

# The Promise of eBPF for the Edge



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Why am I here?



Red Hat



eBPF

# eBPF and Red Hat

We **support eBPF** on RHEL:

- Full kernel backports (RHEL 8.7: kernel 5.14, RHEL 9.1: kernel 5.16)
- Support for eBPF kernel features, bcc-tools and bpftrace

[https://access.redhat.com/documentation/en-us/red\\_hat\\_enterprise\\_linux/9/html/9.0\\_release\\_notes/new-features#BZ-2070506](https://access.redhat.com/documentation/en-us/red_hat_enterprise_linux/9/html/9.0_release_notes/new-features#BZ-2070506)

We **develop eBPF**:

- Upstream kernel contributions (networking, tracing, HID)
- Userspace libraries and tools (libxdp, Aya)
- Code examples and docs (xdp-tutorial, bpf-examples)

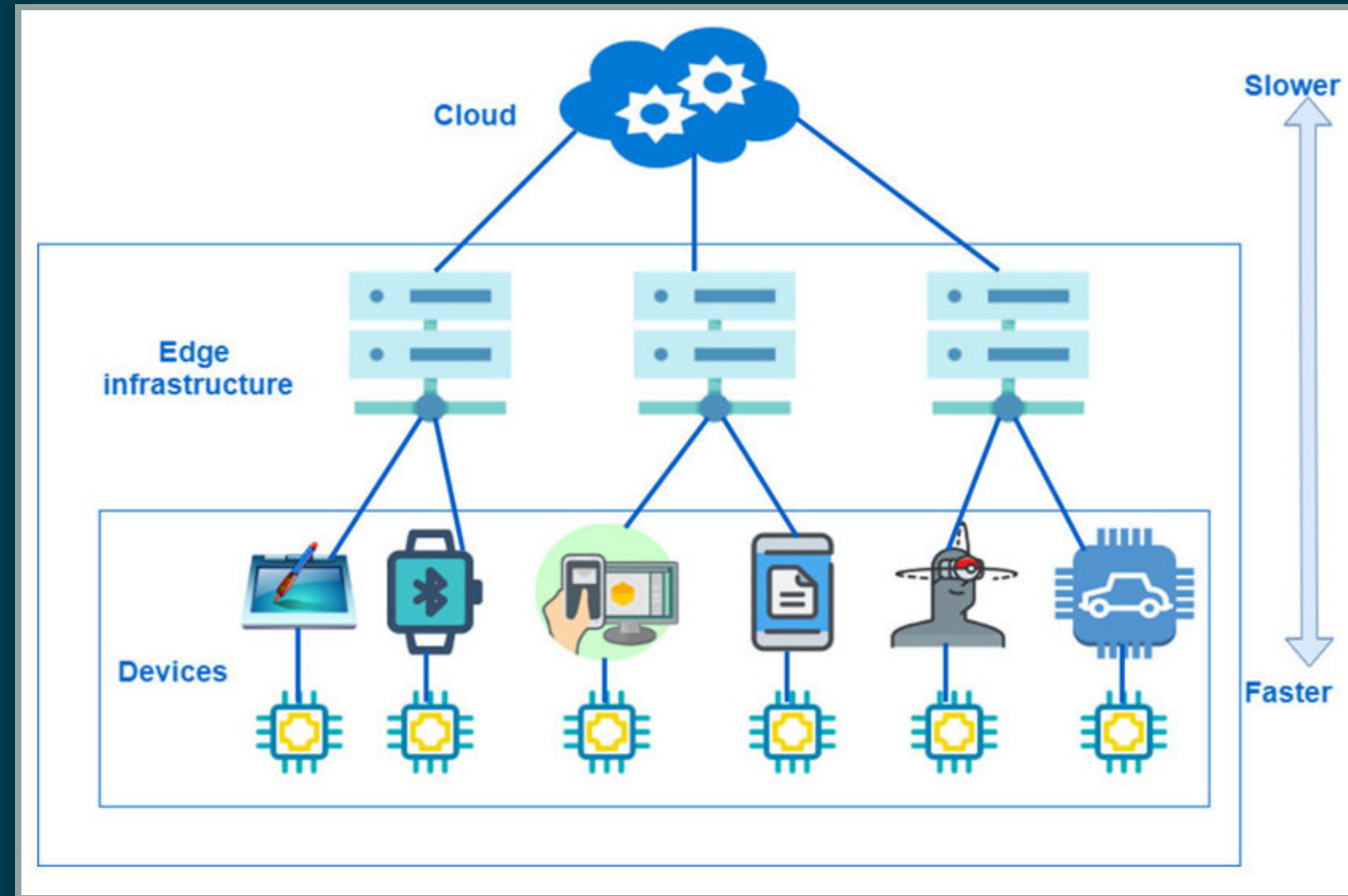
We are a **platinum member of the eBPF foundation**.

Please **don't** rely on the **kernel version** number for detecting eBPF features!

Use **feature probing** instead! See `bpftool feature output`

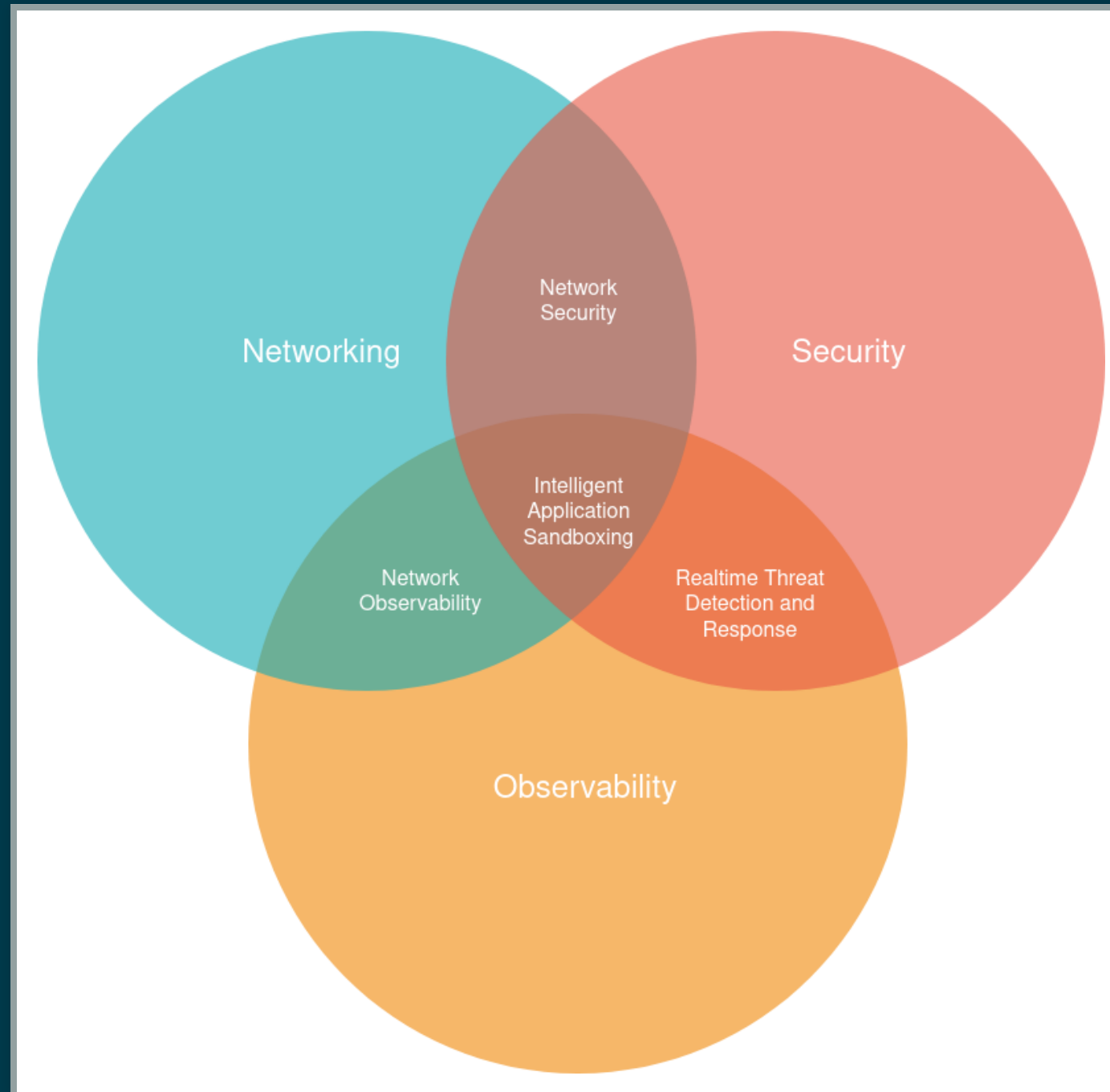


# What is the edge?



From <http://www.computerscijournal.org/vol12no2/an-edge-computing-tutorial/> - CC-BY-4.0

# What can eBPF bring to the edge?



# eBPF for the edge

- Networking
  - Lower overhead container networking and NFV
  - Smaller CPUs: With XDP acceleration we can keep up
    - Accelerate firewall, load balancing, forwarding
- Monitoring
  - Low-overhead performance monitoring
  - Application resource usage reporting
- Security
  - Firewalling and DDoS protection
  - Application isolation
  - Custom security monitoring and enforcement



# eBPF hook co-existence

With more users, **co-existence** becomes important!

- Assume other programs will access your hooks!
  - Not **every hook** supports this
  - In particular, use **libxdp** for XDP hook (**mandatory** on RHEL)
- **More work needed** on this:
  - Security model definition
  - Admin override tools

See **Daniel Borkmann's talk at LPC** for an example of how this can break!



How will you leverage eBPF  
in **your** edge solution?

