon.info netopeer2-server[853]: There are no subscribers for "ietf-netconf-notifications" notifications.

Aug 19 12:30:25 garuda daemon.info netopeer2-server[853]: Generated new event (netconf-session-start).

Aug 19 12:30:25 garuda daemon.info netopeer2-server[853]: Resolving unresolved data nodes and their constraints...

Aug 19 12:30:25 garuda daemon.info netopeer2-server[853]: All data nodes and constraints resolved.

Aug 19 12:30:25 garuda daemon.info netopeer2-server[853]: Resolving unresolved data nodes and their constraints...

Aug 19 12:30:25 garuda daemon.info netopeer2-server[853]: All data nodes and constraints resolved.

Aug 19 12:30:25 garuda daemon.info netopeer2-server[853]: Published event "rpc" "/ietf-netconf:get" with ID 691 priority 0 for 1 subscribers.

Aug 19 12:30:25 garuda daemon.info netopeer2-server[853]: Processing "/ietf-netconf:get" "rpc" event with ID 691 priority 0 (remaining 1 subscribers).

Aug 19 12:30:25 garuda daemon.info netopeer2-server[853]: Successful processing of "rpc" event with ID 691 priority 0 (remaining 0 subscribers).

Aug 19 12:30:25 garuda daemon.info netopeer2-server[853]: Event "rpc" with ID 691 priority 0 succeeded.

Aug 19 12:30:25 garuda daemon.info netopeer2-server[853]: Resolving unresolved data nodes and their constraints...

Aug 19 12:30:25 garuda daemon.info netopeer2-server[853]: All data nodes and constraints resolved.

Aug 19 12:30:25 garuda daemon.info netopeer2-server[853]: Session 24: thread 2 event new RPC.

Aug 19 12:30:25 garuda daemon.info netopeer2-server[853]: Trying to connect via IPv4 to 192.168.4.15:4334.

Aug 19 12:30:25 garuda daemon.info netopeer2-server[853]: getsockopt() error (Connection refused).

Aug 19 12:30:25 garuda daemon.info netopeer2-server[853]: Session 24: thread 2 event new RPC.

Aug 19 12:30:25 garuda daemon.info netopeer2-server[853]: Session 24: thread 2 event session terminated.

Aug 19 12:30:25 garuda daemon.info netopeer2-server[853]: There are no subscribers for "ietf-netconf-notifications" notifications.

Aug 19 12:30:25 garuda daemon.info netopeer2-server[853]: Generated new event (netconf-session-end).

Aug 19 12:30:25 garuda daemon.info netopeer2-server[853]: Trying to connect via IPv4 to 192.168.4.15:4334.

Aug 19 12:30:25 garuda daemon.info netopeer2-server[853]: getsockopt() error (Connection refused).

Aug 19 12:30:26 garuda daemon.info netopeer2-server[853]: Trying to connect via IPv4 to 192.168.4.15:4334.

Aug 19 12:30:26 garuda daemon.info netopeer2-server[853]: getsockopt() error (Connection refused).

Aug 19 12:30:26 garuda daemon.info netopeer2-server[853]: Trying to connect via IPv4 to 192.168.4.15:4334.

Aug 19 12:30:26 garuda daemon.info netopeer2-server[853]: getsockopt() error (Connection refused).

Aug 19 12:30:27 garuda daemon.info netopeer2-server[853]: Trying to connect via IPv4 to 192.168.4.15:4334.

Aug 19 12:30:27 garuda daemon.info netopeer2-server[853]: getsockopt() error (Connection refused).

Aug 19 12:30:27 garuda daemon.info netopeer2-server[853]: Trying to connect via IPv4 to 192.168.4.15:4334.

Aug 19 12:30:27 garuda daemon.info netopeer2-server[853]: getsockopt() error (Connection refused).

Aug 19 12:30:28 garuda daemon.info netopeer2-server[853]: Trying to connect via IPv4 to 192.168.4.15:4334.

Aug 19 12:30:28 garuda daemon.info netopeer2-server[853]: getsockopt() error (Connection refused).

Aug 19 12:30:28 garuda daemon.info netopeer2-server[853]: Trying to connect via IPv4 to 192.168.4.15:4334.

Aug 19 12:30:28 garuda daemon.info netopeer2-server[853]: getsockopt() error (Connection refused).

Aug 19 12:30:29 garuda daemon.info netopeer2-server[853]: Trying to connect via IPv4 to 192.168.4.15:4334.

Aug 19 12:30:29 garuda daemon.info netopeer2-server[853]: getsockopt() error (Connection refused).

Aug 19 12:30:29 garuda daemon.info netopeer2-server[853]: Trying to connect via IPv4 to 192.168.4.15:4334.

Aug 19 12:30:29 garuda daemon.info netopeer2-server[853]: getsockopt() error (Connection refused).

Aug 19 12:30:30 garuda daemon.info netopeer2-server[853]: Trying to connect via IPv4 to 192.168.4.15:4334.

Aug 19 12:30:30 garuda daemon.info netopeer2-server[853]: getsockopt() error (Connection refused).

Aug 19 12:30:30 garuda daemon.info netopeer2-server[853]: Accepted a connection on :::830.

Aug 19 12:30:30 garuda daemon.info netopeer2-server[853]: Session 1663 (user "root", CID 1) created.

Aug 19 12:30:30 garuda daemon.info netopeer2-server[853]: Received an SSH message "request-service" of subtype "ssh-userauth".

Aug 19 12:30:30 garuda daemon.info netopeer2-server[853]: Received an SSH message "request-auth" of subtype "password".

Aug 19 12:30:30 garuda daemon.info netopeer2-server[853]: User "installer" authenticated.

Aug 19 12:30:30 garuda daemon.info netopeer2-server[853]: Received an SSH message "request-channel-open" of subtype "session".

Aug 19 12:30:30 garuda daemon.info netopeer2-server[853]: Received an SSH message "request-channel" of subtype "subsystem".

Aug 19 12:30:30 garuda daemon.info netopeer2-server[853]: Session 1664 (user "root", CID 1) created.

Aug 19 12:30:30 garuda daemon.info netopeer2-server[853]: There are no subscribers for "ietf-netconf-notifications" notifications.

Aug 19 12:30:30 garuda daemon.info netopeer2-server[853]: Generated new event (netconf-session-start).

Aug 19 12:30:30 garuda daemon.info netopeer2-server[853]: Trying to connect via IPv4 to 192.168.4.15:4334.

Aug 19 12:30:30 garuda daemon.info netopeer2-server[853]: getsockopt() error (Connection refused).

Aug 19 12:30:30 garuda daemon.info netopeer2-server[853]: Resolving unresolved data nodes and their constraints...

Aug 19 12:30:30 garuda daemon.info netopeer2-server[853]: All data nodes and constraints resolved.

Aug 19 12:30:30 garuda daemon.info netopeer2-server[853]: Resolving unresolved data nodes and their constraints...

Aug 19 12:30:30 garuda daemon.info netopeer2-server[853]: All data nodes and constraints resolved.

Aug 19 12:30:30 garuda daemon.info netopeer2-server[853]: Published event "rpc" "/notifications:create-subscription" with ID 5 priority 0 for 1 subscribers.

Aug 19 12:30:30 garuda daemon.info netopeer2-server[853]: Processing "/notifications:create-subscription" "rpc" event with ID 5 priority 0 (remaining 1 subscribers).

Aug 19 12:30:30 garuda daemon.info netopeer2-server[853]: Successful processing of "rpc" event with ID 5 priority 0 (remaining 0 subscribers).

Aug 19 12:30:30 garuda daemon.info netopeer2-server[853]: Event "rpc" with ID 5 priority 0 succeeded.

Aug 19 12:30:30 garuda daemon.info netopeer2-server[853]: Session 25: thread 2 event new RPC.

Aug 19 12:30:30 garuda daemon.info netopeer2-server[853]: Resolving unresolved data nodes and their constraints...

Aug 19 12:30:30 garuda daemon.info netopeer2-server[853]: All data nodes and constraints resolved.

Aug 19 12:30:30 garuda daemon.info netopeer2-server[853]: Resolving unresolved data nodes and their constraints...

Aug 19 12:30:30 garuda daemon.info netopeer2-server[853]: All data nodes and constraints resolved.

Aug 19 12:30:30 garuda daemon.info netopeer2-server[853]: Published event "rpc" "/ietf-netconf:edit-config" with ID 3 priority 0 for 1 subscribers.

Aug 19 12:30:30 garuda daemon.info netopeer2-server[853]: Processing "/ietf-netconf:edit-config" "rpc" event with ID 3 priority 0 (remaining 1 subscribers).

Aug 19 12:30:30 garuda daemon.info netopeer2-server[853]: edit-config error-option "stop-on-error" not supported, rollback-on-error will be performed.

Aug 19 12:30:30 garuda daemon.err netopeer2-server[853]: Access to the data model "o-ran-usermgmt" is denied because "installer" NACM authorization failed.

Aug 19 12:30:30 garuda daemon.info netopeer2-server[853]: Failed processing of "rpc" event with ID 3 priority 0 (remaining 1 subscribers).

Aug 19 12:30:30 garuda daemon.err netopeer2-server[853]: Access to the data model "o-ran-usermgmt" is denied because "installer" NACM authorization failed.

Aug 19 12:30:30 garuda daemon.warn netopeer2-server[853]: Event "rpc" with ID 3 priority 0 failed (User callback failed).

Aug 19 12:30:30 garuda daemon.err netopeer2-server[853]: Failed to send an RPC (User callback failed).

Aug 19 12:30:30 garuda daemon.info netopeer2-server[853]: Session 25: thread 0 event new RPC.

Aug 19 12:30:30 garuda daemon.info netopeer2-server[853]: Session 25: thread 0 event reply error.

Aug 19 12:30:30 garuda daemon.info netopeer2-server[853]: Resolving unresolved data nodes and their constraints...

Aug 19 12:30:30 garuda daemon.info netopeer2-server[853]: There is no instance of "/stli\_giru-wdm:system-apps/fw\_manager", but it is not required.

Aug 19 12:30:30 garuda daemon.info netopeer2-server[853]: All data nodes and constraints resolved.

Aug 19 12:30:30 garuda daemon.info netopeer2-server[853]: Processing "notif" "ietf-netconf-notifications" event with ID 1.

Aug 19 12:30:30 garuda daemon.info netopeer2-server[853]: Successful processing of "notif" event with ID 1 priority 0 (remaining 0 subscribers).

Aug 19 12:30:30 garuda daemon.info netopeer2-server[853]: Session 25: thread 3 event new RPC.

Aug 19 12:30:30 garuda daemon.info netopeer2-server[853]: Session 25: thread 3 event session terminated.

Aug 19 12:30:31 garuda daemon.info netopeer2-server[853]: There are no subscribers for "ietf-netconf-notifications" notifications.

Aug 19 12:30:31 garuda daemon.info netopeer2-server[853]: Generated new event (netconf-session-end).

Aug 19 12:30:31 garuda authpriv.debug sshd[10130]: pam\_unix(sshd:account): account installer has password changed in future

Aug 19 12:30:31 garuda auth.info sshd[10130]: Accepted password for installer from 192.168.4.15 port 52784 ssh2

Aug 19 12:30:31 garuda authpriv.info sshd[10130]: 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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=====