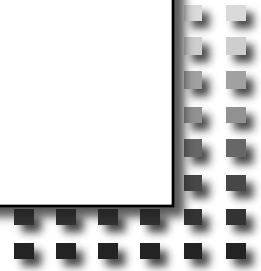




# **IETF Hackathon eBPF & SRv6**

**IETF 121  
2–3 November 2024  
Dublin, Ireland**



# Subject: pwru

- pwru short for “Packet Where Are You” (<https://github.com/cilium/pwru>)
  - #1: exclude empty packets from the log (Jari Arkko)
  - #2: user friendly names for network namespace IDs (Tamás Lévai)
  - #3: support SRv6 encap WIP (Ferenc Fejes)
- Our fork with changes: <https://github.com/SPYFF/pwru>
- PR to upstream after more testing

```
mininet> h1 ./seg6 send 33333 cd::3 bc::2 ab::1
port: 33333, segments: 3
Segment[0]: cd::3
Segment[1]: bc::2
Segment[2]: ab::1
Final: cd::3
mininet> □
```

```
[r3][srv6]# socat - udp-l:33333,fork
```

```
^C[r3][srv6]# socat - udp6-l:33333,fork
TESTTESTEST□
```

```
pwru on ▸ srv6 [ $? ] via ▣ v1.23.2 via ▣ took 44s
```

```
0 > sudo ./pwru --filter-func 'ip6_.*' src ab::be1
2024/11/03 15:50:37 Attaching kprobes (via kprobe-multi)...
44 / 44 [-----]
```

```
2024/11/03 15:50:37 Attached (ignored 0)
```

```
2024/11/03 15:50:37 Listening for events..
```

SKB	CPU	PROCESS	NETNS	MARK/x	IFACE	PROTO	MTU	LEN	TUPLE	FUNC
0xfffffa0c4aaf44800	3	<empty>:58979	4026533403	be1a	0	0x86dd	1500	108	[ab::be1]:43288->[ab::1]:33333(udp)	ip6_send_skb
0xfffffa0c4aaf44800	3	<empty>:58979	4026533403	be1a	0	0x86dd	1500	108	[ab::be1]:43288->[ab::1]:33333(udp)	ip6_local_out
0xfffffa0c4aaf44800	3	<empty>:58979	4026533403	be1a	0	0x86dd	1500	108	[ab::be1]:43288->[ab::1]:33333(udp)	ip6_output
0xfffffa0c4aaf44800	3	<empty>:58979	4026533403	be1a	h1-eth0:2	0x86dd	1500	108	[ab::be1]:43288->[ab::1]:33333(udp)	ip6_finish_output
0xfffffa0c4aaf44800	3	<empty>:58979	4026533403	be1a	h1-eth0:2	0x86dd	1500	108	[ab::be1]:43288->[ab::1]:33333(udp)	ip6_finish_output2
0xfffffa0c4aaf44800	3	<empty>:58979	4026534307	0	r1-eth0:2	0x86dd	1500	108	[ab::be1]:43288->[ab::1]:33333(udp)	ip6_rcv_core
0xfffffa0c4aaf44800	3	<empty>:58979	4026534307	0	r1-eth0:2	0x86dd	1500	108	[ab::be1]:43288->[ab::1]:33333(udp)	ip6_route_input
0xfffffa0c4aaf44800	3	<empty>:58979	4026534307	0	r1-eth0:2	0x86dd	65536	108	[ab::be1]:43288->[ab::1]:33333(udp)	ip6_input
0xfffffa0c4aaf44800	3	<empty>:58979	4026534307	0	r1-eth0:2	0x86dd	65536	108	[ab::be1]:43288->[ab::1]:33333(udp)	ip6_input_finish
0xfffffa0c4aaf44800	3	<empty>:58979	4026534307	0	r1-eth0:2	0x86dd	65536	108	[ab::be1]:43288->[ab::1]:33333(udp)	ip6_protocol_deliver_rcu
0xfffffa0c4aaf44800	3	<empty>:58979	4026534307	0	r1-eth0:2	0x86dd	65536	108	[ab::be1]:43288->[bc::2]:33333(udp)	ip6_route_input
0xfffffa0c4aaf44800	3	<empty>:58979	4026534307	0	r1-eth0:2	0x86dd	1500	108	[ab::be1]:43288->[bc::2]:33333(udp)	ip6_forward
0xfffffa0c4aaf44800	3	<empty>:58979	4026534307	0	r1-eth0:2	0x86dd	1500	108	[ab::be1]:43288->[bc::2]:33333(udp)	ip6_output
0xfffffa0c4aaf44800	3	<empty>:58979	4026534307	0	r1-eth1:3	0x86dd	1500	108	[ab::be1]:43288->[bc::2]:33333(udp)	ip6_finish_output
0xfffffa0c4aaf44800	3	<empty>:58979	4026534307	0	r1-eth1:3	0x86dd	1500	108	[ab::be1]:43288->[bc::2]:33333(udp)	ip6_finish_output2
0xfffffa0c4aaf44800	3	<empty>:58979	4026534366	0	r2-eth0:2	0x86dd	1500	108	[ab::be1]:43288->[bc::2]:33333(udp)	ip6_rcv_core
0xfffffa0c4aaf44800	3	<empty>:58979	4026534366	0	r2-eth0:2	0x86dd	1500	108	[ab::be1]:43288->[bc::2]:33333(udp)	ip6_route_input
0xfffffa0c4aaf44800	3	<empty>:58979	4026534366	0	r2-eth0:2	0x86dd	65536	108	[ab::be1]:43288->[bc::2]:33333(udp)	ip6_input
0xfffffa0c4aaf44800	3	<empty>:58979	4026534366	0	r2-eth0:2	0x86dd	65536	108	[ab::be1]:43288->[bc::2]:33333(udp)	ip6_input_finish
0xfffffa0c4aaf44800	3	<empty>:58979	4026534366	0	r2-eth0:2	0x86dd	65536	108	[ab::be1]:43288->[bc::2]:33333(udp)	ip6_protocol_deliver_rcu
0xfffffa0c4aaf44800	3	<empty>:58979	4026534366	0	r2-eth0:2	0x86dd	65536	108	[ab::be1]:43288->[cd::3]:33333(udp)	ip6_route_input
0xfffffa0c4aaf44800	3	<empty>:58979	4026534366	0	r2-eth0:2	0x86dd	1500	108	[ab::be1]:43288->[cd::3]:33333(udp)	ip6_forward
0xfffffa0c4aaf44800	3	<empty>:58979	4026534366	0	r2-eth0:2	0x86dd	1500	108	[ab::be1]:43288->[cd::3]:33333(udp)	ip6_output
0xfffffa0c4aaf44800	3	<empty>:58979	4026534366	0	r2-eth1:3	0x86dd	1500	108	[ab::be1]:43288->[cd::3]:33333(udp)	ip6_finish_output
0xfffffa0c4aaf44800	3	<empty>:58979	4026534366	0	r2-eth1:3	0x86dd	1500	108	[ab::be1]:43288->[cd::3]:33333(udp)	ip6_finish_output2
0xfffffa0c4aaf44800	3	<empty>:58979	4026534425	0	r3-eth0:2	0x86dd	1500	108	[ab::be1]:43288->[cd::3]:33333(udp)	ip6_rcv_core
0xfffffa0c4aaf44800	3	<empty>:58979	4026534425	0	r3-eth0:2	0x86dd	1500	108	[ab::be1]:43288->[cd::3]:33333(udp)	ip6_route_input
0xfffffa0c4aaf44800	3	<empty>:58979	4026534425	0	r3-eth0:2	0x86dd	65536	108	[ab::be1]:43288->[cd::3]:33333(udp)	ip6_input
0xfffffa0c4aaf44800	3	<empty>:58979	4026534425	0	r3-eth0:2	0x86dd	65536	108	[ab::be1]:43288->[cd::3]:33333(udp)	ip6_input_finish



SKB	CPU	PROCESS	NETNS	NETNSID	MARK/x	IFACE	PROTO	MTU	LEN	TUPLE	FUNC
[...]											
0xffff97b232720e00	2	<empty>:365113	4026532380	ns1	0	12	0x0800	1500	84	192.168.64.1:0->192.168.64.2:0	(icmp) ip_finish_output
0xffff97b232720e00	2	<empty>:365113	4026532380	ns1	0	12	0x0800	1500	84	192.168.64.1:0->192.168.64.2:0	(icmp) __ip_finish_output
[...]											
0xffff97b232720e00	2	<empty>:365113	4026534964	ns2	0	11	0x0800	1500	84	192.168.64.1:0->192.168.64.2:0	(icmp) __netif_receive_skb
0xffff97b232720e00	2	<empty>:365113	4026534964	ns2	0	11	0x0800	1500	84	192.168.64.1:0->192.168.64.2:0	(icmp) __netif_receive_skb_one_core
0xffff97b232720e00	2	<empty>:365113	4026534964	ns2	0	11	0x0800	1500	84	192.168.64.1:0->192.168.64.2:0	(icmp) ip_rcv
[...]											
0xffff97b232720e00	2	<empty>:365113	4026534964	ns2	0	11	0x0800	65536	64	192.168.64.1:0->192.168.64.2:0	(icmp) icmp_rcv
0xffff97b232720e00	2	<empty>:365113	4026534964	ns2	0	11	0x0800	65536	64	192.168.64.1:0->192.168.64.2:0	(icmp) __skb_checksum_complete
0xffff97b232720e00	2	<empty>:365113	4026534964	ns2	0	11	0x0800	65536	56	192.168.64.1:0->192.168.64.2:0	(icmp) icmp_echo
0xffff97b232720e00	2	<empty>:365113	4026534964	ns2	0	11	0x0800	65536	56	192.168.64.1:0->192.168.64.2:0	(icmp) icmp_reply
0xffff97b232720e00	2	<empty>:365113	4026534964	ns2	0	11	0x0800	65536	56	192.168.64.1:0->192.168.64.2:0	(icmp) __ip_options_echo
[...]											
0xffff97b232721000	2	<empty>:365113	4026534964	ns2	0	11	0x0800	1500	98	192.168.64.2:0->192.168.64.1:0	(icmp) eth_type_trans
0xffff97b232721000	2	<empty>:365113	4026532380	ns1	0	12	0x0800	1500	84	192.168.64.2:0->192.168.64.1:0	(icmp) __netif_rx
0xffff97b232721000	2	<empty>:365113	4026532380	ns1	0	12	0x0800	1500	84	192.168.64.2:0->192.168.64.1:0	(icmp) netif_rx_internal
[...]											
0xffff97b232721000	2	<empty>:365113	4026532380	ns1	0	12	0x0800	1500	84	192.168.64.2:0->192.168.64.1:0	(icmp) __netif_receive_skb
0xffff97b232721000	2	<empty>:365113	4026532380	ns1	0	12	0x0800	1500	84	192.168.64.2:0->192.168.64.1:0	(icmp) __netif_receive_skb_one_core
0xffff97b232721000	2	<empty>:365113	4026532380	ns1	0	12	0x0800	1500	84	192.168.64.2:0->192.168.64.1:0	(icmp) ip_rcv
0xffff97b232721000	2	<empty>:365113	4026532380	ns1	0	12	0x0800	1500	84	192.168.64.2:0->192.168.64.1:0	(icmp) ip_rcv_core
[...]											
0xffff97b232721000	2	<empty>:365113	4026532380	ns1	0	12	0x0800	65536	64	192.168.64.2:0->192.168.64.1:0	(icmp) icmp_rcv
0xffff97b232721000	2	<empty>:365113	4026532380	ns1	0	12	0x0800	65536	64	192.168.64.2:0->192.168.64.1:0	(icmp) __skb_checksum_complete
0xffff97b232721000	2	<empty>:365113	4026532380	ns1	0	12	0x0800	65536	56	192.168.64.2:0->192.168.64.1:0	(icmp) ping_rcv
[...]											
0xffff97b232720e00	2	<empty>:365113	4026532380	ns1	0	0	0x0800	0	84	192.168.64.2:0->192.168.64.1:0	(icmp) sock_rfree
0xffff97b232720e00	2	<empty>:365113	4026532380	ns1	0	0	0x0800	0	84	192.168.64.2:0->192.168.64.1:0	(icmp) skb_release_data
0xffff97b232720e00	2	<empty>:365113	4026532380	ns1	0	0	0x0800	0	84	192.168.64.2:0->192.168.64.1:0	(icmp) skb_free_head
0xffff97b232720e00	2	<empty>:365113	4026532380	ns1	0	0	0x0800	0	84	192.168.64.2:0->192.168.64.1:0	(icmp) kfree_skbmem