

# Memory Layout

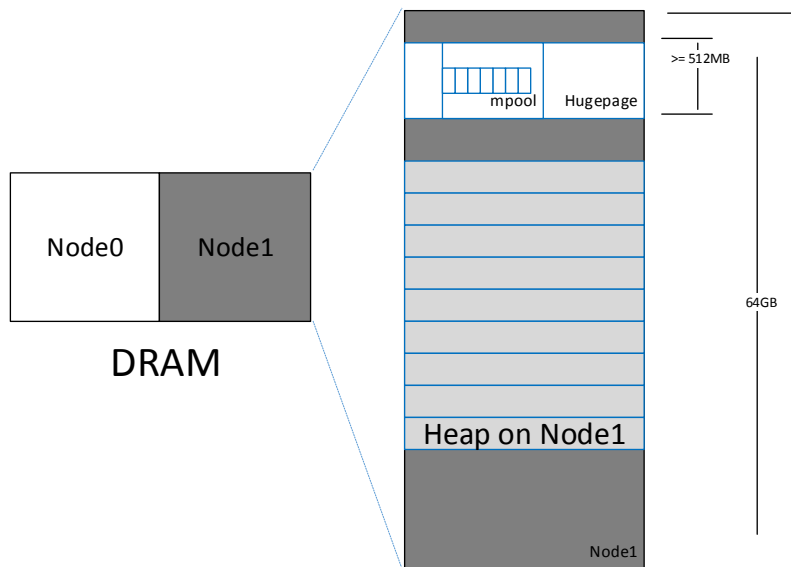
Michael  
2017

## Memory Locality

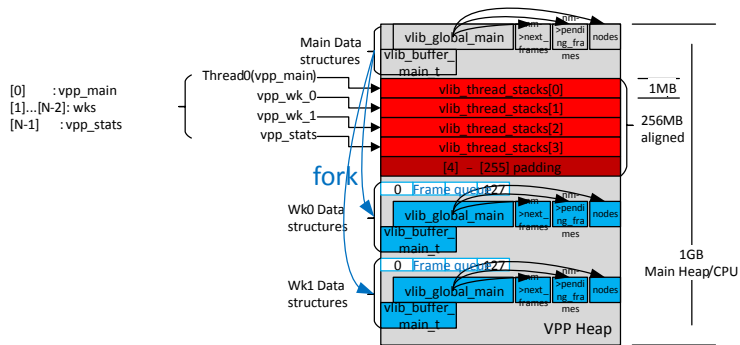
VPP16.09

NUMA

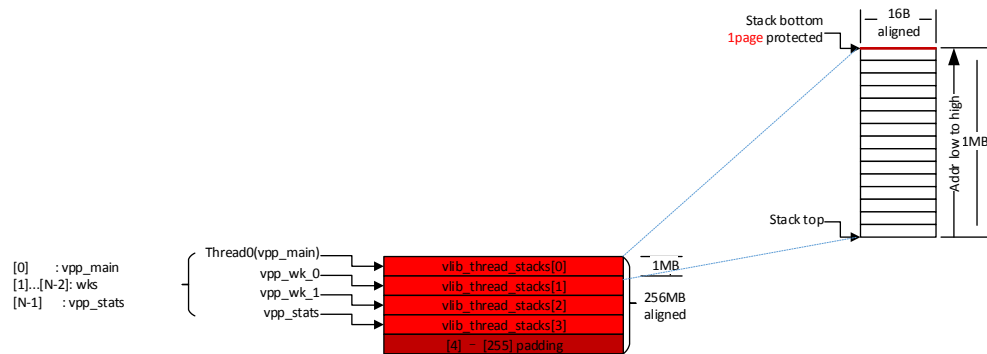
- 2 nodes



If requires a main heap larger than 4gb, then re-compile w/ `-DCLIB_VEC64`



## Vlib thread stack



## Virtual Address Space

VPP16.09

```
cat /etc/vpp/startup.conf
unix {
  noddaemon
  log /tmp/vpp.log
  cli-listen localhost:5002
  cli-no-banner
  full-coredump
}

api-trace {
  on
}

cpu {
  skip-cores 11
  main-core 11
  corelist-workers 12-13
}

dpdk {
  socket-mem 256,256
  nchannels 4
  num-mbufs 16384
  dev 0000:82:00.0
  dev 0000:82:00.1
  uio-driver igb_uio
}
```

```
vpp# show version verbose
Version: v17.04-release
Compiled by: root
Compile host: fpga
Compile date: Thu May 18 10:44:46 CST 2017
Compile location: /home/mwang/fdio/vpp
Compiler: GCC 4.8.3 20140911 (Red Hat 4.8.3-9)
Current PID: 20780
vpp# show dpdk version
DPDK Version: DPDK 17.02.0
DPDK EAL init args: -c 3800 -n 4 --huge-dir
/run/vpp/hugepages --file-prefix vpp -w 0000:82:00.0 -w
0000:82:00.1 --master-lcore 11 --socket-mem 256,256
vpp#
```

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## Virtual Address Space(Cont')

VPP16.09

```
# ./vpp -c /etc/vpp/startup.conf
vlib_plugin_early_init:360: plugin path /usr/lib/vpp_plugins
...
Segment 2: phys:0x17e640000, len:268435456, virt:0x7fa4dbc00000, socket_id:1, hugepage_sz:2097152, nchannel:0, nrank:0
...

# top -H -p $(pgrep vpp)
PID USER PR NI VIRT RES SHR S %CPU %MEM TIME+ COMMAND
20783 root 20 0 3061656 65156 5116 R 99.9 0.1 11:37.29 vpp_wk_0
20784 root 20 0 3061656 65156 5116 R 99.9 0.1 11:37.31 vpp_wk_1
20780 root 20 0 3061656 65156 5116 S 0.3 0.1 0:03.87 vpp_main
20781 root 20 0 3061656 65156 5116 S 0.0 0.1 0:00.00 vfile-sync
20782 root 20 0 3061656 65156 5116 S 0.0 0.1 0:00.00 eal-intr-thread
20785 root 20 0 3061656 65156 5116 S 0.0 0.1 0:00.00 vpp_stats

# cat /proc/$(pgrep vpp)/maps
...
7fa4dbc00000-7fa4dbe00000 rw-s 00000000 00:27 2131609 /vppmap_1
7fa4dbe00000-7fa4dc000000 rw-s 00000000 00:27 2131608 /vppmap_0
<etc>
7fa4eb800000-7fa4eba00000 rw-s 00000000 00:27 2131736 /vppmap_127
7fa4eba00000-7fa4ebc00000 rw-s 00000000 00:27 2131735 /vppmap_126
...
7fa55a5ff000-7fa55ae00000 ---p 00000000 00:00 0
7fa55ae00000-7fa55ae00000 rw-p 00000000 00:00 0 [stack:20782]
...
7fa55c71a000-7fa55c71b000 ---p 00000000 00:00 0
7fa55c71b000-7fa5a0f1b000 rw-p 00000000 00:00 0 [stack:20781]
...
7fa5a2a27000-7fa5a2a28000 r--p 00000000 00:00 0
7fa5a2a28000-7fa5a2b27000 rw-p 00000000 00:00 0 [stack:20780]
7fa5a2b27000-7fa5a2b28000 r--p 00000000 00:00 0
7fa5a2b28000-7fa5a2c27000 rw-p 00000000 00:00 0 [stack:20783]
7fa5a2c27000-7fa5a2c28000 r--p 00000000 00:00 0
7fa5a2c28000-7fa5a2d27000 rw-p 00000000 00:00 0 [stack:20784]
7fa5a2d27000-7fa5a2d28000 r--p 00000000 00:00 0
7fa5a2d28000-7fa5a2e32000 rw-p 00000000 00:00 0 [stack:20785]
```

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For details, please see  
[https://github.com/mwang005/a-deep-dive-into-vpp/blob/master/VPP\\_Virtual\\_Address\\_Space](https://github.com/mwang005/a-deep-dive-into-vpp/blob/master/VPP_Virtual_Address_Space)

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