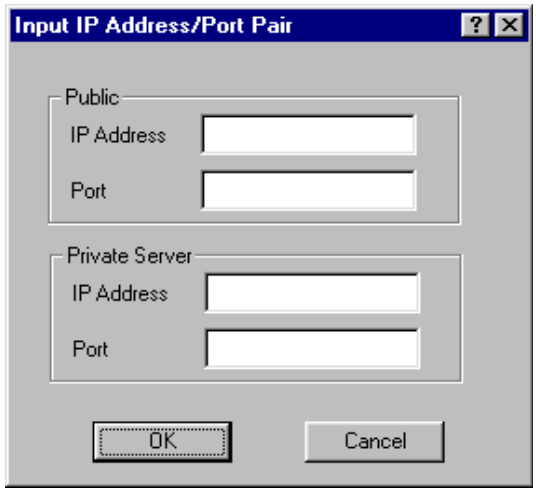
6. Click **Add** to enter another IP address/port pair. The Input IP Address/Port Pair dialog box appears. Then enter the following information as appropriate. Then, click **OK** to close this dialog box.
   - **Public IP Address** – This is the IP address for the outside network. All requests for a particular IP address from the outside or public network will be translated to the appropriate private IP address. For a more detailed definition, see *page 64*.
   - **Public Port** – This item will allow you to assign a particular port that you would like to have one of the private IP addresses to be able to respond to. Here are a few of the more common ports used:
     FTP - 21
     SMTP – 25
     DNS – 53
     WWW – 80
     NNTP - 119
   - **Private Server IP Address** - This is the IP address of the server or workstation (or computer) where you want to get the "received message" for this port assignment.
   - **Private Server Port** – This is the port of where you want to have the server receive the messages.



7. Click **Delete** to permanently remove the IP address/port pair selected. Click **Edit** to modify the IP address/port pair selected. Click **OK**. You will return to the Outgoing Network Address Translation Setup dialog box.

8. After you have finished entering the appropriate information, click **OK**.

9. Now save the changes to the bridge or router. From the **File** menu, choose **Save Config**.

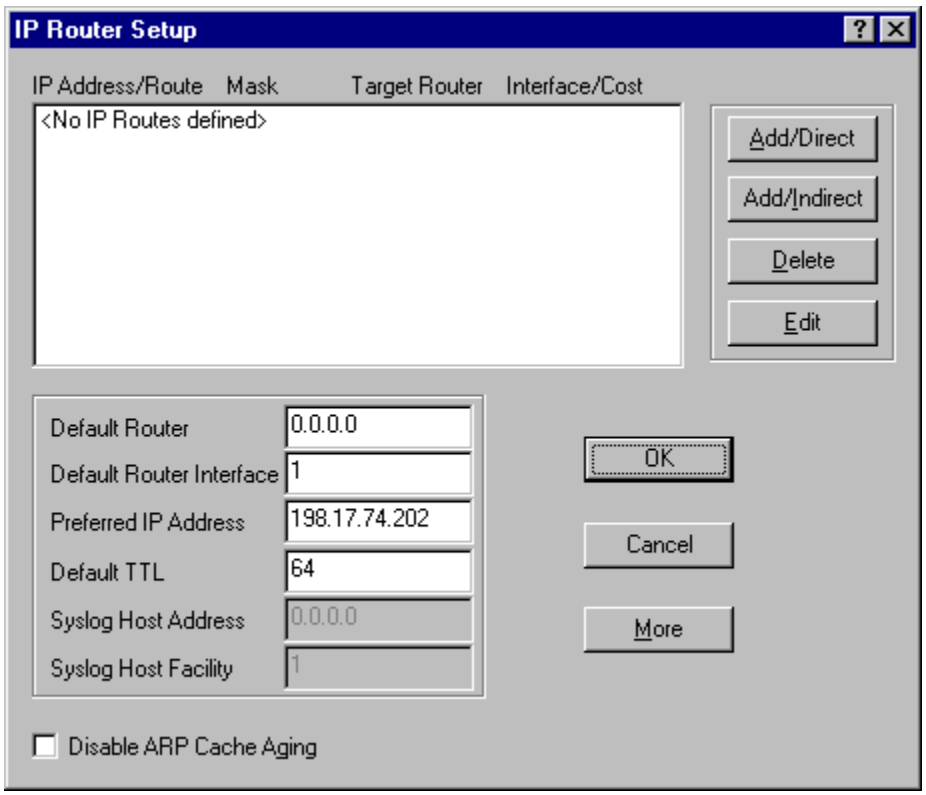
10. A message box appears informing you that the information will be saved to the bridge or router. Click **Yes**.

11. The Configurator confirms that the configuration has been saved. Click **OK**. Restart the computer for changes.

IP ROUTER SETUP

IP-Router Setup

IP Routing - IP Routing in the General Setup Menu must be enabled for this menu to appear. This menu must be completed before saving any configuration in which IP Routing has been enabled. **Saving the configuration with incomplete entries in the route table will render the SPEEDLAN TM inoperable.**



Default Router (IP Address)-This entry should be set to the IP address of the default router that this SPEEDLAN TM is to use when it does not know where to route a particular IP packet.

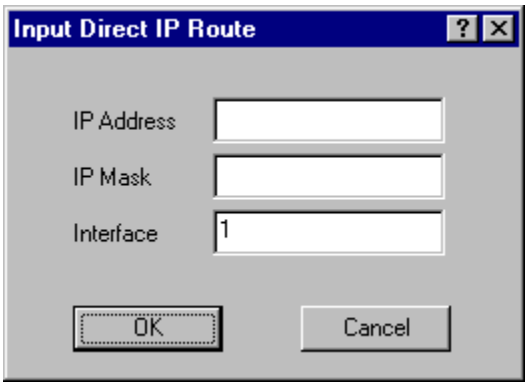
Default Router Interface - This entry should be set to the interface to which the default router is connected.

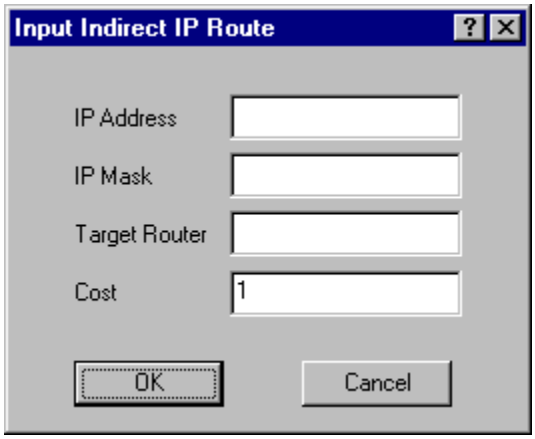
Preferred IP Address - From time to time routers will transmit unsolicited IP packets such as SNMP Traps, Syslog, RIP, or IP ARP packets. Most routers randomly use one of the IP addresses from one of the router's interfaces as the source IP address for these packets. On the brouter you can specify the source IP address that you prefer to use for these packets.

Default TTL - IP hosts on the Internet send out packets with a default "Time To Live" parameter. If you wish to override the factory default of 64 attempts, you can specify your new default value here.

Disable ARP-Cache Aging - Use this option if you want to keep a permanant record of the IP to Ethernet addresses table for each computer directly connected to an interface on the bridge. This feature is helpful when used in conjuntion with a corporate-wide SNMP monitoring tool to create a database of all Ethernet-to-IP address combinations on your network. A standard IP router and the bridge will age their ARP cache entries. It will time out and delete the ARP entries after a certain specified period (usually 10 minutes). The SPEEDLAN TM has the option of not aging (deleting) any ARP cache entries. This will not normally cause any IP network problems but could result in a large ARP cache table. Since the typical bridge/router can hold over 10,000 ARP entries this is not normally a problem.

Add/Direct - This button activates a menu which is used to specify the direct routes for each of the interfaces on the brouter. Direct routes are those that are directly connected to the interfaces. As an example, if interface 1 is to have subnet 128.146.6.0 connected to it and an IP address of 128.146.6.1 with a subnet mask of 255.255.255.0, an entry in this menu should be set up as: IP Address = 128.146.6.1; IP Mask = FFFFFF00; and Interface = 1.





Add/Indirect - This button activates a menu which is used to specify the indirect routes for this bridge/router. These routes are sometimes refered to as static routes. You can use indirect routes to define the way to get to subnets that are attached to other routers in your network. As an example, if subnet 198.17.74.0 is attached to router 128.146.11.20, in order for this brouter to route packets to 198.17.74.1 you should specify an entry that is set up as: IP Address = 198.17.74.0; IP Mask = FFFFFF00; Next Hop = 128.146.11.20 with Cost = 1.

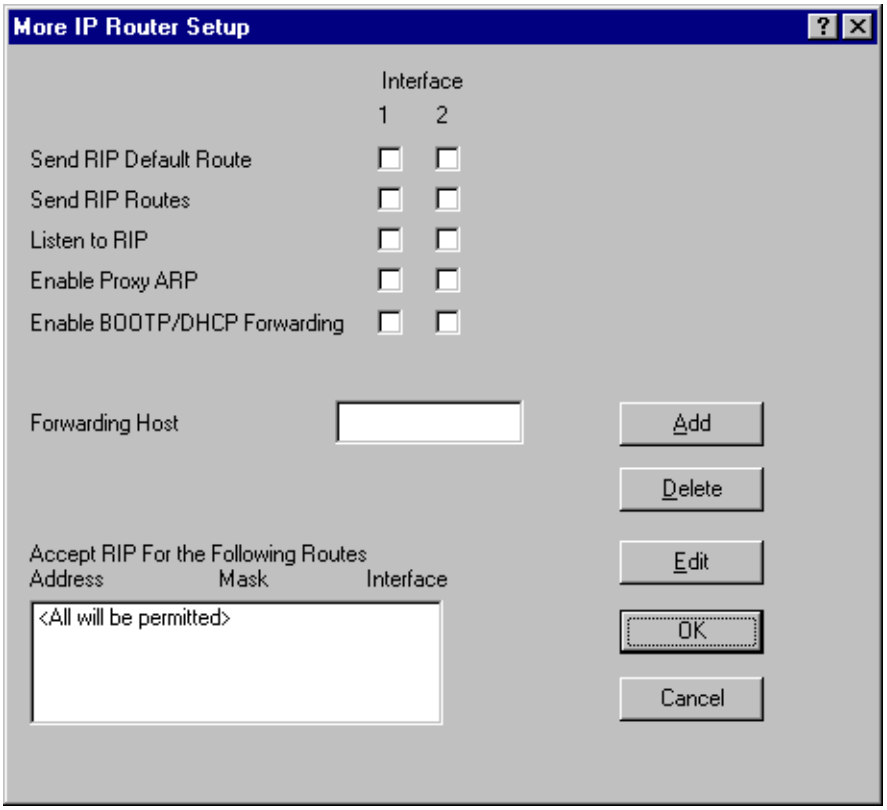
RIP Routing

Wave Wireless brouters support what is known as RIP (Routing Information Protocol). RIP allows users to permit network equipment to communicate with each other to handle the routing plan of your network.

Send RIP Default Route - Enabling this feature instructs the brouter to inform the network (via RIP) that it is the default router for that network. **This feature should only be enabled if this brouter is the only default router on the local network.**

Send RIP Routes - Enabling this feature instructs the brouter to forward all route information gathered and stored by this brouter through the interface(s) selected. This is normally used in conjunction with **Listen to RIP** which instructs the brouter to gather RIP information from other RIP devices on your network.

Listen to RIP - This function enables the brouter to listen for and update its RIP information. The routes gathered in this manner come from other RIP-enabled routers on your network. This feature is normally used in conjuntion with **Send RIP Routes**, which instructs the brouter to pass along all RIP information it has gathered to other RIP devices on your network.



Enable Proxy ARP - This feature allows the brouter to be used as the proxy host for users on the local network. This instructs the brouter to act as a "proxy" for the local destination host. This is used in circumstances that require connections not normally permitted for individual users on a network.

Enable BOOTP/DHCP Forwarding - This feature allows the unit to pass BOOTP and DHCP requests across the wireless network.

Forwarding Host - Defines the IP address of the device configured to act as the forwarding host for BOOTP and DHCP messages in a routed network.

Accept RIP For the Following Routes - Normally RIP instructs the brouter to forward all route information gathered to all RIP devices located on you network. Specifying devices in the RIP Access List allows you to limit which devices will be sent RIP. The devices specified in this list will be the only devices to receive RIP, while all other devices will be denied the RIP information stored on this brouter.

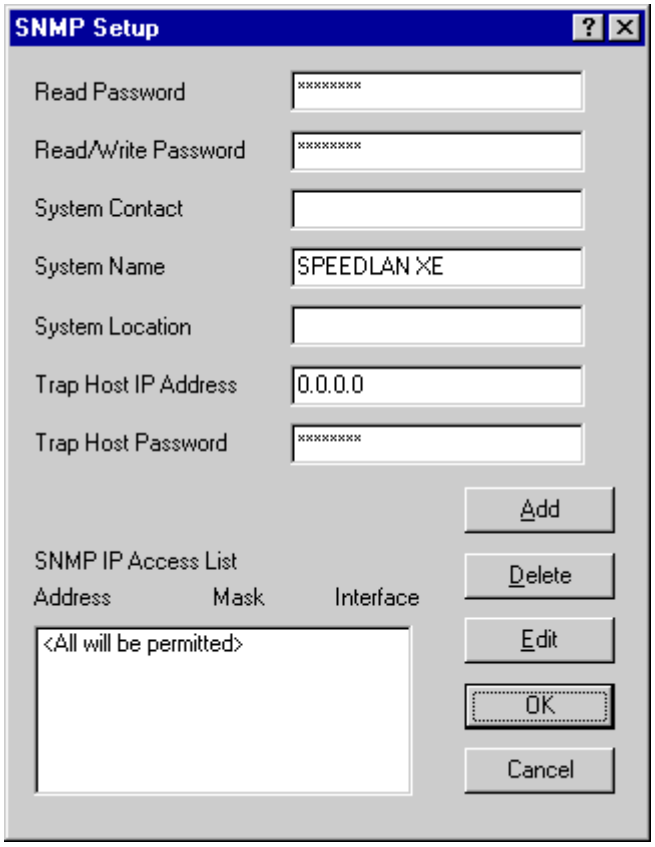
SNMP SETUP

SNMP Setup

Read Password - This is the read-only password used for SNMP support. It is the SNMP password needed to read the Flash ROM Configuration and SNMP MIB variables. The factory-default value for this variable is the string *public*.

Read/Write Password - This is the read/write password used for SNMP support. It is the SNMP password needed to write the Flash ROM configuration and SNMP MIB variables into the bridge. The string should be set to a value that is known only by you. The factory-default value for this variable is the string *public* and should be changed to a string known only to you.

System Contact - This field should contain the identification of the contact person for thisSNMP-managed node, together with information on how to contact this person.



System Name - This field should contain the administratively assigned name for this managed node. By convention, this is the node's fully qualified Internet Domain name (e.g., "bridge20.speedlan.com").

System Location - This field should contain the physical location of this node. (e.g., "telephone closet, 3rd floor").

Trap Host IP Address - This is the IP address of a network-connected host that is set up to receive SNMP Trap messages from this brouter. If you do not have an SNMP Trap Host, set this to 0.0.0.0.

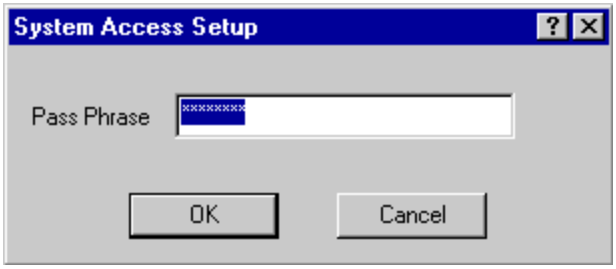
Trap Host Password - This is the SNMP read/write password (community name) of the host that is set up to receive SNMP Trap messages. This field is ignored if the Trap Host IP Address described above is 0.0.0.0.

SNMP IP Access List - You can optionally set up a list of networks, subnets, and hosts that are authorized to access the brouter via SNMP.

System Access Setup

System Access Setup

Use this feature from the Setup menu to enter the System Access Pass Phrase needed by wireless stations to connect to the brouter.



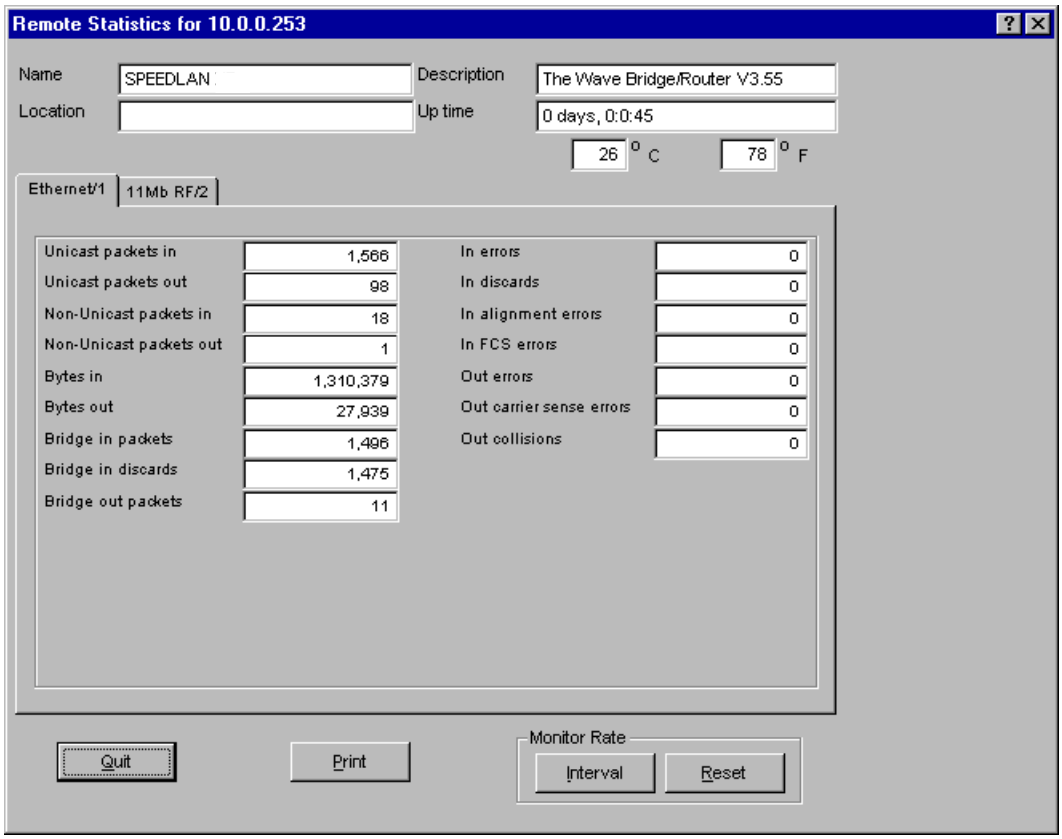
All wireless connections to the brouter are restricted to systems by using the System Access Pass Phrase entred in the dialog box above.

Any wireless station or brouter that does not have the correct System Access Pass Phrase specified will be unable to establish a wireless data connection with the brouter.

SNMP MONITORING

Remote Statistics

In the Remote Statistics screen, you are presented with information regarding the way a SPEEDLAN TM is handling packets as they are passing through an interface. Below you will find many useful items for diagnosing, and gathering traffic statistics on, each interface.



Unicast packets in - The number of subnetwork-unicast packets delivered to a higher-layer protocol.
Unicast packets out - The total number of octets (bytes) transmitted out of the interface, including framing characters.
Non-Unicast packets in - The number of non-unicast (i.e., subnetwork-broadcast or subnetwork-multicast) packets delivered to a higher-layer protocol.
Non-Unicast packets out - The total number of octets (bytes) transmitted out of the interface, including framing characters.
Bytes in - Total number of octets (bytes) received on the interface, including framing characters.
Bytes out - The total number of packets that higher-layer protocols requested be transmitted to a non-unicast (i.e., a subnetwork-broadcast or subnetwork-multicast) address, including those that were discarded or not sent.
Bridge in packets - The number of frames that have been received by this port from its segment. Note that a frame received on the interface corresponding to this port is not counted by this object unless it is for a protocol being processed by the local bridging function.

Bridge in discards - The count of valid frames that have been received which were discarded (i.e., filtered) by the forwarding process.

Bridge out packets - The number of frames that have been transmitted by this port to its segment. Note that a frame transmitted on the interface corresponding to this port is not counted by this object unless it is for a protocol being processed by the local bridging function.

In errors - The number of inbound packets that contained errors preventing them from being deliverable to a higher-layer protocol.

In discards - The number of inbound packets which were chosen to be discarded even though they were deliverable. One possible reason for discarding such a packet could be to free up buffer space.

In Alignment Errors - A count of frames received on a particular interface that are not an integral number of octets in length and do not pass the FCS check.

In FCS Errors - A count of frames received on a particular interface that are an integral number of octets in length but do not pass the FCS check.

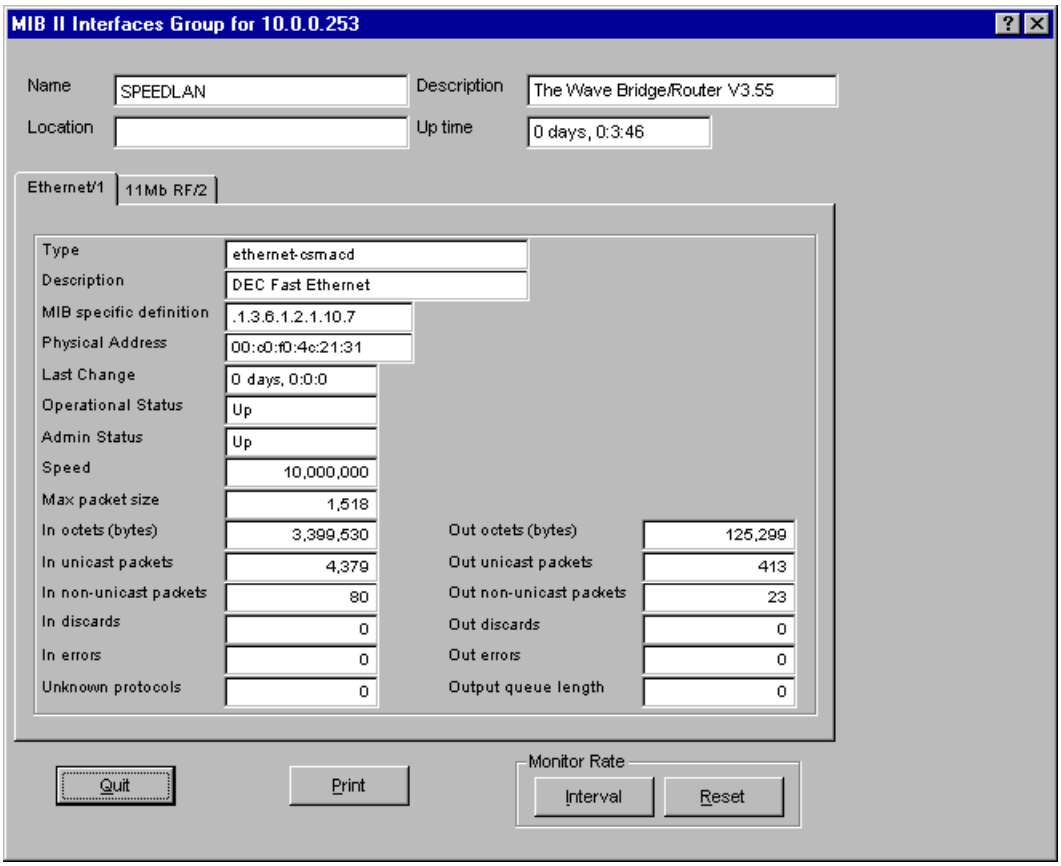
Out Errors - The number of outbound packets that could not be transmitted because of errors.

Out Carrier Sense Errors - The number of times that the carrier-sense condition was lost or never asserted when the SPEEDLAN attempted to transmit a frame on a particular interface.

Out Collisions - A count of successfully transmitted frames on a particular interface for which transmission is inhibited by exactly one or more collisions, plus the number of times that a collision is detected on a particular interface later than 512 bit-times into the transmission of a packet.

Interface Monitor

The interfaces table contains information on the unit's interfaces. Each interface is thought of as being attached to a 'subnetwork'. Note that this term should not be confused with 'subnet' which refers to an address-partitioning scheme used in the Internet suite of protocols.



Type - The type of interface, distinguished according to the physical-link protocols immediately below the network layer in the protocol stack. The possible types are: other, regular1822, hdh1822, ddn-x25, rfc877-x25, ethernet-csmacd, iso88023-csmacd, iso80024-tokenbus, iso88025-tokenring, iso99026-man, starLan, proteon-10Mbit, proteon-80Mbit, hyperchannel, fddi, lapb, sdlc, ds1, e1, basicISDN, PrimaryISDN, propPointToPointSerial, ppp, softwareloopback, eon, ethernet-3Mbit, nsip, slip, ultra, ds3, sip, frame-relay.

Description - A textual string containing information about the interface. This string should include the name of the manufacturer, the product name, and the version of the hardware interface.

MIB specific definator - A reference to MIB definitions specific to the particular media being used to realize the interface. For example, if the interface is being realized by an Ethernet, then the value of this object refers to a document defining objects specific to the Ethernet. If this information is not present, its value will be set to 0.

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

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 reinitialization of the local network-managment subsystem, then this object contains a value of zero.

Operational Status - The state of the interface. The testing state indicates that no operational packets can be passed. Up - ready to pass packets; Down - cannot pass packets; testing - in some test mode.

Admin Status - The desired state of the interface. The testing state indicates that no operational packets can be passed.

Speed - An estimate of the interface's current bandwidth in bits per second. For interfaces which do not vary in bandwidth or whose bandwidth can't be accurately estimated, this object should contain the nominal bandwidth.

Max packet size - The size of the largest datagram which can be sent/received on the interface, specified in octets. For interfaces used for transmitting network datagrams, this is the size of the largest network datagram that can be sent on the interface.

In octets (bytes) - The total number of octets (bytes) received on the interface, including framing characters.

In unicast packets - The number of subnetwork-unicast packets delivered to a higher-layer protocol.

In non-unicast packets - The number of non-unicast (i.e., subnetwork-broadcast or subnetwork-multicast) packets delivered to a higher-layer protocol.

In discards - The number of inbound packets to which were chosen to be discarded even they were deliverable to a higher-layer protocol. One possible reason for discarding such a packet could be to free up buffer space.

In errors - The number of inbound packets that contained errors preventing them from being deliverable to a higher-layer protocol.

Unknown protocols - The number of packets received via the interface which were discarded because of an unknown or unsupported protocol.

Out octets(bytes) - The total number of octets (bytes) transmitted out of the interface, including framing characters.

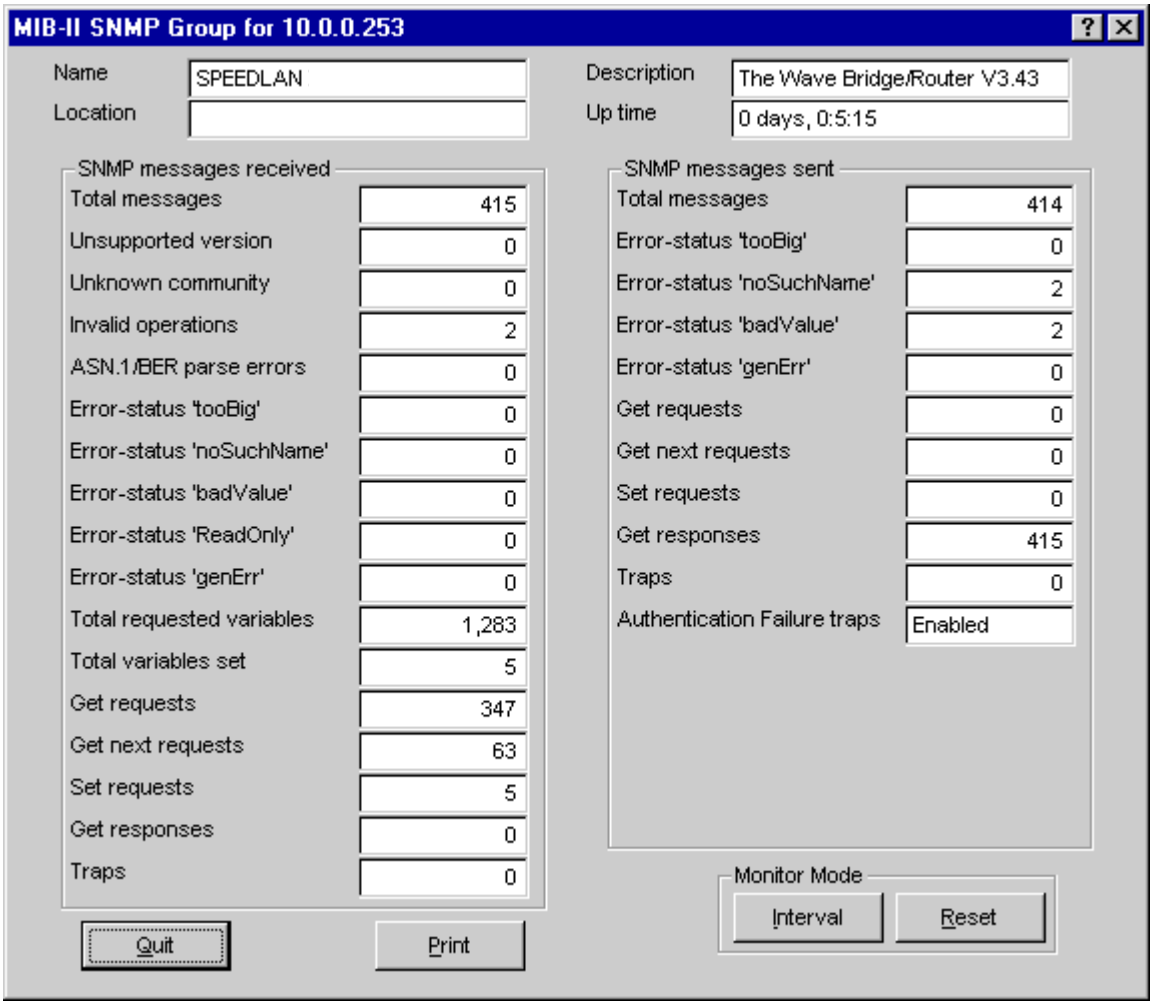
Out unicast packets - The total number of packets that higher-layer protocols requested be transmitted to a subnetwork-unicast address, including those that were discarded or not sent.

Out non-unicast packets - The total number of packets that higher-layer protocols requested be transmitted to a non-unicast (i.e. a subnetwork-broadcast or subnetwork-multicast) address, including those that were discarded or not sent.

Out errors - The number of outbound packets that contained errors preventing them from being transmitted via this interface.

Output queue length - The total number of octets (bytes) waiting to be transmitted via this interface.

SNMP Monitor



SNMP Messages Received

Total Messages - The total number of SNMP messages received.

Unsupported Version - The total number of SNMP messages which were delivered to the SNMP protocol entity and were for an unsupported SNMP version.

Unknown Community - The total number of SNMP messages delivered to the SNMP protocol entity which used an SNMP community name not known to the unit.

Invalid Operations - The total number of SNMP messages delivered to the SNMP protocol entity which represented SNMP operations not allowed by the SNMP community named in the message.

ASN.1/BER parse errors - The total number of ASN.1 or BER errors encountered by the SNMP protocol entity when decoding received SNMP messages.

Error-status 'too big' - The total number of SNMP PDUs delivered to the SNMP protocol entity for which the value of the error-status field was 'too big'.

Error-status 'noSuchName' - The total number of SNMP PDUs delivered to the SNMP protocol entity for which the value of the error-status field was 'noSuchName'.

Error-status 'badValue' - The total number of SNMP PDUs delivered to the SNMP protocol entity for which the error-staus field was 'badValue'.

Error-status 'ReadOnly' - The total number of valid SNMP PDUs delivered to the SNMP protocol entity for which the value of the error-status field was 'ReadOnly'. It should be noted that it is a protocol error to generate an SNMP PDU which contains the value 'ReadOnly' in the error-status field; use this field to detect incorrect implementations of SNMP.

Error-status 'genErr' - The total number of SNMP PDUs delivered to the SNMP protocol entity for which the error-status field was 'genErr'.

Total requested variables - The total number of MIB objects retrieved successfully by the SNMP protocol entity as the result of receiving valid SNMP Get-Request and Get-Next PDUs.

Total variables set - The total number of MIB objects altered successfully by the SNMP protocol entity as the result of receiving valid Set-Request PDUs.

Get requests - The total number of SNMP Get-request PDUs accepted and processed by the SNMP protocol entity.

Get next requests - The total number of SNMP Get-next PDUs accepted and processed by the SNMP protocol entity.

Set requests - The total number of SNMP Set-request PDUs accepted and processed by the SNMP protocol entity.

Get responses - The total number of SNMP Get-response PDUs accepted and processed by the SNMP protocol entity.

Traps - The total number of SNMP Trap PDUs accepted and processed by the SNMP protocol entity.

SNMP Messages Sent

Total Messages - The total number of SNMP messages passed from the SNMP protocol entity to the transport service.

Error-status 'tooBig' - The total number of SNMP PDUs generated by the SNMP protocol entity for which the value of the error-status field was 'tooBig'.

Error-status 'noSuchName' - The total number of SNMP PDUs generated by the SNMP protocol entity for which the value of the error-status field was 'noSuchName'.

Error-status 'badValue' - The total number of SNMP PDUs generated by the SNMP protocol entity for which the value of the error-status field was 'badValue'.

Error-status 'genErr' - The total number of SNMP PDUs generated by the SNMP protocol entity for which the value of the error-status field was 'genErr'.

Get requests - The total number of SNMP Get-request PDUs generated by the SNMP protocol entity.

Get next requests - The total number of SNMP Get-next-request PDUs generated by the SNMP protocol entity.

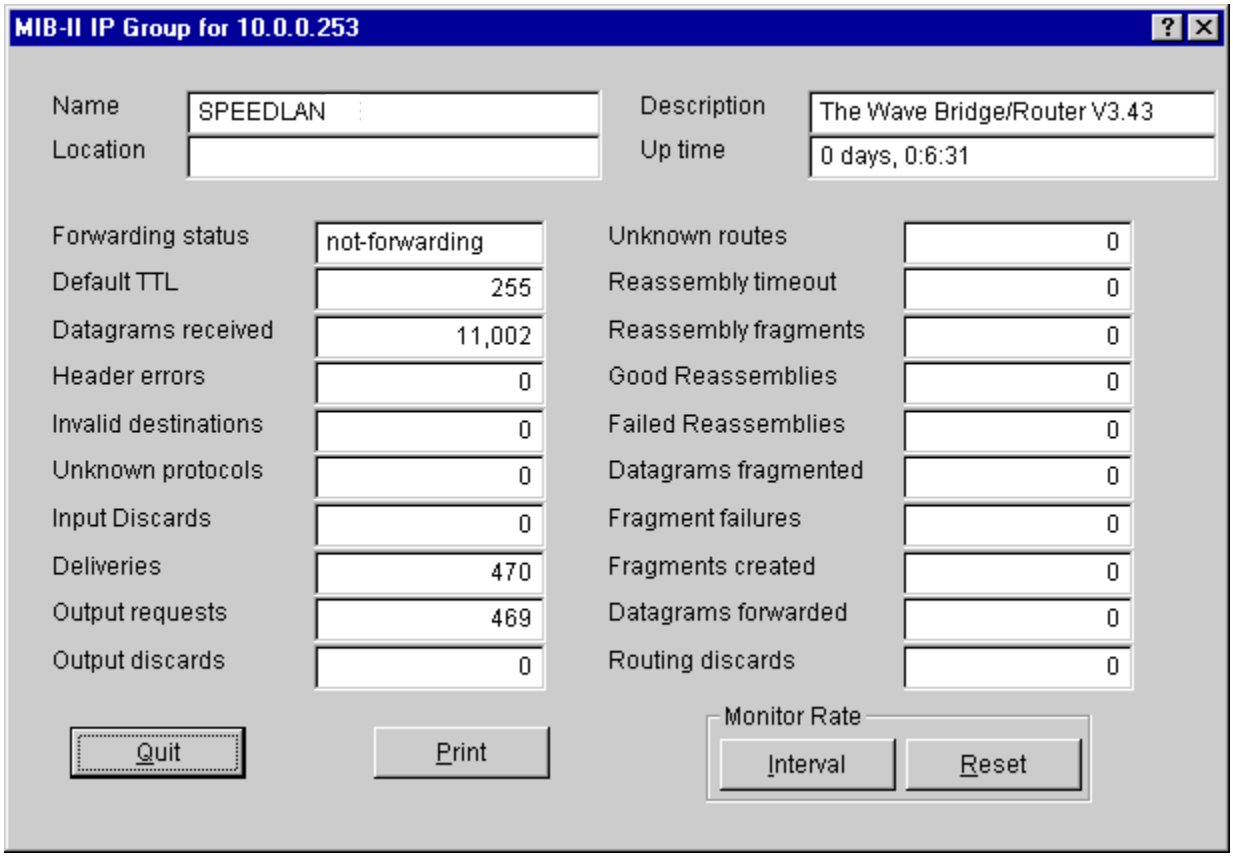
Set requests - The total number of SNMP Set-request PDUs generated by the SNMP protocol entity.

Get responses - The total number of SNMP Get-response PDUs generated by the SNMP protocol entity.

Traps - The total number of SNMP Trap PDUs generated by the SNMP protocol entity.

Authentication Failure Traps - Indicates whether the SNMP agent process is permitted to generate authentication-failure traps.

IP Monitor



The brouter keeps the standard SNMP MIB II statistics on IP type protocols as follows:

Forwarding Status - Indicates whether this entity is acting as an IP gateway in respect to the forwarding of datagrams received by, but not addressed to this enitity. IP gateways forward datagrams, and IP hosts do not (except those source-routed via the host). Note that for some managed nodes, this object may take on only a subset of the possible values.

Default TTL - The default value inserted into the Time-To-Live field of the IP header of datagrams originated at this entity, whenever a TTL value is not supplied by the transport-layer protocol.

Datagrams received - The total number of IP datagrams received by the host.

Header errors - The number of input datagrams discarded due to errors in their IP headers, including bad checksum errors, version-number mismatch, other format errors, time-to-live exceeded, errors discovered in processing their IP options, etc.

Invalid destinations - The number of input datagrams discarded because the IP address in their IP header's destination field was not a valid address for this entity to receive. This count includes invalid addresses (i.e., 0.0.0.0) and addresses of unsupported classes (i.e., Class E). For entities which are not IP gateways and therefore do not forward datagrams, this counter includes datagrams discarded because the destination address was not a local address.

Unknown protocols - The number of locally-addressed datagrams received successfully but discarded because of an unknown or unsupported protocol.

Input Discards - The number of input IP datagrams for which no problems were encountered to prevent their continued processing, but which were discarded anyway (e.g., for lack of buffer space). Note that this counter does not include any datagrams discarded while awaiting re-assembly.

Deliveries - The total number of input datagrams successfully delivered to IP user-protocols.

Output requests - The total number of IP datagrams which user-protocols (including ICMP) supplied to IP in-requests for transmission. Note that this counter does not include any datagrams counted in **Datagrams forwarded**.

Output discards - The number of output IP datagrams for which no problem was encountered to prevent their transmission to their destination, but which were discarded anyway (e.g., for lack of buffer space). Note that this counter would include datagrams counted in **Datagrams forwarded** if any such packets met this (discretionary) discard criterion.

Unknown routes - The number of IP datagrams discarded because no route could be found to transmit them to their destination. Note that this counter includes any packets counted in **Datagrams forwarded** which meet this 'no-route' criterion, as well as any datagrams which a host cannot route because all of its default gateways are down.

Reassembly timeout - The maximum number of seconds that received fragments are held while they are awaiting reassembly at this entity.

Reassembly fragments - The number of IP datagrams received which needed to be reassembled at this entity.

Good Reassemblies - The number of IP datagrams successfully reassembled.

Failed Reassemblies - The number of failures detected by the IP reassembly algorithm (for whatever reason - timed out, errors, etc.). Note that this is not necessarily a count of discarded IP fragments since some algorithms (notably the algorithm in RFC 815) can lose track of the number of fragments by combining them as they are received.

Datagrams fragmented - The number of IP datagrams that have been successfully fragmented at this entity.

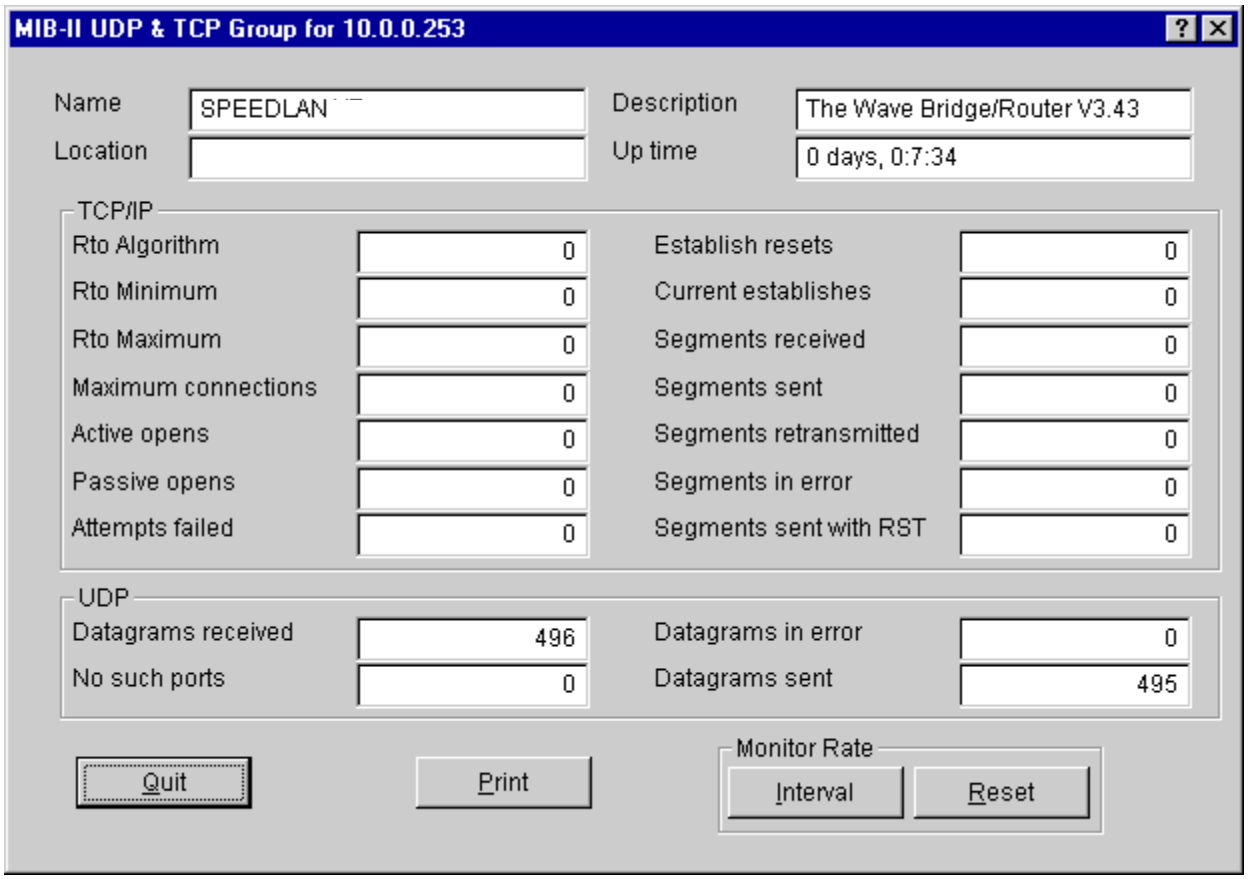
Fragment failures - The number of IP-datagram fragments that have been discarded because they needed to be fragmented at this entity but could not be because the datagram's "don't fragment" flag was set.

Fragments created - The number of IP-datagram fragments that have been generated as a result of fragmentation at this entity.

Datagrams forwarded - The number of input datagrams for which this entity was not their final IP destination, as a result of which an attempt was made to find a route to forward them to that final destination. In entities which do not act as IP gateways, this counter will include only those packets which were Source-Routed via this entity, and for which Source-Route option processing was successful.

Routing discards - The number of routing entries which were chosen to be discarded even though they were valid. One possible reason for discarding such an entry could be to free up buffer space for other routing.

IP/TCP/UDP Monitor



TCP

Rto Algorithm - The algorithm used to determine the timeout value used for retransmitting unacknowledged octets, which can be: “other” - none of the following; “constant” - a constant rto; “rsre” - MIL-STD-1778, Appendix B; “vanj” - Van Jacobson’s algorithm.

Rto Minimum - The minimum value permitted by a TCP implementation for the retransmission timeout, measured in milliseconds. More refined semantics for objects of this type depend upon the algorithm used to determine the retransmission timeout. In particular, when the timeout algorithm is “rsre”, an object of this type has the semantics of the LBOUND quality described in RFC 793.

Rto Maximum - The maximum value permitted by a TCP implementation for the retransmission timeout, measured in milliseconds. More refined semantics for objects of this type depend upon the algorithm used to determine the retransmission timeout. In particular, when the timeout algorithm is rsre, an object of this type has the semantics of the LBOUND quality described in RFC 793.

Maximum connections - The limit on the total number of TCP connections the entity can support. In entities where the maximum number of connections is dynamic, this object should contain the value -1.

Active opens - The number of times TCP connections have made a direct transition to the SYN-SENT state from the CLOSED state.

Passive opens - The number of times TCP connections have made a direct transition to SYN-SENT state from the LISTEN state.

Attempts failed - The number of times TCP connections have made a direct transition to the CLOSED state from either the SYN-SENT state or the SYN-RCVD state, plus the number of times TCP connections have made a direct transition to the LISTEN state from the SYN-RCVD state.

Establish resets - The number of times TCP connections have made a direct transition to the closed state from either the ESTABLISHED state or the CLOSE-WAIT state.

Current establishes - The number of TCP connections for which the current state is either ESTABLISHED or CLOSE-WAIT.

Segments received - The total number of segments received, including those received in error. This count includes segments received on currently established connections.

Segments sent - The total number of segments sent, including those on current connections but excluding those containing only retransmission octets.

Segments retransmitted - The total number of segments retransmitted -- that is, the number of TCP segments transmitted containing one or more previously transmitted octets.

Segments in error - The total number of segments received in error (i.e., with bad TCP checksums).

Segment sent with RST - The number of TCP segments sent containing the RST flag.

UDP

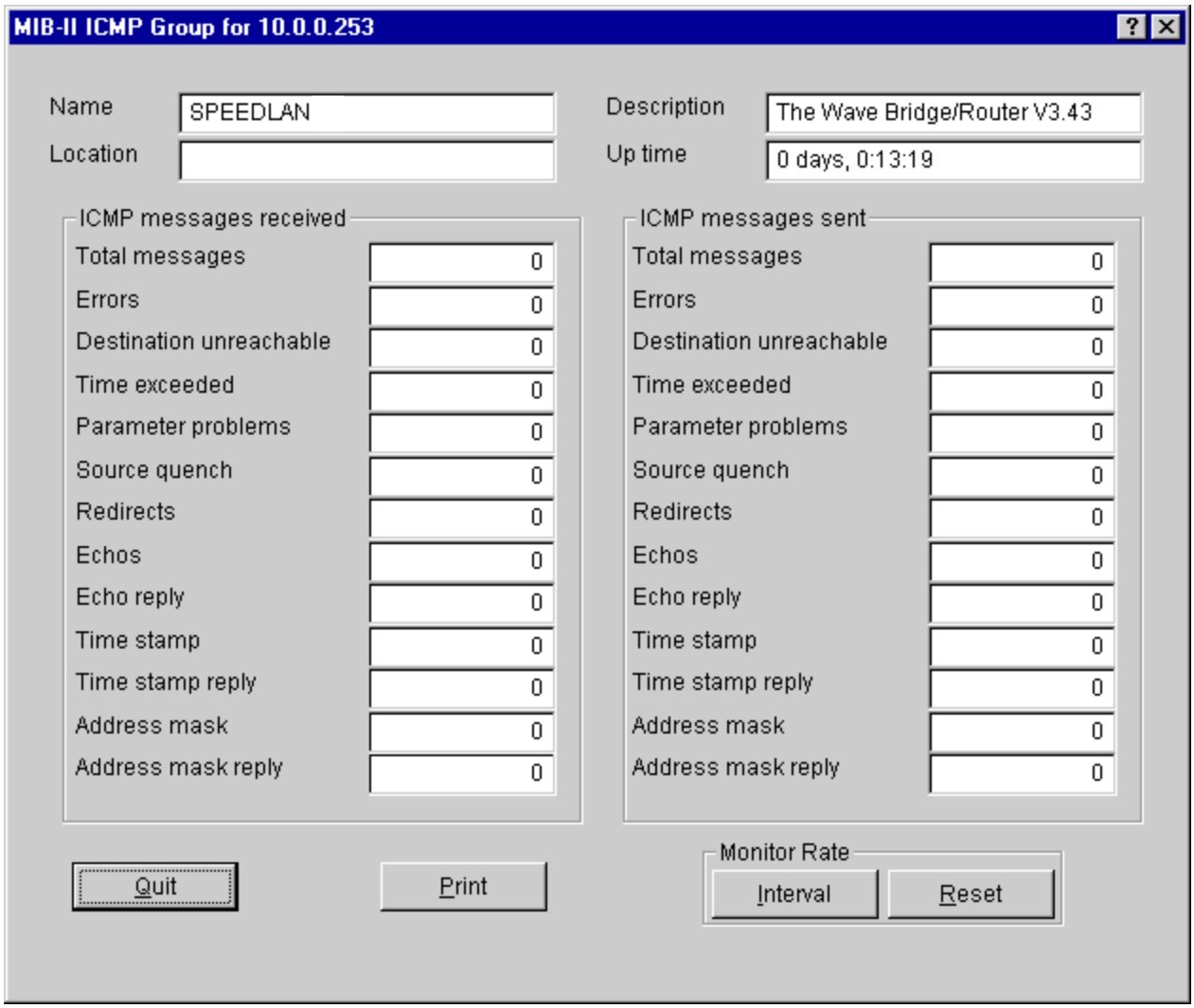
Datagrams received - The total number of UDP datagrams delivered to UDP users.

No such port - The total number of received UDP datagrams for which there was no application at the destination port.

Datagrams in error - The number of received UDP datagrams that could not be delivered for a reason other than the lack of an application at the destination port.

Datagrams sent - The total number of UDP datagrams sent from this entity.

ICMP Monitor



ICMP Messages Received

Total messages - The total number of ICMP messages which the entity received. Note that this counter includes all those counted by received **Errors**.

Errors - The number of ICMP messages which the entity received but determined as having ICMP-specific errors (bad checksums, bad length, etc).

Destination unreachable - The number of ICMP Destination Unreachable messages received.

Time exceeded - The number of ICMP Time Exceeded messages received.

Parameter problems - The number of ICMP Parameter Problem messages received.

Source quench - The number of ICMP Source Quench messages received.

Redirects - The number of ICMP Redirect messages received.

Echoes - The number of ICMP Echo (request) messages received.

Echo reply - The number of ICMP Echo Reply messages received.

Time stamp - The number of ICMP Timestamp (request) messages received.

Time stamp reply - The number of ICMP Timestamp Reply messages received.

Address mask - The number of ICMP Address Mask (request) messages received.

Address mask reply - The number of ICMP Address Mask Reply messages received.

ICMP Messages Sent

Total messages - The total number of ICMP messages which this entity attempted to send. Note that this counter includes all those counted by ICMP out **Errors.**

Errors - The number of ICMP messages which this entity did not send due to problems discovered within ICMP, such as a lack of buffers. This value does not include errors discovered outside the ICMP layer such as the inability of IP to route the resultant datagram. In some implementations there may be no types of errors which contribute to this counter's value.

Destination Unreachable - The number of ICMP Destination Unreachable messages sent.

Time exceeded - The number of ICMP Time exceeded messages sent.

Parameter problems - The number of ICMP Parameter Problem messages sent.

Source quench - The number of ICMP Source Quench messages sent.

Redirects - The number of ICMP Redirect messages sent.

Echoes - The number of ICMP Echo (request) messages sent.

Echo Reply - The number of ICMP Echo Reply messages sent.

Time Stamp - The number of ICMP Time Stamp (request) messages sent.

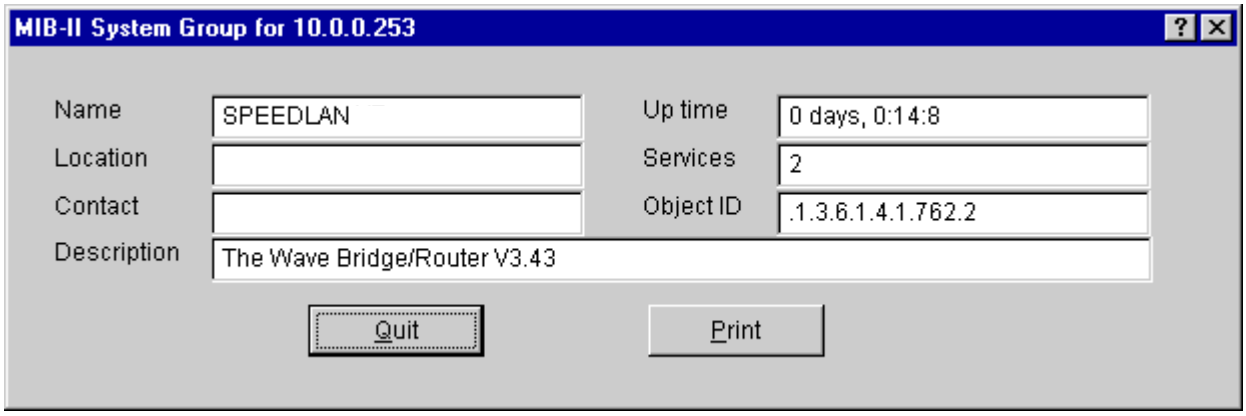
Time Stamp Reply - The number of ICMP Time Stamp Reply messages sent.

Address mask - The number of ICMP Address Mask (request) messages sent.

Address mask reply - The number of ICMP Address Mask Reply messages sent.

TABLES

System Information



The brouter keeps the standard SNMP MIB II statistics on system-related information as follows:

Name - An administratively-assigned name for this managed node. By convention, this is the node's fully-qualified domain name.

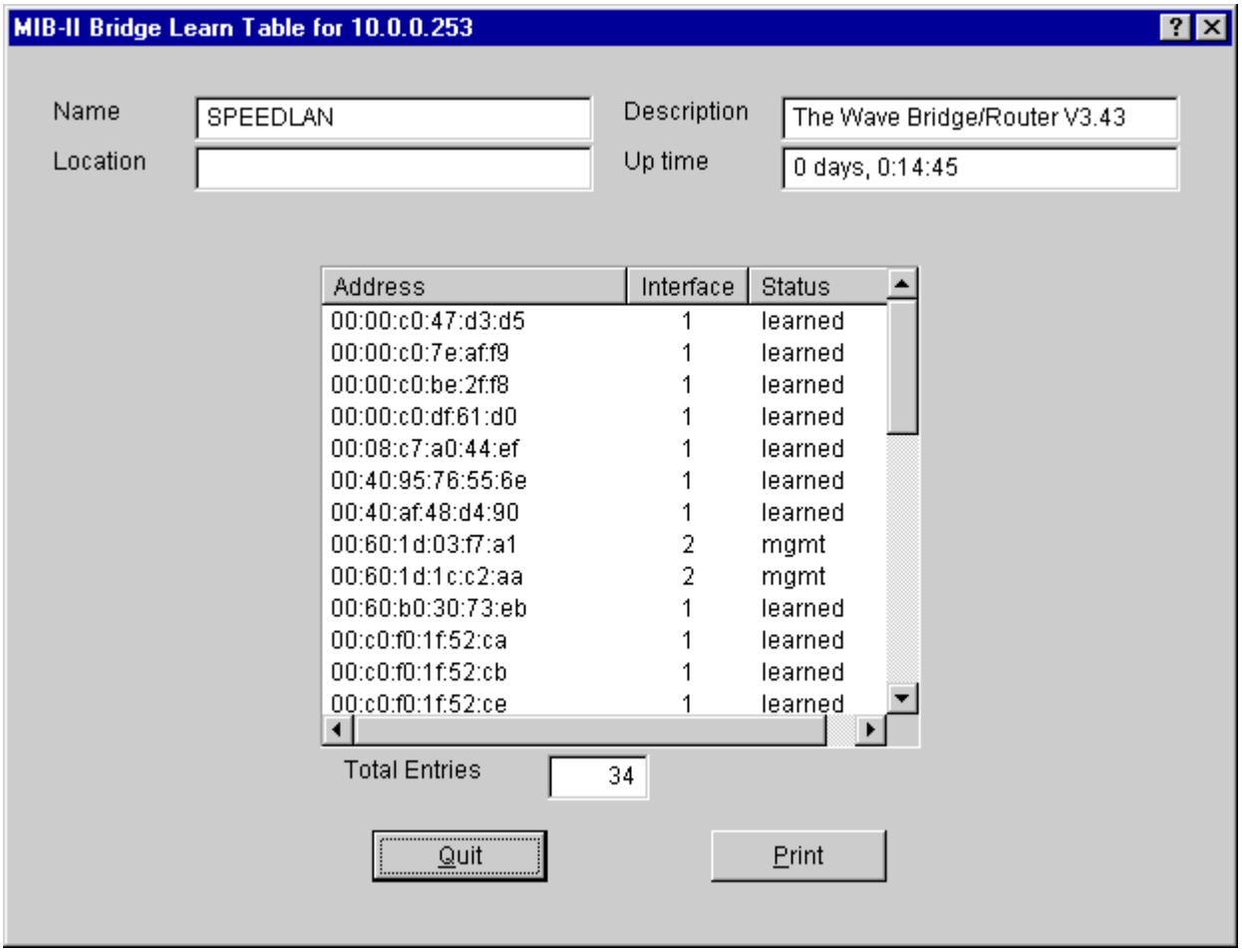
Location - The physical location of this node (e.g., 'telephone closet, 3rd').

Contact - The name/position of the contact person for this managed node, together with information on how to contact this person.

Up time - The time since the network-management portion of the system was last re-initialized.

Description - This value contains the full name and version identification of the system's hardware type, software operating system, and network software.

Bridge Learn Table



This table contains information about unicast entries for which the brouter has forwarding and/or filtering information. This information is used by the transparent bridging function to determine how to propagate a received frame.

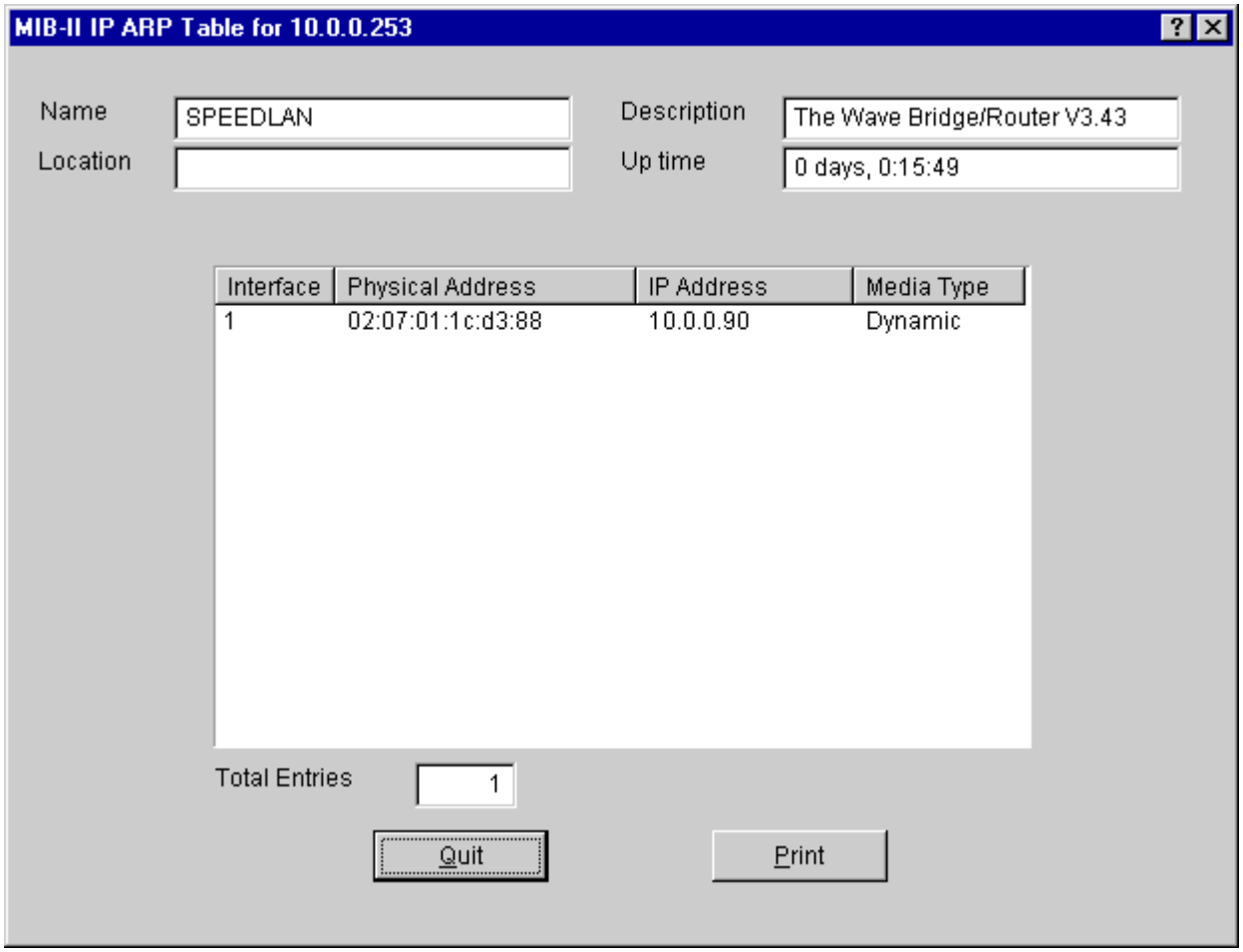
Address - A unicast MAC address for which the brouter has forwarding and/or filtering information.

Interface - Either the value 0 (zero), or the interface number on which a frame has been seen. A value of 0 (zero) indicates that the interface number has not been learned but the the brouter does have some forwarding/ filtering information about this address.

Status - The status of this entry. The meanings of the values are:

other	-	None of the following.
invalid	-	This entry is no longer valid, but has not been flushed from the table yet.
learned	-	This entry was learned, and is being used.
self	-	This entry represents one of the brouter's addresses. The interface value indicates which of the brouter's interfaces has this address.
mgmt	-	This entry is also the value of an existing instance in the static table.

IP ARP Table



The IP ARP Table contains the IP-Address-to-'physical'-(MAC)-Address equivalences.

Interface - The interface on which this entry is effective.

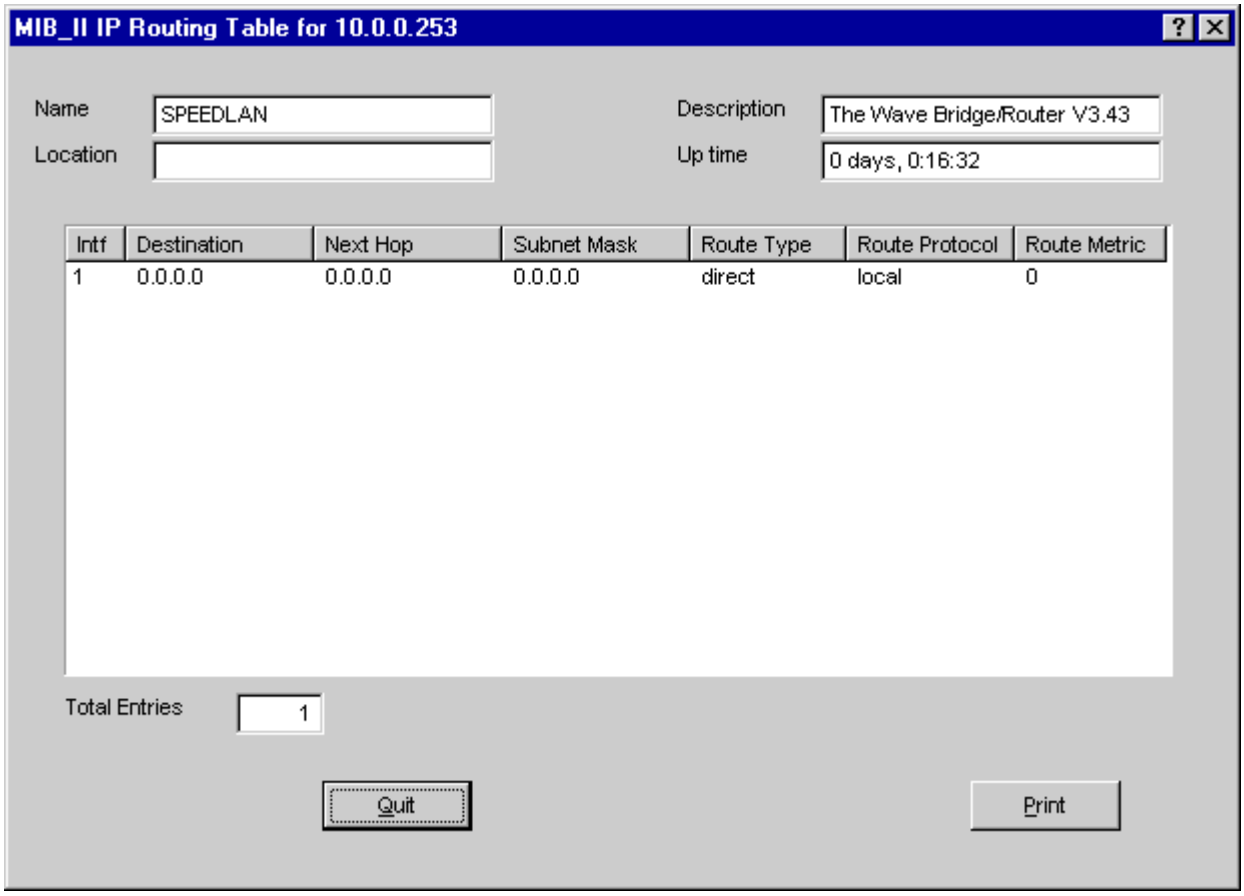
Physical Address - The media-dependent 'physical' (MAC) address. An example would be the MAC address of the Ethernet interface.

IP Address - The IP address corresponding to the media-dependent 'physical' (MAC) address.

Media Type - The type of mapping:

other - none of the following
invalid - an invalidated mapping
dynamic - a mapping that can change with circumstances
static - a mapping which does not change

IP Route Table



The brouter keeps the standard SNMP MIB II statistics on the IP routing table, which contains an entry for each route presently known.

Intf - The local interface through which the next hop of this route should be reached.

Destination - The destination IP address of this route. An entry with a value of 0.0.0.0 is considered a default route. Multiple routes assigned to a single destination can appear in the table, but access to such multiple entries is dependent on the table-access mechanisms defined by the network-management protocol in use.

Next Hop - The IP address of the next hop of this route.

Subnet Mask - Indicates the mask to be a logical-ANDed with the destination address before being compared to the value in the **Destination** field. For systems that do not support arbitrary subnet masks, an agent constructs the value of the **Subnet Mask** by determining whether the value of the correspondent **Destination** field belongs to a Class A, B, or C network.

Route Type - Type of route. This can be:

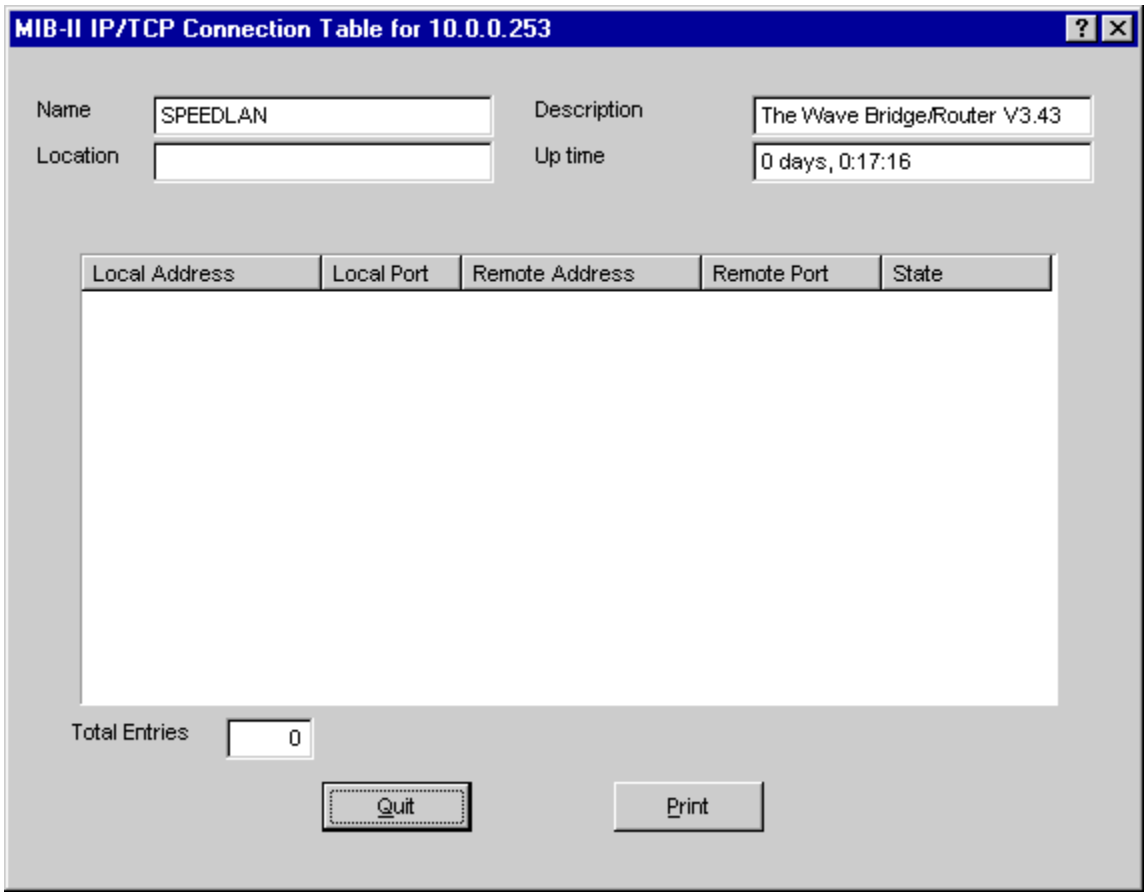
other	-	none of the following
invalid	-	an invalidated route
direct	-	route to directly connected (sub-)network
indirect	-	route to a non-local host/network/subnetwork.

Route Protocol - The routing mechanism by which this route was learned. Inclusion of values for gateway-routing protocols is not intended to imply that hosts should support those protocols. The values are as follows:

other	-	none of the following
local	-	non-protocol information
netmgmt	-	entries set via a network-management protocol
icmp	-	obtained via ICMP (e.g., ICMP 'redirect')
egp	-	all gateway-routing protocols
ggp	-	all gateway-routing protocols

Route Metric - The primary routing metric for this route. The semantics of this metric are determined by the routing protocol specified in the route's **Route Protocol** value. If this metric is not used, its value should be set to -1.

IP/TCP Connection Table



This table reports the states of the TCP connections and contains the following fields:

Local Address - The local IP address for this TCP connection. In the case of a connection in the listen state which is willing to accept connections for any IP interface associated with the node, the value 0.0.0.0 is used.

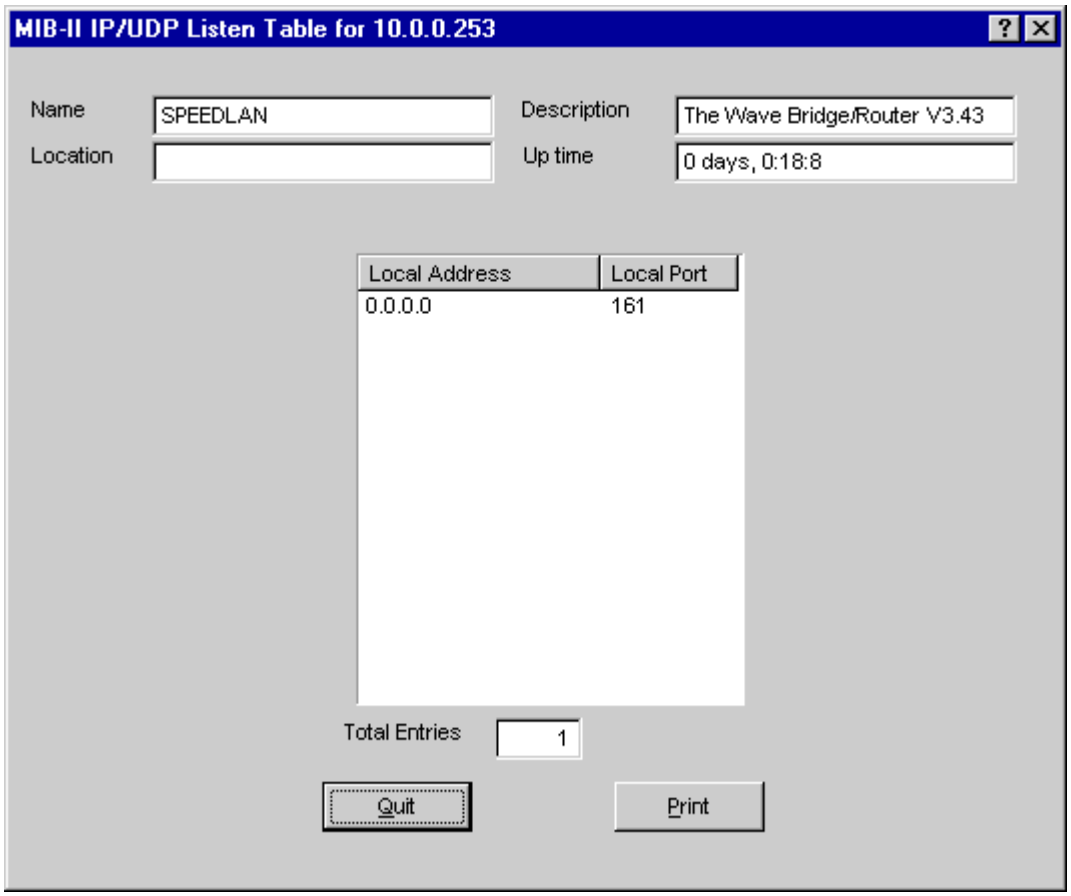
Local Port - The local port number for this TCP connection.

Remote Address - The remote IP address for this TCP connection.

Remote Port - The remote port number for this IP connection.

State - The state of this TCP connection, which can be one of the following: closed, listen, synSent, synReceived, established, finWait1, finWait2, closeWait, LastAck, closing, timeWait, deleteTCB.

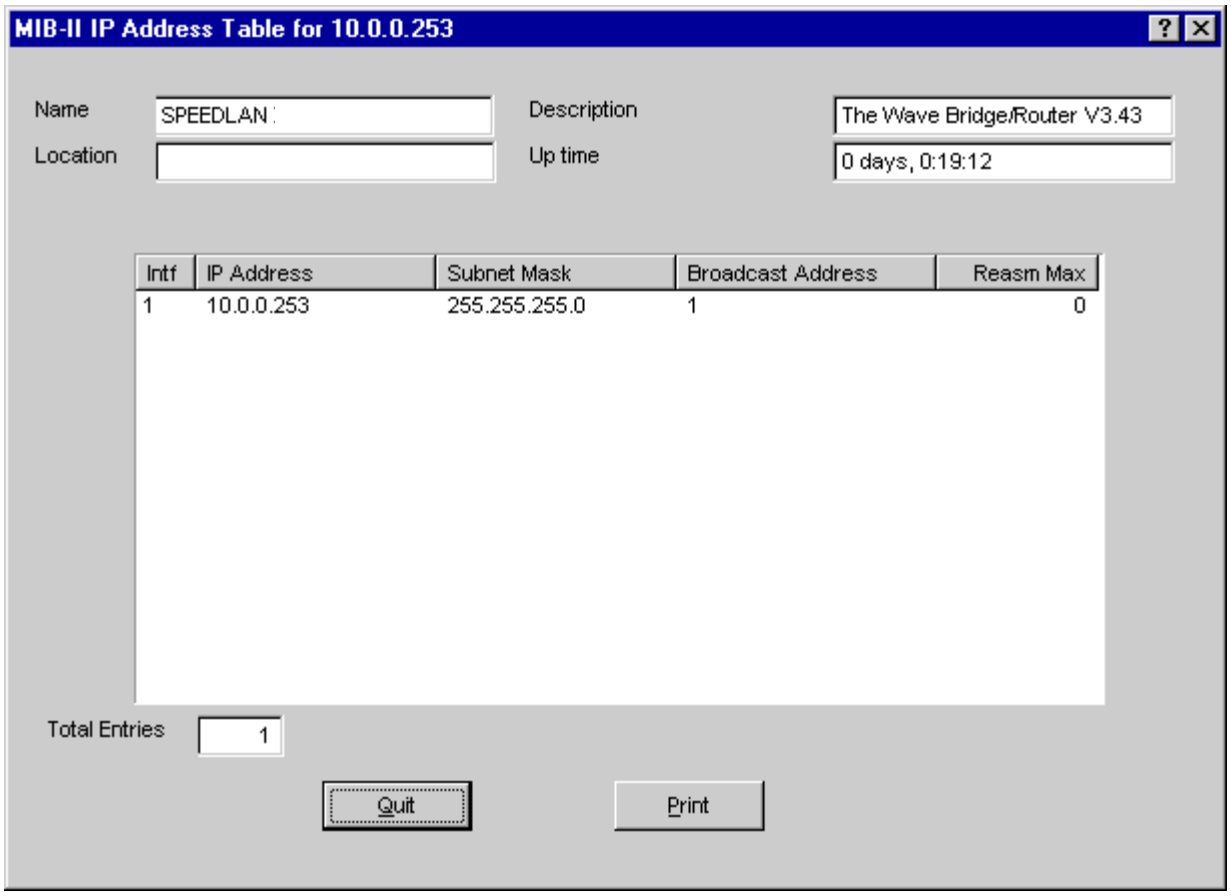
IP/UDP Listener Table



Local Port - The local port number for this UDP connection.

Local Address - The local IP address for this UDP connection. In the case of a connection in the listen state which is willing to accept connections for any IP interface associated with the node, the value 0.0.0.0 is used.

Local IP-Address Table



The table of addressing information relevant the this entity's IP addresses.

Intf - The interface to which the entry is applicable.

IP Address - The IP address to which this entry's addressing information pertains.

Subnet Mask - The subnet mask associated with the IP address of this entity. The value of the mask is an IP address with all the network bits set to 1 and all the host bits set to 0.

Broadcast Address - The value of the least-significant bit in the IP broadcast address used for sending datagrams on the logical interface associated with the IP address of this entry. For example, when the Internet standard all-ones broadcast address is used, the value will be 1. This value applies to both the subnet- and network-broadcast address used by the entity on this logical interface.

Reasm Max - The size of the largest IP datagram which this entity can re-assemble from incoming IP fragmented datagrams received on this interface.

APPENDIX

COMMON ETHERNET PROTOCOLS

This table contains the protocols that can be specified in SPEEDLAN TM's “Ethernet Protocol Menu”.

*	0600	Xerox NS IDP
	0601	XNS Address Translation (3Mb only)
*	0800	DOD Internet Protocol (IP)
	0801	X.75 Internet
	0802	NBS Internet
	0803	ECMA Internet
*	0804	CHAOSnet
	0805	X.25 Level 3
*	0806	Address Resolution Protocol (ARP) (for IP and for CHAOS)
	0807	XNS Compatibility
	081C	Symbolics Private
	0888-088A	Xyplex
	0900	Ungermann-Bass network debugger
	0A00	Xerox IEEE802.3 PUP
	0A01	Xerox IEEE802.3 PUP Address Translation
*	0BAD	Banyan Systems
	0BAF	Banyan VINES Echo
	1000	Berkeley Trailer negotiation
	1001-100F	Berkeley Trailer encapsulation for IP
	1234	DCA - Multicast
*	1600	VALID system protocol
	1989	Artificial Horizons Aviator dogfight simulator on Sun
	3C00	3Com NBP virtual circuit datagram (like XNS SPP) not registered
	3C01	3Com NBP System control datagram not registered
	3C02	3Com NBP Connect request (virtual cct) not registered
	3C03	3Com NBP Connect response not registered
	3C04	3Com NBP Connect complete not registered
	3C05	3Com NBP Close request (virtual circuit) not registered
	3C06	3Com NBP Close response not registered
	3C07	3Com NBP Datagram (like XNS IDP) not registered
	3C08	3Com NBP Datagram broadcast not registered
	3C09	3Com NBP Claim NetBIOS name not registered
	3C0A	3Com NBP Delete NetBIOS name not registered
	3C0B	3Com NBP Remote adapter status request not registered
	3C0C	3Com NBP Remote adapter response not registered
	3C0D	3Com NBP Reset not registered
	4242	PCS Basic Block Protocol
	4321	THD - Diddle
	6000	DEC unassigned, experimental
	6001	DEC MOP Dump/Load Assistance
	6002	DEC MOP Remote Console
	6003	DECnet Phase IV, DNA Routing
	6004	DEC Local Area Transport (LAT)
	6005	DEC diagnostic protocol (at interface initialization?)
	6006	DEC customer protocol
	6007	DEC Local Area VAX Cluster (LAVC SCA)
	6008 & 6009	DEC unassigned

	6010-6014	3Com Corporation
	7000	Ungermann-Bass download
	7001	Ungermann-Bass NIUs
	7002	Ungermann-Bass diagnostic/loopback
	7003	Ungermann-Bass ??? (NMC to/from UB Bridge)
	7005	Ungermann-Bass Bridge Spanning Tree
	7007	OS/9 Microware
	7009	OS/9 Net?
	7020-7029	LRT (England) (now Sintrom)
	7030	Racal-Interlan
	7034	Cabletron
	8003	Cronus VLN
	8004	Cronus Direct
	8005	HP Probe protocol
	8006	Nestar
	8008	AT&T/Stanford University local use
	8010	Excelan
	8013	Silicon Graphics diagnostic
	8014	Silicon Graphics network games
	8015	Silicon Graphics reserved
	8016	Silicon Graphics XNS NameServer, bounce server
	8019	Apollo DOMAIN
	802E	Tymshare
	802F	Tigan, Inc.
*	8035	Reverse Address Resolution Protocol (RARP)
	8036	Aeonic Systems
	8037	IPX - Novell Netware
	8038	DEC LanBridge Management
	8039	DEC unassigned (DSM/DTP?)
	803A	DEC unassigned (Argonaut Console?)
	803B	DEC unassigned (VAXELN?)
	803C	DEC unassigned (NMSV? DNA Naming Service?)
	803D	DEC Ethernet CSMA/CD Encryption Protocol
	803E	DEC unassigned (DNA Time Service?)
	803F	DEC LAN Traffic Monitor Protocol
	8040	DEC unassigned (NetBIOS Emulator?)
	8041	DEC unassigned (MS/DOS?, Local Area System Transport?)
	8042	DEC unassigned
	8044	Planning Research Corp.
	8046 & 8047	AT&T
	8049	ExperData
	805B	VMTP (Versatile Message Transaction Protocol, RFC-1045)
	805C	Stanford V Kernel, version 6.0
	805D	Evans & Sutherland
	8060	Little Machines
	8062	Counterpoint Computers
	8065 & 8066	University of Mass. at Amherst
	8067	Veeco Integrated Automation
	8068	General Dynamics
	8069	AT&T

	806A	Autophon
	806C	ComDesign
	806D	Compugraphic Corporation
	806E-8077	Landmark Graphics Corporation
	807A	Matra
	807B	Dansk Data Elektronik
*	807C	Merit Internodal (or University of Michigan?)
	807D-807F	Vitalink Communications
	8080	Vitalink TransLAN III Management
	8081-8083	Counterpoint Computers
	8088-808A	Xyplex
*	809B	EtherTalk (AppleTalk Phase I over Ethernet)
	809C-809E	Datability
	809F	Spider Systems Ltd.
	80A3	Nixdorf Computers
	80A4-80B3	Siemens Gammasonics Inc.
	80C0-80C3	DCA (Digital Comm. Assoc.) Data Exchange Cluster
	80C6	Pacer Software
	80C7	Applitek Corporation
	80C8-80CC	Intergraph Corporation
	80CD-80CE	Harris Corporation
	80CF-80D2	Taylor Instrument
	80D3-80D4	Rosemount Corporation
	80D5	IBM SNA Services over Ethernet
	80DD	Varian Associates
	80DE-80DF	TRFS (Integrated Solutions)
	80E0-80E3	Allen-Bradley
	80E4-80F0	Datability
	80F2	Retix
	80F3	AppleTalk Address Resolution Protocol (AARP)
	80F4-80F5	Kinetics
	80F7	Apollo Computer
	80FF-8103	Wellfleet Communications(Bay Networks)
	8107-8109	Symbolics Private
	812B	Talaris
	8130	Waterloo Microsystems Inc.
	8131	VG Laboratory Systems
	8137	Novell (old) NetWare IPX (ECONFIG E option)
	8138	Novell, Inc.
	8139-813D	KTI
	814C	SNMP over Ethernet (see RFC1089)
	817D	XTP
	81D6	Lantastic
	8888	HP LanProbe test?
	9000	Loopback (Configuration Test Protocol)
*	9001	3Com XNS Systems Management
*	9002	3Com TCP/IP Systems Management
	9003	3Com loopback detection
	AAAA	DECnet? (Used by VAX 6220 DEBNI)
	FF00	BBN VITAL-LanBridge cache wakeups

COMMON ETHERNET VENDOR ADDRESSES

This table contains the Vendor portion of the assigned Ethernet Addresses. They may be specified in SPEEDLAN TM "Ethernet Address Menu".

000002	BBN (internal usage only)
00000C	Cisco
00000E	Fujitsu
00000F	NeXT (Apple Computer)
000010	Hughes LAN Systems (formerly Sytek)
000011	Tektronix
000015	Datapoint Corporation
000018	Webster (?)
00001B	Novell
00001D	Cabletron
000020	DIAB (Data Intdustrier AB)
000021	SC&C
000022	Visual Technology
000029	IMC
00002A	TRW
0000037	Oxford Metrics Limited
00003C	Auspex
00003D	AT&T
00003F	Syntrex Inc.
000044	Castelle
000046	ISC-Bunker Ramo, An Olivetti Company
000049	Apricot Ltd.
00004B	A.P.T. Appletalk WAN router
00004C	NEC Corporation
00004F	Logicraft 386-Ware P.C. Emulator
000050	Radisys Corporation
000051	HOB Electronic GMGH & Co.
000052	ODS
000055	AT&T
000058	Racore Computer Products Inc.
00005A	(Schneider & Koch in Europe and Syskonnect)
00005A	Xerox 806 (unregistered)
00005D	RCE
00005E	U.S. Department of Defence (IANA)
000061	Gateway Communications
000062	Honeywell
000064	Yokogawa Digital Computer Corp.
000065	Network General
000068	Rosemount Controls
000069	Silicon Graphics(?)
00006B	MIPS00006D Cray Communications, Ltd.
00006E	Artisoft, Inc.
00006F	Madge Networks Ltd.
000074	Ricoh Company Ltd.
000077	MIPS(?), Interphase(?)
000079	Networth Inc.
00007A	Ardent
00007B	Research Machines

00007D	Cray Research Superservices Inc.
00007F	Linotype)
000080	Imagen(?) Also shows as "Harris (3M) (new)"
000081	Synoptics
000084	Aquila (?), ADI Systems Inc.(?)
000086	Gateway (?), Megahertz Corporation(?)
000089	Cayman Systems Gatorbox
00008A	Datahouse Information Systems
00008E	Jupiter(?), Solbourne(?)
000093	Proteon
000094	Asante
000095	Sony/Tektronix
000097	Epoch
000098	Crossomm Corporation
000099	Memorex Telex Corporation
00009F	Ameristar Technology
0000A0	Sanyo Electronics
0000A2	Wellfleet (Bay Networks)
0000A3	Network Application Technology (NAT)
0000A4	Acorn Computers Ltd.
0000A5	Compatible Systems Corporation
0000A6	Network General (internal assignment)
0000A7	Network Computing Devices (NCD) X-terminals
0000A8	Stratus Computer, Inc.
0000A9	Network Systems
0000AA	Xerox machines
0000AC	Apollo
0000AE	Dassault Automatismes
0000AF	Nuclear Data Acquisition Interface Modules (AIM)
0000B0	RND (RAD Network Devices)
0000B1	Alpha Microsystems Inc.
0000B3	CIMLinc
0000B5	Datability Terminal Servers
0000B6	Micro-Matic Research
0000B7	Dove Computer Corporation
0000BC	Allen-Bradley Co. Inc.
0000C0	Western Digital (now SMC)
0000C1	Olicom A/S
0000C6	HP Intelligent Networks Operation
0000C8	Altos
0000C9	Emulex Terminal Servers
0000CC	Densan Co. Ltd.
0000CD	Industrial Research Ltd.
0000D0	Develcon Electronics, Ltd.
0000D1	Adaptec, Inc. "Nodem" product
0000D2	SBE Inc.
0000D7	Dartmouth College (NED Router)
0000D8	3Com? Novell? PS/2
0000DD	Gould
0000DE	Unigraph
0000E2	Acer Counterpoint
0000E3	Integrated Micro Products Ltd.
0000E6	Aptor Produits de Comm. Indust.

0000E7	Star Gate Technologies
0000E8	Accton Technology Corporation
0000E9	Isicad Inc.
0000ED	April
0000EE	Network Designers Limited(?)
0000EF	Alantec
0000F0	Samsung
0000F2	Spider Communications
0000F3	Gandalf
0000F4	Allied Telesis, Inc.
0000F6	A.M.C. (Applied Microsystems Corp.)
0000F8	Digital Equipment Corp. (Compaq Computer Corp.)
0000FB	Rechner Zur Kommunikation
0000FD	High Level Hardware (Orion, UK)
000102	BBN internal usage (not registered)
000143	IEEE802
000163	NDC (National Datacomm Corporation)
000168	W&G (Wandel & Goltermann)
0001C8	Thomas Conrad Corp.
000267	Node Runner Inc.
000701	Racal-Datacom
001700	Kabel
002002	Seritech Enterprise Co. Ltd.
002006	Garrett Communications Inc.
002008	Cable & Computer Technology
002009	Packard Bell Elec. Inc.
00200C	Adastra Systems Corp.
00200E	Satellite Technology Mgmt, Inc.
002011	Canopus Co. Ltd.
002014	Global View Co. Ltd.
002015	Actis Computer SA.
002016	Showa Electric Wire and Cable Co.
002017	Orbotech
00201C	Excel Inc.
00201E	Netquest Corporation
00201F	Best Power Technology Inc.
002021	Algorithms Software Pvt. Ltd.
002022	Teknique, Inc.
002024	Pacific Communications Sciences
002025	Control Technology Inc.
002027	Ming Fortune Industry Co. Ltd.
002028	West Egg Systems Inc.
002029	Teleprocessing Products Inc.
00202C	Welltronix Co. Ltd.
00202E	Daystar Digital
002030	Analog & Digital Systems
002032	Alcatel Taisel
002033	Synapse Technologies Inc.
002036	BMC Software
00203A	Digital Biometrics Inc.
00203B	Wisdm Ltd.
00203C	Eurotime AB
00203F	Juki Corporation
002042	Datametrics Corp

002044	Genitech Pty. Ltd.
002045	Solcom Systems Ltd.
002048	Fore Systems Inc.
002049	Comtron Inc.
00204A	Pronet GMBH
00204B	Autocomputer Co. Ltd.
00204C	Mitron Computer Pte. Ltd.
00204D	Inovis GMBH
00204E	Network Security Systems Inc.
00204F	Deutsche Aerospace AG.
002050	Korea Computer Inc.
002051	Phoenix Data Communications Corp.
002053	Huntsville Microsystems Inc.
002056	Neoproducts
00205B	Skyline Technology
00205D	Nanomatic OY.
00205F	Gammadata Computer GMBH
002061	Dynatech Communications Inc.
002063	Wipro Infotech Ltd.
002064	Protec Microsystems Inc.
002066	General Magic Inc.
002068	Isdyne
002069	ISDN Systems Corporation
00206A	Osaka Computer Corporation
00206D	Data Race Inc.
00206E	Xact Inc.
002074	Sungwoon Systems
002076	Reudo Corporation
002077	Kardios Systems Corporation
002078	Runtop Inc.
00207F	Kyoelsangyo Co. Ltd.
002082	Oneac Corporation
002083	Presticom Inc.
002084	OCE Graphics USA Inc.
002088	Global Village Communication
002089	T3Plus Networking Inc.
00208A	Sonix Communications Ltd.
00208B	Lapis Technologies Inc.
00208C	Galaxy Networks Inc.
00208E	Chevin Software Eng Ltd.
002095	Riva Electronics
002096	Siebe Environmental Controls
002099	Bon Electric Co. Ltd.
00209B	Ersat Electronic GMBH
00209C	Primary Access Corp.
00209D	Lippert Automationstechnik
0020A1	Dovatron
0020A4	Multipoint Networks
0020A6	Proxim Inc.
0020A9	White Horse Industrial
0020AA	NTL Advanced Products
0020AC	Interflex Datensysteme GMBH
0020AE	Ornet Data Communication Tech.
0020AF	3Com Corporation

0020B0	Gateway Devices Inc.
0020B1	Comtech Research Inc.
0020B3	Scltec Communications Systems
0020B6	Agile Networks Inc.
0020BA	Center for High Performance
0020BB	Zax Corporation
0020BE	LAN Access Corporation
0020BF	Aehr Test Systems
0020C2	Texas Memory Systems Inc.
0020C5	Eagle Technology
0020C6	Nectec
0020C8	Larscom Inc.
0020C9	Victron BV
0020CA	Digital Ocean
0020CC	Digital Services Ltd.
0020CD	Hybrid Networks Inc.
0020CE	Logical Design Group Inc.
0020D1	Microcomputer Systems (M) SDN
0020D2	Rad Data Communications Ltd.
0020D3	QST (Quest Standard Telematique)
0020D6	Lannair Ltd.
0020DB	XNET Technology Inc.
0020DC	Densitron Taiwan Ltd.
0020E1	Alamar Electronics
0020E7	B & W Nuclear Service Company
0020E8	Datatrek Corporation
0020E9	Dantel
0020EA	Efficient Networks Inc.
0020EC	Techware Systems Corp.
0020ED	Giga-Byte Technology Co. Ltd.
0020EE	Gtech Corporation
0020EF	U S C Corporation
0020F1	Altos India Ltd.
0020F2	Spectrix Corp
0020F5	Pan Dacom TelecommunicationsGMBH
0020F6	NetTek & WaveBrouter Inc.
0020F8	Carrera Computers Inc.
0020FF	Symmetrical Technologies
004001	Zero One Technology Co. Ltd.
004005	Linksys
004009	Tachibana Tectron Co Ltd.
00400C	General Micor Systems Inc.
00400D	Lannet Data Communications Ltd.
004010	Sonic Systems
004013	NTT Data Comm. Systems Corp.
004014	Comsoft GMBH
004015	Ascom Infrasys AG
00401F	Colorgraph Ltd.
004020	Pinacl Communications
004023	Logic Corporation
004025	Molecular Dynamics
004026	Melco Inc.
004027	SMC Massachusetts Inc.

00402A	Canoga-Perkins
00402B	TriGem
00402F	XLNT Designs Inc.
004030	GK Computer
004032	Digital Communications
004033	Addtron Technology Co. Ltd.
004039	Optec Daiichi Denko Co. Ltd.
00403C	Forks Inc.
004041	Fujikura Ltd.
004043	Nokia Data Communications
004048	SMD Informatica S.A.
00404C	Hypertec Pty Ltd.
00404D	Telecommunications Techniques
00404F	Space & Naval Warfare Systems
004050	Ironics Inc.
004052	Star Technologies Inc.
004054	Thinking Machines Corp.
004057	Lockheed Sanders
004059	Yoshida Kogyo K K
00405B	Funasset Limited
00405D	Star-Tek Inc.
004066	Hitachi Cable Ltd.
004067	Omnibyte Corporation
004068	Extended Systems
004069	Lemcom Systems Inc.
00406A	Kentek Information Systems Inc.
00406E	Corollary Inc.
00406F	Sync Research Inc.
004074	Cable and Wireless Communications Inc.
004076	AMP Incorporated
004078	Wearnes Automation Pte Ltd.
00407F	Agema Infrared Systems AB
004082	Laboratory Equipment Corp.
004085	SAAB Instruments AB
004086	Michels & Kleberhoff Computer
004087	Ubitrex Corporation
00408A	TPS Teleprocessing Sys GMBH
00408C	Axis Communications AB
00408E	CXR/Digilog
00408F	WM-Data Minfo AB
004091	Procomp Industria Electronica
004092	ASP Computer Products Inc.
004094	Shographics Inc.
004095	R.P.T. Intergroups Intl. Ltd.
004096	Telesystems SLW Inc.
00409A	Network Express Inc.
00409C	Transware
00409D	Digiboard Inc.
00409E	Concurrent Technologies Ltd.
00409F	Lancast/Casat Technology Inc.
0040A4	Rose Electronics
0040A6	Cray Research Inc.
0040AA	Valmet Automation Inc.
0040AD	SMA Regelsysteme GMBH

0040AE	Delta Controls Inc.
0040B4	3Com K.K.
0040B5	Video Technology Computers Ltd.
0040B6	Computerm Corporation
0040B9	MACQ Electronique SA.
0040BD	Starlight Networks Inc.
0040C0	Vista Controls Corporation
0040C1	Bizerba-Werke Wilheim Kraut
0040C2	Applied Computing Devices
0040C3	Fischer and Proter Co.
0040C5	Micom Communications Corp.
0040C6	Fibernet Research Inc.
0040C8	Milan Technology Corp.
0040CC	Silcom Manuf'g Technology Inc.
0040CF	Strawberry Tree Inc.
0040D2	Pagine Corporation
0040D4	Gage Talker Corp.
0040D7	Studio Gen Inc.
0040D8	Ocean Office Automation Ltd.
0040DC	Tritec Electronic GMBH
0040DF	Digalog Systems Inc.
0040E1	Marner International Inc.
0040E2	Mesa Ridge Technologies Inc.
0040E3	Quin Systems Ltd.
0040E4	E-M Technology Inc.
0040E5	Sysbus Corporation
0040E7	Arnos Instruments & Computer Systems
0040E9	Accord Systems Inc.
0040EA	Plain Tree Systems Inc.
0040ED	Network Controls Int'natl Inc.
0040F0	Micro Systems Inc.
0040F1	Chuo Electronics Co. Ltd.
0040F4	Cameo Communications Inc.
0040F5	OEM Engines
0040F6	Katron Computers Inc.
0040F9	Combinet
0040FA	Microboards Inc.
0040FD	LXE
0040FF	Telebit Corporation
00608C	3Com Corporation
008000	Multitech Systems Inc.
008004	Antlow Computers Ltd.
008005	Cactus Computers Inc.
008006	Compuadd Corporation
008007	DLOG NC Systeme
00800D	Vosswinkel F.U.
00800F	SMC (Standard Microsystem Corp.)
008010	Commodore
008015	Seiko Systems Inc.
008017	PFU
008016	Wandel and Goltermann
008018	Kobe Steel Ltd.
008019	Dayna Communications Inc.
00801A	Bell Atlantic

00801B	Kodiak Technology
008021	Newbridge Research Corp.
008023	Integrated Business Networks
008024	Kalpana Inc.
008026	Network Products Corporation
008029	Microdyne Corporation
00802A	Test Systems & Simulations Inc.
00802C	The Sage Group PLC
00802D	XYLogics Inc.
00802E	Plexcom, Inc.
008034	SMT-Goupil
008035	Technology Works
008037	Telefon AB LM Ericsson Crop.
008038	Data Research & Applications
00803B	APT Communications Inc.
00803D	Surigiken Co. Ltd.
00803E	Synernetics
008042	Force Computers
008043	Networld Inc.
008044	Systech Computer Corp.
008045	Matsushita Electric Ind. Co.
008046	University of Toronto
008049	Nissin Electric Co. Ltd.
00804C	Contec Co. Ltd.
00804D	Cyclone Microsystems Inc.
008051	Fibermux
008052	Network Professor
008057	Adsoft Ltd.
00805A	Tulip Computers Internat'l B.V.
00805B	Condor Systems Inc.
008062	Interface Co.
008063	Richard Hirschmann GBMH & Co.
008067	Square D Company
008069	Computone Systems
00806A	ERI (Empac Research Inc.)
00806B	Schmid Telecommunication
00806C	Cegelec Projects Ltd.
00806D	Centrury Systems Corp.
00806E	Nippon Steel Corporation
00806F	Onelan Ltd.
008071	SAI Technology
008072	Microplex Systems Ltd.
008074	Fisher Controls
008079	Microbus Designs Ltd.
00807B	Artel Communications Corp.
00807C	FiberCom
00807E	Southern Pacific Ltd.
008082	PEP Modular Computers GMBH
008086	Computer Generations Inc.
008087	Okidata
008088	Victor Company of Japan Ltd.
008089	Tecnetics (Pty) Ltd.
00808A	Summit Microsystems Corp.

00808B	Dacoll Limited
00808C	Frontier Software Development
00808D	Westcoast Technology B.V.
00808E	Radstone Technology
008090	Microtek International Inc.
008092	Japan Computer Industry Inc.
008093	Xyron Corporation
008094	Sattcontrol AB
008096	HDS (Human Designed Systems) X terminals
008098	TDK Corporation
00809A	Novus Networks Ltd.
00809B	Justsystem Corporation
00809D	Datacraft Manufactur'g Pty. Ltd.
00809F	Alcatel Business Systems
0080A1	Microtest
0080A3	Lantronix
0080A6	Republic Technology Inc.
0080A7	Measurex Corp.
0080AC	Imlogix, Division of Genesys
0080AD	Cnet Technology Inc.
0080AE	Hughes Network Systems
0080AF	Allumer Co. Ltd.
0080B1	Softcom A/S
0080B2	NET (Network Equipment Technologies)
0080BA	Specialix (Asia) Pte. Ltd.
0080C2	IEE 802 Committe, Fermi Nat'l Lab
0080C7	Xircom, Inc.
0080C8	D-Link (also Solectek Pocket Adapters)
0080C9	Alberta Microelectronic Centre
0080CE	Broadcast Television Systems
0080D0	Computer Products International
0080D3	Shiva - AppleTalk-Ethernet interface
0080D4	Chase Limited
0080D7	Fantum Engineering Inc.
0080D8	Network Peripherals
0080DA	Bruel & Kjaer
0080DD	GMX Inc. / GIMIX
0080E0	XTP Systems Inc.
0080E7	Lynwood Scientific Dev Ltd.
0080EA	The Fiber Company
0080F0	Kyushu Matsushita Electric Co.
0080F1	Opus
0080F3	Sun Electronics Corp.
0080F4	Telemecanique Electrique
0080F5	Quantel Ltd.
0080FB	BVM Limited
0080FE	Azure Technologies Inc.
00AA00	Intel
00B0D0	Computer Products International
00C000	Lanoptics Ltd.
00C001	Diatek Patient Managment
00C002	Sercomm Corporation
00C003	Globalnet Communications
00C004	Japan Business Computer Co. Ltd.

00C005	Livingston Enterprise Inc.
00C006	Nippon Avionics Co. Ltd.
00C007	Pinnacle Data Systems Inc.
00C008	Seco SRL
00C009	KT Technology (S) Pte Ltd.
00C00A	Micro Craft
00C00B	Norcontrol A.S.
00C00D	Advanced Logic Research Inc.
00C00E	Psitech Inc.
00C00F	Quantum Software Systems Ltd.
00C011	Interactive Computing Devices
00C012	Netspan Corporation
00C013	Netrix
00C014	Telematics Calabasas Int'l Inc.
00C015	New Media Corporation
00C016	Electronic Theatre Controls
00C018	Lanart Corporation
00C019	Leap Technology Inc.
00C01A	Corometrics Medical Systems
00C01B	Socket Communications Inc.
00C01C	Systems Information
00C01D	Grand Junction Networks Inc.
00C01F	S.E.R.C.E.L.
00C020	Arco Electronic Control Ltd.
00C021	Netexpress
00C023	Tutankhamon Electronics
00C024	Eden Sistemas de Computacao SA
00C025	Dataproducts Corporation
00C027	Cipher Systems Inc.
00C028	Jasco Corporation
00C029	Kabel Rheydt AG
00C02A	Ohkura Electric Co. Ltd.
00C02B	Gerloff Gesellschaft
00C02C	Centrum Communications Inc.
00C02D	Fuji Photo Film Co. Ltd.
00C02E	Netwiz
00C02F	Okuma Corporation
00C030	Integrated Engineering B.V.
00C031	Design Research Systems Inc.
00C032	I-Cubed Limited
00C033	Telebit Communications APS
00C034	Dale Computer Corporation
00C035	Quintar Company
00C036	Raytech Electronic Corp.
00C039	Silicon Systems
00C03B	Multiaccess Computing Corp.
00C03C	Tower Tech S.R.L
00C03D	Wiesemann & Theis GMBH
00C03E	FA. Gebr. Heller GMBH
00C03F	Stores Automated Systems Inc.
00C040	ECCI
00C041	Digital Transmission Systems
00C042	Datalux Crop.

00C043	Stratacom
00C044	Emcom Corporation
00C045	Isolation Systems Ltd.
00C046	Kemitron Ltd
00C047	Unimicro Systems Inc.
00C048	Bay Technical Associates
00C04B	Creative Microsystems
00C04D	Mitec Inc.
00C04E	Comtrol Corporation
00C050	Toyo Denki Seizo K.K.
00C051	Advanced Integration Research
00C055	Modular Computing Technologies
00C056	Somelec
00C057	Myco Electronics
00C058	Data Expert Corp.
00C03E	FA. Gebr. Heller GMBH
00C03F	Stores Automated Systems Inc.
00C059	Nippondenso Co. Ltd.
00C05B	Networks Northwest Inc.
00C05C	Elonex PLC
00C05D	L&N Technologies
00C05E	Vari-Lite Inc.
00C060	ID Scandinavia AS
00C061	Solectek Corporation
00C063	Morning Star Technologies Inc.
00C064	General Datacomm Ind Inc.
00C065	Scope Communications Inc.
00C066	Docupoint Inc.
00C067	United Barcode Industries
00C068	Philip Drake Electronics Ltd.
00C069	California Microwave Inc.
00C06A	Zahner-Elektrik GMBH & Co. KG
00C06B	OSI Plus Corporation
00C06C	Svec Computer Corp.
00C06D	Boca Research Inc.
00C06F	Komatsu Ltd.
00C070	Sectra Secure Transmission AB
00C071	Areanex Communications Inc.
00C072	KNX Ltd.
00C073	Xedia Corporation
00C074	Toyoda Automatic Loom
00C075	Xante Corporation
00C076	I-Data International A S
00C077	Daewoo Telecom Ltd
00C078	Computer Systems Engineering
00C079	Fonsys Co. Ltd.
00C07A	Priva B.V.
00C07D	Risc Developments Ltd.
00C07F	Nupon Computing Corp.
00C080	Netstar Inc.
00C081	Metrodata Ltd.
00C082	Moore Products Co.
00C084	Datalink Corp. Ltd.

00C086	The Lynk Corporation
00C087	UUNET Technologies Inc.
00C089	Telindus Distribution
00C08A	Lauterbach Datentechnik GMBH
00C08B	Risq Modular Systems Inc.
00C08C	Performance Technologies Inc.
00C08D	Tronix Product Development
00C08E	Network Information Technology
00C08F	Matsushita Electric Works Ltd
00C090	Praim S.R.L.
00C091	Jabil Circuit Inc.
00C092	Mennen Medical Inc.
00C093	Alta Research Corp.
00C096	Tamura Corporation
00C097	Archipsel SA
00C098	Chuntex Electronic Co. Ltd.
00C099	Yoshiki Industrial Co. Ltd.
00C09B	Reliance Comm/Tec R-Tec
00C09C	TOA Electronic Ltd.
00C09D	Distributed Systems Int'l Inc.
00C09F	Quanta Computer Inc.
00C0A0	Advanced Micro Research Inc.
00C0A1	Tokyo Denshi Sekei Co.
00C0A2	Intermedium A/S
00C0A3	Dual Enterprises Corporation
00C0A4	Unigraf OY
00C0A7	Seel Ltd.
00C0A8	GVC Corporation
00C0A9	Barron McCann Ltd.
00C0AA	Silicon Valley Computer
00C0AB	Jupiter Technology Inc.
00C0AC	Gambit Computer Communications
00C0AD	Marben Communication Systems
00C0AE	Towercom Co. Inc. (PC House)
00C0AF	Teklogix Inc.
00C0B0	GCC Technologies Inc.
00C0B2	Norand Corporation
00C0B3	Comstat Datacomm Corporation
00C0B4	Myson Technology Inc.
00C0B5	Corporate Network Systems Inc.
00C0B6	Meridian Data Inc.
00C0B7	American Power Conversion Corp.
00C0B8	Fraser's Hill Ltd.
00C0B9	Funk Software Inc.
00C0BA	Netvantage
00C0BB	Forval Creative Inc.
00C0BD	Inex Technologies Inc.
00C0BE	Alcatel - Sel
00C0BF	Technology Concepts Ltd.
00C0C0	Shore Microsystems Inc.
00C0C1	Quad/Graphics Inc.
00C0C2	Infinite Networks Ltd.
00C0C3	Acuson Computed Sonography

00C0C4	Computer Operational
00C0C5	SID Informatica
00C0C6	Personal Media Corp.
00C0C8	Micro Byte Pty Ltd.
00C0C9	Bailey Controls Co.
00C0CA	Alfa Inc.
00C0CB	Control Technology Corporation
00C0CD	Comelta S.A.
00C0D0	Ratoc System Inc.
00C0D1	Comtree Technology Corporation
00C0D2	Syntellect Inc.
00C0D4	Axon Networks Inc.
00C0D5	Quancom Electronic GMBH
00C0D6	J1 Systems Inc.
00C0D9	Quinte Network Confidentiality
00C0DB	IPC Corporation (PTE) Ltd.
00C0DC	EOS Technologies Inc.
00C0DE	Zcomm Inc.
00C0DF	KYE Systems Corp.
00C0E1	Sonic Solutions
00C0E2	Calcomp Inc.
00C0E3	Ositech Communications Inc.
00C0E4	Landis & GYR Powers Inc.
00C0E5	Gespac S.A.
00C0E6	Txport
00C0E7	Fiberdata
00C0E8	Plexcom Inc.
00C0E9	Oak Solutions Ltd
00C0EA	Array Technology Ltd.
00C0EB	SEH Comutertechnik GMBH
00C0EC	Dauphin Technology
00C0ED	US Army Electronic
00C0EE	Kyocera Corporation
00C0EF	Abit Corporation
00C0F0	Kingston Technology Corp.
00C0F1	Shinko Electric Co. Ltd.
00C0F2	Transition Engineering Inc.
00C0F3	Network Communications Corp.
00C0F4	Interlink System Co. Ltd.
00C0F5	Metacomp Inc.
00C0F6	Celan Technology Inc.
00C0F7	Engage Communication Inc.
00C0F8	About Computing Inc.
00C0F9	Harris and Jeffries Inc.
00C0FA	Canary Communications Inc.
00C0FB	Advanced Technology Labs.
00C0FC	ASDG Inc.
00C0FD	Prosum
00C0FF	Box Hill Systems Corporation
00DD00	Ungermann-Bass - IBM RT
00DD01	Ungermann-Bass
00EFE5	IBM (3Com card) Micro Channel interface
020406	BBN internal usage (not registered)

020701	Racal Datacom (Micom/Interlan)
026060	3Com
026086	Satelcom MegaPac (UK)
02608C	3Com IBM PC; Imagen; Valid; Cisco; Macintosh
02CF1F	CMC Masscomp; Silicon Graphics; Prime EXL
02E6D3	BTI (Bus-Tech, Inc.) IBM Mainframes
080001	Computer Vision
080002	3Com (formerly Bridge)
080003	ACC (Advanced Computer Communications)
080005	Symbolics LISP machines
080007	Apple Computer Inc.
080008	BBN
080009	Hewlett-Packard
08000A	Nestar Systems
08000B	Uniisys Corporation
08000D	IInternational Computers Ltd.
08000E	NCR/AT&T
08000F	SMC (Standard Microsystems Corp.)
080010	AT&T [misrepresentation of 800010?]
080011	Tektronix, Inc.
080014	Excelan BBN Butterfly, Masscomp, Silicon Graphics
080017	NSC (National Semiconductor Corp.)
08001A	Data General
08001B	Data General
08001E	Apollo
08001F	Sharp Corporation
080020	Sun
080022	NBI (Nothing But Initials)
080023	Matsushita Denso
080025	CDC
080026	Norsk Data (Nord)
080027	PCS Computer Systems GmbH
080028	Texas Instruments
08002B	DEC
08002E	Metaphor
08002F	Prime 50-Series LHC300
080030	CERN
080036	Intergraph CAE stations
080037	Fujitsu-Xerox
080038	Bull
080039	Spider Systems Ltd.
08003B	Torus Systems
08003E	Motorola VME bus processor modules
080041	DCA (Digital Comm. Assoc.)
080044	DSI (DAVID Systems, Inc.)
080046	Sony
080047	Sequent
080048	Eurotherm Gauging Systems
080049	Univation
08004C	Encore
08004E	BICC
080051	Experdata
080056	Stanford University

080057	Evans & Sutherland (?)
080058	DECsystem-20
08005A	IBM
080067	Comdesign
080068	Ridge
080069	Silicon Graphics
08006A	ATTst (?)
08006E	Excelan
080070	Mitsubishi
080074	Casio Computer Co. Ltd.
080075	DDE (Danish Data Elektronik A/S)
080077	TSL (now Retix)
080079	Silicon Graphics
08007C	Vitalink TransLAN III
080080	XIOS
080081	Crossfield Electronics
080083	Seiko Denshi
080086	Imagen/QMS
080087	Xyplex terminal servers
080089	Kinetics AppleTalk-Ethernet interface
08008B	Pyramid
08008D	XyVision machines
08008E	Tandem
08008F	Chipcom Corporation
080090	Retix Inc. Bridges
10005A	IBM
1000D4	DEC
1000E0	Apple A/UX (modified addresses for licensing)
400003	NetWare (?)
475443	GTC (Not registered!) (This number is a multicast!)
484453	HDS ???
800010	AT&T (misrepresented as 080010?)
AA0000	DEC obsolete
AA0001	DEC obsolete
AA0002	DEC obsolete

COMMON ETHERNET MULTICAST ADDRESSES

This table contains commonly used Ethernet Multicast Addresses and the Ethernet Protocols they use. They may be specified in the SPEEDLAN TM "Ethernet Address Menu".

01-00-1D-00-00-00	-802-	Cabletron PC-OV PC discover
01-00-1D-42-00-00	-802-	Cabletron PC-OV Bridge discover
01-00-1D-52-00-00	-802-	Cabletron PC-OV MMAC discover
01-00-5E-00-00-00 through 01-00-5E-7F-FF-FF	0800	DoD Internet Multicast (RFC-1112)
01-00-5E-80-00-00 through 01-00-5E-FF-FF-FF		DoD Internet reserved by IANA
01-00-81-00-00-02		Synoptics Network Management
01-80-C2-00-00-00	-802-	Spanning tree (for bridges)
01-80-C2-00-00-01 through 01-80-C2-00-00-0F	-802-	802.1 alternate Spanning multicast
01-80-C2-00-00-14	-802-	OSI Route level 1 (within area) IS hello?
01-80-C2-00-00-15	-802-	OSI Route level 2 (between area) IS hello?
01-DD-00-FF-FF-FF	7002	Ungermann-Bass boot-me requests
01-DD-01-00-00-00	7005	Ungermann-Bass Spanning Tree
03-00-00-00-00-10	80D5	(OS/2 1.3 EE + Communications Manager)
03-00-00-00-00-40	80D5	(OS/2 1.3 EE + Communications Manager)
09-00-02-04-00-01?	8080?	Vitalink printer messages
09-00-02-04-00-02?	8080?	Vitalink bridge management
09-00-07-00-00-00 through 09-00-07-00-00-FC	-802-	AppleTalk Zone multicast addresses
09-00-07-FF-FF-FF	-802-	AppleTalk broadcast address
09-00-09-00-00-01	8005	HP Probe
09-00-09-00-00-01	-802-	HP Probe
09-00-09-00-00-04	8005?	HP DTC
09-00-0D-xx-xx-xx	-802-	ICL Oslan Multicast
09-00-0D-02-00-00		ICL Oslan Service discover on boot
09-00-0D-02-0A-38		ICL Oslan Service discover on boot
09-00-0D-02-0A-39		ICL Oslan Service discover on boot
09-00-0D-02-0A-3C		ICL Oslan Service discover on boot
09-00-0D-02-FF-FF		ICL Oslan Service discover on boot
09-00-0D-09-00-00		ICL Oslan Service discover as required
09-00-1E-00-00-00	8019?	Apollo DOMAIN
09-00-26-01-00-01?	8038	Vitalink TransLAN bridge management
09-00-2B-00-00-00	6009?	DEC MUMPS?
09-00-2B-00-00-01	8039	DEC DSM/DTP?
09-00-2B-00-00-02	803B?	DEC VAXELN?
09-00-2B-00-00-03	8038	DEC Lanbridge Traffic Monitor (LTM)

09-00-2B-00-00-04		DEC MAP End System Hello?
09-00-2B-00-00-05		DEC MAP Intermediate System Hello?
09-00-2B-00-00-06	803D?	DEC CSMA/CD Encryption?
09-00-2B-00-00-07	8040?	DEC NetBios Emulator?
09-00-2B-00-00-0F	6004	DEC Local Area Transport (LAT)ˇ
9-00-2B-00-00-1x		DEC Experimental
09-00-2B-01-00-00	8038	DEC LanBridge Copy packets
09-00-2B-01-00-01	8038	DEC LanBridge Hello packets (All local bridges) 1 packet per second, sent by the designated LanBridge
09-00-2B-02-00-00		DEC DNA Level 2 Routing Layer ?
09-00-2B-02-01-00	803C?	DEC DNA Naming Service Advertise?
09-00-2B-02-01-01	803C?	DEC DNA Naming Service Solicitation?
09-00-2B-02-01-02	803E?	DEC DNA Time Service
09-00-2B-03-xx-xx		DEC default filtering by bridges?
09-00-2B-04-00-00	8041?	DEC Local Area Sys Transport LAST?
09-00-2B-23-00-00	803A?	DEC Argonaut Console?
09-00-39-00-70-00?		Spider Systems Bridge Hello packet?
09-00-4C-00-00-00	-802-	BICC 802.1 management
09-00-4C-00-00-02	-802-	BICC 802.1 management
09-00-4C-00-00-06	-802-	BICC Local bridge STA 802.1(D) Rev6
09-00-4C-00-00-0C	-802-	BICC Rem bridge STA 802.1(D) Rev8
09-00-4C-00-00-0F	-802-	BICC Remote bridge Adaptive Routing (e.g. to Retix)
09-00-4E-00-00-02?	8137?	Novell IPX (BICC?)
09-00-56-00-00-00 through 09-00-56-FE-FF-FF		Stanford reserved
09-00-56-FF-00-00 through 09-00-56-FF-FF-FF	805C	Stanford V Kernel, version 6.0
09-00-77-00-00-00	-802-	Retix Bridge Local Management System
09-00-77-00-00-01	-802-	Retix spanning tree bridges
09-00-77-00-00-02	-802-	Retix Bridge Adaptive routing
09-00-7C-01-00-01		Vitalink DLS Multicast 09-00-7C-01-00-03 Vitalink DLS
09-00-7C-01-00-04		Vitalink DLS and non DLS Multicast
09-00-7C-02-00-05	8080?	Vitalink diagnostics
09-00-7C-05-00-01	8080?	Vitalink gateway?
09-00-7C-05-00-02		Vitalink Network Validation Message
09-00-87-80-FF-FF	0889	Xyplex Terminal Servers
09-00-87-90-FF-FF	0889	Xyplex Terminal Servers
0D-1E-15-BA-DD-06		HP
80-01-43-00-00-00	-802-	Bridge
80-01-43-00-00-08	-802-	Bridge Management
80-01-43-00-00-28	-802-	ISO 10589 level-1 Intermediate Stations
80-01-43-00-00-48	-802-	Loadable Device
80-01-43-00-00-88	-802-	Load Server
80-01-43-00-00-A8	-802-	ISO 10589 level-2 Intermediate Stations
80-01-43-00-80-00	-802-	FDDI RMT Directed Beacon
80-01-43-00-80-08	-802-	FDDI status report frame
90-00-D4-00-00-20	-802-	OSI Network Layer Intermediate Stations
90-00-D4-00-00-A0	-802-	OSI Network Layer End Stations

AB-00-00-01-00-00	6001	DEC Maintenance Operation Protocol (MOP) Dump/Load Assistance
AB-00-00-02-00-00	6002	DEC Maintenance Operation Protocol (MOP) Remote Console 1 System ID packet every 8-10 minutes, by every: DEC DEUNA interface, DEC DELUA interface, and DEC DEQNA interface
AB-00-00-03-00-00	6003	DECnet Phase IV end node Hello packets 1 packet every 15 seconds, sent by each DECnet host
AB-00-00-04-00-00	6003	DECNET Phase IV Router Hello packets, 1 packet every 15 seconds, sent by the DECnet router
AB-00-00-05-00-00 through AB-00-03-FF-FF-FF		Reserved DEC
AB-00-03-00-00-00	6004	DEC Local Area Transport (LAT) - old
AB-00-04-00-xx-xx		Reserved DEC customer private use
AB-00-04-01-xx-yy	6007	DEC Local Area VAX Cluster groups System Communication Architecture
C0-00-00-00-00-01	-802-	Active Monitor
C0-00-00-00-00-02	-802-	Ring Parameter Monitor
C0-00-00-00-00-04	-802-	Network Server Heartbeat
C0-00-00-00-00-08	-802-	Ring Error Monitor
C0-00-00-00-00-10	-802-	Configuration Report Server
C0-00-00-00-00-20	-802-	Synchronous Bandwidth Manager
C0-00-00-00-00-40	-802-	Locate - Directory Server
C0-00-00-00-00-80	-802-	NETBIOS
C0-00-00-00-01-00	-802-	Bridge
C0-00-00-00-02-00	-802-	IMPL Server
C0-00-00-00-04-00	-802-	Ring Authorization Server
C0-00-00-00-08-00	-802-	LAN Gateway
C0-00-00-00-10-00	-802-	Ring Wiring Concentrator
C0-00-00-00-20-00	-802-	LAN Manager
C0-00-00-00-80-00 through C0-00-40-00-00-00	-802-	user-defined
CF-00-00-00-00-00	9000	Ethernet Configuration Test protocol (Loopback)
FF-FF-00-60-00-04	81D6	Lantastic
FF-FF-00-40-00-01	81D6	Lantastic
FF-FF-01-E0-00-04	81D6	Lantastic