IEEE 802 Nendica Work Item Proposal: Revision of "The Lossless Network for Data Centers"

Roger Marks (Huawei)

For presentation: Nendica meeting, Irvine, 2020-01-15

2020-01-13

IEEE 802 Nendica Report Development Process

- *Nendica work is organized as a set of semi-autonomous Work Items leading to Nendica Reports.*
- *Nendica will ensure that all Work Items are within Nendica scope and that they make progress.*
- *Nendica will ensure ongoing exposure and wide review by issuing Call for Comments on all drafts and completed reports.*

- See:
  - https://1.ieee802.org/802-nendica/ieee-802-nendica-procedures/

IEEE 802 Nendica Work Item Initiation Process

- *Formal Work Item proposal*
  - *Demonstrate industry interest*
  - *Demonstrate fit with scope*
  - *Identify Editor*
- *With Nendica agreement, circulate for comment*
  - *Circulated to 802 EC and 802.1 Working Group thirty days before IEEE 802 Plenary*
  - *Circulated on Nendica web site*
- *Approval:*
  - *Nendica vote at face-to-face meeting*
  - *Subject to confirmation at 802.1 WG Plenary*

- See:
  - https://1.ieee802.org/802-nendica/ieee-802-nendica-procedures/

Lossless Network for Data Centers

- Prior Work Item: Lossless Data Center Networks [LLDCN]
  - Work Item Editor: Paul Congdon
  - Initial draft: November 2017
  - Call for Comments : 2018-04-13 through 2018-05-13
- *IEEE 802 Nendica Report: The Lossless Network for Data Centers* (Published 2018-08-17)
  - 12 individuals listed as Contributors/Supporters
    - 11 affiliations, inc. 3 telecom operators, 2 web-scale providers, …
- Spawned IEEE P802.1Qcz™ Project on Congestion Isolation
  - authorized 2018-09-27
- IEEE 802/IETF Data Center Workshop
  - Bangkok 2018-1-10, 55 registered participants
- Article in *IEEE SA Beyond Standards* (2018-12-06)
- Follow-up presentation (2019-02) and track (2019-06) at North American Network Operator's Group (NANOG)

Nendica DCN Contributions in 2019

- Proposed Nendica Presentation to NANOG 75 (Roger Marks, 2019-01-07)
- Draft LLDCN Webinar presentation (Paul Congdon, 2019-01-15)
- Congestion Management for Ethernet-based Lossless DataCenter Networks (Jesus Escudero-Sahuquillo, 2019-02-04)
- Presentation on Congestion Management for Ethernet-based Lossless DataCenter Networks (Jesus Escudero-Sahuquillo, 2019-02-28)
- IETF-104 DCN HyperScale RDMA HPC Report (Paul Congdon, 2019-04-23)
- NANOG-76 report (Paul Congdon, 2019-07-15)
- LOSSLESS Network for RDMA in ODCC (Jie Li, 2019-07-15)
- Testing LOSSLESS Network for RDMA (Liang Guo, Feng Gao, Liyang Sun, Jun Liu, Qingchun Song, 2019-07-15)
- Strategies to drastically improve congestion control in high performance data centers: next steps for RDMA (Jesus Escudero-Sahuquillo, 2019-07-18)
- IETF Sidemeeting (Paul Congdon, 2019-07-22)
- IETF-105 Sidemeeting minutes (Paul Congdon, 2019-09-18)
- Introduction of a Potential New Work Item for Data Center Network (Liang Guo, Liyang Sun, Jun Liu, Qingchun Song, 2019-10-31)
- Update: Lossless Networks in ODCC (Liang Guo, Liyang Sun, 2019-11-11)
- Lossless Network (Jun Liu, 2019-12-13)
- RoCE Network Proposal (Qingchun Song, 2019-11-12)
- High Performance Computing Ethernet (Yolanda Yu, 2019-11-14)
- IETF-106 Sidemeeting (Paul Congdon, 2019-11-20)

Prior proposal to revise LLDCN

- *Introduction of a Potential New Work Item for Data Center Network*
  - Liang Guo (CAICT); Liyang Sun (Huawei); Jun Liu (Cisco); Qingchun Song(Mellanox)
  - 2019-10-31
- Presented to Nendica, 2019-10-31 and 2019-11-14
- Mentioned some prior Data Center Network (DCN) activity in Nendica
- Indicated that further DCN contributions will be coming

Approach to revision

- Develop new version of LLDCN Nendica Report
  - Prior version becomes obsolete
    - Marked as obsolete on web site
    - New version indicates that prior version is obsolete
  - Some material carries over to revision
  - New material added
  - Material should have relevance to IEEE 802, but may also touch on higher and alternate layers and SDOs

Proposed editors:

Liang Guo (CAICT/ODCC) and Paul Congdon (Huawei)

Potential topics

Contribution driven, so content depends on inputs

New topics potentially include:

- (tbd prior to submitting to 802.1/802)

Fit to Nendica scope

- Nendica ICAID "Motivation and Goal" includes:

  - …identify commonalities, gaps, and trends not currently addressed by IEEE 802 standards and projects, and facilitate building industry consensus towards proposals to initiate new standards development efforts. Encouraged topics include enhancements of IEEE 802 communication networks and vertical networks as well as enhanced cooperative functionality among existing IEEE standards in support of network integration…

- Nendica ICAID "Stakeholder Communities" includes:

  - … users and producers of systems and components for networking systems, data center networks, high performance computing, cloud computing, telecommunications carriers, …

- Work Item is a revision of *IEEE 802 Nendica Report: The Lossless Network for Data Centers*, which was in scope and is identified in current ICAID.

Proposed Schedule

- Work Item initiation
  - 2020-01-15: present/discuss proposal at Nendica meeting
  - 2020-01-22/23: refine at Nendica meeting
  - 2020-02-06?: finalize in telecon, if necessary
  - 2020-02-14: submit proposal to 802 & 802.1
  - 2020-03-19: agreed by 802.1 WG
- Draft development
  - Telecons
  - Meeting: 2020-05-19 to 21 (802.1 Pasadena); 2020-07-14 to 16 (802 Montreal)
- Call for Comments
  - Agree 2020-07-16 to initiate
  - Run 2020-07-24 through 2020-08-24
  - Comment resolution in telecons and 2020-09-22 to 24 (802.1 Stuttgart)
  - Recirculate; comment resolution in telecons and 2020-11-10 to 12 (802 Bangkok)
- Approval
  - 2020-11-19: IEEE 802.1 WG approval

Proposal

- To initiate, within IEEE 802 Nendica, a new Work Item to develop a revision of *IEEE 802 Nendica Report: The Lossless Network for Data Centers*, with Liang Guo and Paul Congdon as editors.

References

- IEEE 802 Nendica Procedures
  - https://1.ieee802.org/802-nendica/ieee-802-nendica-procedures
- IEEE 802 Nendica ICAID (March 2019 – March 2021)
  - https://standards.ieee.org/content/dam/ieee-standards/standards/web/governance/iccom/IC17-001-IE.pdf
- Nendica Document Server
  - https://mentor.ieee.org/802.1/documents?is_group=ICne
- Nendica Work Item: Lossless Data Center Networks [LLDCN]
  - https://1.ieee802.org/802-nendica/nendica-lldcn
- IEEE 802 Nendica Report: The Lossless Network for Data Centers
  - https://mentor.ieee.org/802.1/dcn/18/1-18-0042-00-ICne.pdf
- IEEE 802/IETF Data Center Workshop – Bangkok, 2018-11-10
  - https://1.ieee802.org/802-nendica/802-ietf-workshop-data-center-bangkok