Testing log for setting up watchdog in ham-pi host

6/12/2021

TESTING STARTS

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| --- |
| sudo systemctl status watchdog |

reports that watchdog is enabled but inactive

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| --- |
| sudo systemctl start watchdog |

reports nothing, but log shows that it started correctly

LOGGING in **/var/log/syslog**

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| --- |
| sudo systemctl status watchdog |

watchdog.service - watchdog daemon

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| --- |
| Loaded: loaded (/lib/systemd/system/watchdog.service; enabled; vendor preset: enabled)  Active: active (running) since Sat 2021-06-12 08:05:38 PDT; 2s ago  Process: 9499 ExecStartPre=/bin/sh -c [ -z "${watchdog\_module}" ] || [ "${watchdog\_module}" = "none" ] || /  Process: 9500 ExecStart=/bin/sh -c [ $run\_watchdog != 1 ] || exec /usr/sbin/watchdog $watchdog\_options (cod  Main PID: 9502 (watchdog)  Tasks: 1 (limit: 4915)  CGroup: /system.slice/watchdog.service. /usr/sbin/watchdog -v -q  Jun 12 08:05:38 ham-pi watchdog[9502]: interface: no interface to check  Jun 12 08:05:38 ham-pi watchdog[9502]: temperature: no sensors to check  Jun 12 08:05:38 ham-pi watchdog[9502]: no test binary files  Jun 12 08:05:38 ham-pi watchdog[9502]: no repair binary files  Jun 12 08:05:38 ham-pi watchdog[9502]: error retry time-out = 60 seconds  Jun 12 08:05:38 ham-pi watchdog[9502]: repair attempts = 1  Jun 12 08:05:38 ham-pi watchdog[9502]: alive=[none] heartbeat=[none] to=root no\_act=yes force=no  Jun 12 08:05:38 ham-pi systemd[1]: Started watchdog daemon. |

REBOOT

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| --- |
| sudo reboot  sudo systemctl status watchdog |

reports active and up and running main PID 735

After reboot wd\_keepalive reports enabled but inactive

Stopped watchdog, validated status was inactive

Waited 60 seconds

Watchdog still inactive

Started wd\_keepalive service

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| --- |
| sudo systemctl start wd\_keepalive |

Failed to start, no watchdog device configured, aborting

Watchdog device is in /etc/watchdog.conf and is commented

Systemd reported that it started wd\_keepalive successfully but it's inactive status

/var/log/syslog reports that after stopping watchdog, wd\_keepalive start process triggered

It failed but reported success.

Uncommented device configuration in /etc/watchdog.conf

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| --- |
| watchdog-device = /dev/watchdog |

watchdog was still inactive, so restarted it and checked status

wd\_keepalive is still inactive (dead)

|  |
| --- |
| sudo systemctl start wd\_keepalive |

reports active and running but complains 'cannot set timeout 60 - invalid arg'

the new configuration in watchdog.conf of watchdog device worked, it starts OK

this error looks like it is related to setting the watchdog timeout to more than 15s

but I don't know where this is being set to 60 - some default behavior in code?

behavior to troubleshoot:

* starting watchdog shuts down wd\_keepalive
* starting wd\_keepalive shuts down watchdog
* both are never running at the same time

with watchdog running and wd\_keepalive inactive, killed the watchdog process

wd\_keepalive became active while watchdog remains inactive for more than 60s and beyond

the watchdog log shows that there was an error when running the ExecStopPost script

code=exited, status=1/FAILURE when running wd\_keepalive

in /var/log/syslog the watchdog process reports the failure of the watchdog process

and the starting of the wd\_keepalive process successfully.

**I'm expecting the wd\_keepalive to restart the watchdog process, but that doesn't happen**

Reading the man page more carefully

1. wd\_keepalive sends a signal to the hardware watchdog more frequently than once every 15 seconds to keep it from rebooting. It does no tests. It can be started at boot and is used to prevent a long startup of watchdog daemon from not updating the hardware watchdog and causing an unwanted reboot. **It has nothing to do with restarting the watchdog daemon**, as I thought. It actually has the same function as the watchdog daemon except that it does no tests. That's why just one should be running at any time.
2. The complaint on start of wd\_keepalive that 'cannot set timeout 60' may be a default setting that is enabled if there is no setting in the watchdog.conf file. The man pages for watchdog and wd\_keepalive all refer to updating the hardware watchdog no less frequently than every 60 seconds, but the Raspberry Pi hardware watchdog must be updated no less frequently than every 15 seconds. The ***interval*** setting in watchdog.conf sets the time between executions of the watchdog test set and is 1 sec by default. By giving ***watchdog-timeout*** a value of 15 (seconds) in /etc/watchdog.conf we get rid of the error on start up for wd\_keepalive.
3. The ***realtime*** parameter definitely should be set (“yes”, as noted above) to allow both watchdog and wd\_keepalive to run under high load conditions. It causes these two daemons to run in memory and to never be swapped out under high memory load conditions.
4. Test and repair scripts or programs can be stored in /etc/watchdog.d. Watchdog will discover them on start up and run them with a 'test' parameter at the same frequency as the tests that are configured in watchdog.conf. If the program returns anything other than '0' then watchdog calls the same program with 'repair' parameter and the error that the 'test' parameter returned.
5. The ***repair-binary*** parameter in watchdog.conf names the program that is called by the watchdog daemon whenever it decides a reboot is needed. If the ***repair-binary*** returns '0' indicating that it successfully repaired the problem, watchdog does not reboot and continues. If it goes through this process more times than ***repair-retry*** times, then it reboots anyway. If the ***repair-binary*** program returns anything other than '0', watchdog reboots.
6. The ***logtick*** parameter in watchdog.conf sets the number of interval(s) before a log message is written to /var/log/syslog. This reduces the amount of logging and CPU devoted to logging.
7. The hardware watchdog device isn't documented in the man pages, but the logs are showing that the hardware watchdog is a Broadcom BCM2835 watchdog timer.

7/16/2021

Resuming testing

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| **pi@ham-pi**:**~ $** sudo systemctl status watchdog  **●** watchdog.service - watchdog daemon  Loaded: loaded (/lib/systemd/system/watchdog.service; enabled; vendor preset: enabled)  Active: **active (running)** since Sun 2021-06-13 13:46:28 PDT; 1 months 2 days ago  Process: 19720 ExecStartPre=/bin/sh -c [ -z "${watchdog\_module}" ] || [ "${watchdog\_module}" = "none" ] |  Process: 19721 ExecStart=/bin/sh -c [ $run\_watchdog != 1 ] || exec /usr/sbin/watchdog $watchdog\_options (  Main PID: 19723 (watchdog)  Tasks: 1 (limit: 4915)  CGroup: /system.slice/watchdog.service  └─19723 /usr/sbin/watchdog -v -q  Jul 16 14:07:46 ham-pi watchdog[19723]: still alive after 2852100 interval(s)  Jul 16 14:08:46 ham-pi watchdog[19723]: still alive after 2852160 interval(s)  Jul 16 14:09:46 ham-pi watchdog[19723]: still alive after 2852220 interval(s)  Jul 16 14:10:46 ham-pi watchdog[19723]: still alive after 2852280 interval(s)  Jul 16 14:11:46 ham-pi watchdog[19723]: still alive after 2852340 interval(s)  Jul 16 14:12:46 ham-pi watchdog[19723]: still alive after 2852400 interval(s)  Jul 16 14:13:46 ham-pi watchdog[19723]: still alive after 2852460 interval(s)  Jul 16 14:14:46 ham-pi watchdog[19723]: still alive after 2852520 interval(s)  Jul 16 14:15:46 ham-pi watchdog[19723]: still alive after 2852580 interval(s)  Jul 16 14:16:46 ham-pi watchdog[19723]: still alive after 2852640 interval(s) |

Looks like watchdog has continued to run since last working on it, over a month ago.