Cut-Through Forwarding (CTF) in Bridges and Bridged Networks - Planning Proposal -

Johannes Specht

DCN 1-21-0015-04-ICne

Context and Objectives

Nendica

- Cut-Through Forwarding (CTF) in Bridges and Bridged Networks is a Nendica study item https://1.ieee802.org/802-nendica/nendica-ctf
- Forum to discuss CTF
- Platform to prepare material → For example, for an IEEE 802 Plenary Tutorial
- Across IEEE 802 WGs (IEEE 802.1 and IEEE 802.3) https://www.ieee802.org/3/email_dialog/msg01165.html

Work towards a potential 802.1 Standard for CTF

- Capture the dominant use-cases and relevant markets
- Capture how to deal with QoS Challenges
- Reach consensus in IEEE 802.1
- Formulate problem statements for discussion in IEEE 802.1 and with IEEE 802.3

My Intention

- Initiate/lead related discussions
- Develop technical aspects/integrate into IEEE 802.1 Stds environment
- Present/discuss material

Proposed Material/Output to Develop

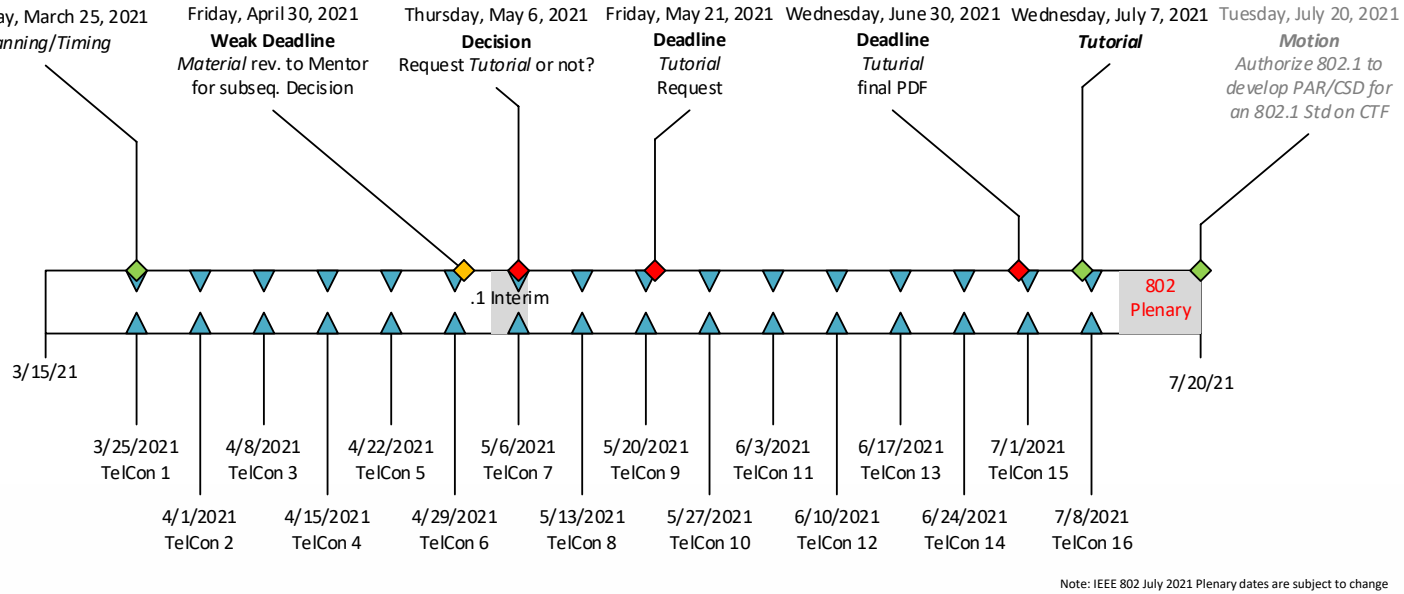
Joint presentation

- High-level on CTF (at least from an IEEE 802.1 point of view), for example
  - Motivation
  - *Specific* Use-cases, applications, markets, etc.
  - Technical feasibility
  - Technical Overview
  - …
- Contents from individual contributions, or by reference to individual contributions

Individual contributions

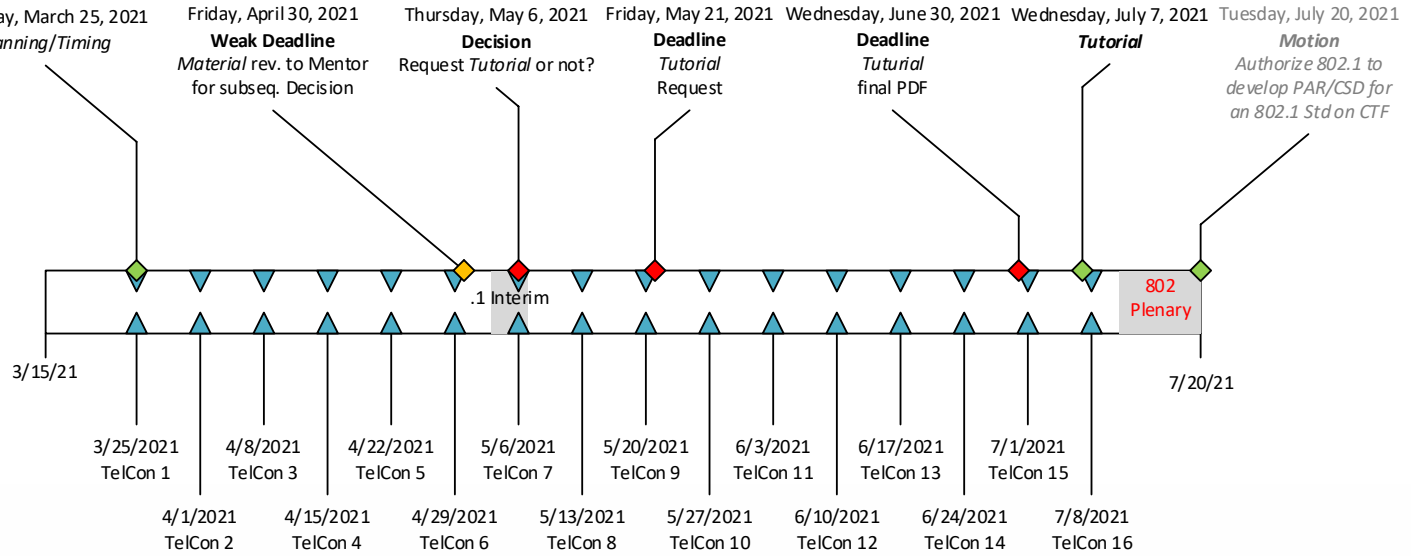
- Technical document (author‘s work in progress)
  - “Preview” of core elements in a potential IEEE 802.1 Standard
  - Network aspects and constraints
  - New protocols/protocol procedures for CTF
  - *Generic* use-cases (market- and application unaware)
  - Technical decisions from discussions
  - See also https://www.ieee802.org/1/files/public/docs2021/new-specht-cut-through-update-0121-v02.pdf
- ***Other individual contributions on CTF are welcome!***

Planning Proposal: Introduction



- Historically, CTF is controversially discussed in IEEE 802.1 and IEEE 802.3
- Building IEEE 802.1 consensus, followed by initial joint 802.1/802.3 activities, is a *first phase*
  - Before IEEE 802.1 activities (e.g., motion)
  - Before IEEE 802.3 activities (e.g. CFI)
- This proposal shows how such a first phase ***could*** look like
  - Consensus is not a decision of an individual such as the author
  - Open for discussion, adjustment, change during the course of this first phase
- This proposal is based on the idea to give an IEEE 802 tutorial on CTF
  - A tutorial is **one option** to discuss/initiate activities across multiple IEEE 802 WGs (IEEE 802.1 & IEEE 802.3)
    - Broad audience
    - Requires sufficient contents
  - However, there are **alternative options**
    - Joint 802.1/802.3 sessions
    - Nendica sessions

Planning Proposal: Steps/Goals

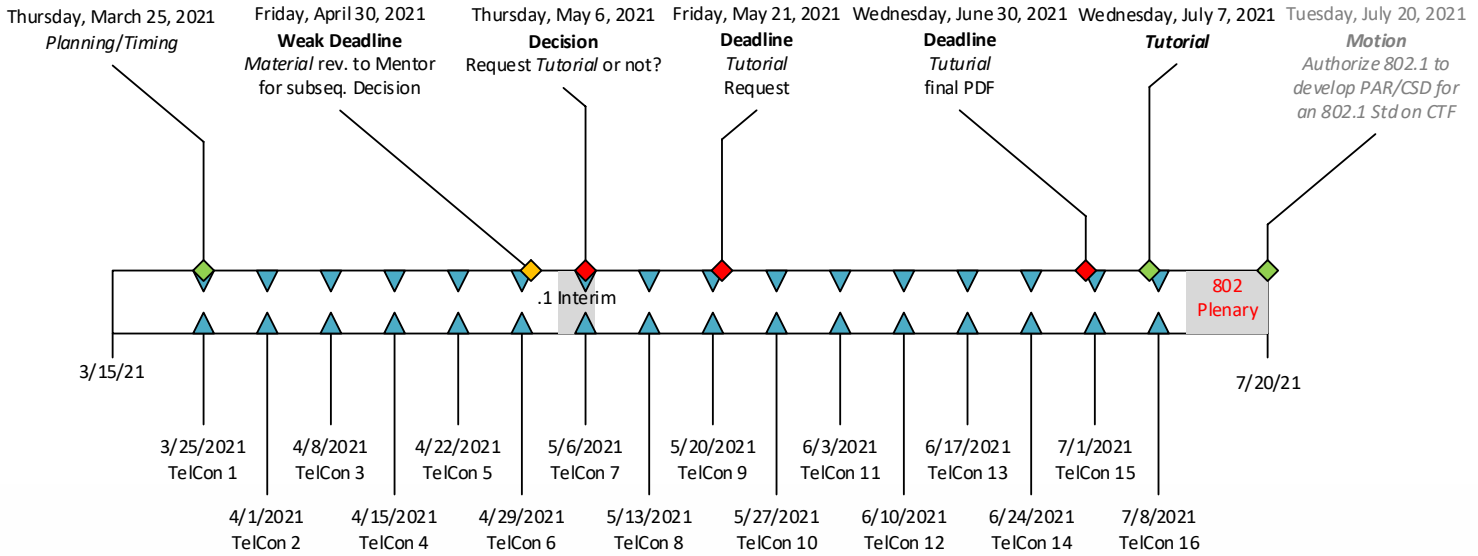


- Now … Until ~ end of April 2021
  - Prepare the 802.1 presentation on CTF for 802.1 & 802.3
- May 6, 2021 (during the 802.1 Interim)
  - Decision: Request IEEE 802 tutorial time, or not?
  - Implication: Level of consensus/support in 802.1 known
  - Implication: Open concerns, discussion points known
Resolution until tutorial request feasible?
  - Implication: Sufficient content & contributions exists/known
- May 21, 2021 (or earlier)
  - Options (either, or both)
    - Request 802 Tutorial time in July (high attendance expected)
(https://mentor.ieee.org/802-ec/dcn/21/ec-21-0076-00-00EC-2021-july-tutorial-request-form.docx)
    - Pre-announced Nendica session(s)/joint 802.1 & 802.3 sessions (less timing constraints)
- June 30, 2021 (or earlier; in case of an 802 Tutorial)
  - File final presentation
- July 7, 2021
  - 802 Tutorial
- After July 7, 2021 (in case of an 802 Tutorial)
  - 802.1 specific steps, 802.3 specific steps, **OR**
  - Further joint activities

Planning Proposal: Nendica Meetings

Schedule

- Start during regular Nendica sessions
  - Current Nendica schedule: 2h/week
  - Weekly 90 min. for CTF, or less
    - Other Nendica work items/study items
    - Required discussion time not know, yet
- If (and only if) more time is needed:
  - Separate sessions for CTF, 2h/week
  - Wednesdays, 9am to 11am ET
    (1h overlap with IEEE P802.1DP)
  - Requires 802.1 approval
- Keep CTF on the agenda
  - Reminder/placeholder, welcoming individual contributions
  - Submitting contributions (latest)
    - Indication: The day before a Nendica meeting
    - Upload: Before presenting during the meeting (https://mentor.ieee.org/802.1/documents?is_group=ICne)
- Add key dates to Nendica/IEEE 802.1 calendar



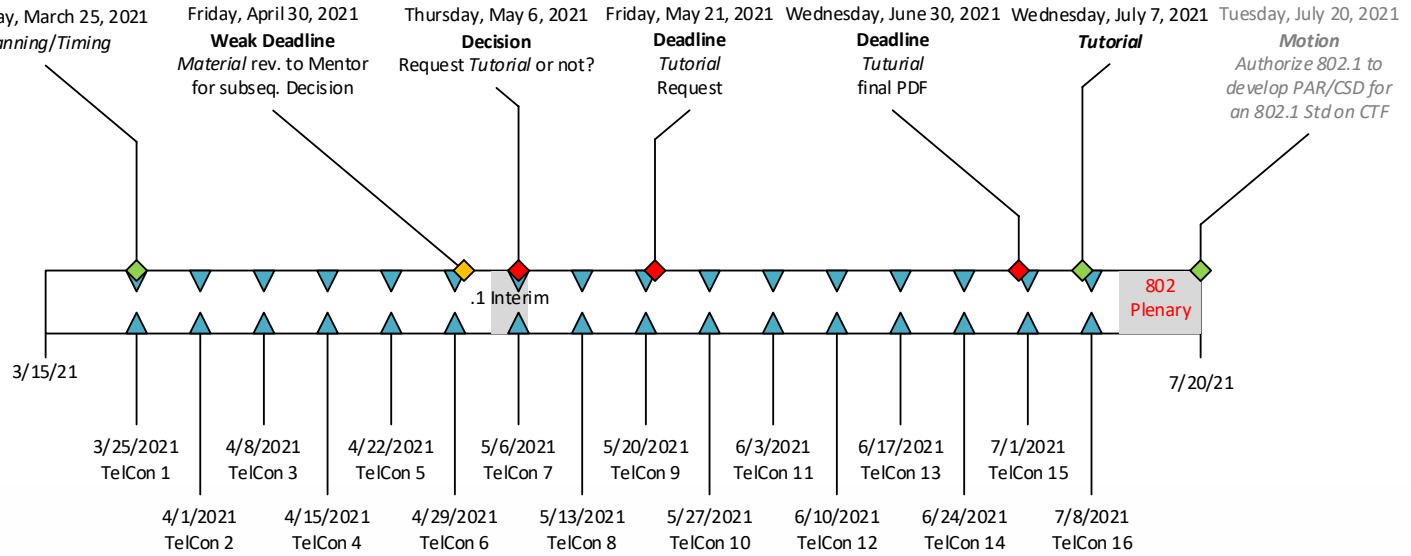
Content

- Present and discuss individual contributions on CTF
- Prepare and discuss joint material
  - Structure & content
    - Content of this presentation itself
    - Link to individual contributions from this presentation
  - Presenters

Discussion: Timing and Locations

Estimates

- Appears aiming for May 2021 realistic to reach “sufficient” 802.1 consensus?
- Appears aiming for July 2021 realistic to initiate dedicated steps in IEEE 802.1 and IEEE 802.3?



Beyond IEEE 802.1

- 802 Tutorial?
- 802.1/802.3 joint session(s)?
- Final decision could be made in May 2021, based on the status by then

Discussion: In case of a joint presentation/tutorial

Author of this slide set[1]

- Introduction & Motivation
  (TSN tools/data plane/guaranteed latency/CTF delay performance impact…)
- A possible 802.1 integration
  - Network aspects/QoS challenges with CTF
  - Bridge features with CTF
- Problem statements

Contributions from others?

- For example, markets/specific use-cases
- Proposals/contributors?

Other discussions?

1: Cmp. https://www.ieee802.org/1/files/public/docs2021/new-specht-cut-through-update-0121-v02.pdf and https://mentor.ieee.org/802.1/dcn/21/1-21-0009-01-ICne-cut-through-forwarding-ctf-in-bridges-and-bridged-networks.pdf

Possible structure of a tutorial (and who is driving it)

- Johannes Specht: Introduction & Motivation
  (TSN tools/data plane/guaranteed latency/CTF delay performance impact…)
- Markets/use-cases presentations
  - Jordon Woods: Industrial Automation
  - Data Center Bridging
  - Jordon Woods: Pro Audio
  - Automotive
- Contribution(s), from an 802.3 perspective (placement in a tutorial can be different)
- Johannes Specht: A possible 802.1 integration
  - Network aspects/QoS challenges with CTF
  - Bridge features with CTF
- Johannes Specht: Problem statements for 802.3
- Call for actions

Thank you for your Attention!

Questions, Opinions, Ideas?

Johannes Specht
Dipl.-Inform. (FH)
M +49 (0)170 718-4422
johannes.specht.standards@gmail.com