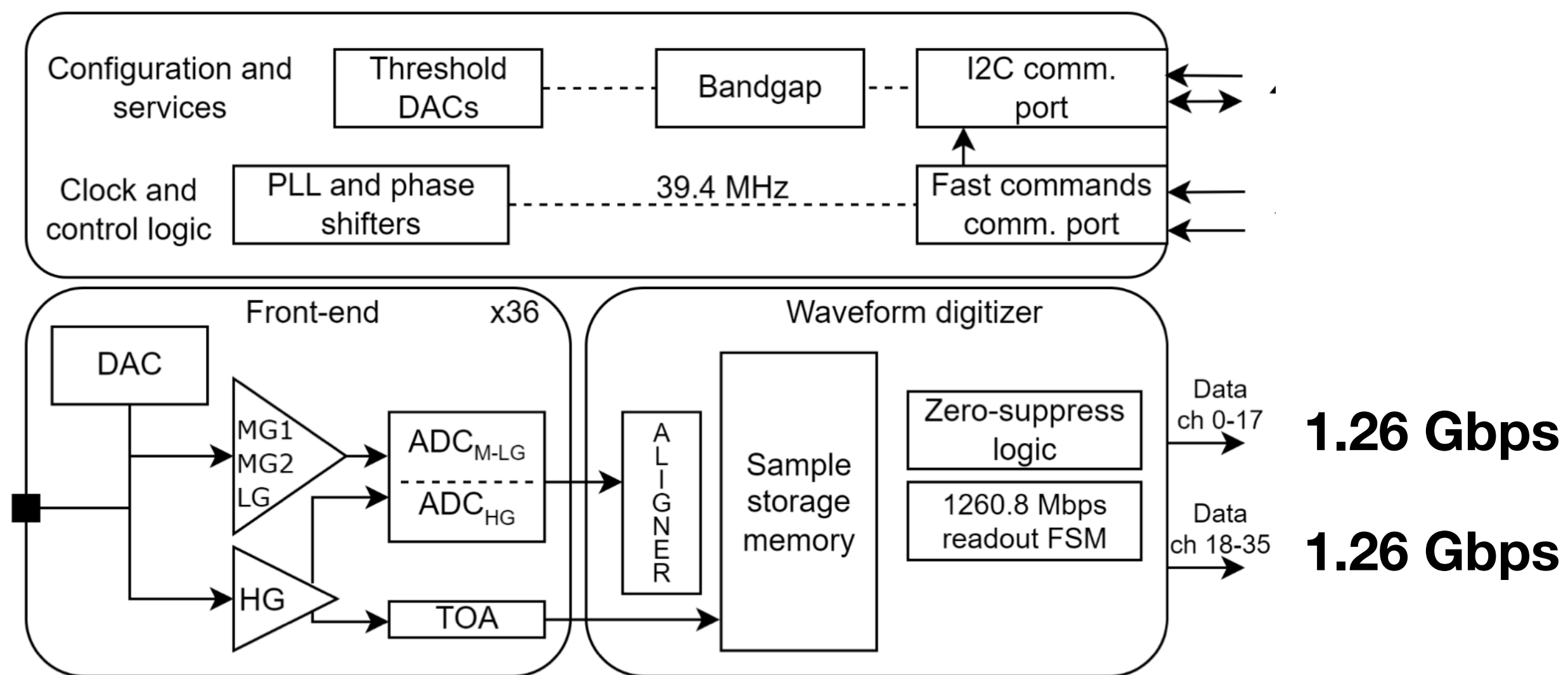# CALOROC 36 or 72 (32 or 64) channel configuration

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(ORNL)
Input from discussions with Omega, etc.

CALOROC1 A/B readout

Just concentrating on the back-end of the ASIC:
- 2x1.26 Gbps speed
- Covers 2x 18 channels (total 36 channels)
- Some I2C and fast command lines

Some readout capability calculation:

Data format:
- 1 sample
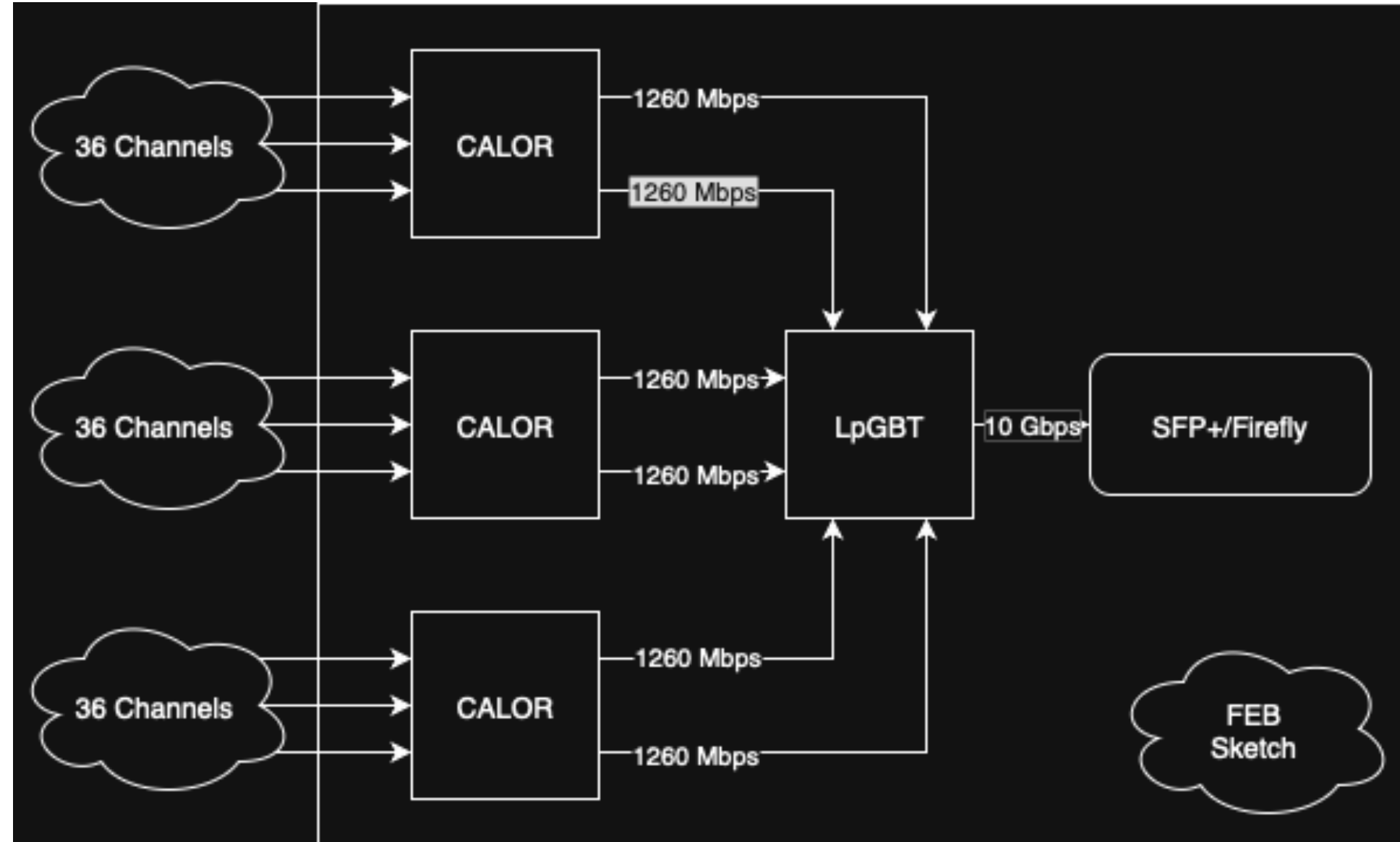 - 32b header, 32b hitmap, (1-18)x32b channels, 32b trailer, 32b idle = 160b-704b

4 sample then 640b-2816b

Readout speed: 704b/1260Mbps = 0.558 µs (0.127 µs for 1 channel)

- Physics event with 4 samples - 2.232 µs —> 450 kHz readout
- Noise event (1 random channel) with 4 samples - 118 kHz
  - If all 18 channels are noisy at same time 450 kHz/18 = 25 kHz
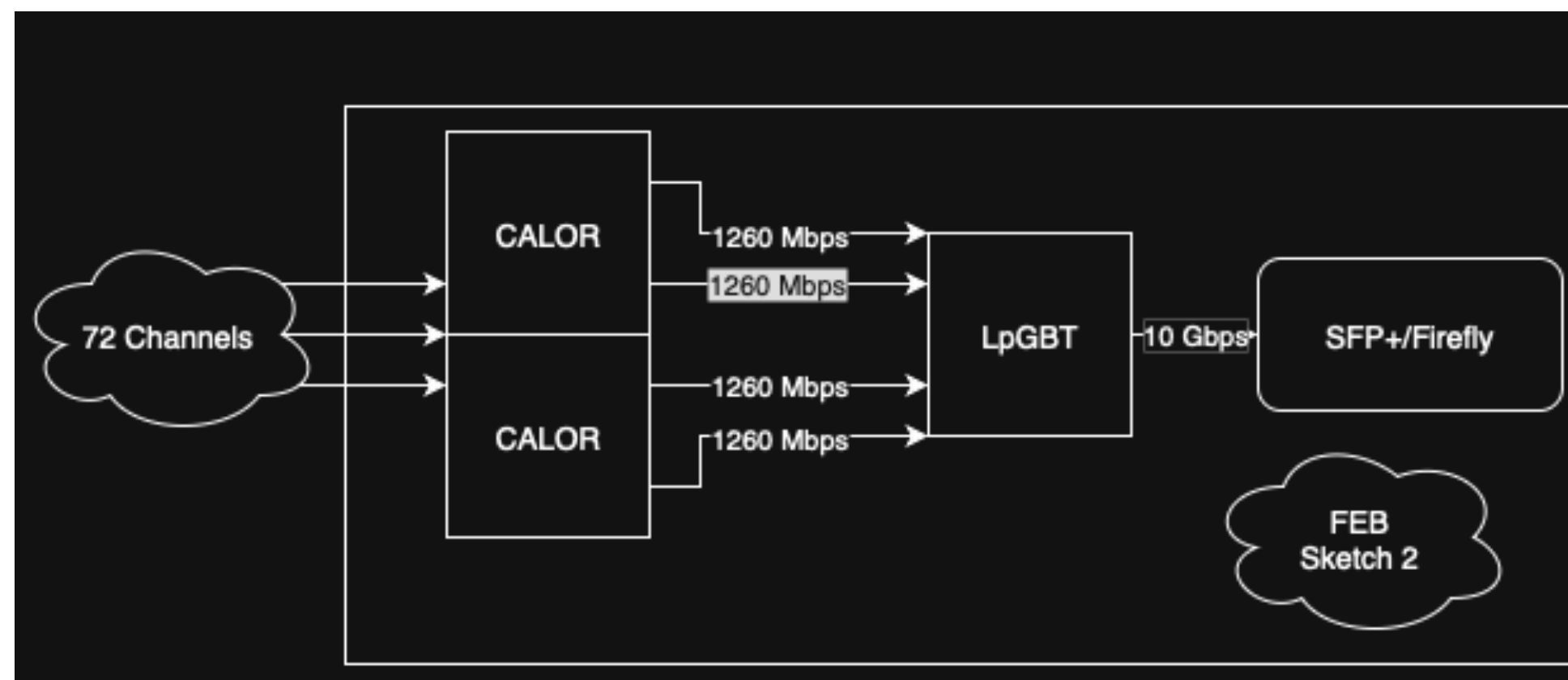
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CALOROC 1

Option 1 (36 channel):
- 3:1 Caloroc:LpGBT
- Covers 108 channels
- Exact same amount of services needed

Option 2 (72/64 channel):
- 1:1 Caloroc:LpGBT, 2x 1260Mbps lines are unused
- Covers 72 channels (or 64, if they would not fit in)
- Baseline with the services

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Some pros and cons

36 channel one	72 channel one
90%	81%
6700 pc	3700 pc
Wafer cost	Wafer cost
Packaging (2$/pc?)	Packaging (2$/pc?)
3:1 LpGBT ratio	1:1 LpGBT ratio
10 Gbps output from FEB	10 Gbps output from FEB
Services are the same	Services are the same
36, 72, 108 channel per FEB	72 (64) channel per FEB

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