Liaison Proposal to UEC

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Jieyu Li (CMCC)
Yunping Lyu (Huawei)

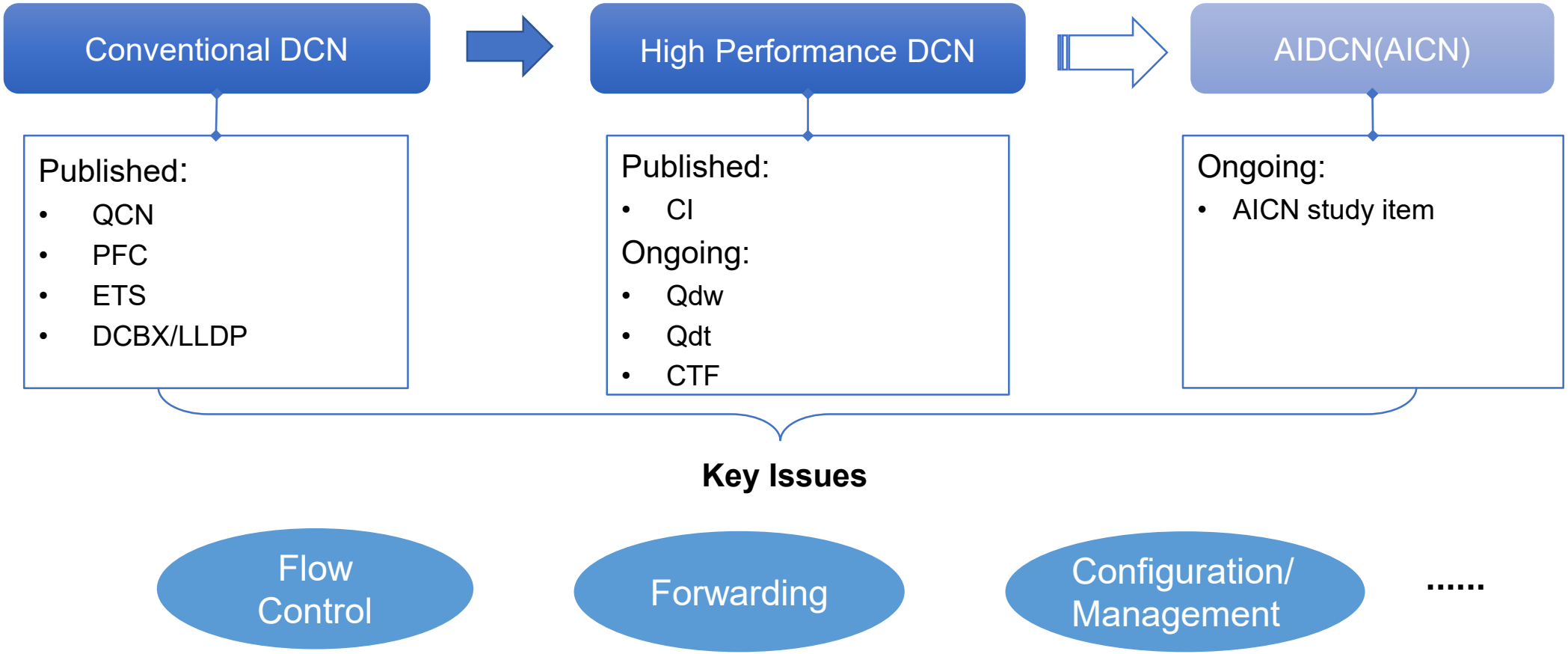
Recap

- In March plenary Nendica meeting, we preliminarily discussed the next step of AICN study item and one suggestion is to build liaison relationship to other relevant organizations, such as UEC.

- This is the follow-up discussion of liaison proposal to UEC.

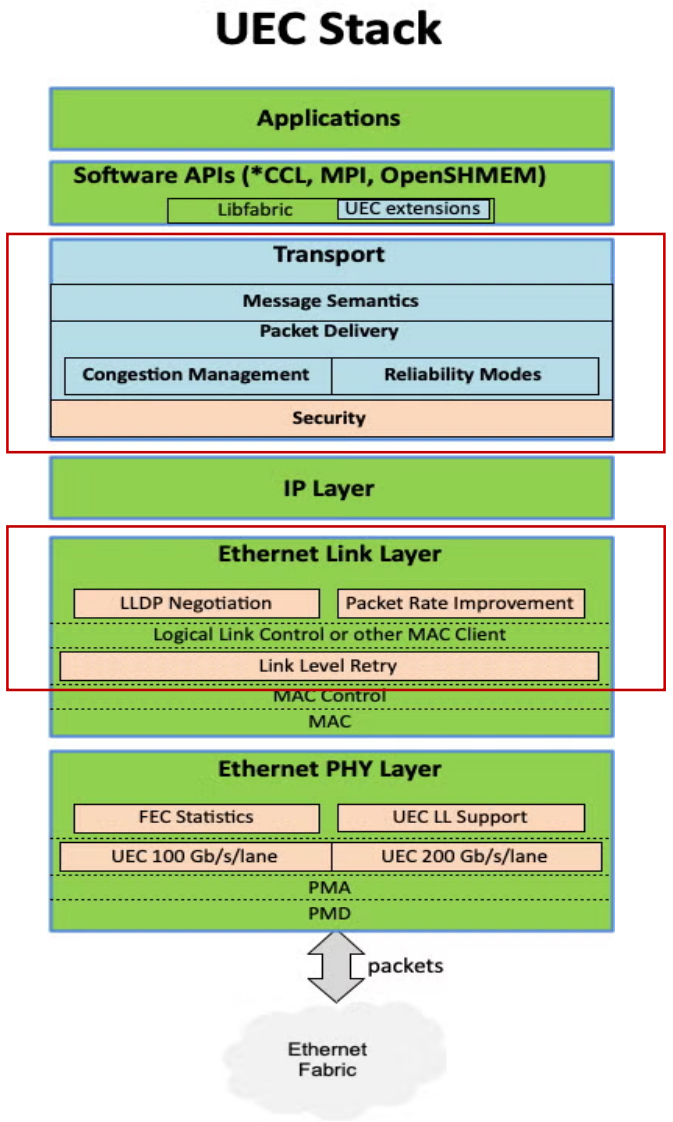
IEEE 802.1 DCN/DCB Relevant Works

- IEEE 802.1 has been continuously improving Ethernet-based data center networking, from conventional DCN to high-performance DCN including those for AI applications.



UEC is working on Ethernet-based AI&HPC network

- UEC aims to build an Ethernet-based, open, interoperable, high performance, full-communications stack architecture to meet the growing network demands of AI & HPC at scale;
- Latest public status:
  - UEC summit was hold in April;
  - Spec 1.0 is about to release;
  - Beyond 1.0 is under planning;



Key Issues

Ethernet Link Layer
- LLDP Negotiation;
- Link Level Retry;
- Credit based flow control;

Transport Layer
- Congestion management: multiple paths & packet spraying; Congestion control algorithm;

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- **UEC specifies congestion management for AI/HPC network, including lossless network and best-effort network.**

Information Source:
[UEC Progresses Towards v1.0 Set of Specifications - Ultra Ethernet Consortium]
[UEC Member Summit | LF Events]

Liaison Motivation

- **Congestion management is a critical aspect of data center networking, and both IEEE 802.1 and UEC are actively working to enhance performance in this area.**

Relevant ongoing efforts in IEEE802.1:

- IEEE 802 NENDICA AI Computing Network (AICN) study item: analyzes key requirements and challenges for AI training and inference networks, while also identifying potential areas for future standardization work.
- IEEE P802.1Qdw Source Flow Control (SFC) project: aims to specify enhancements to flow control mechanisms, addressing inherent limitations of PFC.

- **A liaison relationship enables information and experience sharing, allowing both organizations to leverage each other's work to further enhance Ethernet for AI networks.**
  - Input from active AI market participants within UEC can help IEEE 802.1 better understand the requirements and challenges of AI networks.
  - IEEE 802.1 could consider UEC's outputs during standards development, with the potential to incorporate relevant output into IEEE 802.1 standards to achieve broader industry consensus and interoperability.

Liaison Statement Proposal

- Prepare liaison statement from IEEE802.1 to UEC, including:
  - Information of IEEE802.1's work related to AI/HPC networks
  - Awareness of the relevance to UEC work from public available information and previous IEEE802.3 liaison communication
  - Invitation to establish liaison relationship, encouraging collaboration between the 2 organizations
    - Presentations from UEC outlining Ethernet network requirements in AI datacenters, along with updates on UEC's progress in developing related technical specifications
    - Presentations from individual UEC members and their companies describing additional needs
    - Sharing of UEC documents relevant to the development of the AICN study item or the P802.1Qdw project
    - Anticipate a similar request from UEC requesting IEEE 802.1 share their relevant documents with UEC, and invite UEC and its members to participate in IEEE802.1 working processes to advance efforts on relevant standards.
  - Brief introduction of IEEE802.1 working process to facilitate participation by UEC members
- Expect to build the relationship as soon as possible, considering the fast pace of AI network developments
  - Preferred: Conduct an ePoll before the July Plenary to approve the liaison statement
  - Alternative: Use the July Plenary session for discussion and voting

Thanks!