Hot Topics in Networking

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- Low phase for (Internet) networking,
  - ICN nearing its end, similar for SDN/NFV.
  - Openflow appears to be dead; P4 is alive (seems more flexible/programmable)
  - The wave of hardware offloading is diminishing.

- SIGCOMM moved away from core Internet.
  - More papers on wireless, data centers, some systems paper[s].
  - Hyperscalers are widening the gap further (eg openstack vs Azure)
  - Papers (by giants) on load balancing optimisations likely not widely useful.

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What's Hot? Depends on whom you ask; some sector[s] of the industry still migrating physical servers to VM[s].

- Hardware assisted networking, programming hardware.
- Networking at 1TB/s speeds:
  - Computing at nanoseconds scale is currently challenging.
  - Kernel bypass techniques can reduce latencies to microseconds scale only.
  - Understanding PCIe Performance for End Host Networking, SIGCOMM'18 https://doi.org/10.1145/3230543.3230560
  - New h/w opens opportunities (release cycle for firmware upgrade is small)

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- Within the IETF?
  - IETF QUIC (multicasting video streaming)
  - IETF SR: used by operators (softbank) within their domain for TE.
  - IETF Deterministic networking?
    - Ultra-low latency, similar to IEEE time-sensitive networking.
    - Use-case: Vehicular networking; controlling power plants.
    - Time synchronisation; discussions ongoing on how 3GPP will implement it
  - Locator/ID separation.
  - Anything else comes to mind?

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- Funding agencies don't fund networking anymore.
  Recent H2020 calls: A/R, Edge computing, autonomous driving, 5G (lobby)
  More funding on applications with societal impact.

- What about optimisations for UDP?
  - Expectations is that this is a short term problem.

- Cybersecurity?
  - Largely identifying bad practises, high-level research on attack models.

- Blockchain?

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- Congestion control?
  - Not really hot, but some work being done: see: Google BBR.

- Networking for AI?
  - SIGCOMM had a NETAI workshop with the most attendees.

- Microservices in 5G? Proxies, sidecars, kubernetes
- Network slicing?
- P2P:
  - There is hope that QUIC can bring it back due to feature support such as connection migration.