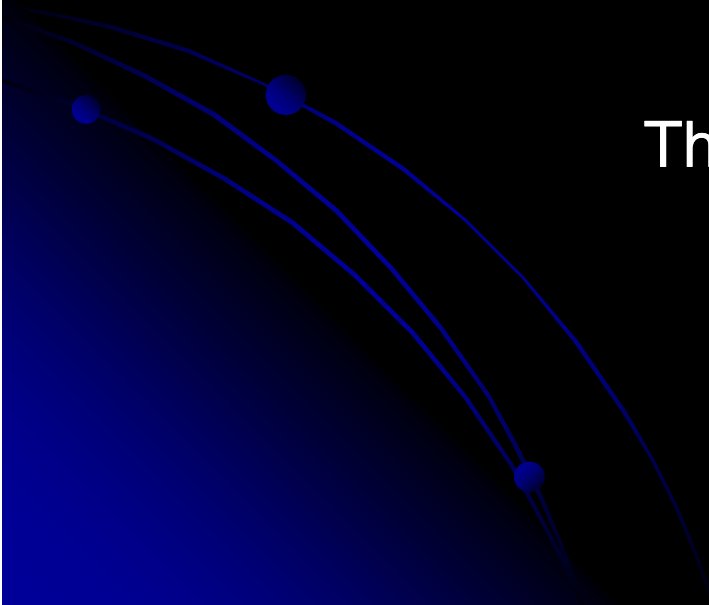


# Timing Review 2008

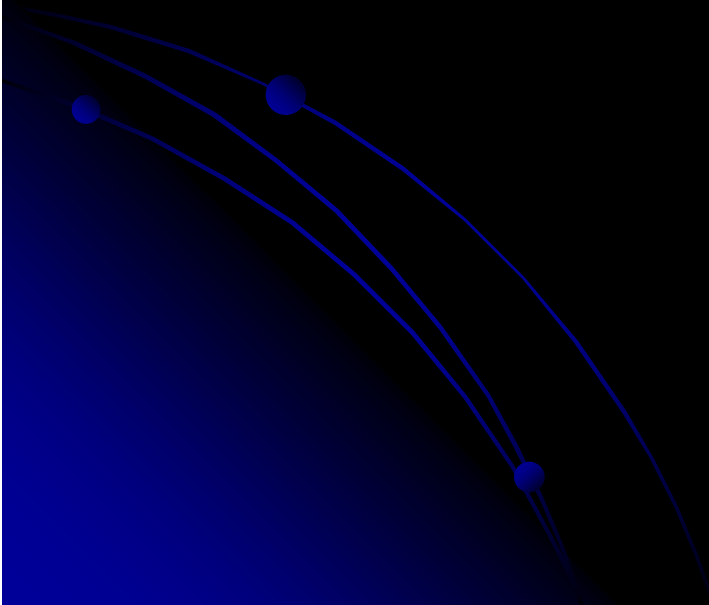
## Recommendation for data distribution

The Middleware Team  
AB-CO-IN



# Outline

- Requirements and expectations
- Selection approach
- Test results
- Recommended solution



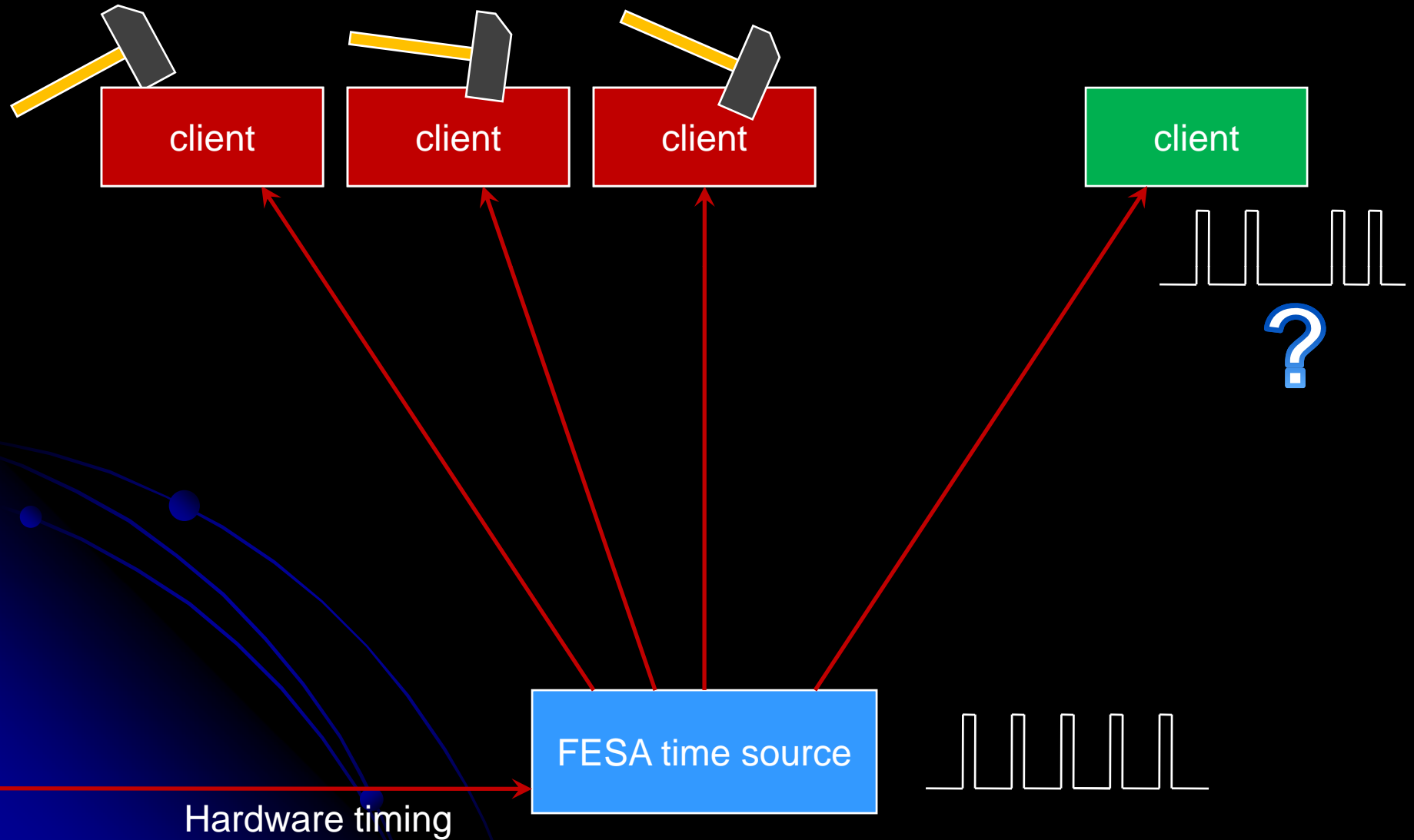
# Requirements and expectations

- Three important requirements were identified by the involved parties:
  - The data delivery *should* be based on standard and established CO components to facilitate integration, understanding and diagnostics.
  - It should be possible to introduce hardware-based timing delivery without heavily disturbing the high-level application point of view.
  - The timing constraints for the real-time usage patterns were defined so that the system should deliver information to **~2000 listeners within 100ms.**


# Selection approach

- Since standard solutions are preferred *if possible*, the natural approach is to test them against the given requirements and *stop* looking further if we find that the results are within the constraints.
  - We know from previous measurements that:
    - FESA server on a Linux machine can handle ~400 clients,
    - with ~200 clients it can update all of them within 10ms.
  - These numbers are satisfactory, but they only show the performance in *stable conditions*.
- What we did not measure, however, is the behavior of the whole system in case of partial failures.
- The selection approach therefore involved:
    - Identification of typical partial failure scenarios.
    - Measurements of correlation between quality of service as perceived by proper clients and the failures experienced by other clients.

# Selection approach – test bench



# Test results

- No lost updates were observed.
  - The worst case introduced client-side jitter of 2ms.
  - “Bursts” of connections and disconnections are also problematic, but they can be excluded - timing clients are *independent*.
  - Latency and scalability is satisfactory up to few hundred clients.
- 

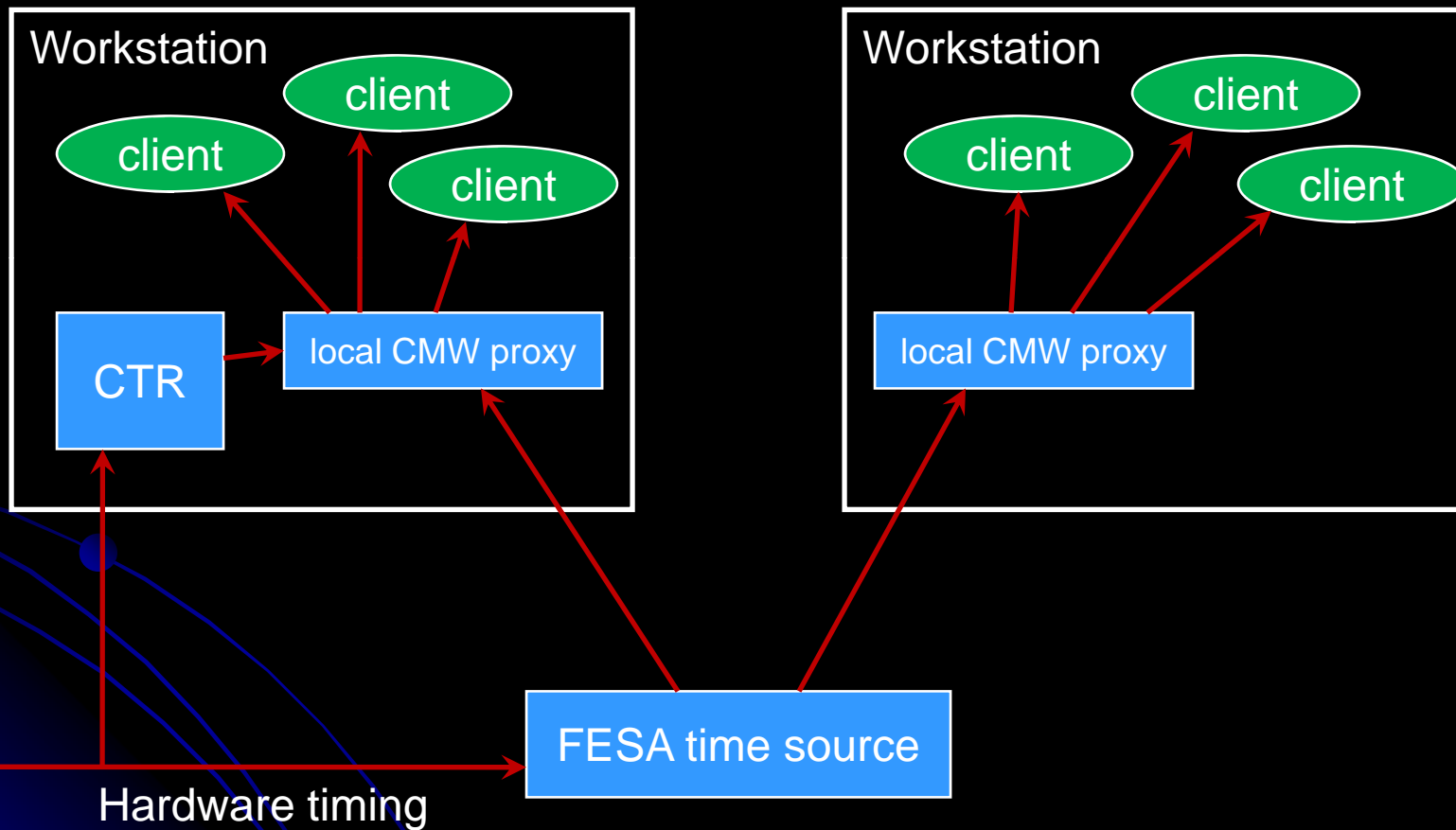
# Recommended solution

- The core recommendation with regard to the transport protocol is **CMW**.
- The architecture and layout of communicating components was discussed with HT and AP.

Two general architectures are foreseen and it is agreed that even though they have to solve the same problem, they do it in different ways and therefore provide different tradeoffs.

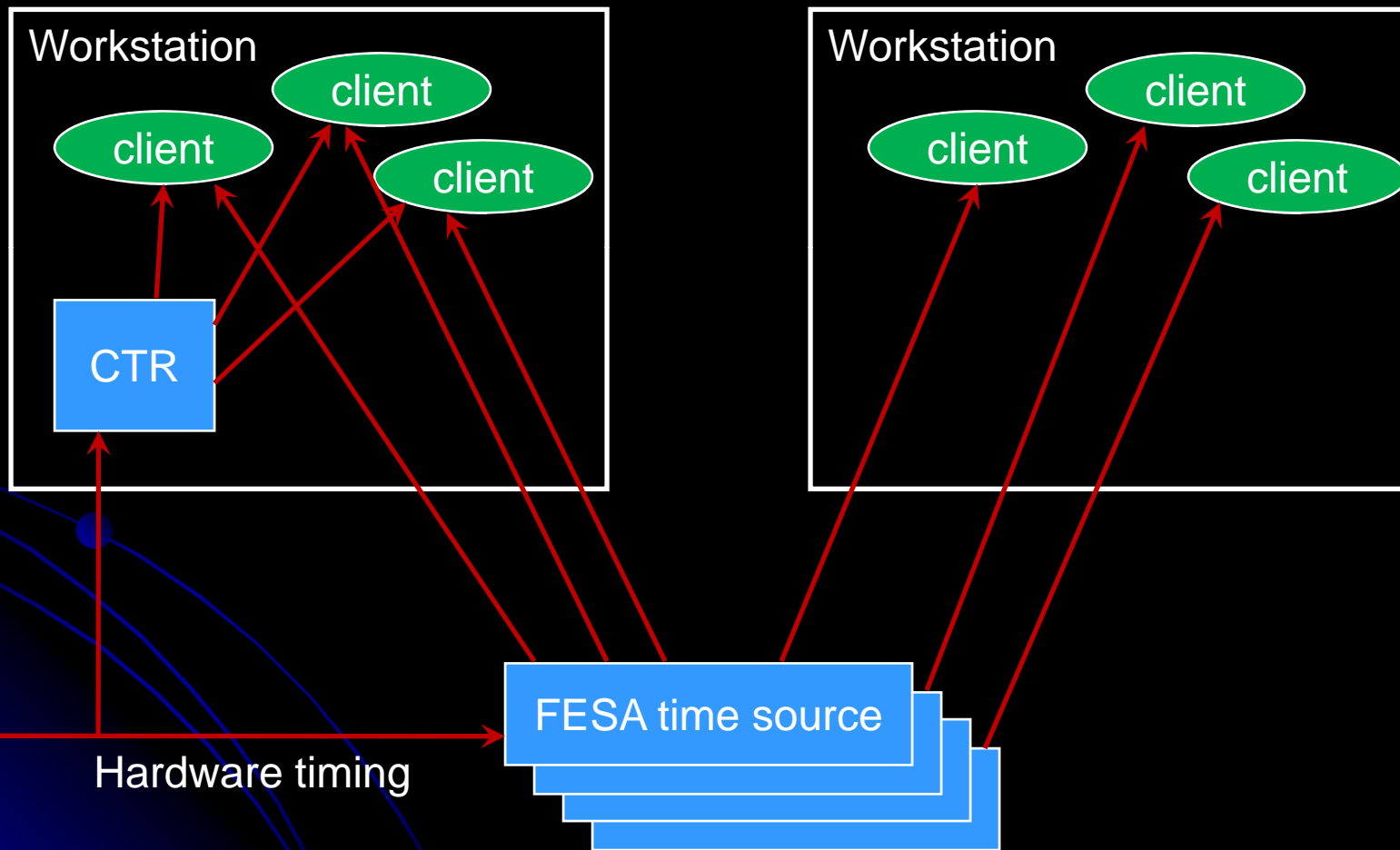
**It is too early to freeze a single layout today.**

# Recommended solution – v. 1





# Recommended solution – v. 2



“Walking on water  
and developing software  
to specification  
are easy  
as long as both are frozen.”

- Edward V. Berard

