# APIPA Monitoring Service (apipamon)

Michael Dumdei, Texarkana College

## Description

APIPA monitor is a watchdog service that monitors network interfaces and resets them if they have an APIPA address or if they are unable to ping the default gateway. It was written to handle a problem we were having with Windows VMs in our virtual environment occasionally losing their IP and falling back to an automatic private IP address (APIPA or the 169.254.x.x range).

## Operation

The service wakes up on a user specified interval (-i option: default every 10 seconds), and tests IPV4 enabled interfaces for 169.254 addressing. If an APIPA address is present, the service disables and then re-enables the NIC which clears the problem.

For NICS that should have APIPA addresses, including the word "APIPA" anywhere in the NIC interface NAME (right-click, rename network adapter), will prevent APIPA Monitor from processing that interface. The loopback interface and any interface with "Microsoft Failover Cluster Virtual Adapter" in the DESCRIPTION are also skipped. Microsoft's clustering uses APIPA addressing on the cluster virtual adapter, so you don't want to reset that on every polling cycle.

The service optionally pings the default gateway every "x" seconds (-g option: default 30). The test tries up to 3 times on 2 second intervals to ping the default gateway. The first of the three to succeed results in a successful test and terminates the test. If all three pings fail, the gateway test fails. The "maximum gateway fails" parameter (-f option: default 1) determines how many gateway test fails must occur before the service resets the NIC due to an unreachable gateway.

To DISABLE gateway ping tests, set the -g option to zero.

## Optional arguments

**-i nbrSeconds**:  Poll interval - how often the service activates. Tests for APIPA on every activation and resets the adapter if an APIPA address is present. Do not set this to less than 10 seconds.

**-g nbrSeconds**:  Gateway test interval - how often to run ping tests against the default gateway. The test is a series of 3 pings at 2 sec intervals. If all fail, the test fails. The default interval is every 30 seconds. Note: Gateway tests happen when the service activates (polling interval), so the test happens on the first poll activation after the gateway test interval is reached.

**-t nbr_mSecs**:  Ping timeout – how long to wait for a ping response before the ping is considered to have failed. Default is 500 msecs (some switches have low priority on ping response).

**-l nbrPingFails**:  Number of pings allowed before writing to the EventLog. The GW should always respond, but due to prioritization of ping traffic sometimes even 500 msecs isn't long enough. This prevents cluttering the EventLog due to an occasional long ping. Default is allow 1 miss.

**-f nbrGwFails**:  Number of gateway ping tests (3 ping) that can fail before the adapter is reset due to an unresponsive gateway. The default is 1 which resets the NIC on the first gateway test failure.

**-h nbrSeconds**:  Number of seconds in back-off period between adapter resets. This is to prevent back to back resets and allow DHCP to do its thing. Default is 25 secs.

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**Example configuration using sc.exe** (mandatory space between binpath= and first quote)

> sc config apipamon binpath= "\"c:\bin\APIPA Monitor.exe\" -i 10 -g 25 -t 100 -l 0 -f 2 -h 45"

You may also test parameter settings by entering arguments on the General tab of the Services window; however, these are one-time settings and will not persist to the next startup session.

## Install / Uninstall
NOTE: If you pass bad arguments when installing, the service SILENTLY fails to install and the Event log will have entries (41, 49) to help locate what it didn't like. The 41 events are the passed arguments and a 49 means there was an error. If successful, the event log will show the service started and the parameters used to start the service.

To install:
- Copy "APIPA Monitor.exe" to the folder where you want it to reside
- Run the EXE with a "-install" switch. You can optionally follow the "-install" switch with desired settings. Example,
    - You want the service to activate and check for an APIPA address every 15 seconds,
    - You want to check for an unreachable gateway every 45 seconds,
    - You want a gateway ping to be considered bad if the response time is over 100 msecs,
    - You want to log all failed pings (0 = allow no unlogged missed gw pings),
    - You want to allow one gateway test (3-ping series) to fail without resetting the NIC. On the second failure, you want to reset the NIC,
    - Once the NIC is reset, you don't want to reset it again for at least 90 seconds,

    use:  "APIPA Monitor.exe" -install -i 15 -g 45 -t 100 -l 0 -f 2 -h 90

    To install with default parameters:

    - "APIPA Monitor.exe" -install

- The service will run as the local system account, with a start type of Automatic (Delayed).

- Installation automatically starts the service.

- Event viewer tracks actions – filter Event Viewer for a source of "apipamon" to locate events.

To uninstall:

- "APIPA Monitor.exe" -uninstall


Reconfigure:

- Use sc.exe as described earlier to change parameters without uninstalling / re-installing, or just uninstall and re-install with new arguments if you prefer.