

GII TDRC

MEMORIA Práctica 5

Monitorización de Redes con SNMP

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Duración: 1 sesión

NOMBRE Y APELLIDOS	Nikita Stetskiy				
OPCIÓN	A	ISLA X	8	ISLA Y	10

IMPORTANTE: En base a los valores X e Y tendrá que calcular la opción de respuesta del guión de prácticas.
Para ello, tendrá que seguir la siguiente tabla:

OPCIÓN	VALOR X	VALOR Y
A	PAR	PAR
B	PAR	IMPAR
C	IMPAR	PAR
D	IMPAR	IMPAR

INSTRUCCIONES:

- Debe reemplazar por la respuesta correcta todo texto que aparezca de color rojo.
- Incluya capturas de pantalla de las configuraciones donde aparezca el símbolo de imagen (reemplace dicha imagen por la captura o capturas que necesite):



- Puede emplear la herramienta recortes en windows para realizar las capturas de pantalla o emplear el atajo **WINDOWS+IMPRIMIR_PANTALLA** y posteriormente pegar la captura en el documento.
- Puede emplear la herramienta Shutter en linux para realizar las capturas de pantalla.
- Puede emplear el atajo **COMANDO+MAYUSCULAS+4+BARRA_ESPACIADORA** en MAC para realizar las capturas de pantalla.

1. CONFIGURACIÓN INICIAL

3. Conectividad
entre PCs de la
misma y diferente
isla

```
C:\>ping 10.8.2.2

Pinging 10.8.2.2 with 32 bytes of data:

Reply from 10.8.2.2: bytes=32 time<1ms TTL=126
Reply from 10.8.2.2: bytes=32 time<1ms TTL=126
Reply from 10.8.2.2: bytes=32 time<1ms TTL=126
Reply from 10.8.2.2: bytes=32 time<1ms TTL=126

Ping statistics for 10.8.2.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

```
C:\>ping 10.10.1.2

Pinging 10.10.1.2 with 32 bytes of data:

Reply from 10.10.1.2: bytes=32 time=1ms TTL=124
Reply from 10.10.1.2: bytes=32 time<1ms TTL=124
Reply from 10.10.1.2: bytes=32 time<1ms TTL=124
Reply from 10.10.1.2: bytes=32 time<1ms TTL=124

Ping statistics for 10.10.1.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

2. CONFIGURACIÓN Y ACTIVACIÓN DE AGENTES

2. Comandos
necesarios para
configurar router
de la Isla X

```
R8_A>enable
R8_A#config t
Enter configuration commands, one per line. End with CNTL/Z.
R8_A(config)#snmp-server community READ ro
R8_A(config)#snmp-server community WRITE rw
```

2. Comandos
necesarios para
configurar router
de la Isla Y

```
R10_C>enable
R10_C#config t
R10_C(config)#snmp-server community PUBLIC ro
```

3. Muestra de
SNMP funcionando
en router de la isla
X

```
R8_A>enable
R8_A#config t
Enter configuration commands, one per line. End with CNTL/Z.
R8_A(config)#snmp-server community READ ?
    ro Read-only access with this community string
    rw Read-write access with this community string
    <cr>
R8_A(config)#snmp-server community READ ro
%SNMP-5-WARMSTART: SNMP agent on host R8_A is undergoing a warm start
R8_A(config)#snmp-server community WRITE rw
```



```
R8_A#show running-config
Building configuration...

Current configuration : 717 bytes
!
version 12.4
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname R8_A
!
!
!
!
!
!
!
!
ip cef
no ipv6 cef
!
!
!
!
!
!
!
!
!
!
!
!
spanning-tree mode pvst
!
!
!
!
!
interface FastEthernet0/0
 ip address 10.8.1.100 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet0/1
 ip address 172.16.8.100 255.255.255.0
 duplex auto
 speed auto
!
interface Vlan1
 no ip address
 shutdown
!
router rip
 version 2
 network 10.0.0.0
 network 172.16.0.0
 no auto-summary
!
ip classless
!
ip flow-export version 9
!
!
!
!
!
!
!
snmp-server community READ RO
snmp-server community WRITE RW
!
line con 0
!
line aux 0
!
line vty 0 4
 login
!
!
end
```

```
R10_C>enable
R10_C#config t
Enter configuration commands, one per line. End with CNTL/Z.
R10_C(config)#snmp-server community PUBLIC ?
    ro  Read-only access with this community string
    rw  Read-write access with this community string
    <cr>
R10_C(config)#snmp-server community PUBLIC ro
%SNMP-5-WARMSTART: SNMP agent on host R10_C is undergoing a warm start
R10_C(config)#
```

3. Muestra de SNMP funcionando en router de la isla Y



```
R10_C#show running-config
Building configuration...

Current configuration : 695 bytes
!
version 12.4
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname R10_C
!
!
!
!
!
!
!
ip cef
no ipv6 cef
!
!
!
!
!
!
!
!
!
!
spanning-tree mode pvst
!
!
!
!
!
!
interface FastEthernet0/0
 ip address 172.32.81.101 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet0/1
 ip address 172.16.10.102 255.255.255.0
 duplex auto
 speed auto
!
interface Vlan1
 no ip address
 shutdown
!
router rip
 version 2
 network 172.16.0.0
 network 172.32.0.0
 no auto-summary
!
ip classless
!
ip flow-export version 9
!
!
!
!
!
!
snmp-server community PUBLIC RO
!
line con 0
!
line aux 0
!
line vty 0 4
 login
!
!
!
end
```

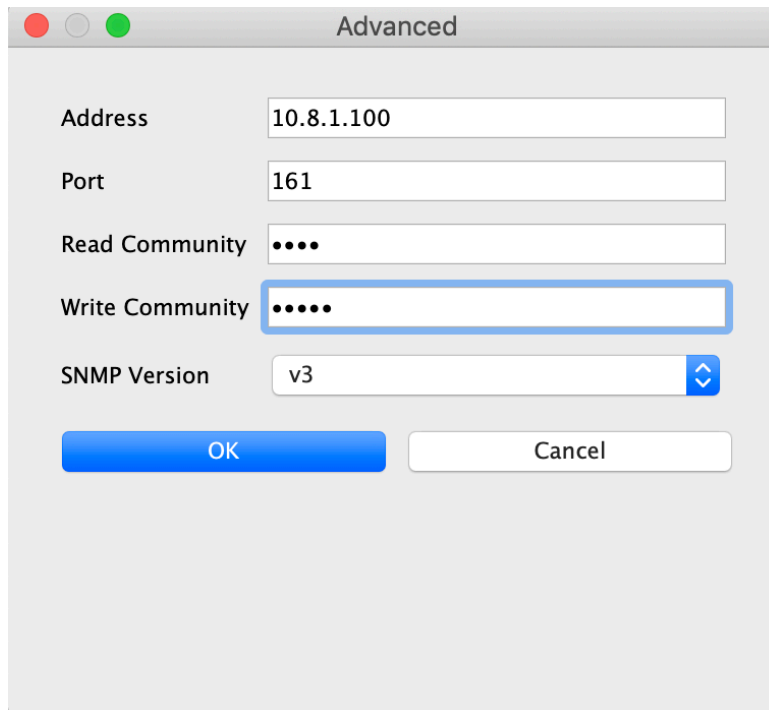
4. Explicación

El Protocolo simple de administración de redes (SNMP) es un protocolo de capa de aplicación para intercambiar información de administración entre dispositivos de red. SNMP es uno de los protocolos ampliamente aceptados para administrar y monitorizar elementos de red. La mayoría de los elementos de red de nivel profesional vienen con un agente SNMP incluido. Estos agentes deben estar habilitados y configurados para comunicarse con el sistema de administración de red (NMS).

En nuestro caso para configurarlo hemos usado el comando `snmp-server community` el cual nos da las opciones de configurar el nombre del community (32 caracteres) y en nuestro caso también la opción de read-only (ro) ó read-write(rw). Como podemos ver se ha configurado correctamente al usar el comando `show running-config`.

3. DEFINICIÓN Y USO DEL GESTOR DE RED

2. Configuración de acceso en MIB Browser a router de la isla X



Advanced

Address: 10.8.1.100

Port: 161

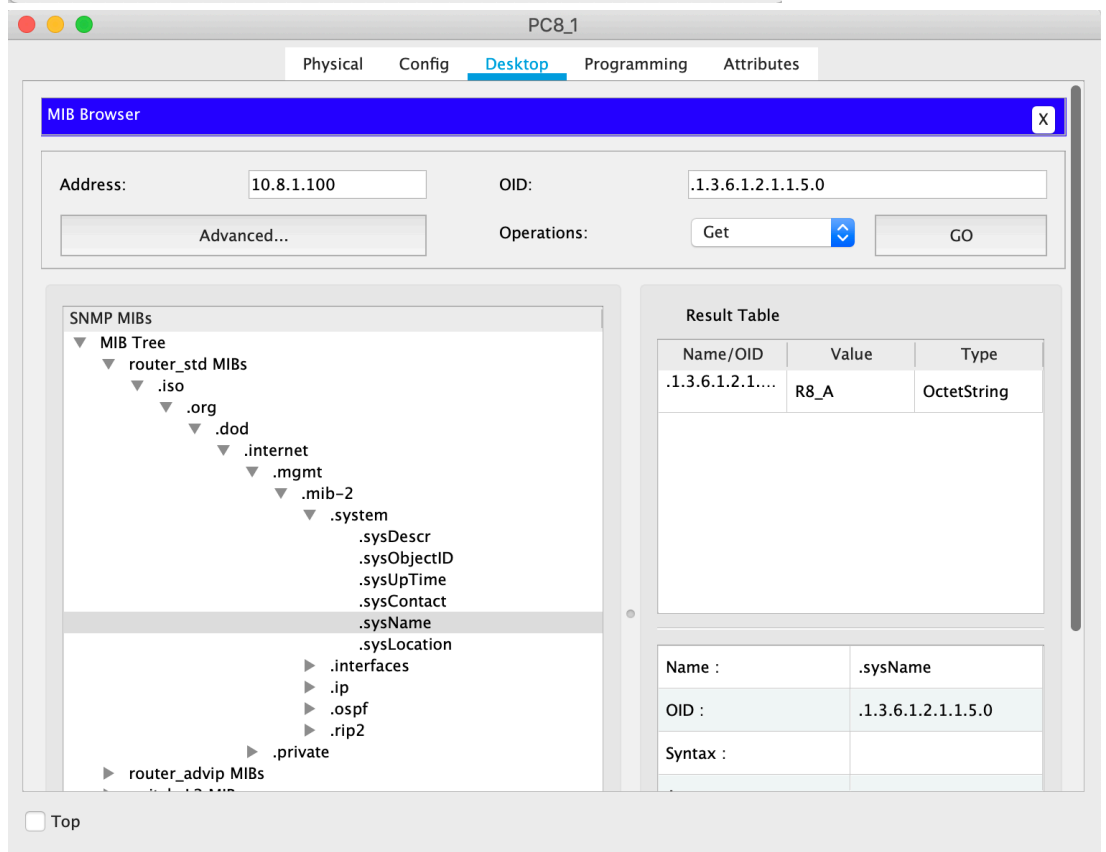
Read Community:

Write Community:

SNMP Version: v3

OK Cancel

3. Objeto que indica el nombre del router



PC8_1

Physical Config Desktop Programming Attributes

MIB Browser

Address: 10.8.1.100 OID: .1.3.6.1.2.1.1.5.0

Advanced... Operations: Get GO

SNMP MIBs

- MIB Tree
 - router_std MIBs
 - .iso
 - .org
 - .dod
 - .internet
 - .mgmt
 - .mib-2
 - .system
 - .sysDescr
 - .sysObjectID
 - .sysUpTime
 - .sysContact
 - .sysName
 - .sysLocation
 - .interfaces
 - .ip
 - .ospf
 - .rip2
 - .private
 - router_advip MIBs

Result Table

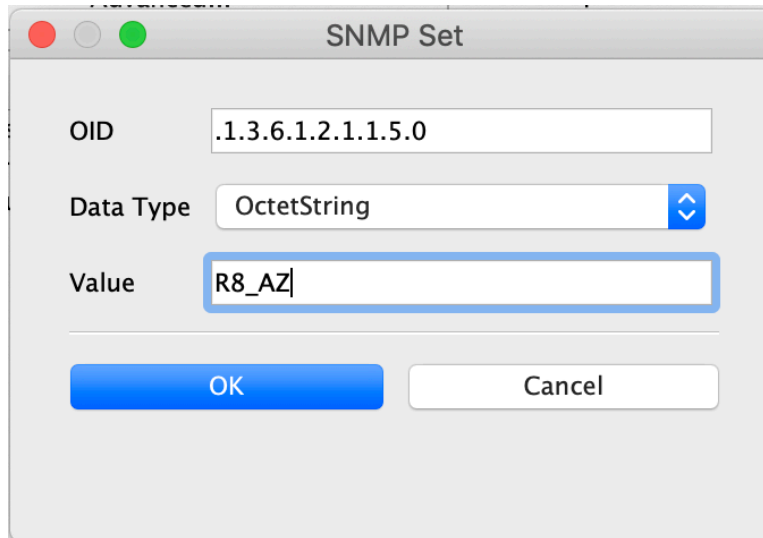
| Name/OID | Value | Type |
|------------------|-------|-------------|
| .1.3.6.1.2.1.... | R8_A | OctetString |

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4. OID del objeto (numérico y cadena)

1.3.6.1.2.1.1.5.0

5. Cambio de
nombre del router



SNMP Set

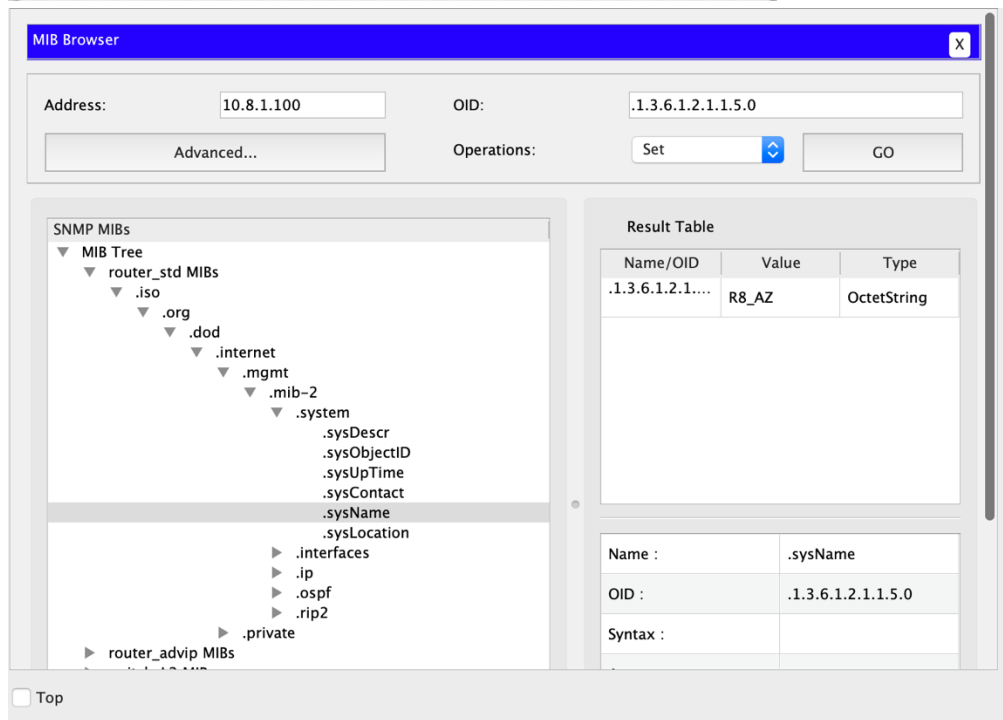
OID: .1.3.6.1.2.1.1.5.0

Data Type: OctetString

Value: R8_AZ

OK Cancel

6. Comprobación
del cambio de
nombre en el
router



MIB Browser

Address: 10.8.1.100 OID: .1.3.6.1.2.1.1.5.0

Advanced... Operations: Set GO

SNMP MIBs

- ▼ MIB Tree
 - ▼ router_std MIBs
 - ▼ .iso
 - ▼ .org
 - ▼ .dod
 - ▼ .internet
 - ▼ .mgmt
 - ▼ .mib-2
 - ▼ .system
 - .sysDescr
 - .sysObjectID
 - .sysUpTime
 - .sysContact
 - .sysName
 - .sysLocation
 - .interfaces
 - .ip
 - .ospf
 - .rip2
 - .private
 - ▼ router_adv MIBs

Result Table

| Name/OID | Value | Type |
|------------------|-------|-------------|
| .1.3.6.1.2.1.... | R8_AZ | OctetString |

Name : .sysName

OID : .1.3.6.1.2.1.1.5.0

Syntax :

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7. Objeto que muestra las interfaces del router

PC8_1

Physical Config **Desktop** Programming Attributes

MIB Browser

Address: 10.8.1.100 OID: .1.3.6.1.2.1.2.2.1.2

Advanced... Operations: Get GO

SNMP MIBs

- .mib-2
 - .system
 - .sysDescr
 - .sysObjectID
 - .sysUpTime
 - .sysContact
 - .sysName
 - .sysLocation
 - .interfaces
 - .ifNumber
 - .ifTable
 - .ifEntry
 - .ifIndex
 - .ifDescr
 - .ifType
 - .ifMtu
 - .ifSpeed
 - .ifPhysAddress
 - .ifAdminStatus
 - .ifOperStatus

router_advip MIBs
switch_L2 MIBs

Result Table

| Name/OID | Value | Type |
|------------------------|-----------------|-------------|
| .1.3.6.1.2.1.2.2.1.2.1 | Vlan1 | OctetString |
| .1.3.6.1.2.1.2.2.1.2.2 | FastEthernet0/0 | OctetString |
| .1.3.6.1.2.1.2.2.1.2.3 | FastEthernet0/1 | OctetString |

Name : .ifDescr
OID : .1.3.6.1.2.1.2.2.1.2
Syntax :
Access :
Description :

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8. Comprobación de interfaces del router

```
R8_AZ>show ip interface brief
```

| Interface | IP-Address | OK? | Method | Status | Protocol |
|-----------------|--------------|-----|--------|-----------------------|----------|
| FastEthernet0/0 | 10.8.1.100 | YES | manual | up | up |
| FastEthernet0/1 | 172.16.8.100 | YES | manual | up | up |
| Vlan1 | unassigned | YES | unset | administratively down | down |

9. Configuración de acceso en MIB Browser a router de la isla Y

Advanced

Address 172.32.81.101

Port 161

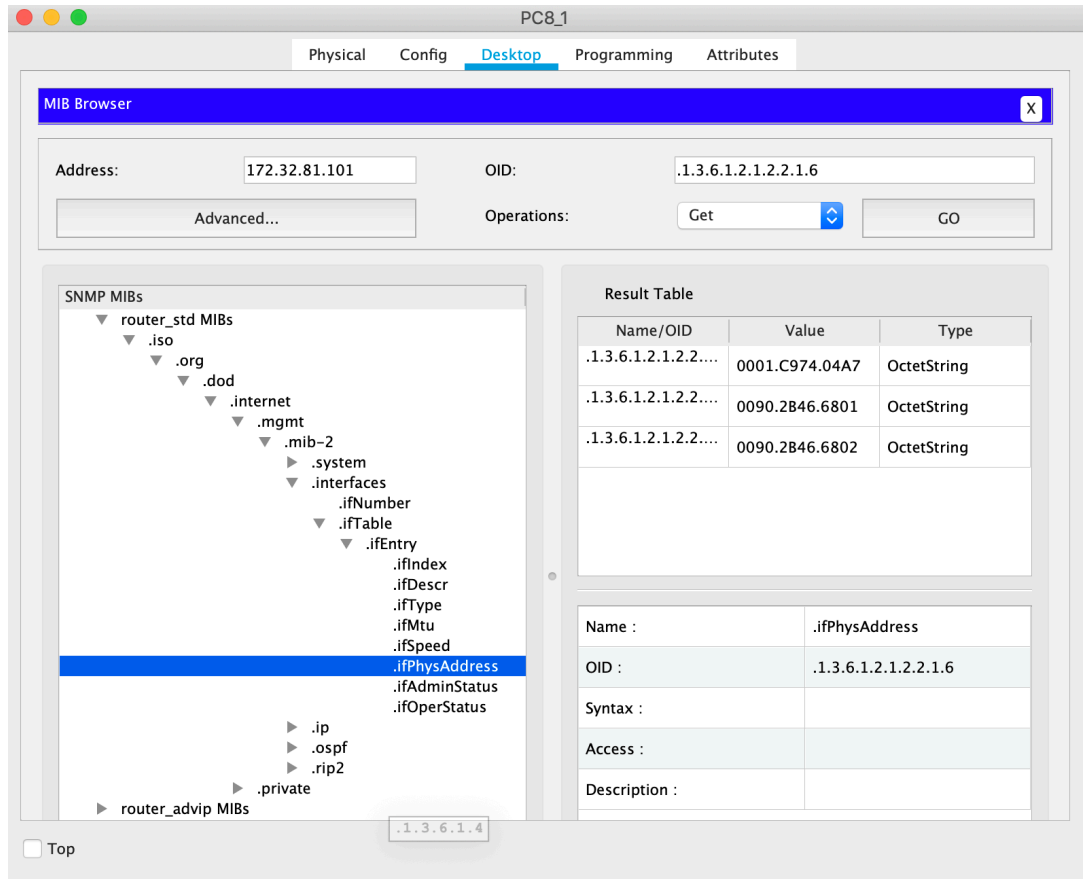
Read Community

Write Community

SNMP Version v3

OK Cancel

10. Objeto con la dirección MAC del interfaz FE0/0 del router (entre otras)



The screenshot shows the PC8_1 MIB Browser window. The 'Address' field is set to 172.32.81.101 and the 'OID' field is set to .1.3.6.1.2.1.2.2.1.6. The 'Operations' dropdown is set to 'Get'. The 'Result Table' shows the following data:

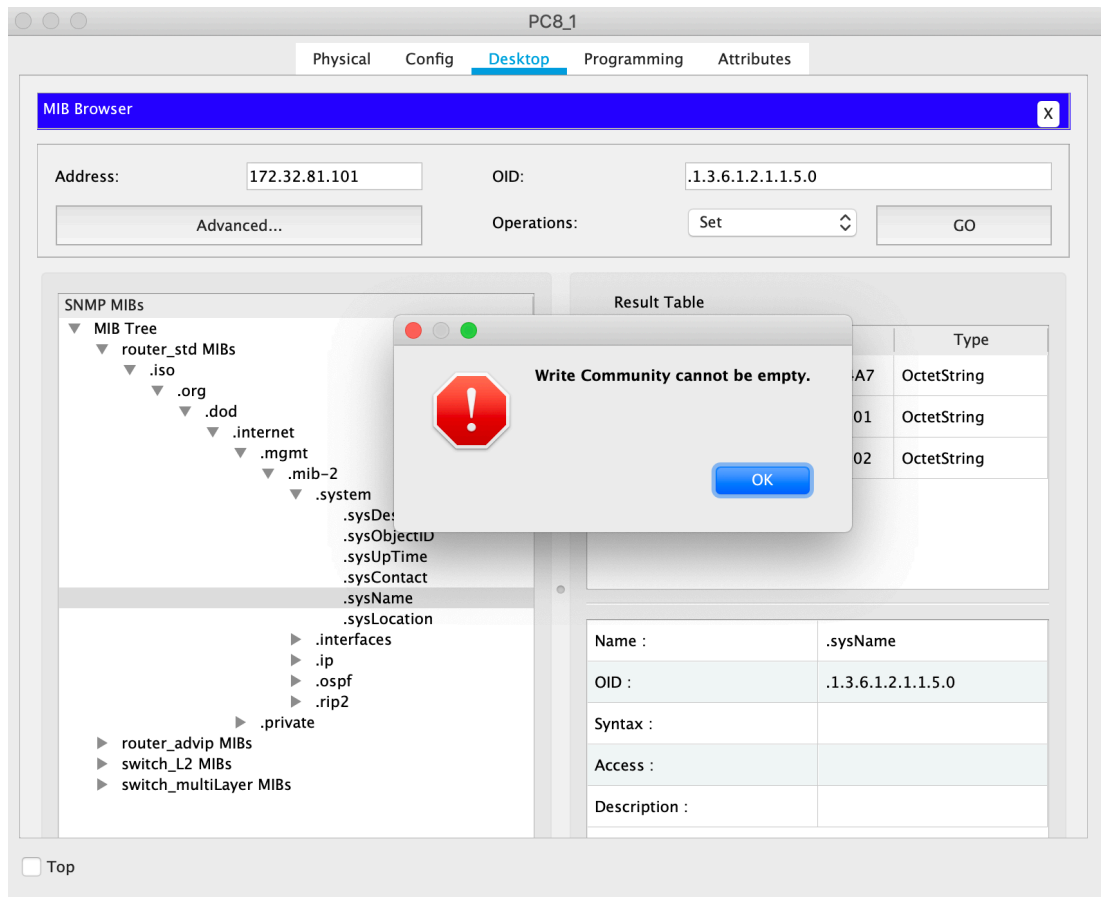
| Name/OID | Value | Type |
|----------------------|----------------|-------------|
| .1.3.6.1.2.1.2.2.... | 0001.C974.04A7 | OctetString |
| .1.3.6.1.2.1.2.2.... | 0090.2B46.6801 | OctetString |
| .1.3.6.1.2.1.2.2.... | 0090.2B46.6802 | OctetString |

The 'Name' field is set to .ifPhysAddress and the 'OID' field is set to .1.3.6.1.2.1.2.2.1.6. The 'Syntax' field is empty. The 'Access' field is empty. The 'Description' field is empty.

11. Comprobación de la MAC de la interfaz FE0/0

```
R10_C#show interfaces fastEthernet 0/0
FastEthernet0/0 is up, line protocol is up (connected)
Hardware is Lance, address is 0090.2b46.6801 (bia 0090.2b46.6801)
Internet address is 172.32.81.101/24
MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec,
    reliability 255/255, txload 1/255, rxload 1/255
Encapsulation ARPA, loopback not set
Full-duplex, 100Mb/s, media type is RJ45
ARP type: ARPA, ARP Timeout 04:00:00,
Last input 00:00:08, output 00:00:05, output hang never
Last clearing of "show interface" counters never
Input queue: 0/75/0 (size/max/drops); Total output drops: 0
Queueing strategy: fifo
Output queue :0/40 (size/max)
5 minute input rate 29 bits/sec, 0 packets/sec
5 minute output rate 33 bits/sec, 0 packets/sec
  181 packets input, 16558 bytes, 0 no buffer
    Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
    0 input packets with dribble condition detected
  169 packets output, 15632 bytes, 0 underruns
    0 output errors, 0 collisions, 1 interface resets
    0 babbles, 0 late collision, 0 deferred
    0 lost carrier, 0 no carrier
    0 output buffer failures, 0 output buffers swapped out
```


12. Error en cambio de nombre del router



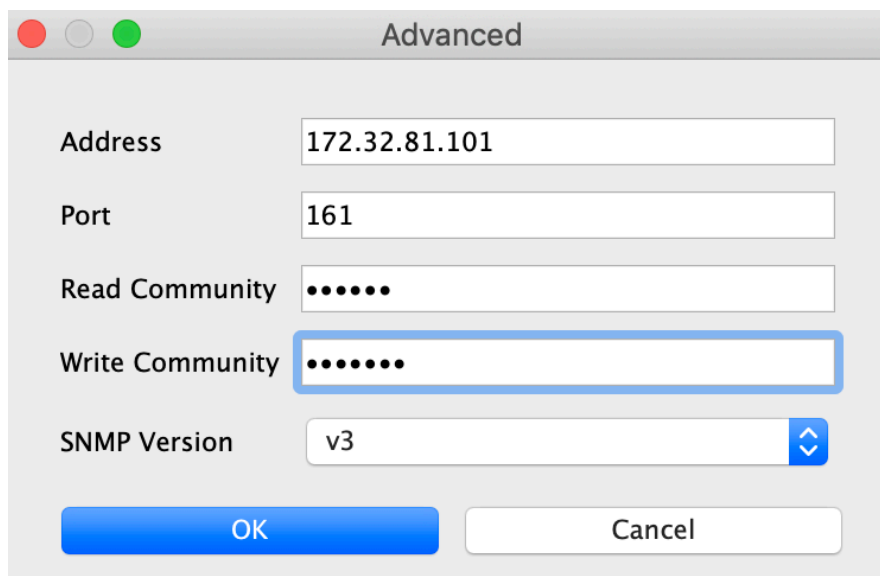
12. Explicación

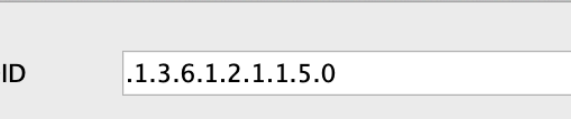
Porque solo lo hemos configurado para accesos de sólo lectura, no como en el router de la isla X, en el cual hemos configurado la lectura y la lectura/escritura.

13. Comandos para posibilitar el cambio de nombre del router mediante SNMP

R10_C>enable
R10_C#config t
R10_C(config)#snmp-server community PRIVATE rw

13. Configuración de MIB Browser





SNMP Set

OID .1.3.6.1.2.1.1.5.0

Data Type OctetString

Value R10_CZ

OK Cancel

The screenshot shows the PC8_1 MIB Browser application. The 'Desktop' tab is selected. The 'Address' field is set to '172.32.81.101' and the 'OID' field is set to '.1.3.6.1.2.1.1.5.0'. The 'Operations' dropdown is set to 'Set'. The 'Advanced...' button is visible. The 'SNMP MIBs' tree on the left shows the hierarchy from 'MIB Tree' down to 'router_std MIBs' and 'switch_multiLayer MIBs'. The 'Result Table' on the right displays the OID '.1.3.6.1.2.1.1.5.0' with the value 'R10_CZ' and type 'OctetString'. Below the table, the 'sysName' attribute is shown with its value '.1.3.6.1.2.1.1.5.0'.

| Name/OID | Value | Type |
|--|--------|-------------|
| .1.3.6.1.2.1.1.5.0
(.iso.org.dod.int... | R10_CZ | OctetString |

| | |
|---------------|--------------------|
| Name : | .sysName |
| OID : | .1.3.6.1.2.1.1.5.0 |
| Syntax : | |
| Access : | |
| Description : | |

