

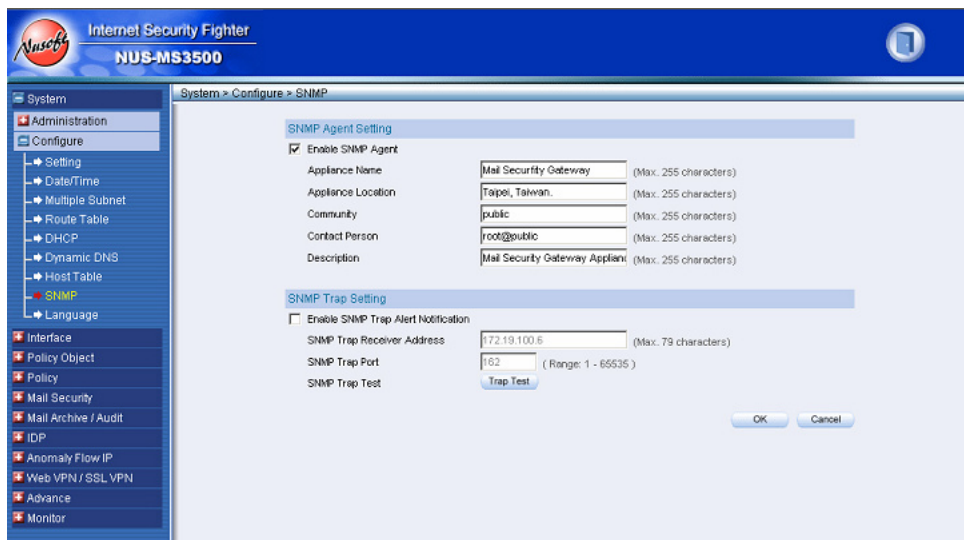
Using WhatsUp to Access the SNMP Management Information

Visit Ipswitch official website at <http://www.whatsupgold.com/products/download/> to download WhatsUp and run the installation after downloaded.

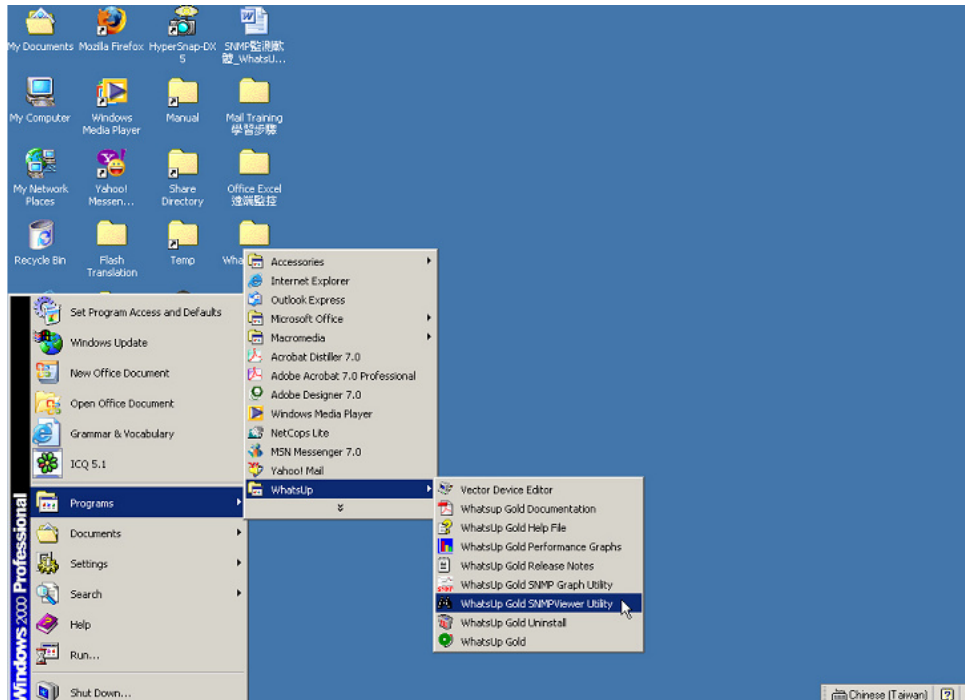
Step 1. In the navigation pane, click **Management > SNMP**.

Step 2. Tick the checkbox of **Enable SNMP Agent**. (See figure below)

- Type the device name, device location, community, contact person and the description of the device in the corresponding fields.
- Click **OK** to complete the settings.



Step 3. To run WhatsUp, click Start > Programs > WhatsUp > WhatsUp Gold SNMPViewer Utility. (See figure below)

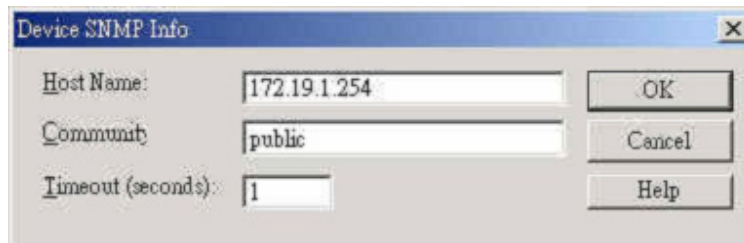


Step 4. Click Continue Evaluation. (See figure below)

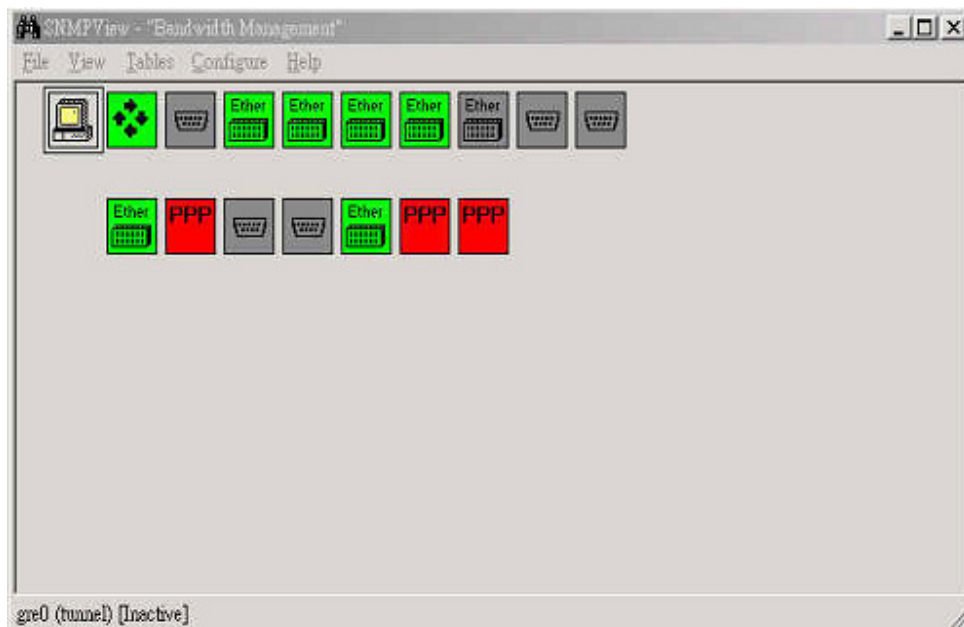


Step 5. Complete the blank fields and click **OK**. (See figure below)

- **Host Name:** Enter the host name or IP address of a device.
- **Community:** This is the password used for SNMP read permission for this device. (Note: You can set the Read Community for all maps and all devices by using the Replace SNMP Community feature.)
- **Timeout:** Enter the timeout. A value of 500 or greater is treated as milliseconds; less than 500 as seconds. If a device does not respond to the SNMP request within this time, the request times out.



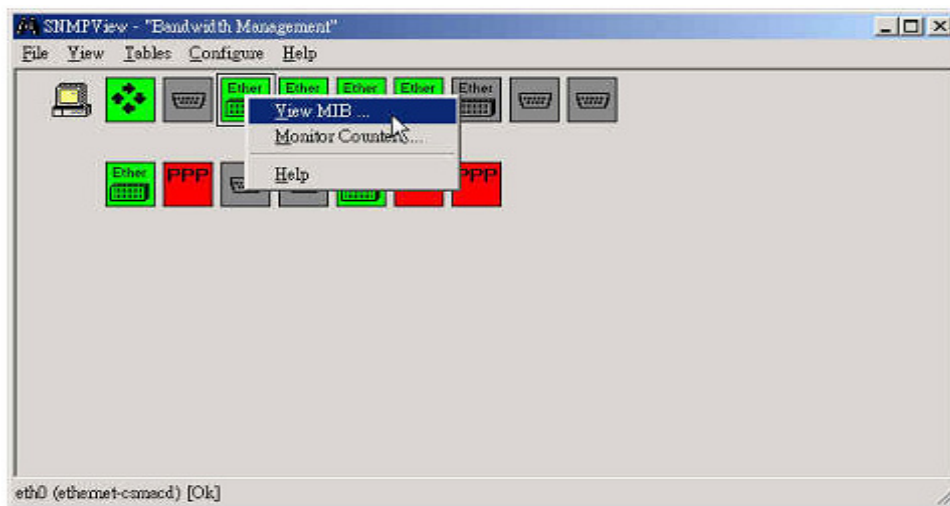
Step 6. This view shows all interfaces on the selected device, and for each interface, shows its type and status. (See figure below)



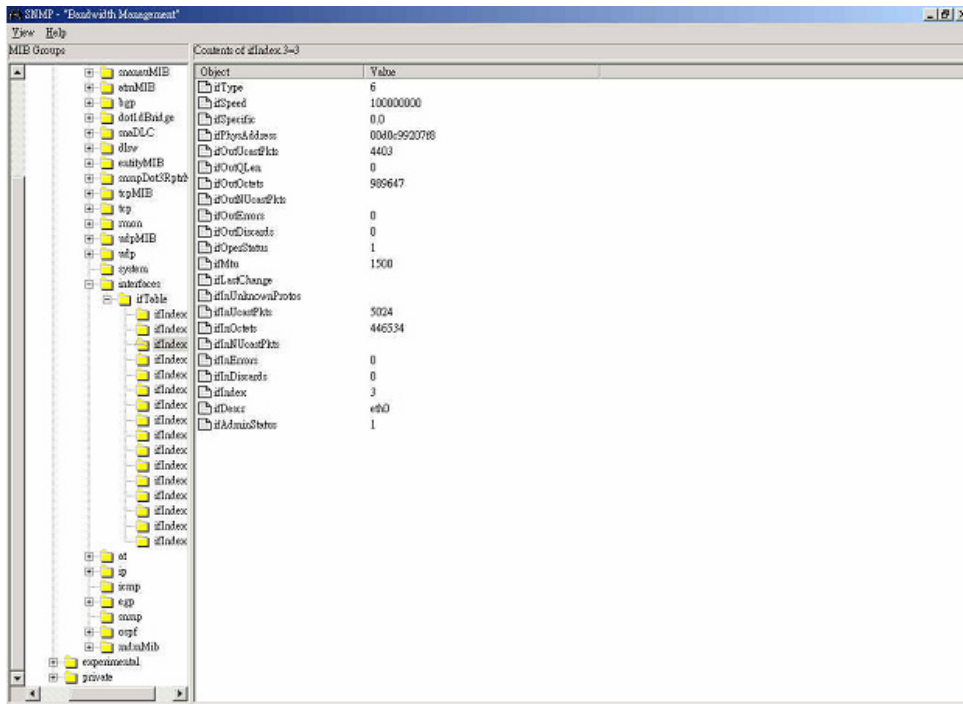
Colors indicate the status of an interface: (See table below)

| Color | Status |
|-------|---------------------------------|
| Green | the interface is up and running |
| Red | the interface is down |
| Grey | the interface is not configured |

Step 7. To view detailed SNMP data for an interface, right-click the interface icon and then select **View MIB**. (See figure below)



Step 8. The MIB Viewer shows current data for that interface. (See figure below)



Below are some frequently seen SNMP Objects:

ifType: the type of interface.

ifSpeed: the transfer speed of the interface.

ifSpecific: the specification of the interface.

ifPhysAddress: the MAC address of the interface.

ifOutUCastPkts: the total number of packets transmitted.

ifOutQLen: the length of the output packet queue (in packets).

ifOutOctets: the total number of octets transmitted (including framing characters).

ifOutNUCastPkts: the total number of packets transmitted to a non-unicast (i.e., a subnet broadcast or subnet multicast) address.

ifOutErrors: the number of outbound discarded packets due to errors.

ifOutDiscards: the number of outbound discarded packets.

ifOperStatus: the current state of the interface. (1: active; 2: idle)

ifMtu: the size of the largest packet that can be processed on the interface (octet).

ifLastChange: the current operational state of the interface.

ifInUnknownProtos: the number of inbound discarded packets due to an unknown or unsupported protocol.

ifInUCastPkts: the number of (subnet) unicast packets received.

ifInOctets: the total number of octets received (including framing characters).

ifInUNCastPkts: the number of non-unicast (i.e., subnet broadcast or subnet multicast) packets received.

ifInErrors: the number of inbound discarded packets due to errors.

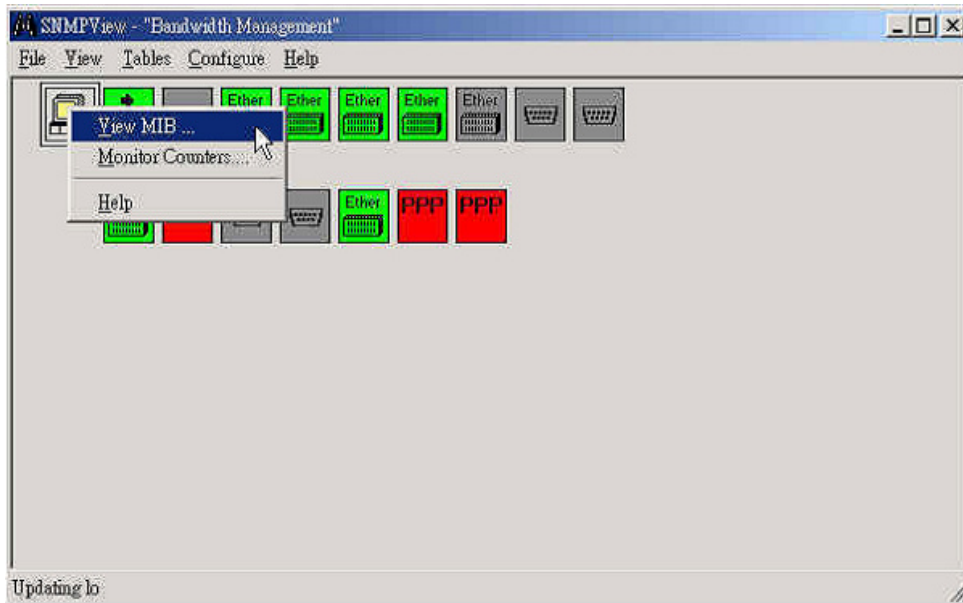
ifInDiscards: the number of inbound discarded packets.

ifIndex: a unique value that identifies the interface in the MIB's ifTable.

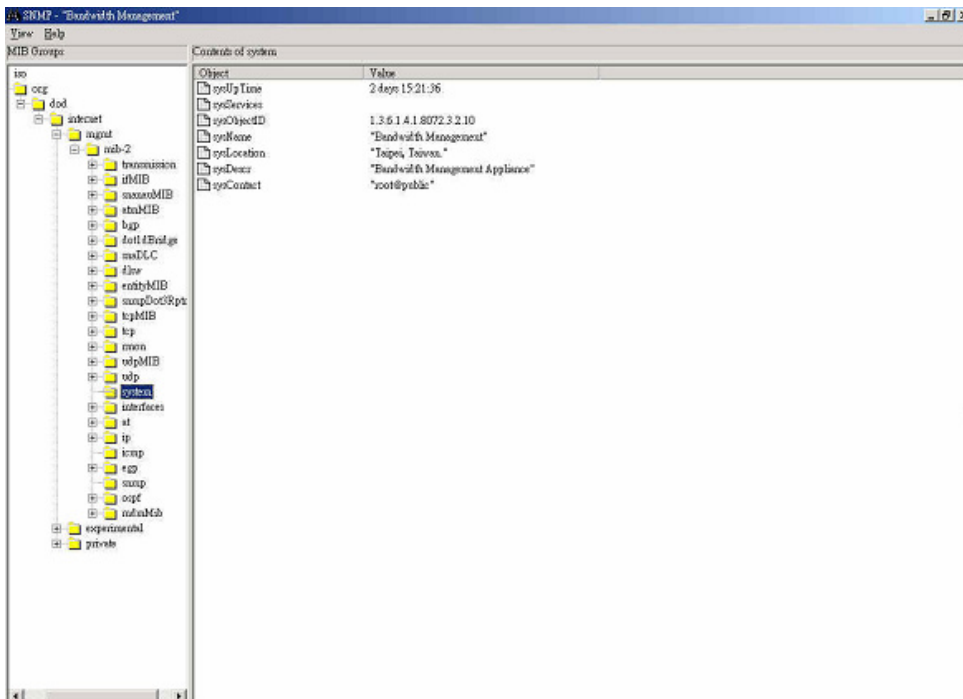
ifDescr: the name of the manufacturer, the product name and the version of the hardware interface.

ifAdminStatus: the desired state of the interface. (1: monitored; 2: not being monitored)

Step 9. Right-click on the device in a map, then select **View MIB** from the pop-up menu. (See figure below)



Step 10. You can use the MIB Viewer to view any SNMP object for the device. (See figure below)



The definitions for SNMP objects:

sysUpTime: the uptime of the device

sysServices: the services provided by the device

sysObjectID: the object identifiers of the device

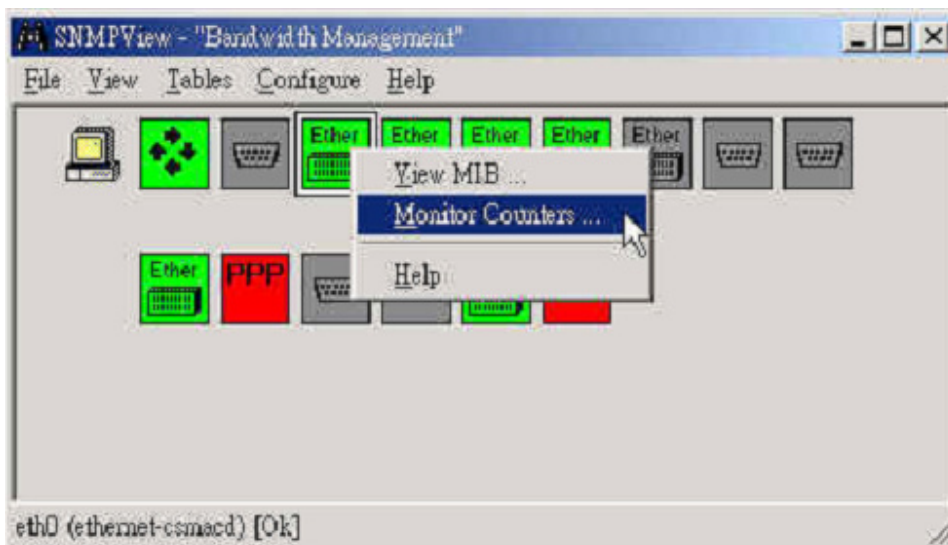
sysName: the name of the device

sysLocation: the location of your company

sysDescr: the description for the device

sysContact: the contact person

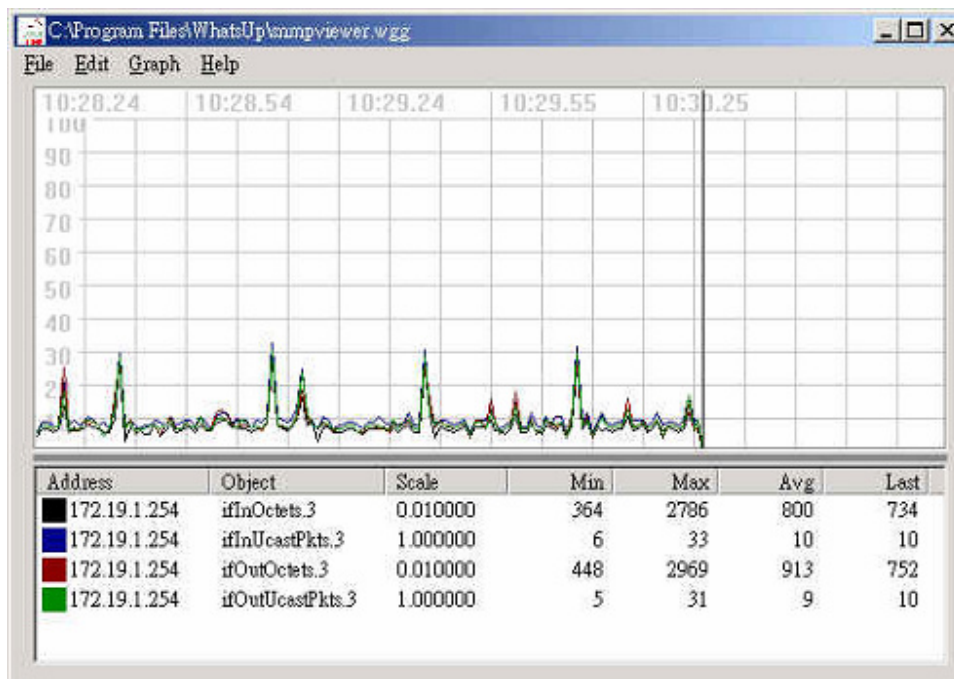
Step 11. To graph any of the SNMP counters, right-click the interface icon, and then select **Monitor Counters**. (See figure below)



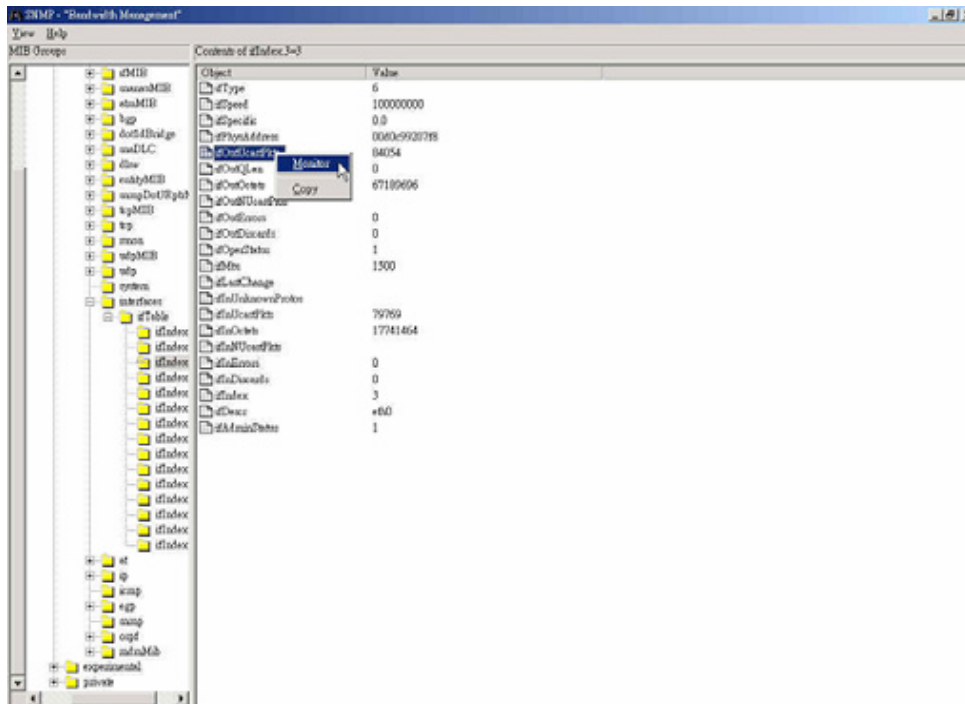
Step 12. Select one or more counters to graph, and then click **OK**. (See figure below)



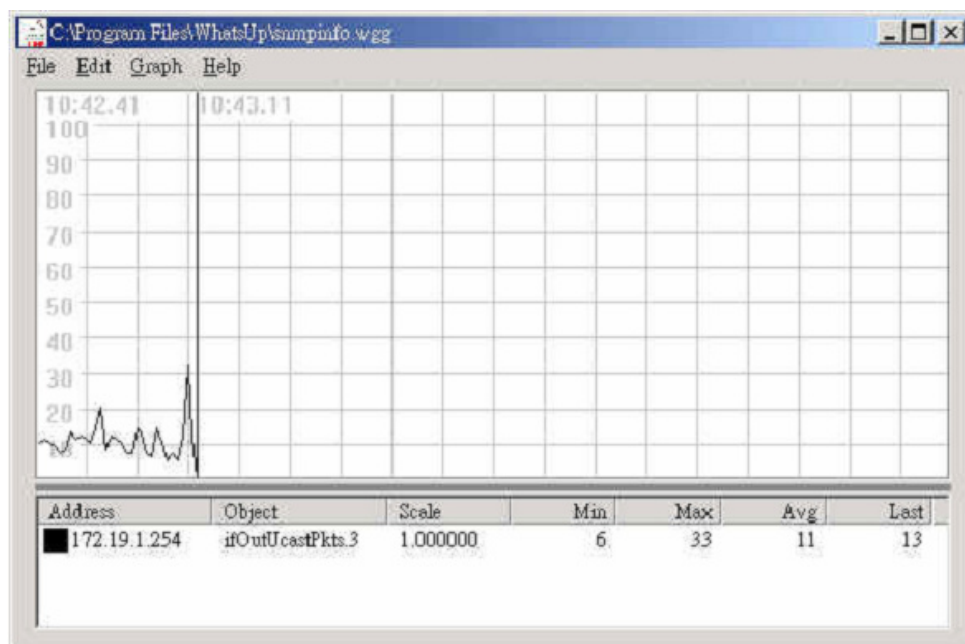
Step 13. The SNMP Graph Utility appears and begins graphing the selected SNMP object. The view of which is continuously updated. (See figure below)



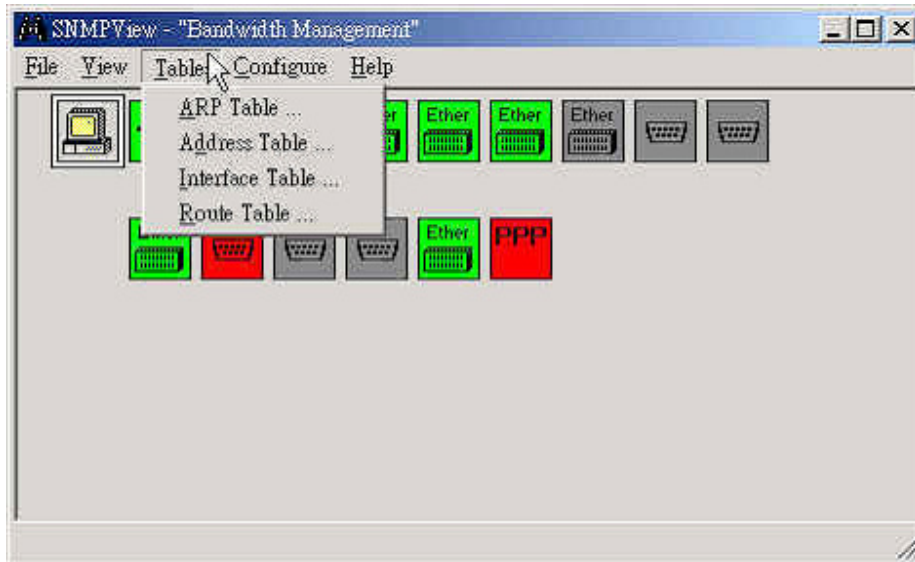
Step 14. From the MIB Viewer, you can select an SNMP object to monitor. Right-click on an SNMP counter and then select **Monitor**. (See figure below)



Step 15. The SNMP Graph Utility appears and begins graphing the selected SNMP object. (See figure below)



Step 16. From the **Table** menu, you can view the device's MIB data for different kinds of information (see figure below). Each of these views is continuously updated.

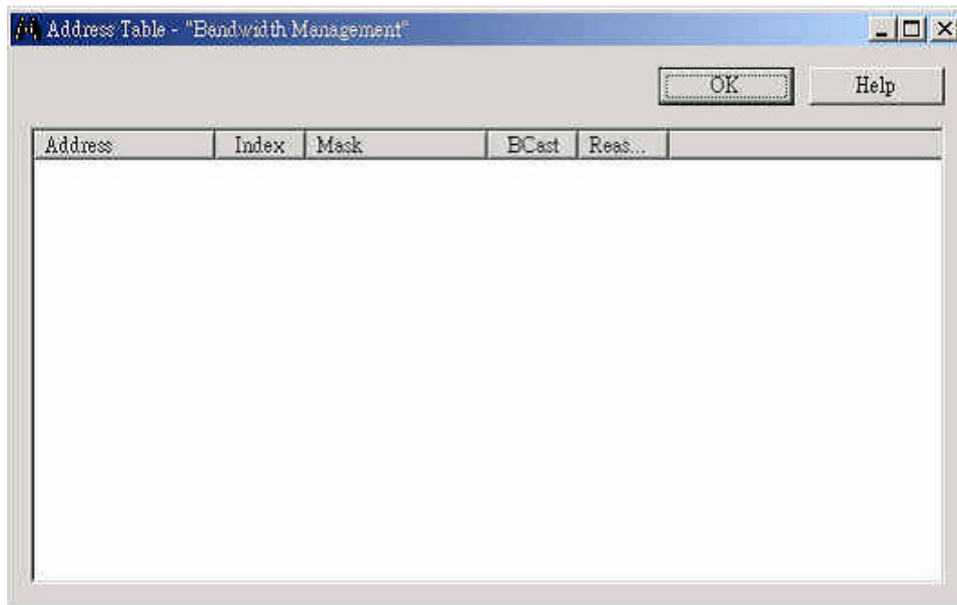


Step 17. The columns in the ARP Table show the following information. (See figure below)

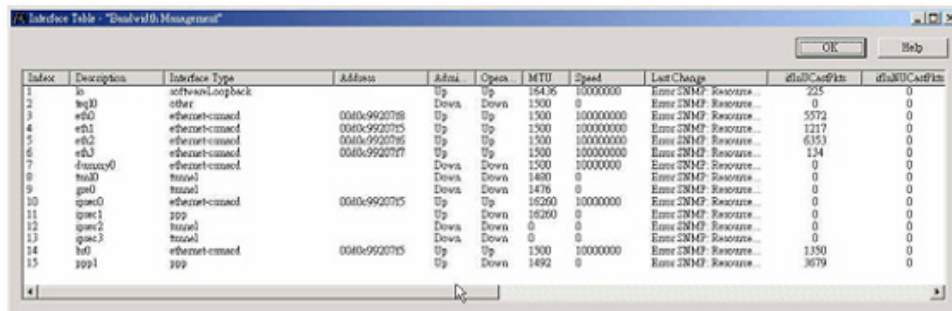
The screenshot shows the 'ARP Table - "Bandwidth Management"' window. It contains a table with the following data:

| Index | Address | Physical Address | Type |
|-------|---------------|------------------|------|
| 3 | 172.19.0.110 | 00sadeadbef0 | 3 |
| 3 | 172.19.1.115 | 0048544afa44 | 3 |
| 3 | 172.19.1.137 | 0048544afb66 | 3 |
| 3 | 172.19.1.216 | 00cc00000009 | 3 |
| 3 | 172.19.2.249 | 0090fb0459b3 | 3 |
| 4 | 211.22.93.137 | 00a0c51101e8 | 3 |
| 6 | 211.22.93.137 | 000000000000 | 4 |
| 6 | 211.22.93.141 | 0050bf16f5ce | 3 |
| 6 | 211.22.93.142 | 0040c7856c73 | 3 |

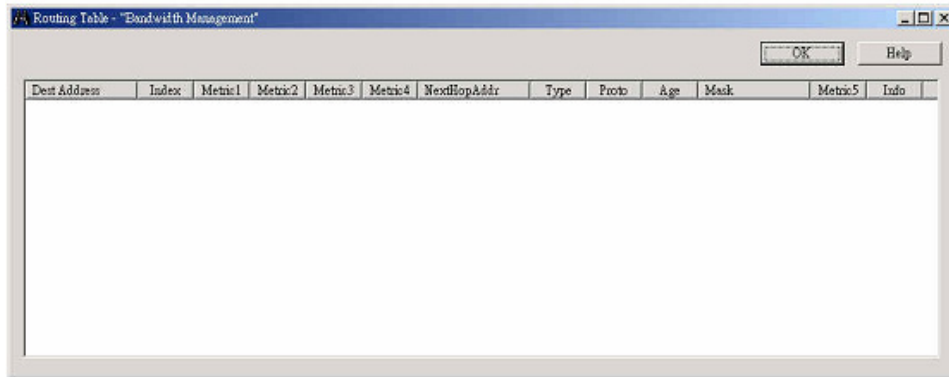
Step 18. The columns in the Address Table show the following information.
(See figure below)



Step 19. The columns in the Interface Table show the following information.
(See figure below)



Step 20. The columns in the Route Table show the following information.
(See figure below)



The image shows a screenshot of a software window titled "Routing Table - Bandwidth Management". The window contains a table with the following columns: Dest Address, Index, Metric1, Metric2, Metric3, Metric4, NextHopAddr, Type, Proto, Age, Mask, Metric5, and Info. The table is currently empty. There are "OK" and "Help" buttons in the top right corner of the window.

| Dest Address | Index | Metric1 | Metric2 | Metric3 | Metric4 | NextHopAddr | Type | Proto | Age | Mask | Metric5 | Info |
|--------------|-------|---------|---------|---------|---------|-------------|------|-------|-----|------|---------|------|
|--------------|-------|---------|---------|---------|---------|-------------|------|-------|-----|------|---------|------|

The definitions for the columns in each table:

Index: a unique value that identifies the interface in the MIB's ifTable (same as ifIndex).

Description: the descriptions for the interface, including the name of the manufacturer, the product name and the version of the hardware interface.

Interface Type: the type of interface, distinguished according to the physical/link/network protocol(s) immediately "below" IP in the protocol stack.

Address: the interface's address at the protocol layer immediately "below" IP in the protocol stack. For interfaces that do not have such an address (e.g., a serial line), this object should contain an octet string of zero length.

Admin Status: the desired state of the interface: Up - ready to pass packets; Down; or Testing - in some testing state.

Operator Status: the current state of the interface: Up - ready to pass packets; Down; or Testing - in some testing state.

MTU: the size of the largest IP datagram that can be sent / received on the interface, specified in octets.

Speed: an estimate of the interface's current bandwidth in bits per second. For interfaces that do not vary in bandwidth, or for those where no accurate estimation can be made, this object should contain the nominal bandwidth.

Last Change: the value of sysUpTime at the time the interface entered its current operational state. If the current state was entered prior to the last re-initialization of the local network management subsystem, then this object contains a zero value.

InUCastPkts: the number of (subnet) unicast packets delivered to a higher-layer protocol.

InUNCastPkts: the number of non-unicast (i.e., subnet broadcast or subnet multicast) packets delivered to a higher-layer protocol.

InErrors: the number of inbound packets that contained errors preventing them from being deliverable to a higher-layer protocol.

InDiscards: the number of inbound packets which were chosen to be discarded even though no errors had been detected to prevent their being deliverable to a higher-layer protocol. One possible reason for discarding such a packet could be to free up buffer space.

Unknown Protos: the number of packets received via the interface which were discarded because of an unknown or unsupported protocol.

OutUCastPkts: the total number of packets that higher-level protocols requested be transmitted to a subnet-unicast address, including those that were discarded or not sent.

OutNUCastPkts: the total number of packets that higher-level protocols requested be transmitted to a non-unicast (i.e., a subnet broadcast or subnet multicast) address, including those that were discarded or not sent.

OutErrors: the number of outbound packets that could not be transmitted because of errors.

OutDiscards: the number of outbound packets which were chosen to be discarded even though no errors had been detected to prevent their being transmitted. One possible reason for discarding such a packet could be to free up buffer space.

InOctets: the total number of octets received on the interface, including framing characters.

OutOctets: the total number of octets transmitted out of the interface, including framing characters.