



# Tech Info Library

## MultiGate Mac: General Information

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### TOPIC -----

MultiGate Mac is a software router/gateway for Macintosh II computers from Network Resources Corporation. It supports

- AppleTalk and TCP/IP routing
- IP in DDP encapsulation (MacIP support for MacTCP clients)
- Up to five Ethernet cards and one LocalTalk.

### DISCUSSION -----

MultiGate Mac can run as a concurrent AppleShare application, or under MultiFinder or System 7 with a mail gateway. The only requirement is that an additional Ethernet card be used for other services besides the gateway, because MultiGate Mac requires dedicated cards for routing.

MacIP support lets MacTCP clients on LocalTalk access TCP/IP host computers. MultiGate Mac can be used to connect an AppleTalk internetwork to a TCP/IP backbone and provide IP in DDP encapsulation for up to 254 Macintosh computers anywhere on the AppleTalk internetwork. Flexible IP support allows for static addressing via MacTCP, MacTCP server mode, or a combination of the two.

MultiGate Mac also supports an alternative host access scheme, based on the MultiGate Stream Protocol. This user-friendly protocol is highly efficient on limited-bandwidth networks (LocalTalk, for example).

MultiGate Mac supports full TCP/IP interior gateway routing between Ethernet segments. This includes support for RIP, proxy-ARP, and RFC-950 subnetting.

SNMP support is also provided.

### Configuration

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ConfigureIt!, a HyperCard stack, makes it easy to configure the gateway. ConfigureIt! builds a text file that is read by the gateway at startup. (This file can also be edited using TeachText.)

When MultiGate Mac reads the configuration file, it does extensive error checking to make sure the configuration is valid. It checks for syntax errors in the configuration file, and when the network protocols are initialized, it checks for such items as valid network numbers, consistent subnet masks, duplicate addresses, etc. If it detects an error, the gateway logs a message to the monitor, detailing the problem. The user can then correct the problem and try again.

Once the gateway is running, it continues to monitor the network. It shuts down only if it encounters a serious network error. In such a case, it logs a message to the monitor.

### Operations Interface

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A password-protected Operations Interface is accessible via any computer capable of establishing a Telnet session. This powerful interface provides detailed information on gateway status, port statistics, and gateway configuration. It also provides detailed network information, including AppleTalk routing information, with statistics on network usage, IP routing, encapsulation mapping tables and activity, ARP and AARP tables, "pinging" of AppleTalk or IP devices, tracking and logging of network error packets, and so on.

The error tracking feature is useful for isolating network faults; it lets the user view the first 100 bytes of each protocol layer in an error packet that has been saved. This information can be used to pinpoint the offending entity. Over 100 network errors on the AppleTalk and IP networks are tracked.

### Features of the Telnet Interface

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- Prints AARP tables (AT->EN mapping tables).
  - Prints ARP tables (IP->EN mapping tables).
  - Prints the gateway configuration.
  - Evaluates expressions in octal, decimal, and hex.
  - DNS lookups of names.
  - Can dump specific portions of router memory (like MacsBug).
  - Prints a summary of various errors and events recorded by the router including: packets dropped due to unknown AT network, packets dropped due

to unknown EN address (via AARP), hop count overflow, error packets saved by router. Over 100 types of error packets are saved. The first 100 bytes of each protocol layer can be dumped for analysis to determine originating device, destination, type of packet, etc. Many events other than those listed above are recorded by the gateway.

- Logs errors to your screen in real time.
- Can define the format packets are logged with.
- Can log packets to/from a given address of given type in real time.
- Can shut down the gateway.
- Dumps address mapping for IP-in-DDP encapsulation.
- Prints summary of each TCP<->MSP connection.
- Prints the detailed state of a specific connection.
- Dumps the entire AT<->IP mapping tables.
- Dumps NBP address tables.
- Does an NBP lookup and prints the results.
- Dumps info about packet buffer at a given address.
- Sends and times Echo packets to the named host (AppleTalk or IP).
- Can restart the gateway.
- Dumps the RTMP tables for all AppleTalk nets.
- Dumps the RIP tables for all IP nets.
- Gives the RTMP or RIP entry for a defined network#.
- Prints the status of the gateway and detailed statistics on each port.
- Traces connections.
- Displays current software version.
- Flushes the ARP/AARP entry for a particular address.
- Dumps the RTMP table for each net in that zone.

#### Security

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The current version of MultiGate Mac provides the following:

- Filtering of inbound Telnet sessions to connected networks

- The ability to declare a network insecure. This means that the gateway won't respond to RTMP tables and RIP tables on a given network, unless the router providing the tables is statically configured in the gateway configuration file.

#### MultiGate 2000

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The functionality of MultiGate Mac is also available with NRC's dedicated LocalTalk-to-Ethernet hardware router, MultiGate 2000. The software module, called IPGate, provides all the features of MultiGate Mac other than Ethernet-to-Ethernet routing. Instead of logging start-up errors to the screen, IPGate logs them to NVRAM and then reboots from PROM code (ensuring that the router will come back up). MultiGate Manager Jr. can then be used to retrieve the error code from NVRAM. Users can then analyze the error, make the appropriate corrections to the router configuration, and then download a new image to the router.

For more information, search on "Network Resources".

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