Event Builder

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Nothing improved since last B2GM, just survey and purchasing products in the markets.

Architecture candidates

1. Large scale switch (+ redundancy)
2. Large scale switch + box switch
3. multiple box switches

Large scale switch

- ARISTA 7500 series
- Upto 384x10G(SFP+)
- Full wire rate, non blocking.
- M = 1 will be enough
  - 7500 has 64MB buffer
- but no 10G-T x48 board yet

Problem

- 7500 series doesn't have 1000T.
- Yes, all SFP+ port can equip 1000T SFP.
  - Most of other vendors is not so. SFP+ supports only 10Gbps.
- Even though, C/P of 1000T SFP is worse.

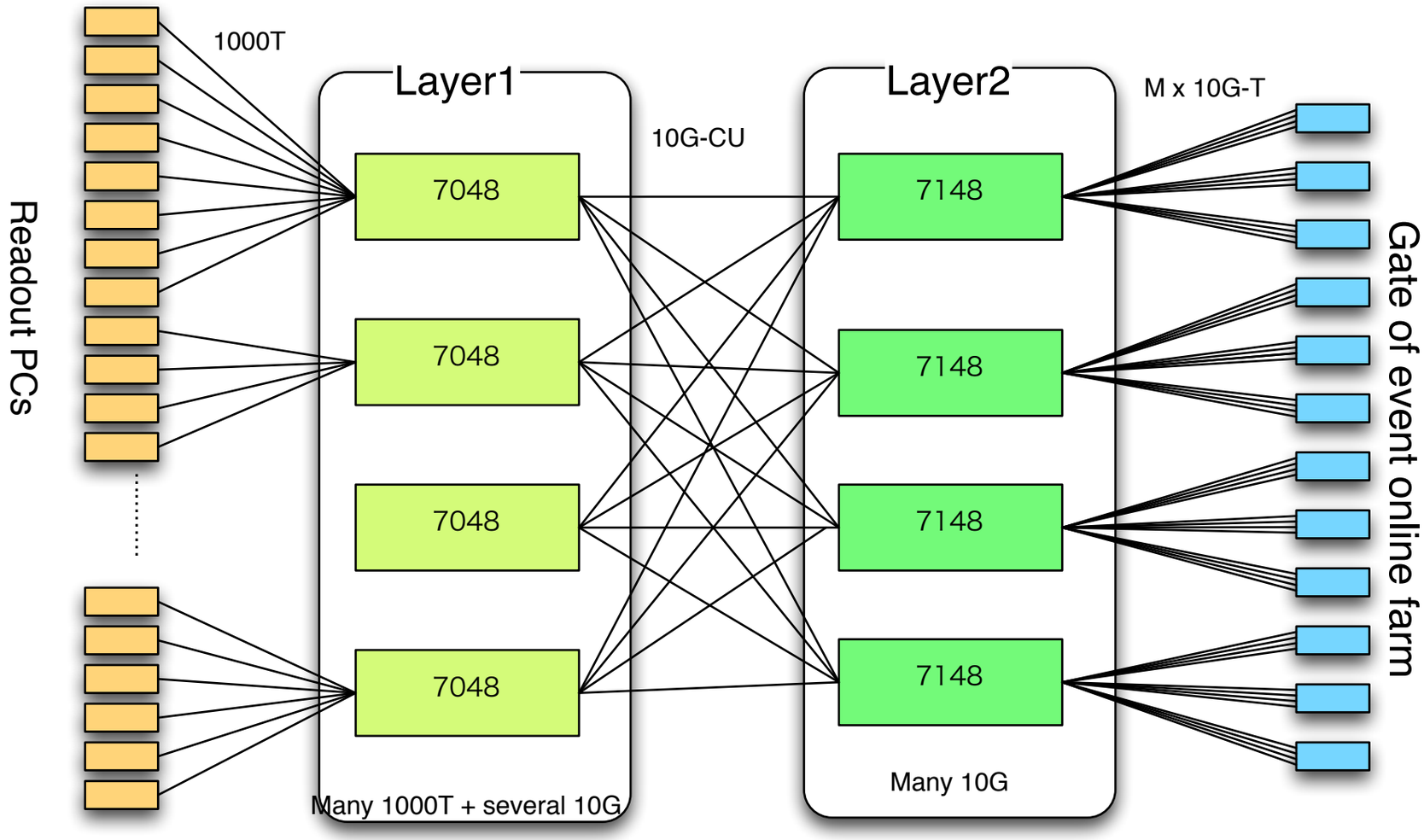
- Cost per port is expensive.
- Redundant system is awfully expensive. (90 million yen)
- Gradually purchasing according to the data rate is impossible.

2nd candidate

- several 7048 for layer1
- 7500 for layer2
- M = 1

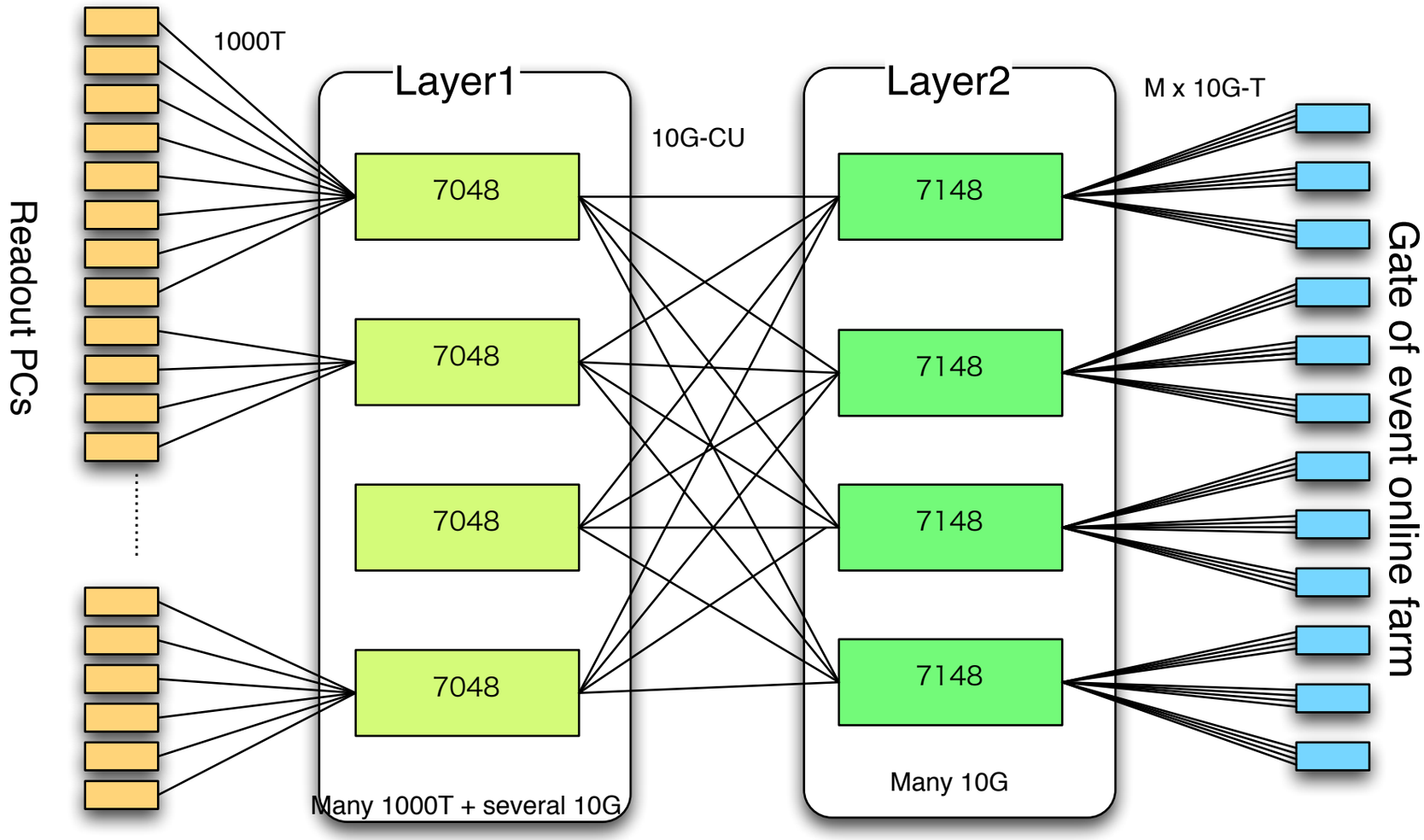
- Slightly cheaper than 1st candidate, but cost of 7500 is still dominant.
- Redundant system is still expensive. (80 million yen)

3rd candidate



3rd candidate

- Complex of box switches



3rd candidate

- Complex of box switches
- 7048 as layer1
- 7148 (or 7140) as layer2
- M = 4 or 5
  - 7148 buffer is shorter than 7048

Prices

- Candidate 1 is too expensive
- Candidate 2 is still expensive
- Candidate 3 maybe acceptable
  - for step-by-step purchase, build-up
  - 2 and 3 requires 7048, so 7048 test is essential.

7048

- 7048 equips many 1Gbps and several 10Gbps interfaces
- Switch architecture is **"store and forward"** which requires long buffer.
- This has 768M packet buffer in total
  - sufficient to pass "short" burst
  - insufficient for the burst during a few seconds like a Belle experiment.

7048 test

- Confirm 7048 works well as layer 1
  - 12x1 test is done in last autumn
    - but M must be > 1 to avoid the packet loss.
    - In this weekend, 7048 will arrive at KEK. 16x1 test will starts.

7140T

- Candidate 3 requires 7148S or 7140T as layer2
  - 7148S doesn't handle 10G-T, but 7140T does.
  - we want to use 10G-T because of its reach (100m)
- 71xx architecture is **"cut-through"** which differs from that of 7048.
- Not full wire rate. 800Gbps in total.
- **If 7140 is insufficient as layer2, we have to choose candidate 2, which requires 7500.**
  - **7500 is store-and-forward and has long buffer.**

Cut through

- Cut-through starts transmission immediately after receiving the header of packet without completion the entire packet.
- The latency is extremely shorter than store-and-forward.
- So buffer is not strongly required.
  - Most of recent cheap 10G switches base on this arch.
- 7148 has only 1.7MB in total buffer.
- So # of output interface really must be larger than # of input.
  - This requires M > 4

For large “M”

- Intel X520 series, 82599
- Dual 10G-CR (X520-DA2)
  - also available Intel 10G-AF-DA, 82598
    - but reach is only 7m
- **Dual 10G-T (X520-T2)**
  - reach is 100m
- Gate for FARM requires two or three these cards.

Prospects

- Now parts for the tests are arriving to KEK, please wait to next report in future.
  - two 7048s as layer1
  - X520-T2 and X520-DA2 for farm gate
  - Many Quad 1000T for dummy sender
- Anyway, our choice will be candidate 3.