



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

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

**@ Software Release for MCB1: v1.0.1**

**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 192.168.170.37 --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>garuda</name>
      <account-type>PASSWORD</account-type>
      <enabled>true</enabled>
    </user>
    <user>
      <name>operator11302326379</name>
      <account-type>PASSWORD</account-type>
      <enabled>true</enabled>
    </user>
    <user>
      <name>operator44567591</name>
      <account-type>PASSWORD</account-type>
      <enabled>true</enabled>
    </user>
  </users>
</data>
=====
```

```
</user>
<user>
  <name>operator8075861281902</name>
  <account-type>PASSWORD</account-type>
  <enabled>true</enabled>
</user>
<user>
  <name>operator17619020756748090</name>
  <account-type>PASSWORD</account-type>
  <enabled>true</enabled>
</user>
<user>
  <name>operator86938204120707827368</name>
  <account-type>PASSWORD</account-type>
  <enabled>true</enabled>
</user>
<user>
  <name>operator7596639986022389968</name>
  <account-type>PASSWORD</account-type>
  <enabled>true</enabled>
</user>
</users>
</data>
```

```
=====
***** Connect to the NETCONF Server *****
=====
```

```
=====
***** Connect to the NETCONF Server *****
=====
```

```
> connect --ssh --host 192.168.170.37 --port 830 --login installer
```

```
Interactive SSH Authentication
```

```
Type your password:
```

```
Password:
```

```
> status
```

```
Current NETCONF session:
```

```
ID      : 17
```

```
Host    : 192.168.170.37
```

```
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=63
```

```
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>operator01996968174598462205</name>
      <account-type>PASSWORD</account-type>

<password>8jJ^mfLoTA.UAkyQD12iT4)+^ZCOeU~WIBzZ}C^}L0V.RE9}+toN.mHQiutAWQ4j7[[]DQ.w}DZEoye+4AgHcSLOx</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 #####**

=====

Oct 29 23:26:09 mcb1 daemon.info netopeer2-server[980]: Trying to connect via IPv4 to 192.168.170.85:4334.

Oct 29 23:26:09 mcb1 daemon.info netopeer2-server[980]: getsockopt() error (Connection refused).

Oct 29 23:26:10 mcb1 daemon.info netopeer2-server[980]: Trying to connect via IPv4 to 192.168.170.85:4334.

Oct 29 23:26:10 mcb1 daemon.info netopeer2-server[980]: Successfully connected to 192.168.170.85:4334 over IPv4.

Oct 29 23:26:10 mcb1 daemon.info netopeer2-server[980]: Session 217 (user "root", CID 1) created.

Oct 29 23:26:10 mcb1 daemon.info netopeer2-server[980]: Received an SSH message "request-service" of subtype "ssh-userauth".

Oct 29 23:26:10 mcb1 daemon.info netopeer2-server[980]: Received an SSH message "request-auth" of subtype "password".

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: User "installer" authenticated.

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Received an SSH message "request-channel-open" of subtype "session".

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Received an SSH message "request-channel" of subtype "subsystem".

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Call Home client "default-client" session 17 established.

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Session 218 (user "root", CID 1) created.

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: There are no subscribers for "ietf-netconf-notifications" notifications.

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Generated new event (netconf-session-start).

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Resolving unresolved data nodes and their constraints...

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: All data nodes and constraints resolved.

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Resolving unresolved data nodes and their constraints...

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: All data nodes and constraints resolved.

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Published event "rpc" "/ietf-netconf:get" with ID 24 priority 0 for 1 subscribers.

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Processing "/ietf-netconf:get" "rpc" event with ID 24 priority 0 (remaining 1 subscribers).

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Successful processing of "rpc" event with ID 24 priority 0 (remaining 0 subscribers).

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Event "rpc" with ID 24 priority 0 succeeded.

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Resolving unresolved data nodes and their constraints...

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: All data nodes and constraints resolved.

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Session 17: thread 0 event new RPC.

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Resolving unresolved data nodes and their constraints...

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: All data nodes and constraints resolved.

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Resolving unresolved data nodes and their constraints...

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: All data nodes and constraints resolved.

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Published event "rpc" "/ietf-netconf:get" with ID 25 priority 0 for 1 subscribers.

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Processing "/ietf-netconf:get" "rpc" event with ID 25 priority 0 (remaining 1 subscribers).

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Published event "operational" "/o-ran-software-management:software-inventory" with ID 10.

Oct 29 23:26:11 mcb1 user.notice fw\_manager[1064]: RPC #10 recieved. xpath -> /o-ran-software-management:software-inventory

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Event "operational" with ID 10 succeeded.

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Resolving unresolved data nodes and their constraints...

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: There is no leafref  
"/ietf-hardware:hardware/ietf-hardware:component/o-ran-hardware:product-code" with the value "STL=O-RU", but it is not required.

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: There is no leafref  
"/ietf-hardware:hardware/ietf-hardware:component/o-ran-hardware:product-code" with the value "STL=O-RU", but it is not required.

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: There is no leafref  
"/ietf-hardware:hardware/ietf-hardware:component/o-ran-hardware:product-code" with the value "STL=O-RU", but it is not required.

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: All data nodes and constraints resolved.

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Successful processing of "rpc" event with ID 25 priority 0 (remaining 0 subscribers).

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Event "rpc" with ID 25 priority 0 succeeded.

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Resolving unresolved data nodes and their constraints...

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: All data nodes and constraints resolved.

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Resolving unresolved data nodes and their constraints...

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: There is no leafref  
"/ietf-hardware:hardware/ietf-hardware:component/o-ran-hardware:product-code" with the value "STL=O-RU", but it is not required.

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: There is no leafref  
"/ietf-hardware:hardware/ietf-hardware:component/o-ran-hardware:product-code" with the value "STL=O-RU", but it is not required.

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: There is no leafref  
"/ietf-hardware:hardware/ietf-hardware:component/o-ran-hardware:product-code" with the value "STL=O-RU", but it is not required.

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: All data nodes and constraints resolved.

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Session 17: thread 3 event new RPC.

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Resolving unresolved data nodes and their constraints...

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: All data nodes and constraints resolved.

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Resolving unresolved data nodes and their constraints...

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: All data nodes and constraints resolved.

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Published event "rpc" "/ietf-netconf:get-config" with ID 20 priority 0 for 1 subscribers.

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Processing "/ietf-netconf:get-config" "rpc" event with ID 20 priority 0 (remaining 1 subscribers).

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Successful processing of "rpc" event with ID 20 priority 0 (remaining 0 subscribers).

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Event "rpc" with ID 20 priority 0 succeeded.

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Resolving unresolved data nodes and their constraints...

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: All data nodes and constraints resolved.

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Resolving unresolved data nodes and their constraints...

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: There is no leafref  
"/ietf-hardware:hardware/ietf-hardware:component/ietf-hardware:name" with the value "ru-port1", but it is not required.

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: There is no leafref  
"/ietf-hardware:hardware/ietf-hardware:component/ietf-hardware:name" with the value "ru-port1", but it is not required.

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: All data nodes and constraints resolved.

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Session 17: thread 0 event new RPC.

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Accepted a connection on :::830.

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Session 223 (user "root", CID 1) created.

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Received an SSH message "request-service" of subtype "ssh-userauth".

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Received an SSH message "request-auth" of subtype "password".

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: User "operator" authenticated.

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Received an SSH message "request-channel-open" of subtype "session".

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Received an SSH message "request-channel" of subtype "subsystem".

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Session 224 (user "root", CID 1) created.

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: There are no subscribers for "ietf-netconf-notifications" notifications.

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Generated new event (netconf-session-start).

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Resolving unresolved data nodes and their constraints...

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: All data nodes and constraints resolved.

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Resolving unresolved data nodes and their constraints...

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: All data nodes and constraints resolved.

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Published event "rpc" "/ietf-netconf:get" with ID 26 priority 0 for 1 subscribers.

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Processing "/ietf-netconf:get" "rpc" event with ID 26 priority 0 (remaining 1 subscribers).

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Successful processing of "rpc" event with ID 26 priority 0 (remaining 0 subscribers).



Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Event "rpc" with ID 26 priority 0 succeeded.

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Resolving unresolved data nodes and their constraints...

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: All data nodes and constraints resolved.

Oct 29 23:26:11 mcb1 daemon.info netopeer2-server[980]: Session 18: thread 0 event new RPC.

Oct 29 23:26:12 mcb1 daemon.info netopeer2-server[980]: Session 18: thread 0 event new RPC.

Oct 29 23:26:12 mcb1 daemon.info netopeer2-server[980]: Session 18: thread 0 event session terminated.

Oct 29 23:26:12 mcb1 daemon.info netopeer2-server[980]: There are no subscribers for "ietf-netconf-notifications" notifications.

Oct 29 23:26:12 mcb1 daemon.info netopeer2-server[980]: Generated new event (netconf-session-end).

Oct 29 23:26:17 mcb1 daemon.info netopeer2-server[980]: Resolving unresolved data nodes and their constraints...

Oct 29 23:26:17 mcb1 daemon.info netopeer2-server[980]: All data nodes and constraints resolved.

Oct 29 23:26:17 mcb1 daemon.info netopeer2-server[980]: Resolving unresolved data nodes and their constraints...

Oct 29 23:26:17 mcb1 daemon.info netopeer2-server[980]: All data nodes and constraints resolved.

Oct 29 23:26:17 mcb1 daemon.info netopeer2-server[980]: Published event "rpc" "/notifications:create-subscription" with ID 8 priority 0 for 1 subscribers.

Oct 29 23:26:17 mcb1 daemon.info netopeer2-server[980]: Processing "/notifications:create-subscription" "rpc" event with ID 8 priority 0 (remaining 1 subscribers).

Oct 29 23:26:17 mcb1 daemon.info netopeer2-server[980]: Successful processing of "rpc" event with ID 8 priority 0 (remaining 0 subscribers).

Oct 29 23:26:17 mcb1 daemon.info netopeer2-server[980]: Event "rpc" with ID 8 priority 0 succeeded.

Oct 29 23:26:17 mcb1 daemon.info netopeer2-server[980]: Session 17: thread 2 event new RPC.

Oct 29 23:26:17 mcb1 daemon.info netopeer2-server[980]: Resolving unresolved data nodes and their constraints...

Oct 29 23:26:17 mcb1 daemon.info netopeer2-server[980]: All data nodes and constraints resolved.

Oct 29 23:26:17 mcb1 daemon.info netopeer2-server[980]: Resolving unresolved data nodes and their constraints...

Oct 29 23:26:17 mcb1 daemon.info netopeer2-server[980]: All data nodes and constraints resolved.

Oct 29 23:26:17 mcb1 daemon.info netopeer2-server[980]: Published event "rpc" "/ietf-netconf:edit-config" with ID 9 priority 0 for 1 subscribers.

Oct 29 23:26:17 mcb1 daemon.info netopeer2-server[980]: Processing "/ietf-netconf:edit-config" "rpc" event with ID 9 priority 0 (remaining 1 subscribers).

Oct 29 23:26:17 mcb1 daemon.info netopeer2-server[980]: edit-config error-option "stop-on-error" not supported, rollback-on-error will be performed.

Oct 29 23:26:17 mcb1 daemon.err netopeer2-server[980]: Access to the data model "o-ran-usermgmt" is denied because "installer" NACM authorization failed.

Oct 29 23:26:17 mcb1 daemon.info netopeer2-server[980]: Failed processing of "rpc" event with ID 9 priority 0 (remaining 1 subscribers).

Oct 29 23:26:17 mcb1 daemon.err netopeer2-server[980]: Access to the data model "o-ran-usermgmt" is denied because "installer" NACM authorization failed.

Oct 29 23:26:17 mcb1 daemon.warn netopeer2-server[980]: Event "rpc" with ID 9 priority 0 failed (User callback failed).

Oct 29 23:26:17 mcb1 daemon.err netopeer2-server[980]: Failed to send an RPC (User callback failed).

Oct 29 23:26:17 mcb1 daemon.info netopeer2-server[980]: Session 17: thread 4 event new RPC.

Oct 29 23:26:17 mcb1 daemon.info netopeer2-server[980]: Session 17: thread 4 event reply error.

Oct 29 23:26:18 mcb1 user.notice SYNCMNGR[1310]: Received message from S-Plane

Oct 29 23:26:22 mcb1 daemon.info netopeer2-server[980]: Session 17: thread 2 event new RPC.

Oct 29 23:26:22 mcb1 daemon.info netopeer2-server[980]: Session 17: thread 2 event session terminated.

Oct 29 23:26:22 mcb1 daemon.info netopeer2-server[980]: There are no subscribers for "ietf-netconf-notifications" notifications.

Oct 29 23:26:22 mcb1 daemon.info netopeer2-server[980]: Generated new event (netconf-session-end).

Oct 29 23:26:22 mcb1 daemon.info netopeer2-server[980]: Call Home client "default-client" session terminated.

Oct 29 23:26:22 mcb1 daemon.info netopeer2-server[980]: Trying to connect via IPv4 to 192.168.170.85:4334.

Oct 29 23:26:22 mcb1 daemon.info netopeer2-server[980]: getsockopt() error (Connection refused).

Oct 29 23:26:22 mcb1 auth.info sshd[18953]: Accepted password for installer from 192.168.170.85 port 52370 ssh2

Oct 29 23:26:22 mcb1 authpriv.info sshd[18953]: 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 \*\*\*\*\*

=====

=====

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