

# Sentient networking

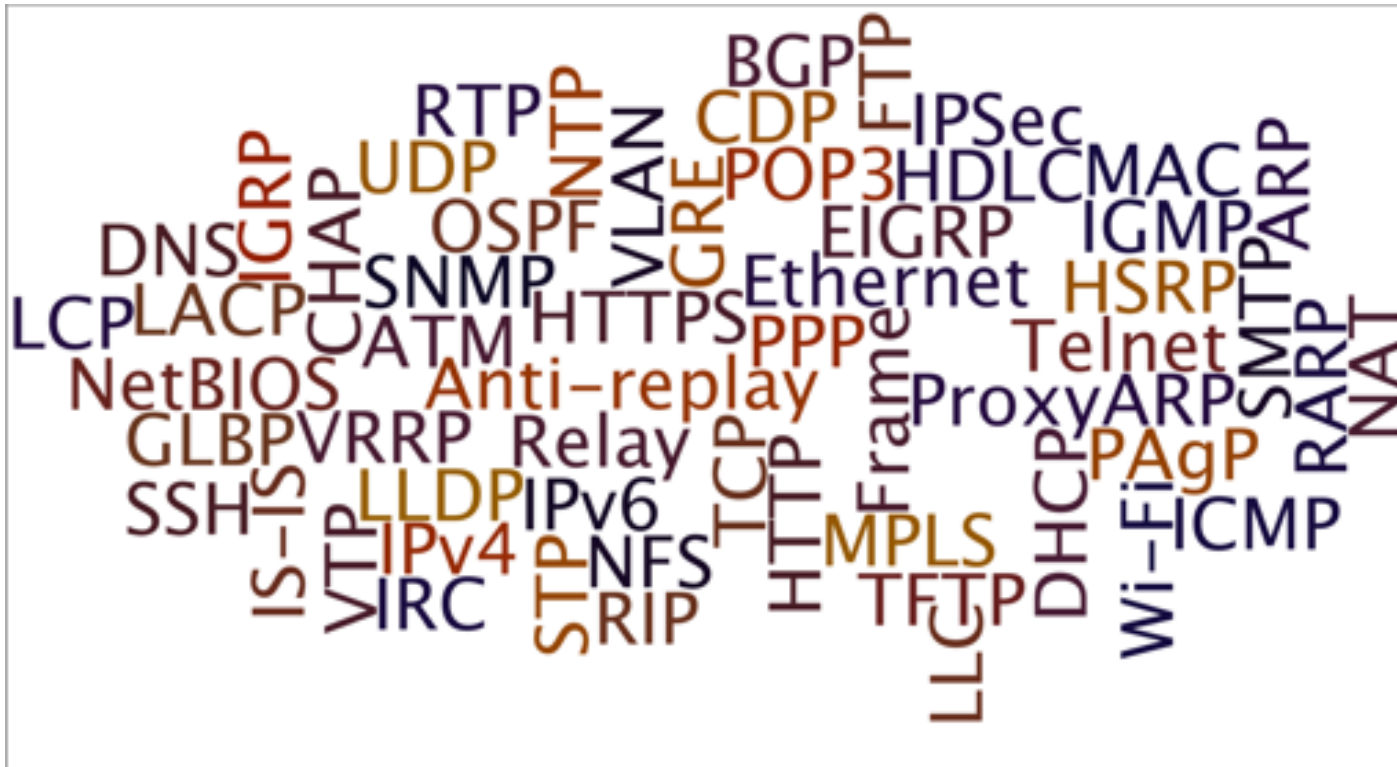
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# Internet of Senses

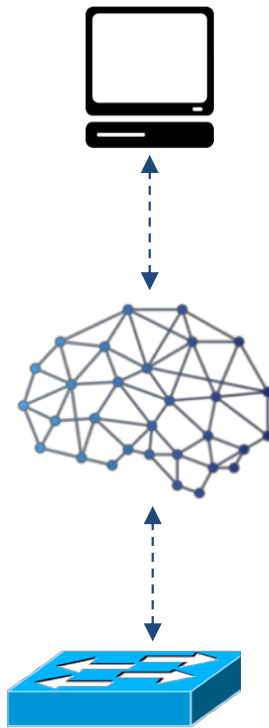


*Network sentience through distributed sensing,  
intelligence and programmable functionality*

# 50 shades of complexity



# SDN to the rescue?



- APPs: monitoring, security, ...
- Controller **a.k.a. Network Operating System**
  - Centralized decision making
  - Programmable
- Switches
  - Only need to worry about forwarding
  - Reduced CapEx

# What about the data-plane?



# The power of P4 programming


```
#include <core.p4>
#include <v1model.p4>
struct metadata {}
struct headers {}

parser MyParser(packet_in packet,
  out headers hdr,
  inout metadata meta,
  inout standard_metadata_t standard_metadata) {
  state start { transition accept; }
}

control MyVerifyChecksum(inout headers hdr, inout
  metadata meta)
{
  apply { }
}

control MyIngress(inout headers hdr,
  inout metadata meta,
  inout std_mtd_t std_mtdt) {
  apply {
    if (std_mtdt.ingress_port == 1) {
      std_mtdt.egress_spec = 2;
    } else if (std_mtdt.ingress_port == 2) {
      std_mtdt.egress_spec = 1;
    }
  }
}

```

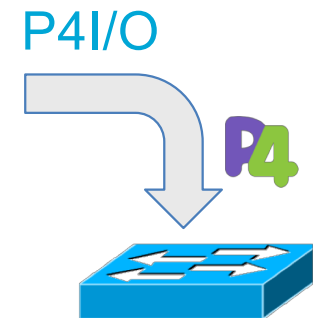


Without the hassle:

```
import drop_heavy_hitters
import drop_ddos

define intent dropHeavyHitters:
  to any
  for traffic('any')
  apply drop_heavy_hitters
  with threshold('more', 20)

define intent dropDDoS:
  to any
  for traffic('any')
  apply drop_ddos
  with threshold('more', 5)
```



*How to program the programmable network?*



# Eradicating NP-hard problems

By not designing protocols in isolation



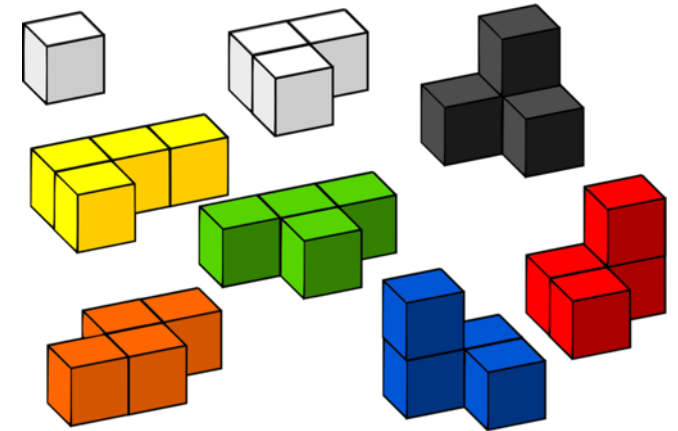
# Network sentience



Data-driven networking



Artificial intelligence



Networking primitives

*More info? Contact me at*

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