draft-ietf-6tisch-6top-sf0-05

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Status

- Goal: Dynamic and Distributed Scheduling Function Zero for 6tisch
- News: Revision from comments
- Next: ?
Tickets

#Ticket 66, 67, 70, 71, 72, 74, 76, 78, 79, 80, 81, 84, 86, 87, 93, 94, 95: Typos, expressions, deleted text.

#Ticket 67: Transferred to sections from Intro:
  – Cell Estimation Algorithm
  – Allocation Policy
Tickets

#Ticket 68: Difference between allocated and used cells
  – Allocated cell reserves a resource
  – Used cell is when the resource is filled with a packet.

• We count those used during the last slotframe.
• SF0 only allocates TX cells to the neighbor.
• There are no shared cells allocated by SF0.


#Ticket 69: Definition of overprovision

Overprovisioning:

- Is the action and effect of **increasing a value representing an amount of resources**.

- In the case of SF0, overprovisioning is done as a **provision to reduce traffic variability effects on packet loss**, to the expense of **artificially allocating a number of cells**.
Tickets

#Ticket 75: Relocation

• It is defined on section 4.3.3 of the 6P draft
• SF0 only decides when the relocation mechanism is activated.
• The replacement cells are selected randomly among the available ones.
• There are no retransmissions on SF0. If the allocation fails and the bad PDR condition prevails, retriggered on the next slotframe.
Tickets

#Ticket 77: Triggering events

- There is only one triggering event left: When there is a \textbf{change in the number of used cells} towards any of the neighbours

#Ticket 82, 83: Cell Estimation Algorithm

- Collect the number of used cells \textbf{towards a particular neighbor during the last slotframe}
Tickets

#Ticket 85: Flow diagram for Cell Estimation Algorithm
Tickets

#Ticket 88: OVERPROVISION value

• It is implementation-specific
• A value of 0 (Zero):
  – **Case 1:** The number of scheduled cells is equal to the number of used cells: the algorithm cannot detect an increase in cell usage. Since there is no space for new packets to the neighbour, they are dropped at the queue.
  – **Case 2:** The number of scheduled cells is higher than the number of used cells: the algorithm detects an increase in cell usage. However, the number of used cells will tend to fill the scheduled cells and it will fall into Case 1.

• Conclusion: Zero means that the number of scheduled cells towards a neighbor will not grow on top of the initial value.
#Ticket 89: OVERPROVISION relationship with SF0THRESH

- There is no intended relationship.
- They are independent on purpose to keep modularity.
- The Cell Estimation Algorithm decides **how many** cells to schedule
- The Allocation Policy decides **when** to schedule
- Along the history of SF0, we have changed the Cell Estimation Algorithm without changing the Allocation Policy. This results in complete separation between the two blocks
Tickets

#Ticket 90: CellList error handling

- **SF0 does not handle errors.** If a transaction does not succeed, it will be triggered on the next slotframe if the change in resources is still not satisfied.
- The cells on the CellList will be **randomly chosen**. Although we can add an advantage from the CellList response, we try to keep SF0 simple.
Tickets

#Ticket 91: 6P Timeout value
• SF0 has now a **per-transaction timeout value** which is implementation-specific.

#Ticket 92: PDR Definition
• Packet Delivery Rate (PDR) **is calculated per cell**, as the **percentage** of acknowledged packets, for the **last 10 packet transmission attempts**. There is no retransmission policy on SF0.
Tickets

#Ticket 96: Allocation Policy mechanism

• Initial Value of SCHEDULEDCELLS:
  Node Behavior at Boot
  – “In order to define a known state after the node is restarted, a CLEAR command is issued to each of the neighbor nodes to enable a new allocation process and **at least a SF0THRESH number of cells MUST be allocated to each of the neighbours.**”
  – SF0THRESH value is implementation-specific

• There is **no formula** to determine the number of cells to ADD or DELETE. The number of cells to ADD or DELETE is implementation-specific

• SF0THRESH is supposed to be a **fixed value**. A variable SF0THRESH has not been considered for the draft to keep it simple.
Questions?

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