

# Scaling the L2:

Cell-level “gossip”

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# Cell-level messaging: gains

## With **current PeerDAS**

- Reduced **store-and-forward delay**
  - **BUT, verification latency is still there**
  - **Small message overhead is there**
- Column reconstruction from **partial getBlobs**
  - Useful when
    - All blobs are public, AND
    - blobs are not all diffused in the mempool

# Cell-level messaging: gains

## With row-topics

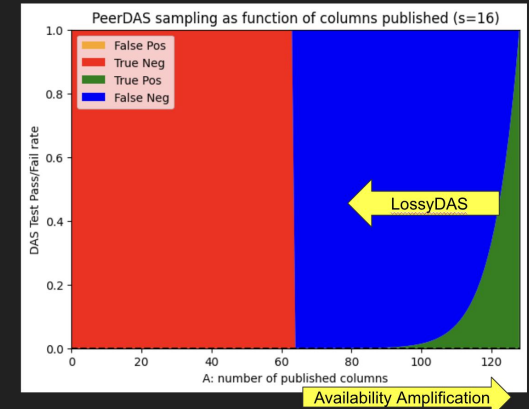
- **Partial EC-based reconstruction**
  - Still need 64 columns, but at least not the full CPU load

## With 2D RS erasure coding

- Cell-level sampling uses the same message size

## With 2D RS erasure coding and row-topics

- Availability amplification:
  - no “bordeline available” or “95%” available state.
- No need for supernodes



# Cell-level messaging: hurdles

CPU overhead: cell-level validation

- VerifyCellProof (our forwarding latency):
  - 12th gen P-core: 1.46 ms
  - 12th gen E-core: 3.66 ms

BUT, we have batching

Messages/sec overhead:

- We do have small attestations working fine

Bandwidth overhead:

$\text{IdSize} / \text{messageSize}$  -> structured IDs and bitmaps ?

# Cell-level messaging: in the mempool

We already have the erasure coded type3 tx there, just not looking into it

We could do:

- Cell-based blob diffusion
- Mempool blob sampling

# Backup slides

Cell-level “gossip”

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# DAS Test Statistics

X axis: columns published

Y axis:

- LOG SCALE!
- Stacked plot

How to read:

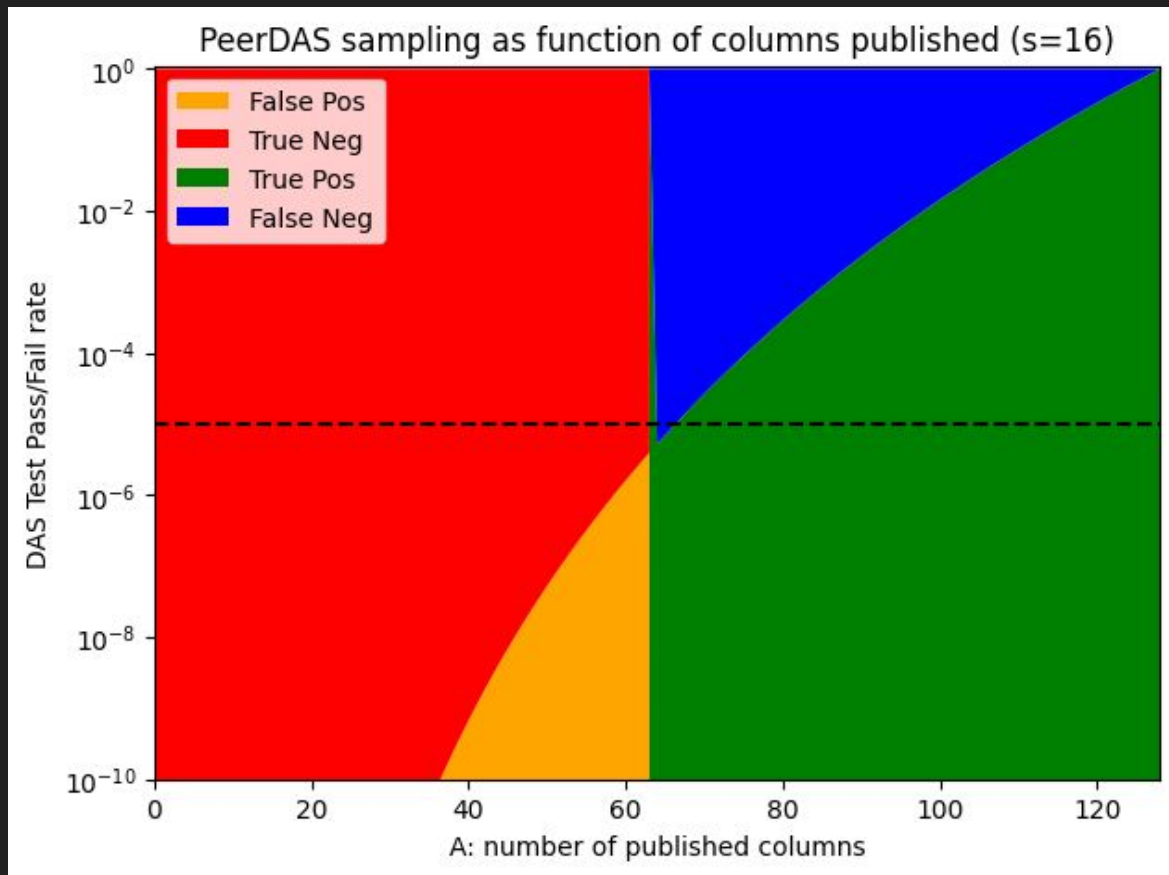
At a given X:

- Probability distribution between FP/TN/TP/FN

FP threshold:



FN: almost all nodes



# DAS Test Statistics

X axis: columns published

Y axis:

- LINEAR SCALE!
- Stacked plot

How to read:

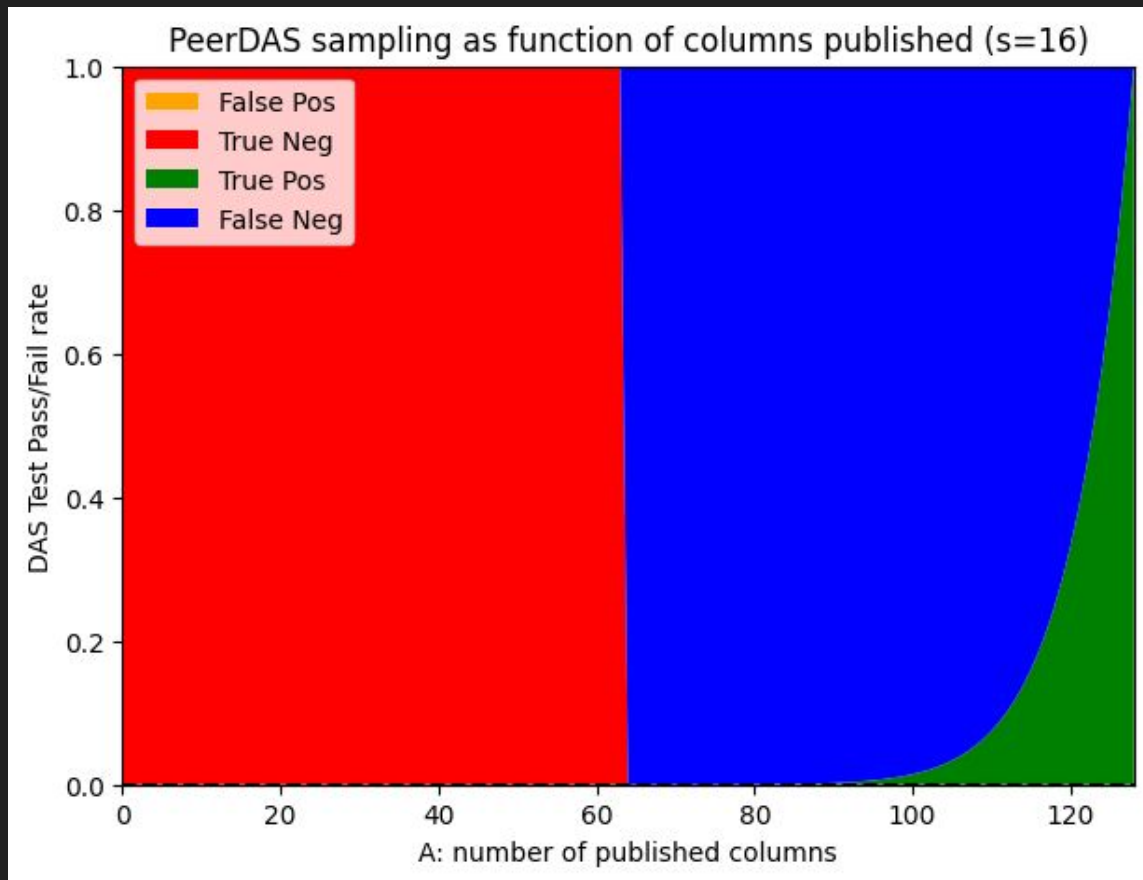
At a given X:

- Probability distribution between FP/TN/TP/FN

FP threshold:



FN: almost all nodes





# DAS Test Statistics

## LossyDAS:

- Changes sampling
- Reduce FN, while keep FP threshold



## Availability Amplification:

- Changes “reality”
- Published columns → repaired columns
- Just available → overwhelmingly available

