



SNMP-V3 **[on the Router]**

- **SNMP-v3 architecture comprises the following:**
 - entities - that may be either managers, agents, or a combination of both
 - a management information base (MIB),
 - a transport protocol.

SNMP-V3

[on the Router]

- At least one manager node runs the SNMP management software in every configuration.
 - Managed devices such as routers, servers, and workstations are equipped with an agent software module.
 - The agent provides access to local objects in the MIB that reflect activity and resources at the node.
 - The agent also responds to manager commands to retrieve values from, and set values in the MIB.

SNMP MIB Views for SNMPv3

- An SNMP MIB view is a arbitrary subset of objects in the MIB.
 - Objects in the view may be from any part of the object name space, and not necessarily the same sub-tree.
 - Views are created by using the command:

```
ADD SNMP VIEW=view-name {OID=oid-tree|MIB=mib-name}  
[TYPE={INCLUDE|EXCLUDE}]
```

SNMP Defined MIB Names

- lists the MIB names that are defined within the ATR router.
 - These names can be used in commands instead of using the MIB tree character string.

Value	Meaning
internet	1.3.6.1
mib-2	1.3.6.1.2.1
system	1.3.6.1.2.1.1
interfaces	1.3.6.1.2.1.2
at	1.3.6.1.2.1.3
ip	1.3.6.1.2.1.4
icmp	1.3.6.1.2.1.5
tcp	1.3.6.1.2.1.6
udp	1.3.6.1.2.1.7

transmission	1.3.6.1.2.1.10
snmp	1.3.6.1.2.1.11
bgp	1.3.6.1.2.1.15
rmon	1.3.6.1.2.1.16
bridge	1.3.6.1.2.1.17
host	1.3.6.1.2.1.25
mau	1.3.6.1.2.1.26
if	1.3.6.1.2.1.31
private	1.3.6.1.4

alliedTelesyn	1.3.6.1.4.1.207
snmpV2	1.3.6.1.6
snmpModules	1.3.6.1.6.3
snmpFramework	1.3.6.1.6.3.10
snmpMPD	1.3.6.1.6.3.11
snmpTarget	1.3.6.1.6.3.12
snmpUsm	1.3.6.1.6.3.15
snmpVacm	1.3.6.1.6.3.16

SNMP Groups

- Groups were introduced as part of SNMPv3.
 - They are the means by which users are assigned their views and access control policy.
 - Groups are created by using the command:

```
ADD SNMP GROUP=group-name  
SECURITYLEVEL={AUTHNOPRIV | NOAUTHNOPRIV | AUTHPRIV}  
[READVIEW=view-name] [WRITEVIEW=view-name]  
[NOTIFYVIEW=view-name]
```

- Once a group has been created, users can be added to them.
 - ▲ In practice a number of groups would be created, each with varying views and access security requirements.
 - ▲ Users would then be added to their most appropriate groups.

SNMP Users

- Users were introduced as part of SNMPv3.
 - From a system perspective a user is represented as an entity stored in a table
 - ▲ that defines the access and authentication criteria to be applied to access or modify the SNMP MIB data.
- Users are created by using the command:

```
ADD SNMP USER=user-name [GROUP=group-name]  
    [AUTHPROTOCOL={NONE|MD5|SHA}] [AUTHPASSWORD=password]  
    [PRIVPROTOCOL={NONE|DES}] [PRIVPASSWORD=password]
```


SNMP Target Addresses

- Target addresses were introduced as part of SNMPv3.
 - They specify the destination and user that receives outgoing notifications such as trap messages.
 - SNMP target address names must be unique within the managed device.
- Target addresses are created by using the command:

```
ADD SNMP TARGETADDR=address-name IP=target-ipadd  
[UDP=udp-port] PARAMS=params-name
```

SNMP-v3 (Configuration Examples)

- The following example illustrates the steps required to configure the router's SNMP agent.
 - In this example, two network management stations have been set up on a large network.
 - The central NMS (IP address 192.168.11.5) is used to both monitor devices on the network and use SNMP set messages to manage the devices on the network.
 - Trap messages are sent to this management station.

To configure SNMP-v3

1. Enable the SNMP agent.

Enable the SNMP agent and enable the generation of authenticate failure traps to monitor unauthorised SNMP access.

```
ENABLE SNMP
```

```
ENABLE SNMP AUTHENTICATE_TRAP
```

2. Add SNMP views

You can specify views using their OID or the predefined MIB name.

```
ADD SNMP VIEW=ATMIB OID=1.3.6.1.2.14 TYPE=INCLUDE
```

```
ADD SNMP VIEW=ATMIB MIB=alliedTelesyn TYPE=INCLUDE
```

3. Add SNMP group

```
ADD SNMP GROUP=ord-user SECURITYLEVEL=NOAUTHNOPRIV  
READVIEW=ATMIB
```

```
ADD SNMP GROUP=admin-user SECURITYLEVEL=AUTHNOPRIV  
READVIEW=ATMIB  
WRITEVIEW=ATMIB  
NOTIFYVIEW=ATMIB
```

4. Add SNMP users

Add users to the groups, using commands like:

```
ADD SNMP USER=ken GROUP=admin-user AUTHPROTOCOL=MD5  
AUTHPASSWORD=mercury
```

5. Add SNMP targetparams

```
ADD SNMP TARGETPARAMS=netmonpc SECURITYLEVEL=AUTHNOPRIV  
USER=ken
```

6. Add SNMP target address

```
ADD SNMP TARGETADDR=target IP=192.168.11.5 UDP=162  
PARAMS=netmonpc
```



Thanks