Hewlett Packard
Enterprise

linuxKI

Q1: Is LinuxKI safe to run on a production server?

A1: As with any software that contains a kernel driver, any defects in the kernel driver (whether in ftrace or LiKI) can cause a system crash or hang. So there are some risks but every attempt has been made to limit the risks as much as possible, including testing on large SMP servers and testing on a variety of Linux releases. LinuxKI has been run in many large mission critical environments without incident.

Q2: How much overhead does LinuxKI add to the system?

A2: The amount of overhead depends on the number and frequency of events trace. A good rule of thumb for most systems is about 3%. Remember, that a KI dump obtained with the runki script only collects trace data for a default of 20 seconds, so most systems can withstand a 3% degradation over 20 seconds.

Also, remember that LinuxKI also needs CPU and memory to run, as well as disk space if the data is logged to disk instead, and memory if the data is logged to /dev/shm.

Q3: How large are the KI dumps?

A3: This also depends on the number and frequency of events traced. On a busy DL380, the LinuxKI dump may be 300 MB or less, but on a busy SuperdomeX, it could be well over 1 GB. We have seen 20 second KI dumps as large as 5 GB.

Q4: I get the following error when I install LinuxKI:

```
/opt/linuxki/module_prep: line 45: make: command not found
                Unable to build compatible LiKI module - you may still be
able to use ftrace mode
```

A4: In order to compile the LiKI module from source, you need the GCC compiler and the make packages installed, as well as the kernel headers.

Q5: I get the following error when I install LinuxKI:

```
$ rpm --install linuxki-4.2-1.x86_64.rpm
        Finishing installation of the Linux KI Toolset ...
        Finding compatible LiKI loadable kernel module ...
        Please ignore any messages about incompatible modules in syslog
        Unable to find compatible module - attempting to build from
source ...
hostkernel=3.10.0-229.el7.x86_64.debug
hostdistro=rhel
hostversion=7.1
EXTRA_CFLAGS=-g -O3 -Wall -DHARDCLOCK_STACK_SKIP=0 -DOTHER_STACK_SKIP=2
make -C /lib/modules/3.10.0-229.el7.x86_64.debug/build
M=/tmp/tmp.gdAq4FOx5c   modules
make: *** /lib/modules/3.10.0-229.el7.x86_64.debug/build: No such file or
directory.  Stop.
make: *** [build] Error 2
        Unable to build compatible LiKI module - you may still be able to
use ftrace mode
```

A5: In order to build the LiKI DLKM module (likit.ko), you will need the Linux kernel headers installed. Note that you can still use LinuxKI in ftrace mode.

Q6: I get errors about missing dependencies when installing LinuxKI.

A6: You can simply ignore dependencies when installing the toolset:

```
$ rpm --install --nodeps linuxki-4.3-1.noarch.rpm
```

Q7: When I try to run *kiinfo* on a running system, I get the following error:

```
kiinfo error: load_liki_module():94 [likis.c]: Unable to load likit.ko
module
```

A7: Be sure to login as root/superuser.

Q8: I get the following error when I execute *kiinfo* or the *runki* script:

```
/opt/linuxki/kiinfo: error while loading shared libraries: libtinfo.so.5:
cannot open shared object file: No such file or directory
```

A8: Be sure to link the appropriate libtinfo.so library located in /lib64. For example:

```
$ ln -s /lib64/libtinfo.so.5.9 /lib64/libtinfo.so.5
```

Be sure to check the appropriate libtinfo.so filenames in /lib64.

Q9: I get the following error when I execute *kiinfo* to analyze data on a running system:

```
  Failed to open liki directory in debugfs.  Make sure debugfs is mounted
or use debug_dir option to specify the correct location.
kiinfo error: init_liki_tracing():160 [likis.c]: Failed to initialize liki
tracing module: errno 2 - No such file or directory
  Unloading likit.ko...
```

A9: Be sure the debugfs is mounted:

```
$ mount -t debugfs debugfs /sys/kernel/debug
```

Q10: When I execute *kiinfo -live*, it returns a prompt with no error

A10: Because ***kiinfo -live*** is curses based, the error is lost on the curses based screen. Try to redirect stderr to a file and view it afterwards:

```
$ kiinfo -live -a 5 2>ki.err
```

Q11: Can I collected LinuxKI data on a VMware host:

A11: No. Some Linux kernels do not include the necessary tracing facilities provided by more mainstream kernels. However, you can collect LinuxKI data from a VMware guest, and you can also collect LinuxKI data from a KVM host and KVM guest.

Q12: Can I collected LinuxKI data on a RHEL 5 system:

A12: No. RHEL 5 kernels do not include the necessary tracing facilities provided by more mainstream kernels. You must have Linux kernel version 2.6.32 or later and CONFIG_FTRACE=y must be set for the kernel build.

Q13: When I execute the *runki* script, it collected data using ftrace instead of LiKI. Why?

A13: Be sure to check the resulting ki.err.<timestamp> file from the data collected for a possible cause. A couple of reasons that ftrace is used:

1. The LiKI DLKM file (likit.ko) was not provided or built during installation. Check the /opt/linuxki/modules directory to be sure the appropriate version is present that matches your Linux kernel version.
2. The likit.ko DLKM module was not unloaded in a previous run. Try executing "`rmmod likit`", and if it is successful, try executing the ***runki*** script gain.
3. The insmod command could not be located. Be sure to check the PATH environment various and ensure the appropriate path for insmod is included.

Q14: In the console log, I see several messages of the following form:

```
likit: disagrees about version of symbol module_layout
```

A14: Several pre-compiled versions of the LiKI DLKM are included in the LinuxKI packages. During installation, if the installation script cannot find a matching DLKM for the current Linux version, the script will try to perform an insmod on each pre-compile module in /opt/linuxki/modules and the messages will be generated for each incompatible version. These messages are normal during installation and can easily be ignored.

With LinuxKI version 5.0, these messages should be eliminated or greatly reduced.

Q15: On RHEL 7 systems, I get a message about LiKI DLKM tainting the kernel:

```
likit: module verification failed: signature and/or required key missing
- tainting kernel
```

Will this impact my RHEL support?

A15: In RHEL 7 the tainted message has been made more generalized, which requires a deeper look into why the kernel was tainted to determine if there is an unexpected condition. Now, any loaded driver module that is built outside of a full Linux kernel build will taint the kernel.

The /proc/sys/kernel/tainted file contains additional information on the taint reasons. For more information, see:

https://access.redhat.com/solutions/800133