BPFCTRL

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Suricata

- Network Traffic Analysis
  - Intrusion Detection System
  - Network Security Monitoring
- Community driven
- Code:
  - Open Source
  - Mixed of C and Rust

Suricata on live traffic

- Sniffer mode
  - Get raw traffic
  - Use AF_PACKET socket
  - Like tcpdump

suricata –af-packet=$(wtfiseth0) port 80 and host 10.0.0.1

Note: alias wtfiseth0='ip r l | grep default | cut -d " " -f 5'

Suricata on selected live traffic (hipster style)

- BPF is your grand mother technology
- Linux has eBPF
  - Extended Berkeley Packet Filter
  - Filters can be developed in C
  - Shared data structure
    - Between kernel and user space
    - Data can be managed by external tool

Simple eBPF filter

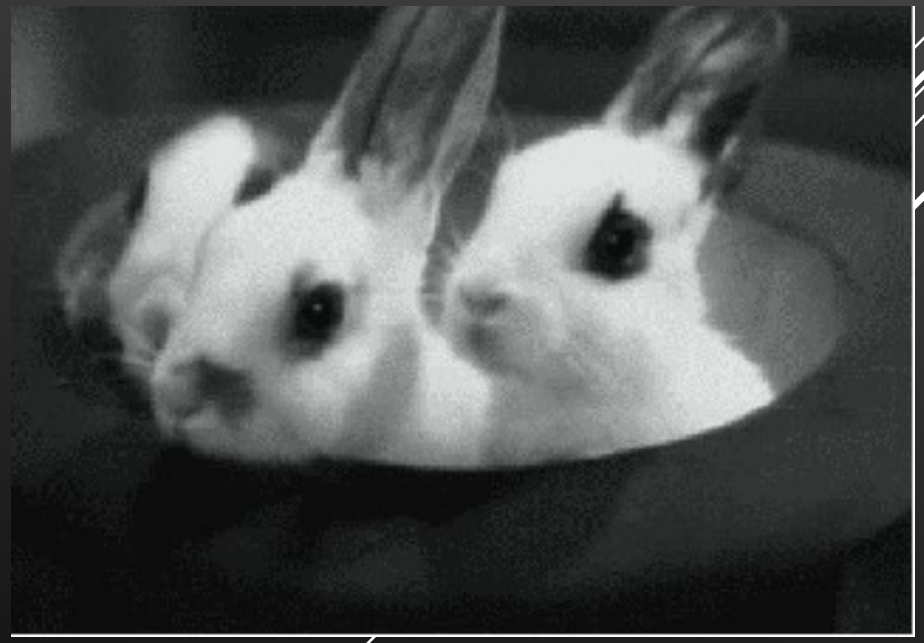
```
#define LINUX_VERSION_CODE 263682

struct bpf_map_def SEC("maps") ipv4_drop = {
    .type = BPF_MAP_TYPE_PERCPU_HASH,
    .key_size = sizeof(__u32),
    .value_size = sizeof(__u32),
    .max_entries = 32768,
};

struct vlan_hdr {
    __u16   h_vlan_TCI;
    __u16   h_vlan_encapsulated_proto;
NORMAL  ebpf-xdp-update-5.0-v2  ebpf/filter.c +
    __u32 *value;
    __u32 ip = 0;

    nhoff = skb->cb[0];

    ip = load_word(skb, nhoff + offsetof(struct iphdr, saddr));
    value = bpf_map_lookup_elem(&ipv4_drop, &ip);
    if (value) {
        *value = *value + 1;
        return 0;
    }

    ip = load_word(skb, nhoff + offsetof(struct iphdr, daddr));
    value = bpf_map_lookup_elem(&ipv4_drop, &ip);
    if (value) {
```

Introducing bpfctrl

- Wrapper on top of bpftool
- LGPLv2
- Manage pinned maps
- Currently support
  - IPv4 with counters
  - Single integer

Demonstration

- Verify Suricata sees traffic
- Add IP to drop list
- Nothing anymore



https://github.com/stamusNetworks/bpfctrl

THANK YOU!

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