

Hot Topics in Networking

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Hot Topics in Networking

- 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.