Hewlett Packard Enterprise

Basic Commands

Prerequisite
Install Linux kernel header package(s) if you want to collect data using the LiKI DKLM module. See the LinuxKI MasterClass documentation for more details.

Installation:
```
rpm --install --nodeps linuxki-7.7-1.noarch.rpm
dpkg --install linuxki_7.7-1_all.deb
```

Add LinuxKI to your PATH variable:
```
export PATH=$PATH:/opt/linuxki
```

Collect KI Dump:
```
cd /dev/shm                  # if memory is available
runki [-d <secs>]            # default is 20 secs
```

IMPORTANT NOTE: The longer the trace collection, the larger the resulting LinuxKI trace dump. Be sure you have plenty of disk space or space in /dev/shm to collect your LinuxKI trace dump!

Post-process KI Dump data
```
kiall [-r]
```

Mounting the debug filesystem (debugfs)
```
mount -t debugfs debugfs /sys/kernel/debug
```

Note: Most Linux versions now mount /sys/kernel/debug by default.

Curses-base live mode
```
kiinfo -live [-a <secs>]     # default is 5 secs
```

Clean-up KI files in cwd
```
kiclean -p -f
```

KI dump collection Examples

KI dump help
```
runki -h
```

Collect for 60 seconds
```
runki -d 60
```

Collect using ftrace with all events
```
runki -f
```

Collect with Advanced CPU statistics
```
runki -R
```

Collect and include scsi subsys
```
runki -e default -s scsi
```

Collect with Collect/MW, sar, perf data and Java stacks
```
runki -M -U -X -j
```

Collect with all subsystems, excluding some system calls
```
echo "time" >sysignore
echo "futex" >>sysignore
echo "gettimeofday" >>sysignore
runki -e all -I sysignore
```

Collect using PID filtering for 2 minutes
```
runki -P 26814 -d 120
```

Collect data and add a comment
```
runki -c "slow run, only 20MB/sec"
```

Continuous Logging, then dump on likiend
```
runki -d 0
kiinfo -likiend
```

KI Dump Post Processing Examples

Post-processing help
```
kiall -h
```

Create <hostname>/<timestamp> subdir structure
```
kiall -r
```

Create Kparse Report in text format
```
kiall -x
```

Online kiinfo Examples

kiinfo help
```
kiinfo -h
```

PID Analysis Report with multiple PID filters for 30 seconds
```
kiinfo -kipid pid=6814,pid=6815,scdetail -a 30
```

Disk Analysis report to show top 10 pids accessing a specific dev every 5 seconds for a minute
```
kiinfo -kidsk dev=0x00800010,npid=10 -a 5 -p 12
```

CPU/RunQ Analysis with Advanced CPU statistics
```
kiinfo -kirunq events=default,msr -a 5
```

Show just SCSI Synchronize Cache commands for 1 minute
```
kiinfo -kitrace subsys=scsi -a 60 | grep -i synchronize_cache
```

KI Dump kiinfo Examples

PID Analysis Report with System Call details, Cooperating Task details, and per-pid RunQ Histogram
```
kiinfo -kipid scdetail,coop,rqhist -ts 0416_1523
```

PID Analysis Report with Time filtering
```
kiinfo -kipid scdetail -start 3.0 -end 4.0 -ts 0416_1523
```

Disk Analysis Report with modify I/O Histogram
```
echo "2 5 10 20 50 100" >bkfname
kiinfo -kidsk bkfname=bkfname -ts 0416_1523
```

Kitrace Report with formatted time and the per-cpu sequence counter for a specific CPU
```
kiinfo -kitrace seqcnt,fmttime,cpu=4 -ts 0416_1523
```

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Kiinfo -live Commands Menu

Global Statistics and Select

```
s - Select Task/CPU/Disk
g - Global Task List
l - Global Node Stats
c - Global CPU Stats
p - Global Prof Stats
h - Global HT CPU Stats
i - Global IRQ Stats
d - Global Disk Stats
m - Global Mpath Stats
y - Global WWN Stats
z - Global HBA Stats
t - Global IO by PID
f - Global File Stats
w - Global Wait Stats
u - Global Futex Stats
n - Global Socket Stats
k - Global Docker Stats
```

Per-Task Statistics and Selective Statistics

```
G - Task Main Stats
D - Task Disk Stats
M - Task Mpath Stats
L - Task System Calls
W - Task Wait Stats
P - Task Profile Stats
F - Task File Stats
O - Task Coop Stats
U - Task Futex Stats

C - Select CPU Stats
T - Select Disk Stats
I - Select IRQ Stats
K - Select Docker Stats
X - Select Futex Stats
```

Control and Miscellaneous Commands

```
? - Help
r - Refresh
b - Prev Screen
+ - Show Syscall Detail
- - Hide Syscall Detail
```

Online mode only

```
a - Set Alarm Interval
e - Exclude Syscall
E - Show Excl Syscalls
```

Dump mode only from LiKI traces

```
> - Next Step
< - Prev Step
j - Step Time
J - Jump to Time
```

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runki [-h] [-L] [-M] [-U] [-X] [-a] [-j] [-J path] [-f | -p] [-n interface] [-v] [-d duration] [-t maxrun] [-P pid] [-G tgid] [-C cpu] [-D dev] [-R] [-e event] [-s subsys] [-I sysignore] [-T timestamp] [-c "comment"]

```
-h              Help
-L              Gather minimal data for local analysis...no gzip/tar
-M              Include Collectl/MeasureWare data collection
-U              Include userspace profile (perf) data collection
-X              Include sar data collection
-a              Execute 'perf annotate' on userspace profile (perf) data
-j              Collect Java stacks
-J <path>       Location of Java jstack command
-n <interface>  Gather tcpdump trace data
-v              Skip vxfs, misc disc data collection
-d <secs>       Duration of KI data collection. Defaults to 20 secs if not specified.
-d 0            Initiate continuous logging.  Collect LinuxKI dump with kiinfo -likiend
-t <secs>       Maximum time for data collection tools to run. Defaults to 120 secs if not specified.
-p              Skip Per-PID data (lsof, stacks, numa_maps, maps)
-f              Use ftrace tracing instead of liKI DLKM tracing to dump trace data.
-P <pid>        Filter collection on Task ID or PID (LiKI only)
-G <tgid>       Filter collection on Task Group ID or TGID (LiKI only)
-C <cpu>        Filter collection on cpu (LiKI only)
-D <dev>        Filter collection on device (LiKI only)
-R              Advance CPU stats (Freq, CPI, LLC Hit%) using MSR registers (LiKI only)
-e <event>      Identify events to dump. Possible values are: default | all | <event>
-s <subsys>     Identify subsys to dump. For example: irq, scsi, block, etc.
-I <sysignore>  File to specify ignored system call (liki only)
-F <hc_per_sec> Number of CPU Profile events per second (default: 100)
-T <timestamp>  Should be of the form MMDD_HHMM
-V "<varargs>"  Specify multiple filters and flags to pass to kiinfo -likidump
-c "comment"    echo comment into comment.$tag file
```

kiall [-h] [-l] [-m] [-r] [-f] [-c] [-x] [-M] [-B] [-t timestamp]

```
-h              Help
-l              Lite version - bypasses some options
-m              Do not process collectl or MWA data
-r              restore into created subdir - <host>/<MMDD_HHMM>
-f              Find KI files in pwd and any directories below
-c              Cluster-wide processing
-x              Generate Kparse text format instead of html format
-M              Leave C++ function names mangled
-B              Add Disk Block Frequency stats to Kparse report
-t <timestamp>  Only process KI budle with matching timestamp
```

kiclean [-h] [-r] [-f] [-p]

```
-h              Help
-r              Recursively traverse sudirs looking for KI data to archive
-p              Remove PIDS subdirectory
-f              Force remove misc/tmp files
```