

6top Protocol (6P)

draft-ietf-6tisch-6top-protocol-01

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Status

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<https://datatracker.ietf.org/doc/draft-ietf-6tisch-6top-protocol/>

The draft was adopted as Working Group draft after IETF95. [draft-ietf-6tisch-6top-protocol-00](#)

This draft is renamed from [draft-wang-6tisch-6top-sublayer-04](#), which was presented at the IETF94.

New in this version:

- Clarification of Concurrent 6P Transaction

Discussion

Derived from the plugtest experimentation. Several points to be improved:

-6P Count → 6P Status:

- Need to know $A \rightarrow B$ cells and $B \rightarrow A$ cells.

-Pagination in 6P List command

- Need to be able to limit the count and paginate
- Need to List $A \rightarrow B$ and $B \rightarrow A$ cells

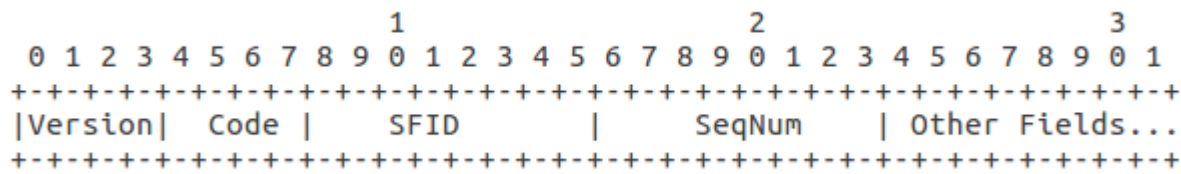
-Consistency of the schedule

- Mechanism to assert consistency between A and B schedule.
- Used to trigger correction actions at the SF (e.g CLEAR)

6P Count

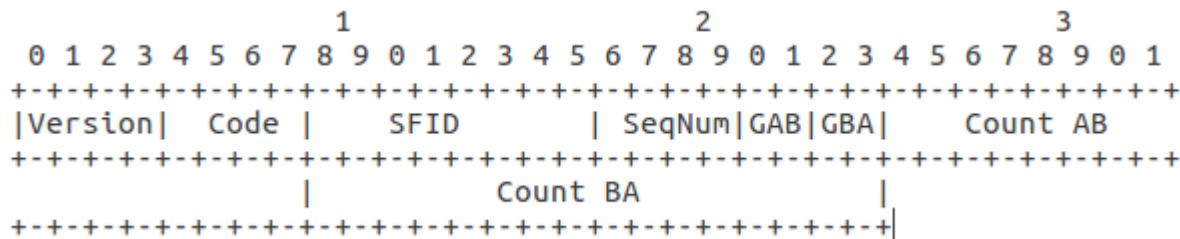
Current 6P Count only returns the number of TX cells that a node has allocated to a neighbor.

Current response format: (where Other Fields = Count AB)



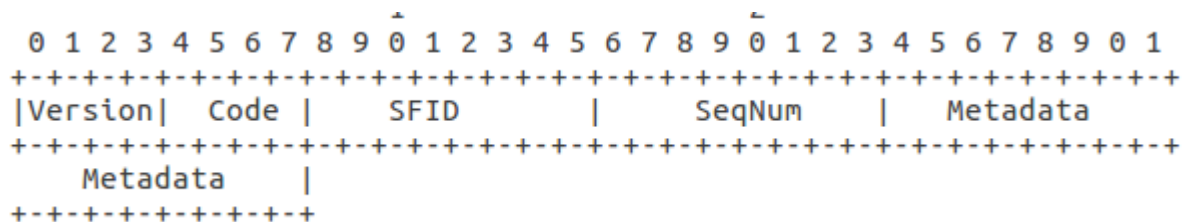
-Convert it to a Status retrieval:

- Rename: 6P Count → 6P Status
- GAB and GBA: generation of the schedule (A→B and B→A)
- IANA_6TOP_CMD_COUNT → IANA_6TOP_CMD_STATUS



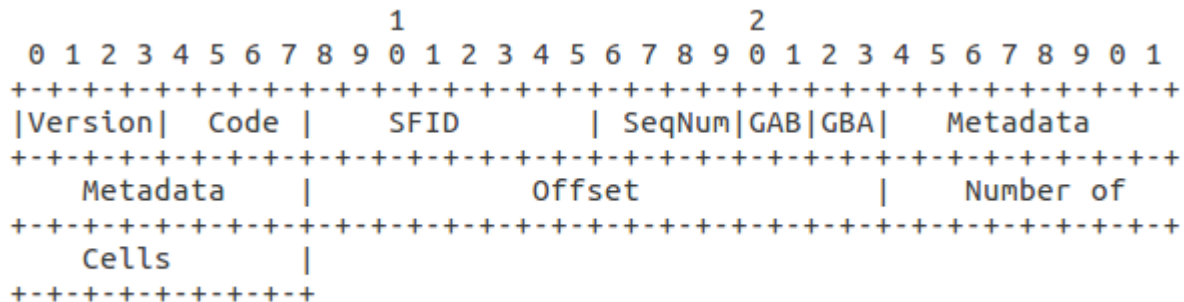
6P List Pagination

Current 6P List request message format



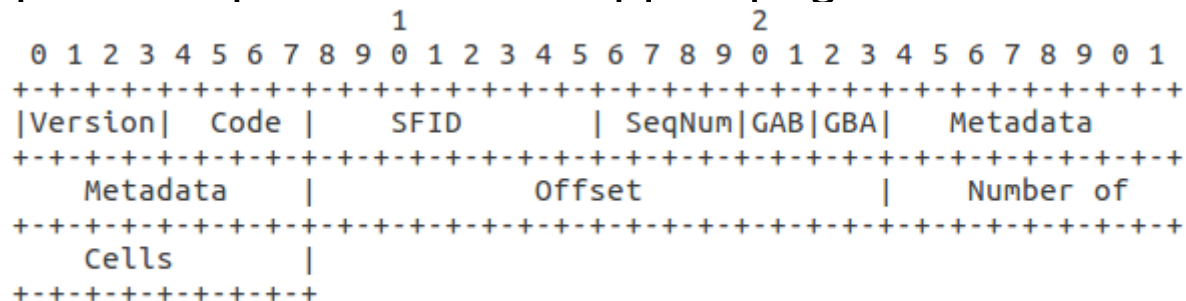
Proposed improvement to support pagination

1 CMD (List) → 2 CMD (List AB and List BA)



6P List Pagination

Proposed improvement to support pagination



Offset (2B): the offset of the first requested cell in the schedule.

Number of cells (2B): the number of cells requested starting at Offset.

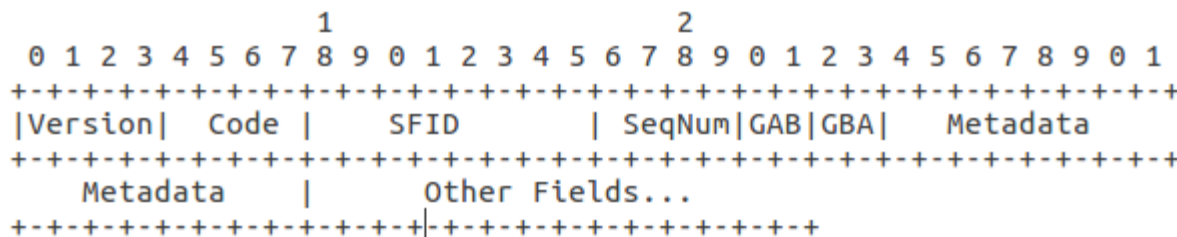
Error Codes:

-IANA_6TOP_RC_NO_RESOURCES: When the list does not fit in the packet.

Consistency

Mission: Be able to detect inconsistencies in the schedule

- Need to know whether the two sides have the same information in the schedule.
- Modify general 6P Header. Split Seqnum field. Use 4bit for SeqNum and 4bit to keep track of the **generation** of the schedule.
- Lollipop counter. Wraps from 10b to 01b. 00b only on clear.
- **In the packet:** Generation Number per side (A→B and B→A).
- 2 bit counter: {0=clean, 1-2: counter, 3 = reserved}
- GAB and GBA fields in the header.
- **In the node:** Local Generation Number (A→B and B→A).
- 2 bit counter: {0=clean, 1-2: counter, 3 = reserved}
- GTx and GRx in the



Consistency

- Generation Counter per side (A→B and B→A).
- 2 bit counter: {0=clean, 1-2: counter, 3 = reserved}

Rules (Assume 2 node A and B)

- When a node has never scheduled anything to the neighbor

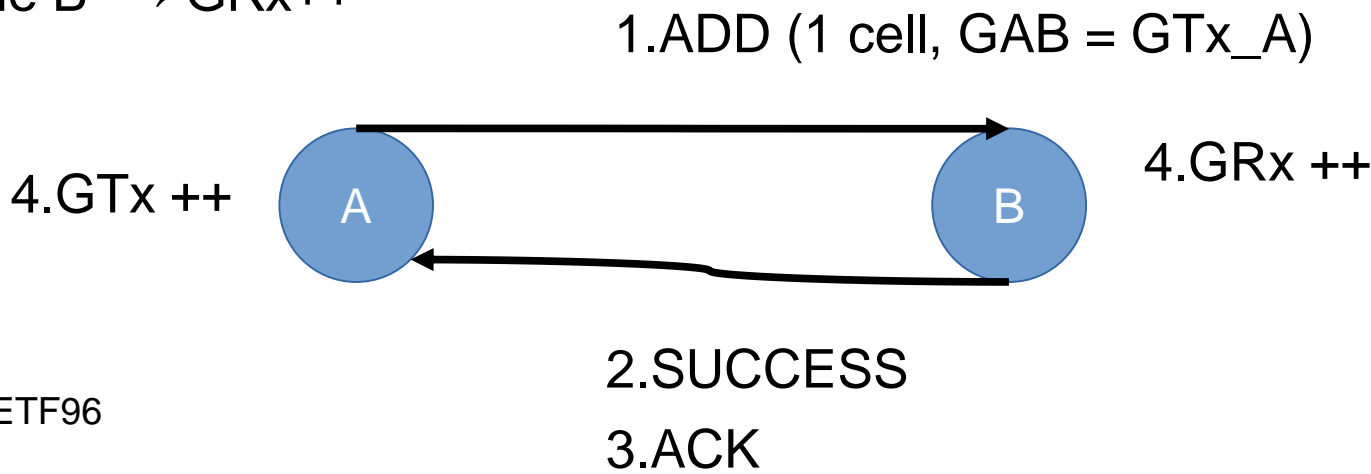
$$GAB = GBA = GTx = GRx = 0$$

- After 6P CLEAR → $GAB = GBA = GTx = GRx = 0$

- After 6P ADD or DELETE (A→B) :

Node A → $GTx++$

Node B → $GRx++$

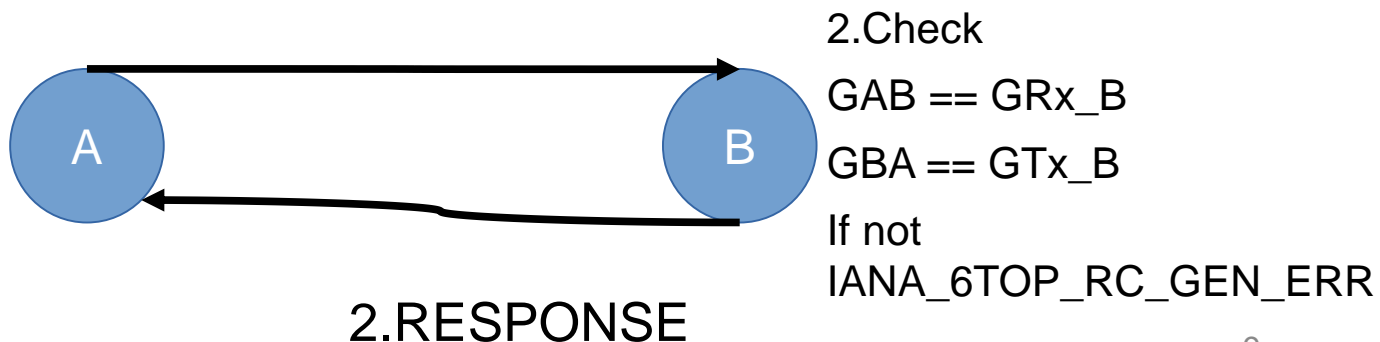


Inconsistency detection

At each 6P Packet.

- GAB and GBA are part of the header
- Inconsistency detection does not apply to 6P CLEAR cmd.
- If detected Return IANA_6TOP_RC_GEN_ERR

1.STATUS (1 cell, GAB = GTx_A, GBA = GRx_A)





Thanks!

- Q&A