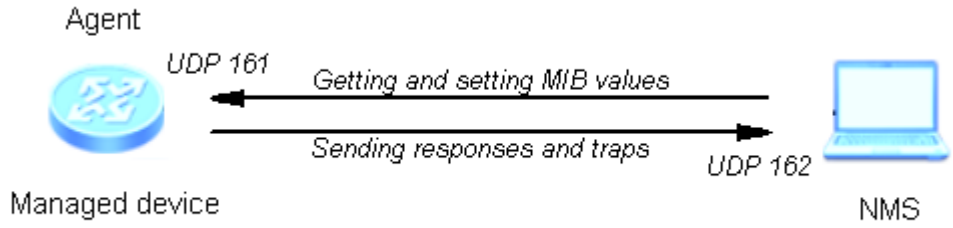
SNMPv2c configuration on Huawei devices

Simple Network Management Protocol (SNMP) is widely used for IP networks' devices management and monitoring. Not only routers and switches can be managed using SNMP. It can be used with servers, modems, printers, etc. It is application layer protocol and is defined as IETF standard.

How SNMP works?

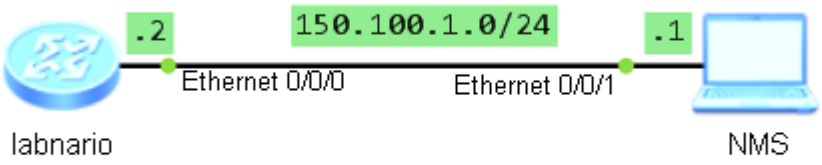
It operates based on the following components:

- *Network Management Station (NMS),* sends SNMP requests to query managed devices and receives alarms send by these devices. NMS uses the MIB to identify and manage device objects.
- *Agent* – process running on the managed device which is responsible for sending alarms to the NMS and processing requests received from NMS.
- *Managed device* – a networking device on which the Agent process is running.



It is also important to remember, that community string is used in ***SNMPv2c*** to identify communication between NMS and Managed device. Community string is a kind of password which is send as a clear-text string. Using community we can restrict access to our managed device.

SNMP configuration example:



To enable SNMP agent on the managed device:

```
<labnario>system-view
[labnario]snmp-agent
```

Let's check if our SNMP agent is running:

```
[labnario]display snmp-agent sys-info
   The contact person for this managed node:
           R&D Beijing, Huawei Technologies co.,Ltd.

   The physical location of this node:
           Beijing China

   SNMP version running in the system:
           SNMPv3
```

As you see, *SNMPv3* agent is enabled by default. The contact person and physical location, both have some default information configured. To run *SNMPv2c* only, we have to disable *SNMPv3*:

```
[Huawei]undo snmp-agent sys-info version v3
```

Let's check again:

```
[Huawei]display snmp-agent sys-info
   The contact person for this managed node:
           R&D Beijing, Huawei Technologies co.,Ltd.

   The physical location of this node:
           Beijing China

   SNMP version running in the system:
           SNMPv2c
```

To change the equipment administrator's contact information:

```
[labnario]snmp-agent sys-info contact Call labnario at 00-11 223344556677
[labnario]snmp-agent sys-info location Warsaw, Poland
[labnario]display snmp-agent sys-info
   The contact person for this managed node:
           Call labnario at 00-11 223344556677

   The physical location of this node:
           Warsaw, Poland

   SNMP version running in the system:
           SNMPv2c
```

Now we want our agent to be managed by the NMS. To do so, we need to configure ***community*** for read only and/or read-write access. First we need to configure access-list, which allows access for our NMS station:

```
[labnario]acl 2012
[labnario-acl-basic-2012]
[labnario-acl-basic-2012]rule 10 permit source 150.100.1.1 0.0.0.0
```

Now we can configure access for NMS host defined in ACL 2012:

```
[labnario]snmp-agent community read LABNARIO_COMMUNITY_RO acl 2012
```

If we want our NMS station not only to browse but also modify *MIB objects*, read-write access rights should be configured:

```
[labnario]snmp-agent community write LABNARIO_COMMUNITY_RW acl 2012
```

Now our agent can be pooled by the NMS station. Both read only and read-write access rights are configured. If we do not want some MIB objects to be modified by the NMS, *MIB view* needs to be defined and applied to the previously configured community string:

```
[labnario]snmp-agent mib-view excluded LIMITED-VIEW1 1.3.6.1.4.1.2011.6.7
[labnario]snmp-agent community write LABNARIO_COMMUNITY_RW acl 2012 mib-
view LIMITED-VIEW1
```

Now we want to configure our agent to send alarms to the NMS. In this example we use traps, for inform messages just use 'inform' parameter instead of 'trap'.

```
[labnario]snmp-agent target-host trap address udp-domain 150.100.1.1 params
securityname LABNARIO
```

Parameter '**securityname**' is the name for the principal on whose behalf SNMP messages will be generated.

Now enable the function of sending traps to NMS. After this function is configured, the device reports abnormal events to the NMS:

```
[Huawei]snmp-agent trap enable
Warning: All switches of SNMP trap/notification will be open. Continue?
[Y/N]:y
```

This function has to be configured in both '*trap*' and '*inform*' modes.

You can also enable traps for specific features:

```
[Huawei]snmp-agent trap enable feature-name ?
  arp             Enable ARP traps
  bfd             Enable BFD traps
  bgp             Enable BGP traps
  bulkstat        Enable BULKSTAT traps
  configuration   Enable CONFIGURATION traps
  datasync        Enable DATASYNC traps
  dhcp_trap       Enable dhcp_trap
  e-lmi           Enable E-LMI traps
  efm             Enable EFM traps
  eoam-1ag        Enable EOAM-1AG traps
  eoam-y1731      Enable EOAM-Y1731 traps
  etrunk          Enable E-Trunk traps
  ...
```

Final configuration:

```
[labnario]displ curr | inc snmp
snmp-agent
snmp-agent local-engineid 800007DB03548998AE0B48
snmp-agent community read  LABNARIO_COMMUNITY_RO acl 2012
```

```
snmp-agent community write  LABNARIO_COMMUNITY_RW mib-view LIMITED-VIEW1
acl 2012
snmp-agent sys-info contact Call labnario at 00-11 223344556677
snmp-agent sys-info location Warsaw, Poland
snmp-agent sys-info version v2c
undo snmp-agent sys-info version v3
snmp-agent target-host trap address udp-domain 150.100.1.1 source LoopBack0
params securityname LABNARIO v2c
snmp-agent mib-view excluded LIMITED-VIEW1 hwCfgChgNotify
snmp-agent trap source LoopBack0
snmp-agent trap enable
```

Verification:

```
[labnario]display snmp-agent community
   Community name:LABNARIO_COMMUNITY_RO
       Group name:LABNARIO_COMMUNITY_RO
       Acl:2012
       Storage-type: nonVolatile

   Community name:LABNARIO_COMMUNITY_RW
       Group name:LABNARIO_COMMUNITY_RW
       Acl:2012
       Storage-type: nonVolatile

[labnario]displ snmp-agent mib-view viewname LIMITED-VIEW1
   View name:LIMITED-VIEW1
       MIB Subtree:hwCfgChgNotify
       Subtree mask:FFF0(Hex)
       Storage-type: nonVolatile
       View Type:excluded
       View status:active

[labnario]displ snmp-agent target-host
Target-host NO. 1
------------------------------------------------------------
  IP-address    : 150.100.1.1
  Source interface : LoopBack0
  VPN instance  : -
  Security name : LABNARIO
  Port          : 162
  Type          : trap
  Version       : v2c
  Level         : No authentication and privacy
  NMS type      : NMS
  With ext-vb   : No
------------------------------------------------------------

[labnario]displ acl 2012
Basic ACL 2012, 1 rule
ACL's step is 5
 rule 10 permit source 150.100.1.1 0 (0 times matched)
```