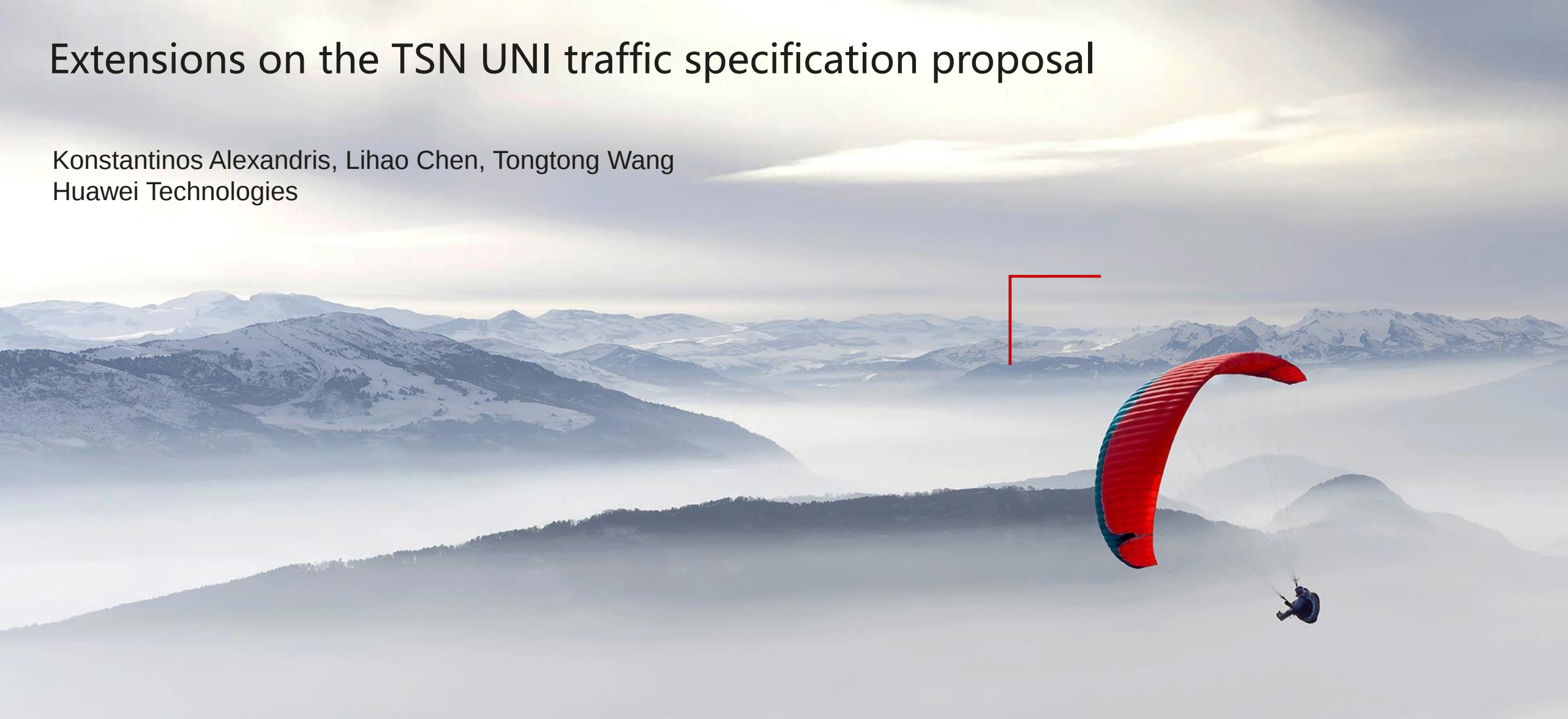


Extensions on the TSN UNI traffic specification proposal

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History & Progress in Nendica Group

- Various directions have been discussed during IEEE 802.1 2022 Interim and Plenary sessions.
 - Topic differed to Nendica group to be developed further.
- **Feb `23 - Jun `23:** Incubation period of the “802.1-23-0001 Vetting topic: Extensions on the TSN UNI traffic specification” (curr. is Rev.6).
- All revisions can be found here:
 - https://mentor.ieee.org/802.1/documents?is_group=ICne&is_year=2023&is_dcn=0001
- Proposal discussed in TSN TG: [January Interim Session](#) and [May Interim Session](#) 2023.
- **Disposition:** No further comments raised. Chair of the Nendica group indicated in the Nendica report toward the 802.1 WG Opening in July 2023 Plenary Meeting that vetting of this topic has been completed.

Objective

- TSN UNI TSpec to handle TokenBucket traffic model [1,2]
 - Need for a standard way to receive stream requirements
 - Only basic and TimeAware Tspec elements are included in 802.1Q-2022
- Enable TSN UNI to support the TokenBucket traffic model in conjunction with centralized configuration [*]
 - End-station/CUC needs to send the TokenBucket Tspec via TSN UNI
 - Current projects and standards do not define specific YANG models
 - Centralized configuration involves CNC assistance support
 - To be complementary to RAP (P802.1Qdd) that uses distributed configuration

[*] Both fully centralized and centralized network/distributed user configuration models

[1] <https://standards.ieee.org/ieee/802.1Q/10323/>

[2] <https://www.ieee802.org/1/files/public/docs2021/new-specht-onats-0921-v01.pdf>

Proposal (1/2)

Tspec definition is not **complete**: Addition of parameters for the TokenBucket model

Sub-clauses to be extended:

- **46.2.3.5:** Extension of the existing Tspec incorporating the relevant parameters (**currently missing**)

Table 46-10–TspecTokenBucket elements

Name	Data type	Reference
MaxFrameSize	uint16	46.2.3.5.3
MinFrameSize	uint16	46.2.3.5.8
CommittedInformationRate	uint64	46.2.3.5.9
CommittedBurstSize	uint32	46.2.3.5.10

- **46.2.3.5.8 - 10:** Explanatory text related to Table 46-10 parameters to be added (**currently missing**)

Proposal (2/2)

Existing YANG models do not support centralized configuration including the TokenBucket Tspec

Sub-clauses to be extended:

- **48.5.23:** Extension of the respective YANG schema tree related to the `ieee802-dot1q-tsn-config-uni` YANG module (**currently missing**)
 - `traffic-specification` [3]: To include TokenBucket TLV parameters [TokenBucket Tspec]
- **48.6.3:** Extension of the `ieee802-dot1q-tsn-types` YANG module (**currently missing**)
 - `container token-bucket`: To be added under `container traffic-specification` including the relevant parameters as leaf statement:

`min-frame-size, committed-information-rate, committed-burst-size`

[3] <https://1.ieee802.org/tsn/802-1qdi/>



Extensions on TSN UNI YANG schema tree

Updates on schema for the ieee802-dot1q-tsn-config-uni YANG module [*]

```
module: ieee802-dot1q-tsn-config-uni
```

```
⋮
```

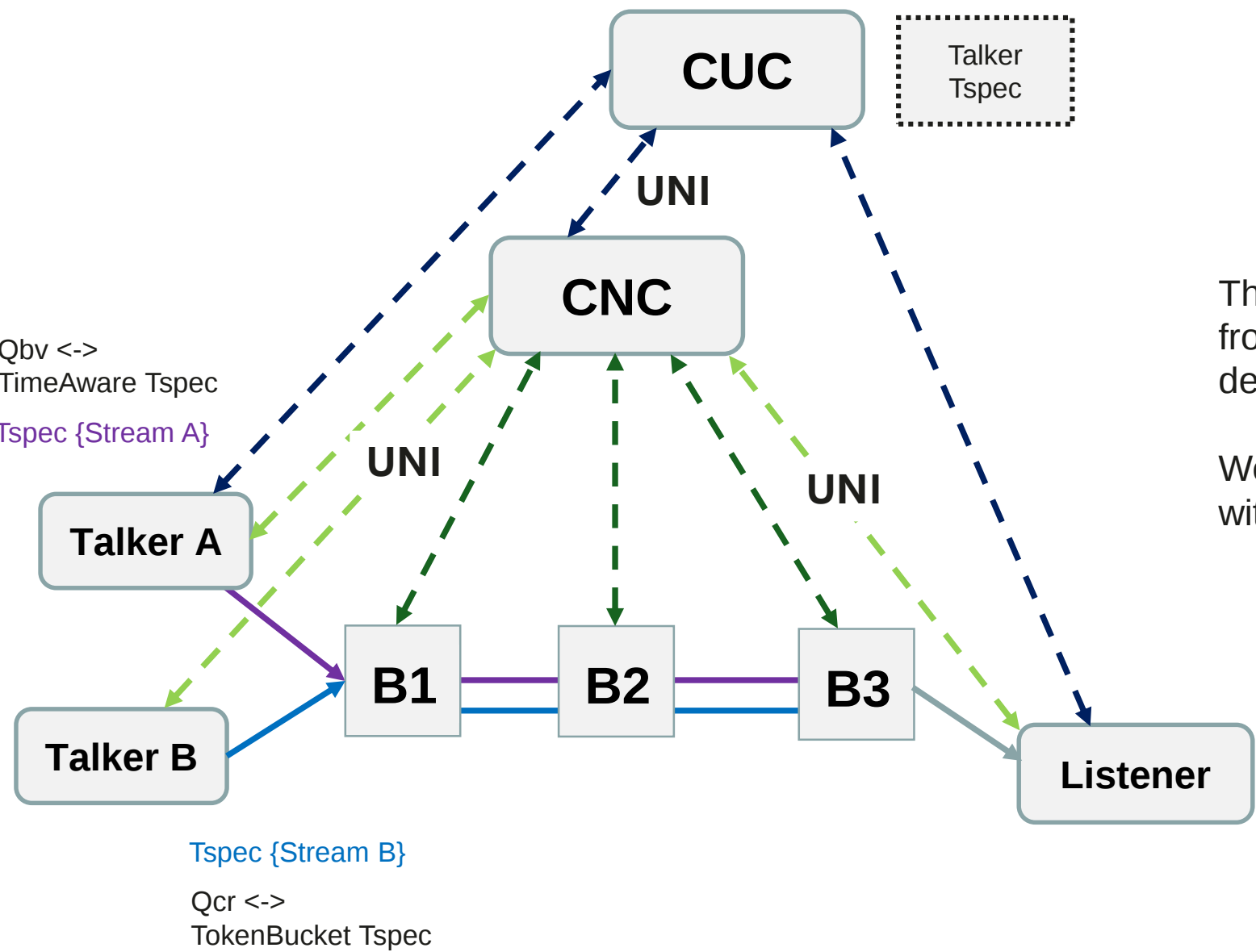
```
+--rw traffic-specification
|   +--rw (tspec-options)
|   |   +--:(tspec-option-1)
|   |   |   +--rw interval
|   |   |   |   +--rw numerator uint32
|   |   |   |   +--rw denominator uint32
|   |   |   +--rw max-frames-per-interval uint16
|   |   |   +--rw time-aware!
|   |   |       +--rw earliest-transmit-offset uint32
|   |   |       +--rw latest-transmit-offset uint32
|   |   |       +--rw jitter uint32
|   |   +--:(tspec-option-2)
|   |       +--rw token-bucket
|   |           +--rw committed-information-rate uint64
|   |           +--rw committed-burst-size uint32
|   |           +--rw min-frame-size uint16
|   +--rw max-frame-size uint16
|   +--rw transmission-selection uint8
```

Tspec Option 1 “xor” 2

- Isolation of Tspec models (token bucket and others) in case of parameters dependency.
- What about introducing “choice” nodes in the respective YANG module ?
- The objective is to exclude any correlation while extending the existing YANG module.

[*] Similar changes apply to ieee802-dot1q-tsn-types YANG module.

Configuration Model & Tspec



The way TimeAware Tspec is conveyed from user to CNC has already been defined.

We should follow the same methodology with TokenBucket Tspec.



Conclusion

Need to extend TSN UNI

1. Motion to generate PAR and CSD
2. Any questions ?



Thank you.



Extensions on TSN UNI YANG schema tree – Alt. option

Updates on schema for the ieee802-dot1q-tsn-config-uni YANG module

```
module: ieee802-dot1q-tsn-config-uni
```

```
⋮
```

```
+--rw traffic-specification
|   +--rw interval
|   |   +--rw numerator uint32
|   |   +--rw denominator uint32
|   +--rw max-frames-per-interval uint16
|   +--rw time-aware!
|   |   +--rw earliest-transmit-offset uint32
|   |   +--rw latest-transmit-offset uint32
|   |   +--rw jitter uint32
|   +--rw token-bucket!
|   |   +--rw committed-information-rate uint64
|   |   +--rw committed-burst-size uint32
|   |   +--rw min-frame-size uint16
|   +--rw max-frame-size uint16
|   +--rw transmission-selection uint8
```

- Other way is to introduce the token bucket model as a “presence container” in the YANG module [4].
- Following that methodology, redundancy may be introduced.