Community Discussion and Overview

A review of the Internet Engineering Task Force (IETF) information indicates that there are four approved access types for Simple Network Management Protocol (SNMP) version 1: read-only, read-write, write-only and not-accessible. Therefore, only slight modifications need be made to the community tables to match IETF. The IETF information is documented below, with the required modifications for review.

Present IETF Definitions

From RFC-1157 [SNMP v1]

A pairing of an SNMP agent with an arbitrary set of SNMP application entities is called an SNMP community. Each SNMP community is named by a string of octets, which is called the community name for said community.

An SNMP message originated by an SNMP application entity that belongs to the SNMP community named by the community component of said message is called an authentic SNMP message. The set of community rules, by which an SNMP message is identified as an authentic SNMP message for a particular SNMP community, is called an authentication scheme.

An implementation of a function identifying authentic SNMP messages according to one or more authentication schemes is called an authentication service.

The effective management of administrative relationships among SNMP application entities requires authentication services that, through the use encryption or other techniques, are able to identify authentic SNMP messages with a high degree of certainty. Some SNMP implementations may wish to support only a trivial authentication service identifying SNMP messages as authentic SNMP messages.

From RFC-1155 [SMI]:

Access Methods: read-only, read-write, write-only and not-accessible

Conforming with SNMP Version 1

Any NAFEM device supporting an SNMP community table permits access control to it. The SNMP community table specifies SNMP communities and accessibility levels supported by a NAFEM device. In practice, SNMP communities act like passwords, providing certain levels of access by Management Information Bases (MIBs).
An SNMP community defines the level of access available through a manager’s workstation using a specific SNMP community name. Network Manager’s Work Stations (NMWSs) using the same community name exist within the same administrative domain. NMWSs not equipped with a community name for a specific operation are precluded from that operation. Therefore, the use of a community name by an administrator is a simple form of authentication.

When a NAFEM device receives an SNMP request packet, it compares the SNMP community name in the packet with those in its SNMP community table. If the name is found, the associated access is checked, and if the access level permits, the requested function is performed. If the name is not found, or if the access level does not permit access, the requested is denied and an error message is returned.

**SNMP Community Entry Names**

Community names are defined by the administration entity of the network on which the NAFEM device resides. The rule for any community name is that it must contain only printable characters within an 8-character octet string. The NAFEM default community, *administration*, must be used to initialize additional community names until another entry, having the same access rights, is made.

**Example Community Entry Name**

```
Community_Name – Object Type
SYNTAX octet string (size (0,8))
ACCESS read-write
STATUS current
DESCRIPTION “This object is paired with the community access object and contains the community name for the entities that messages with this NAFEM device. Setting this object with the community access object will allow the addition or removal of the paired objects to or from the community table once a community ‘add object’ or ‘remove object’ is set.”
```

By default, the following SNMP communities and privileges are entered and supported in the community table. Removal of these SNMP communities is not allowed, however, the access level and privileges may be changed for:

- **Public** (read-only access)
- **Private** (read and clear statistics)
- **Admin** (read and write capabilities)
SNMP Community Entry Access Levels

Community_Name – Object Type
SYNTAX integer
[ 0 ] no access The SNMP community cannot write to or read SNMP objects on the NAFEM device.
[ 1 ] read-only The SNMP community can read readable SNMP objects on the NAFEM device.
[ 2 ] clear statistics The SNMP community can write to a limited set of MIB variables on the NAFEM device.
[ 3 ] configure The SNMP community can read readable SNMP objects on the NAFEM device can write to write-able SNMP objects on the NAFEM device.
ACCESS read-write
STATUS current
DESCRIPTION “This object is paired with the community name object and contains the access level for entities that message with this NAFEM device. Setting this object with the community name object will allow will allow the addition or removal of the paired objects to or from the community table once a community ‘add object’ or ‘remove object’ is set.”

SNMP Community Entry Add/Remove

Community_Add Object Type
SYNTAX integer
[ 0 ] no action
[ 1 ] add community name to the NAFEM device
ACCESS write
STATUS current
DESCRIPTION “This object permits the addition of community names and access levels to the community table object. Entries in the community name and community access objects are the source of the new table entry. These objects must first be set to the new entry. Duplication of the community names are not permitted. If a duplicate community name is entered with a changed access level, then the new access level is assigned to the existing community name.”

Community_Add Object Type
SYNTAX integer
[ 0 ] no action
[ 1 ] remove community name from the NAFEM device
ACCESS write
STATUS current
DESCRIPTION “This object permits the removal of community names and access levels to the community table object. Entries in the community name and community access objects are the source of which table entry to remove. These objects must first be set to the table entry to be removed. Removal is not allowed of the ‘private’, ‘administration’, or ‘public’ community names. However, the access level and privileges may be changed for these default entries.”
SNMP Community Entry Table List

The community name table contains indexed pairs of community names and associated access levels and privileges. This table has read-only access. The addition or removal of these items occur in pairs and is performed by setting the community name and access objects and then setting the ‘community add’ or ‘community remove’ object status.

Community_Table Object Identifier
Community_Entry Object Identifier
Community_Table_Index Object Type
  SYNTAX           integer
  ACCESS           read-only
  STATUS           current
  DESCRIPTION      “The index number to the community name table."

Community_Table_Name Object Type
  SYNTAX           octet string (size (0..8))
  ACCESS           read-only
  STATUS           current
  DESCRIPTION      “The name of the community that the NAFEM device will recognize as being a part of and will respond to the SNMP messages containing this community name are received."

Community_Table_Access Object Type
  SYNTAX           integer
  [ 0 ] no access The SNMP community cannot read or write to SNMP objects on the NAFEM device.
  [ 1 ] read-only The SNMP community can read readable SNMP objects on the NAFEM device.
  [ 2 ] clear statistics The SNMP community can write to a limited set of MIB variables on the NAFEM device.
  [ 3 ] configure The SNMP community can read readable SNMP objects on the NAFEM device and can write to write-able SNMP objects on the NAFEM device.
  ACCESS           read-only
  STATUS           current
  DESCRIPTION      “The access level for the community name that this device will recognize as being part of and will respond to when SNMP messages containing this community name are received for the appropriate access request.”