Computing in the Network
Needs
Network/Compute Information Exposure

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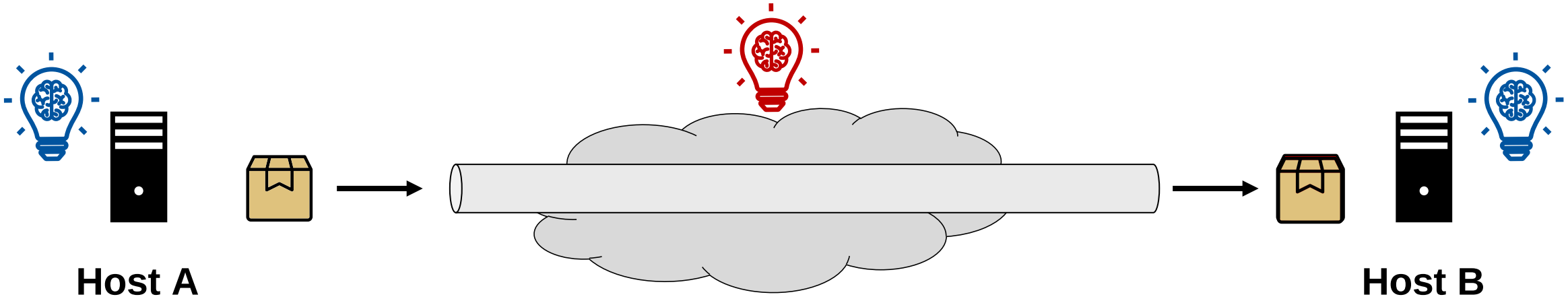
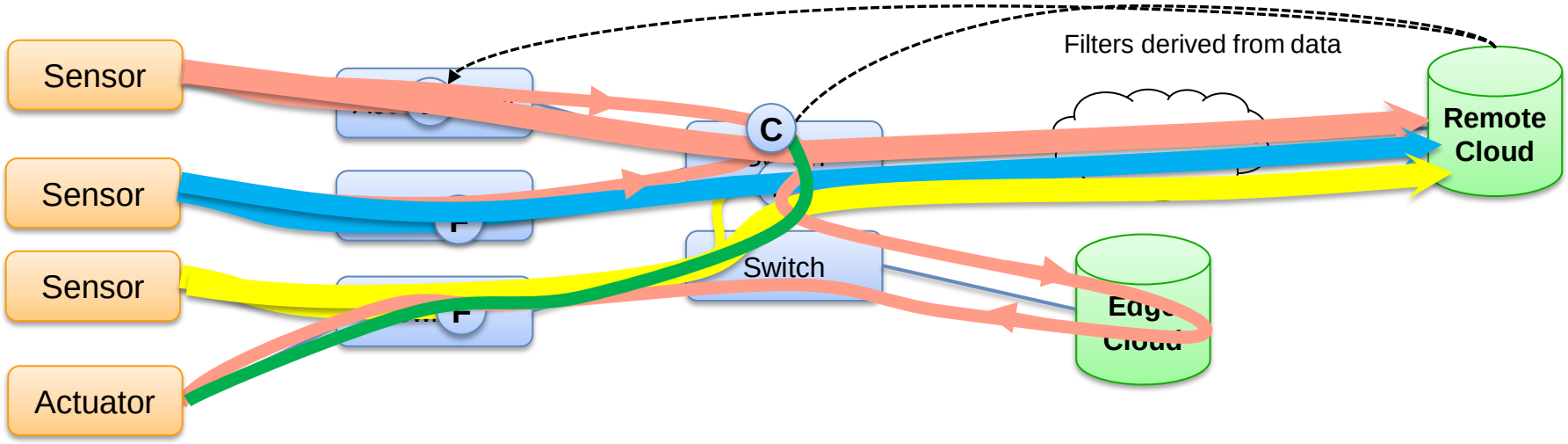
Computing In The Network (COIN) – From Dumb to Smart Networks



- **End-to-end principle**
  - Network as a dumb pipe
- **COIN**
  - Network no longer a dumb pipe

COIN extends edge computing with new compute platforms / capabilities

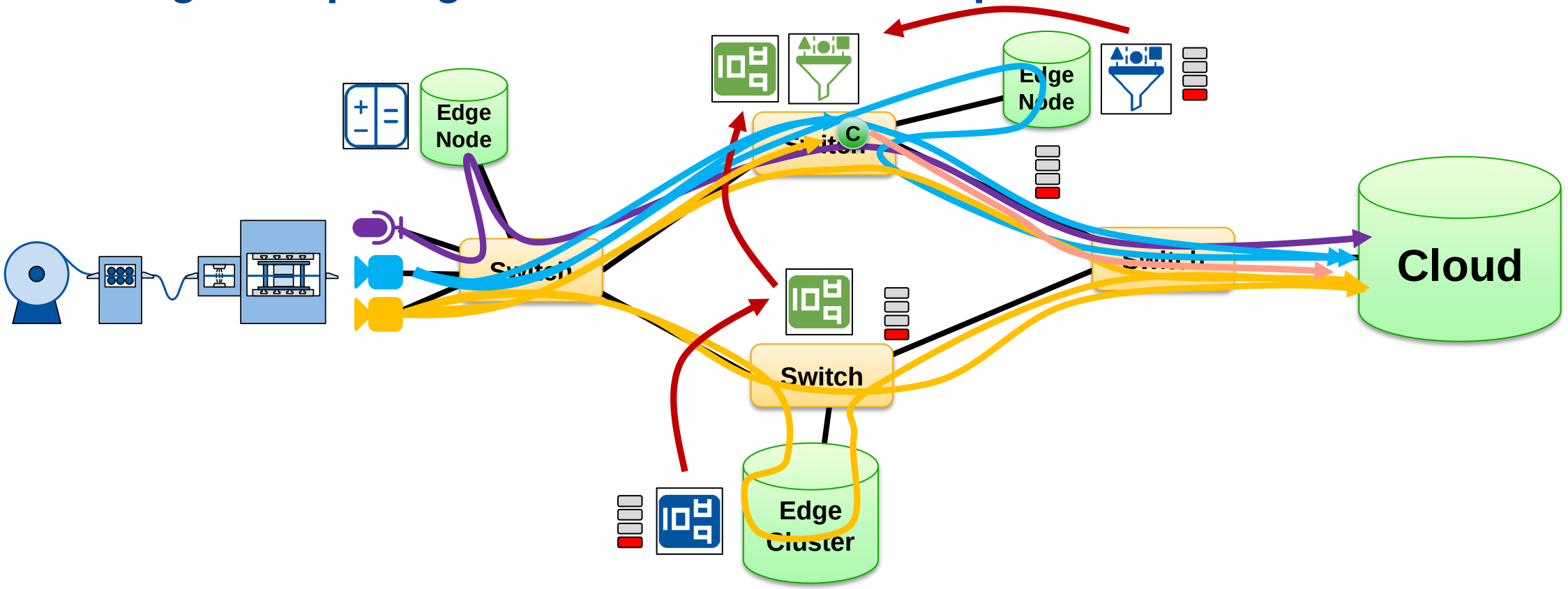
Why COIN?



- COIN offers on-path, line-rate processing
- Examples
  - On-path data preprocessing
  - Networked control

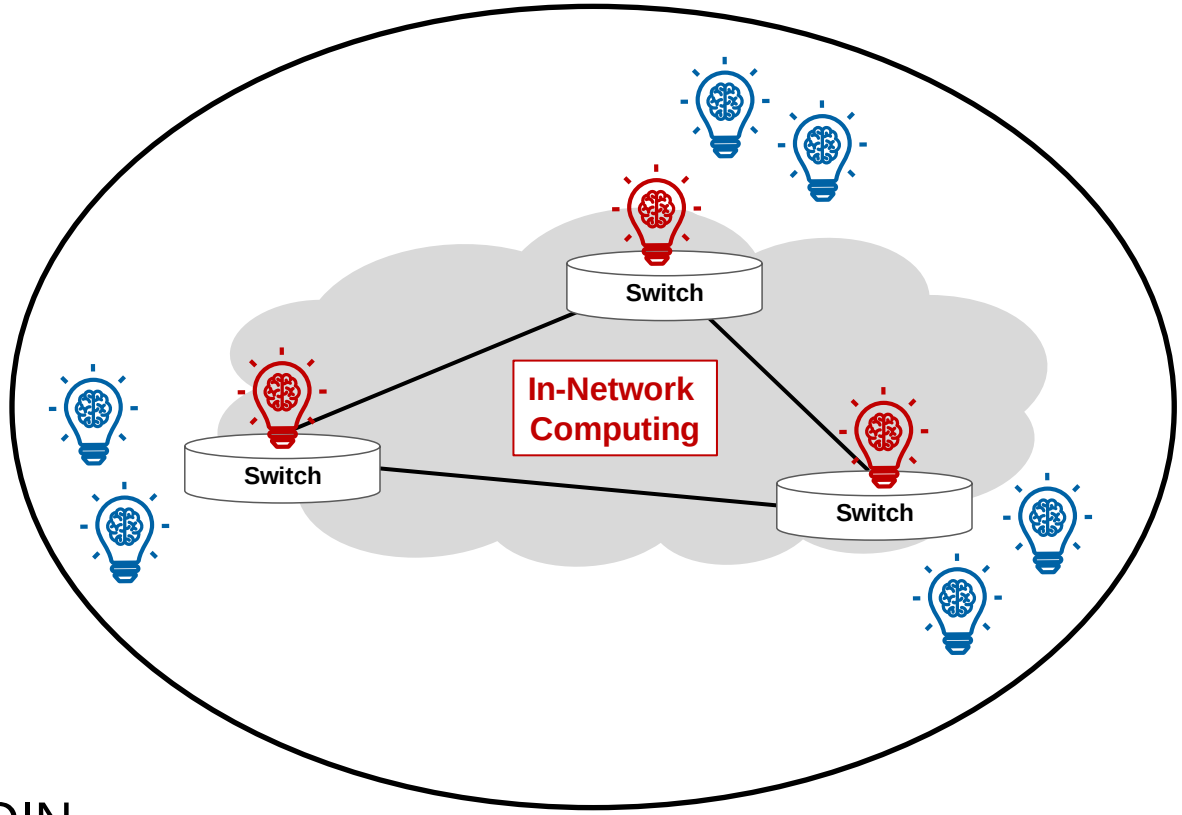
(Utopian?) Vision For Computing

- From **edge computing** to the **network as a computer**



Towards a Networked Operating System

- Need to describe/communicate COIN resources
  - Required for platform-aware deployment
    - COIN compute capabilities vary between devices
      - P4 hardware vs. software switch
- How/what to communicate?
  - Static vs. runtime information
  - Granularity? 
- Unified model?
  - But: no strict compute/network separation for COIN



Conclusion

- **(Utopian?) vision for computing**
  - From **edge computing** to the **network as a computer**
  - Compute and network capabilities/capacities become intertwined

- **How to design a unified model for compute/network capabilities/capacities?**

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