# QA TEST REPORT

@ FILE NAME:   M_CTC_ID_021_.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
<?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 fm-pm privileges.
================================================================================
> connect --ssh --host 192.168.4.46 --port 830 --login observer
          Interactive SSH Authentication
          Type your password:
          Password:
          > status
          Current NETCONF session:
          ID        : 30
          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,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 get the configuration of the o-ran-processing.yang model.
=======================================================================

=======================================================================
## > edit-config  --target running --config --defop replace
=======================================================================

=======================================================================
## ******* Replace with below xml ********
=======================================================================

```
<processing-elements xmlns="urn:o-ran:processing-element:1.0">
<transport-session-type>ETH-INTERFACE</transport-session-type>
<ru-elements>
  <name>element0</name>
  <transport-flow>
   <interface-name>eth0.100</interface-name>
   <eth-flow>
    <ru-mac-address>98:ae:71:01:64:d8</ru-mac-address>
    <vlan-id>100</vlan-id>
    <o-du-mac-address>64:9d:99:b1:7e:63</o-du-mac-address>
   </eth-flow>
  </transport-flow>
</ru-elements>
</processing-elements>
```

=======================================================================
## 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-processing-element:processing-elements/ru-elements |
| message | : | Access to the data model "o-ran-processing-element" is denied because "observer" NACM authorization failed. |

```
==================================================================
  ############ SYSTEM LOGS #############
==================================================================
Aug  2 18:49:24 garuda daemon.info netopeer2-server[846]: Trying to connect via IPv4 to 192.168.4.15:4334.
Aug  2 18:49:24 garuda daemon.info netopeer2-server[846]: getsockopt() error (Connection refused).
Aug  2 18:49:25 garuda daemon.info netopeer2-server[846]: Trying to connect via IPv4 to 192.168.4.15:4334.
Aug  2 18:49:25 garuda daemon.info netopeer2-server[846]: getsockopt() error (Connection refused).
Aug  2 18:49:26 garuda daemon.info netopeer2-server[846]: Trying to connect via IPv4 to 192.168.4.15:4334.
Aug  2 18:49:26 garuda daemon.info netopeer2-server[846]: getsockopt() error (Connection refused).
Aug  2 18:49:27 garuda daemon.info netopeer2-server[846]: Trying to connect via IPv4 to 192.168.4.15:4334.
Aug  2 18:49:27 garuda daemon.info netopeer2-server[846]: getsockopt() error (Connection refused).
Aug  2 18:49:28 garuda daemon.info netopeer2-server[846]: Trying to connect via IPv4 to 192.168.4.15:4334.
Aug  2 18:49:28 garuda daemon.info netopeer2-server[846]: getsockopt() error (Connection refused).
Aug  2 18:49:29 garuda daemon.info netopeer2-server[846]: Trying to connect via IPv4 to 192.168.4.15:4334.
Aug  2 18:49:29 garuda daemon.info netopeer2-server[846]: getsockopt() error (Connection refused).
Aug  2 18:49:29 garuda user.notice SYNCMNGR[1160]: Received message from S-Plane
Aug  2 18:49:30 garuda daemon.info netopeer2-server[846]: Trying to connect via IPv4 to 192.168.4.15:4334.
Aug  2 18:49:30 garuda daemon.info netopeer2-server[846]: getsockopt() error (Connection refused).
Aug  2 18:49:31 garuda daemon.info netopeer2-server[846]: Trying to connect via IPv4 to 192.168.4.15:4334.
Aug  2 18:49:31 garuda daemon.info netopeer2-server[846]: getsockopt() error (Connection refused).
Aug  2 18:49:32 garuda daemon.info netopeer2-server[846]: Trying to connect via IPv4 to 192.168.4.15:4334.
Aug  2 18:49:32 garuda daemon.info netopeer2-server[846]: getsockopt() error (Connection refused).
Aug  2 18:49:33 garuda daemon.info netopeer2-server[846]: Trying to connect via IPv4 to 192.168.4.15:4334.
Aug  2 18:49:33 garuda daemon.info netopeer2-server[846]: getsockopt() error (Connection refused).
Aug  2 18:49:33 garuda daemon.info netopeer2-server[846]: Accepted a connection on :::830.
Aug  2 18:49:33 garuda daemon.info netopeer2-server[846]: Session 1814 (user "root", CID 1) created.
Aug  2 18:49:33 garuda daemon.info netopeer2-server[846]: Received an SSH message "request-service" of subtype "ssh-userauth".
Aug  2 18:49:33 garuda daemon.info netopeer2-server[846]: Received an SSH message "request-auth" of subtype "password".
Aug  2 18:49:33 garuda daemon.info netopeer2-server[846]: User "observer" authenticated.
Aug  2 18:49:33 garuda daemon.info netopeer2-server[846]: Received an SSH message "request-channel-open" of subtype "session".
Aug  2 18:49:33 garuda daemon.info netopeer2-server[846]: Received an SSH message "request-channel" of subtype "subsystem".
Aug  2 18:49:33 garuda daemon.info netopeer2-server[846]: Session 1815 (user "root", CID 1) created.
Aug  2 18:49:33 garuda daemon.info netopeer2-server[846]: There are no subscribers for "ietf-netconf-notifications" notifications.
Aug  2 18:49:33 garuda daemon.info netopeer2-server[846]: Generated new event (netconf-session-start).
Aug  2 18:49:34 garuda daemon.info netopeer2-server[846]: Trying to connect via IPv4 to 192.168.4.15:4334.
Aug  2 18:49:34 garuda daemon.info netopeer2-server[846]: getsockopt() error (Connection refused).
Aug  2 18:49:34 garuda daemon.info netopeer2-server[846]: Resolving unresolved data nodes and their constraints...
Aug  2 18:49:34 garuda daemon.info netopeer2-server[846]: All data nodes and constraints resolved.
Aug  2 18:49:34 garuda daemon.info netopeer2-server[846]: Resolving unresolved data nodes and their constraints...
Aug  2 18:49:34 garuda daemon.info netopeer2-server[846]: All data nodes and constraints resolved.
Aug  2 18:49:34 garuda daemon.info netopeer2-server[846]: Published event "rpc" "/notifications:create-subscription" with ID 6 priority 0 for 1
subscribers.
Aug  2 18:49:34 garuda daemon.info netopeer2-server[846]: Processing "/notifications:create-subscription" "rpc" event with ID 6 priority 0
(remaining 1 subscribers).
Aug  2 18:49:34 garuda daemon.info netopeer2-server[846]: Successful processing of "rpc" event with ID 6 priority 0 (remaining 0 subscribers).
Aug  2 18:49:34 garuda daemon.info netopeer2-server[846]: Event "rpc" with ID 6 priority 0 succeeded.
```

Aug  2 18:49:34 garuda daemon.info netopeer2-server[846]: Session 30: thread 1 event new RPC.

Aug  2 18:49:34 garuda daemon.info netopeer2-server[846]: Resolving unresolved data nodes and their constraints...

Aug  2 18:49:34 garuda daemon.info netopeer2-server[846]: All data nodes and constraints resolved.

Aug  2 18:49:34 garuda daemon.info netopeer2-server[846]: Resolving unresolved data nodes and their constraints...

Aug  2 18:49:34 garuda daemon.info netopeer2-server[846]: All data nodes and constraints resolved.

Aug  2 18:49:34 garuda daemon.info netopeer2-server[846]: Published event "rpc" "/ietf-netconf:edit-config" with ID 4 priority 0 for 1 subscribers.

Aug  2 18:49:34 garuda daemon.info netopeer2-server[846]: Processing "/ietf-netconf:edit-config" "rpc" event with ID 4 priority 0 (remaining 1 subscribers).

Aug  2 18:49:34 garuda daemon.info netopeer2-server[846]: edit-config error-option "stop-on-error" not supported, rollback-on-error will be performed.

Aug  2 18:49:34 garuda daemon.err netopeer2-server[846]: Access to the data model "o-ran-processing-element" is denied because "observer" NACM authorization failed.

Aug  2 18:49:34 garuda daemon.info netopeer2-server[846]: Failed processing of "rpc" event with ID 4 priority 0 (remaining 1 subscribers).

Aug  2 18:49:34 garuda daemon.err netopeer2-server[846]: Access to the data model "o-ran-processing-element" is denied because "observer" NACM authorization failed.

Aug  2 18:49:34 garuda daemon.warn netopeer2-server[846]: Event "rpc" with ID 4 priority 0 failed (User callback failed).

Aug  2 18:49:34 garuda daemon.err netopeer2-server[846]: Failed to send an RPC (User callback failed).

Aug  2 18:49:34 garuda daemon.info netopeer2-server[846]: Session 30: thread 0 event new RPC.

Aug  2 18:49:34 garuda daemon.info netopeer2-server[846]: Session 30: thread 0 event reply error.

Aug  2 18:49:34 garuda daemon.info netopeer2-server[846]: Session 30: thread 0 event new RPC.

Aug  2 18:49:34 garuda daemon.info netopeer2-server[846]: Session 30: thread 0 event session terminated.

Aug  2 18:49:34 garuda daemon.info netopeer2-server[846]: There are no subscribers for "ietf-netconf-notifications" notifications.

Aug  2 18:49:34 garuda daemon.info netopeer2-server[846]: Generated new event (netconf-session-end).

Aug  2 18:49:35 garuda daemon.info netopeer2-server[846]: Trying to connect via IPv4 to 192.168.4.15:4334.

Aug  2 18:49:35 garuda daemon.info netopeer2-server[846]: getsockopt() error (Connection refused).

Aug  2 18:49:36 garuda daemon.info netopeer2-server[846]: Trying to connect via IPv4 to 192.168.4.15:4334.

Aug  2 18:49:36 garuda daemon.info netopeer2-server[846]: getsockopt() error (Connection refused).

Aug  2 18:49:37 garuda daemon.info netopeer2-server[846]: Trying to connect via IPv4 to 192.168.4.15:4334.

Aug  2 18:49:37 garuda daemon.info netopeer2-server[846]: getsockopt() error (Connection refused).

Aug  2 18:49:38 garuda daemon.info netopeer2-server[846]: Trying to connect via IPv4 to 192.168.4.15:4334.

Aug  2 18:49:38 garuda daemon.info netopeer2-server[846]: getsockopt() error (Connection refused).

Aug  2 18:49:39 garuda daemon.info netopeer2-server[846]: Trying to connect via IPv4 to 192.168.4.15:4334.

Aug  2 18:49:39 garuda daemon.info netopeer2-server[846]: getsockopt() error (Connection refused).

Aug  2 18:49:39 garuda auth.info sshd[12583]: Accepted password for observer from 192.168.4.15 port 59756 ssh2

Aug  2 18:49:39 garuda authpriv.info sshd[12583]: pam_unix(sshd:session): session opened for user observer by (uid=0)

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

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


===============================================================================
Access Control FM-PM (negative case)              =          SUCCESS

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