

# In-network Contention Resolution for Disaggregated Memory

Stewart Grant, Alex C. Snoeren

## Memory Disaggregation

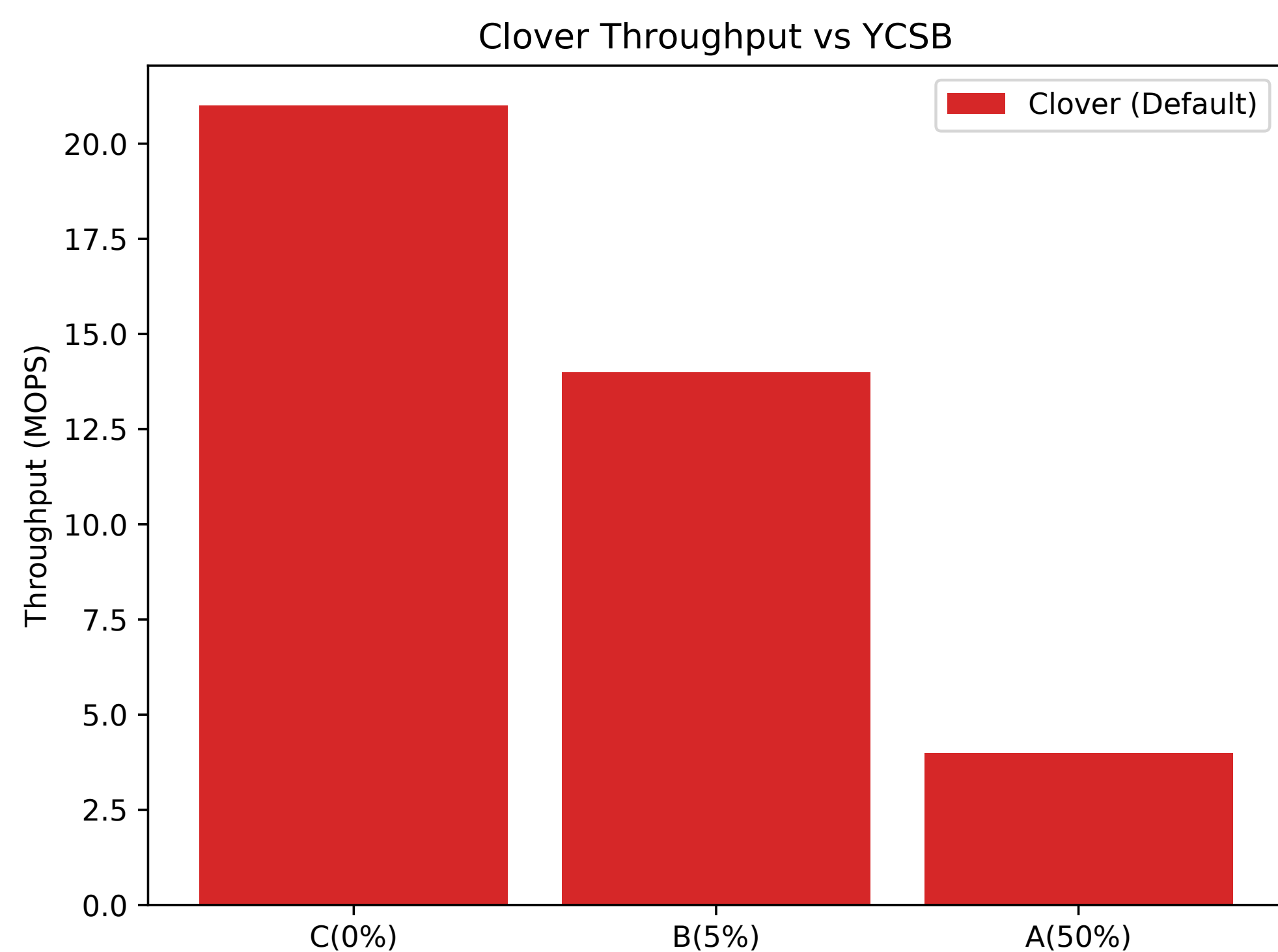
**Good**

Scalability  
Power Efficiency  
Cost Savings

**Bad**

**Latency** →  
Faults

## Contention! The Price of Remote Memory

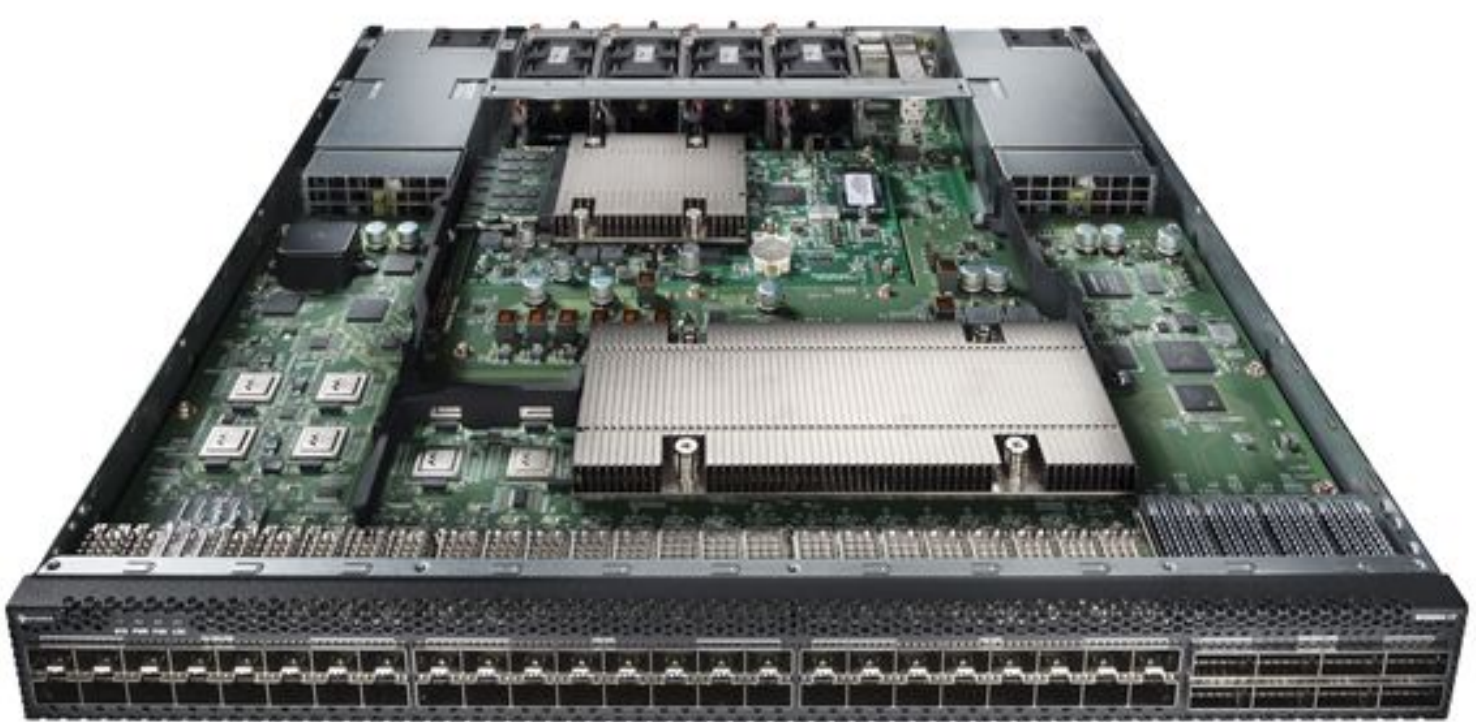


Writes to shared memory collapse performance

**20x** Slower than Local DRAM

## Networking Can Save Us! (But it's Tricky)

Centralized Programmable Switch

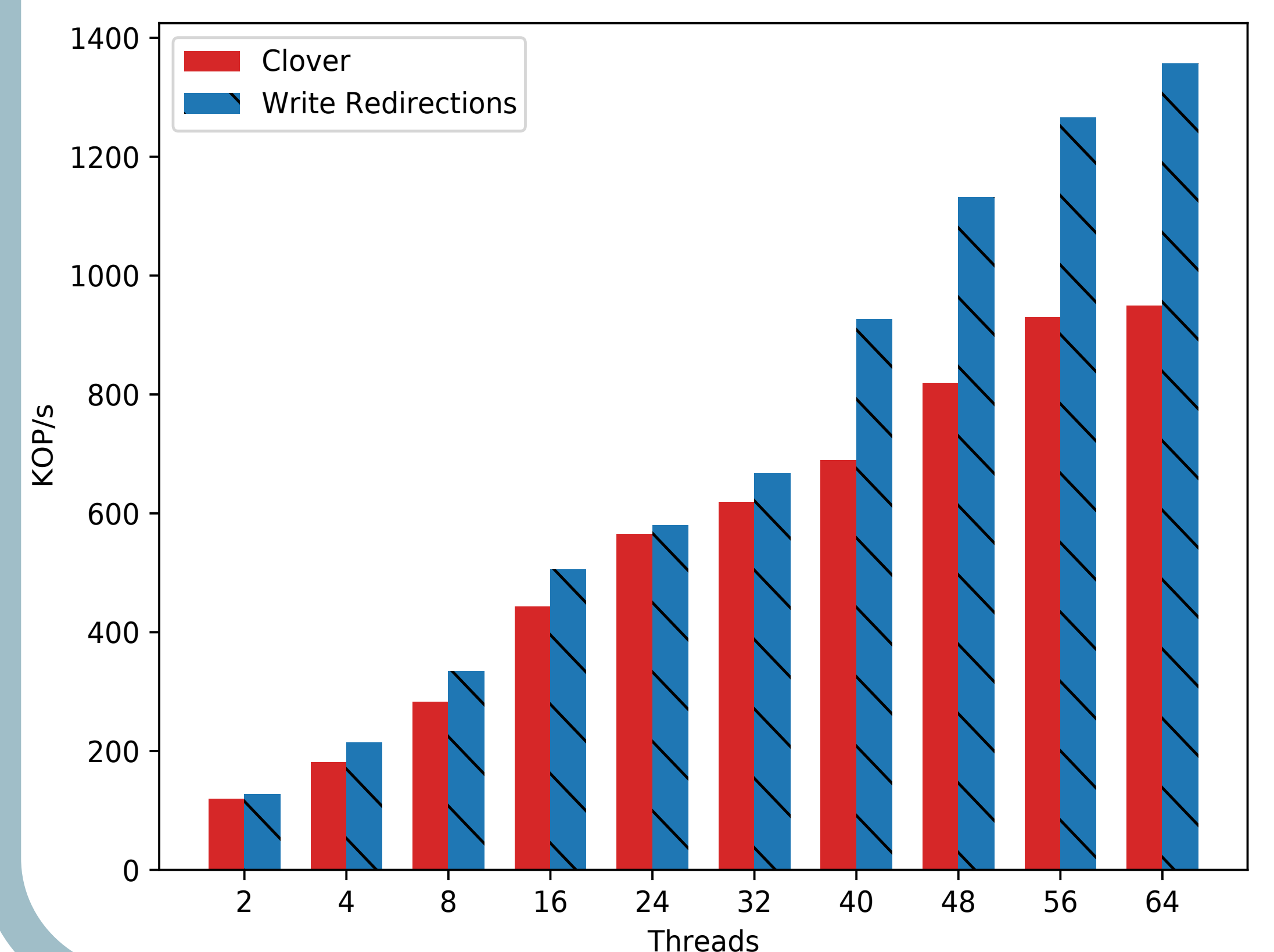


Switch Serializes Packets (RDMA) At Egress Port

### Challenges

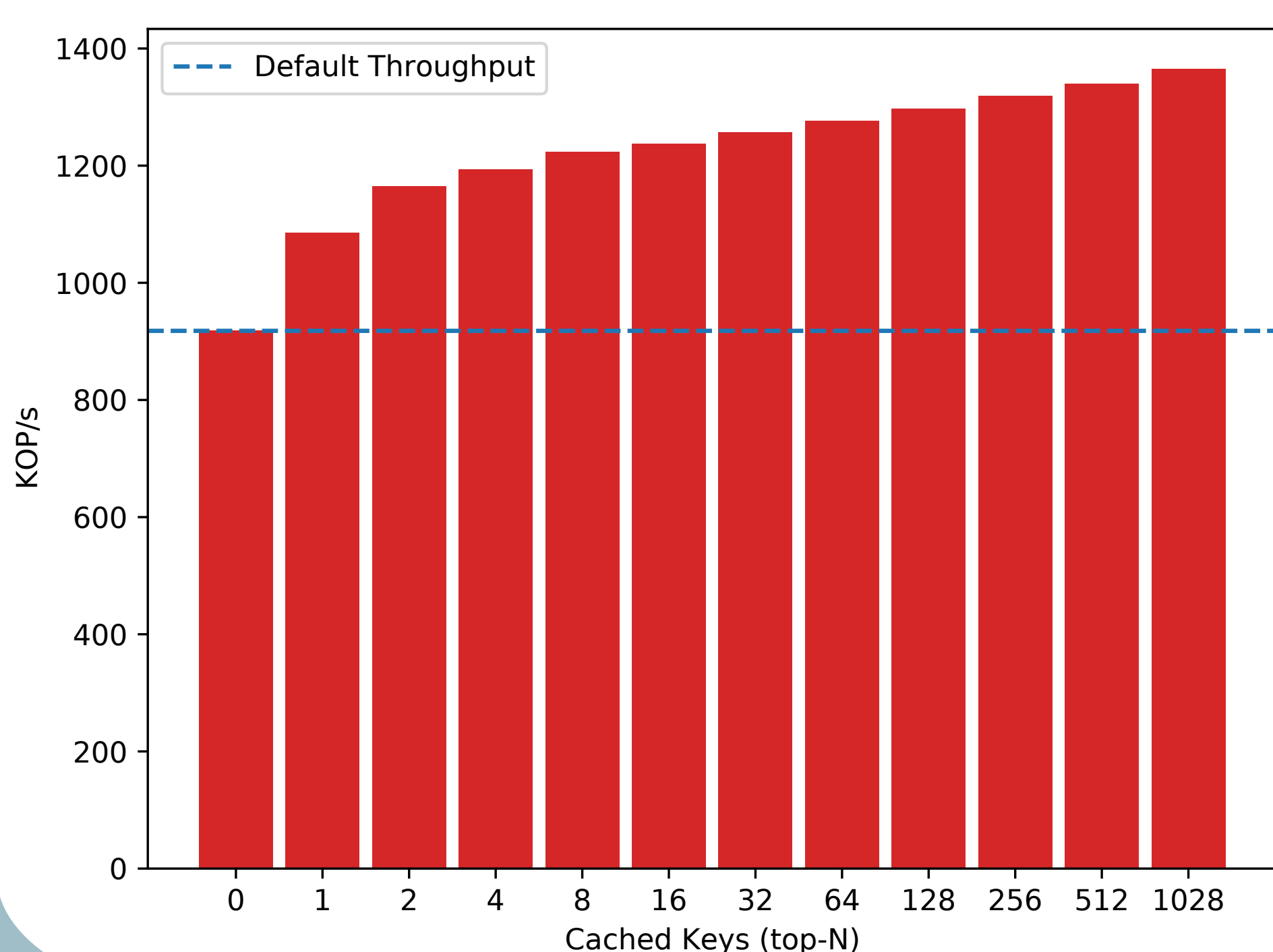
- Scarcely Memory
- Intended to Forward Packets
- Restrictive Programming

## Performance Gains

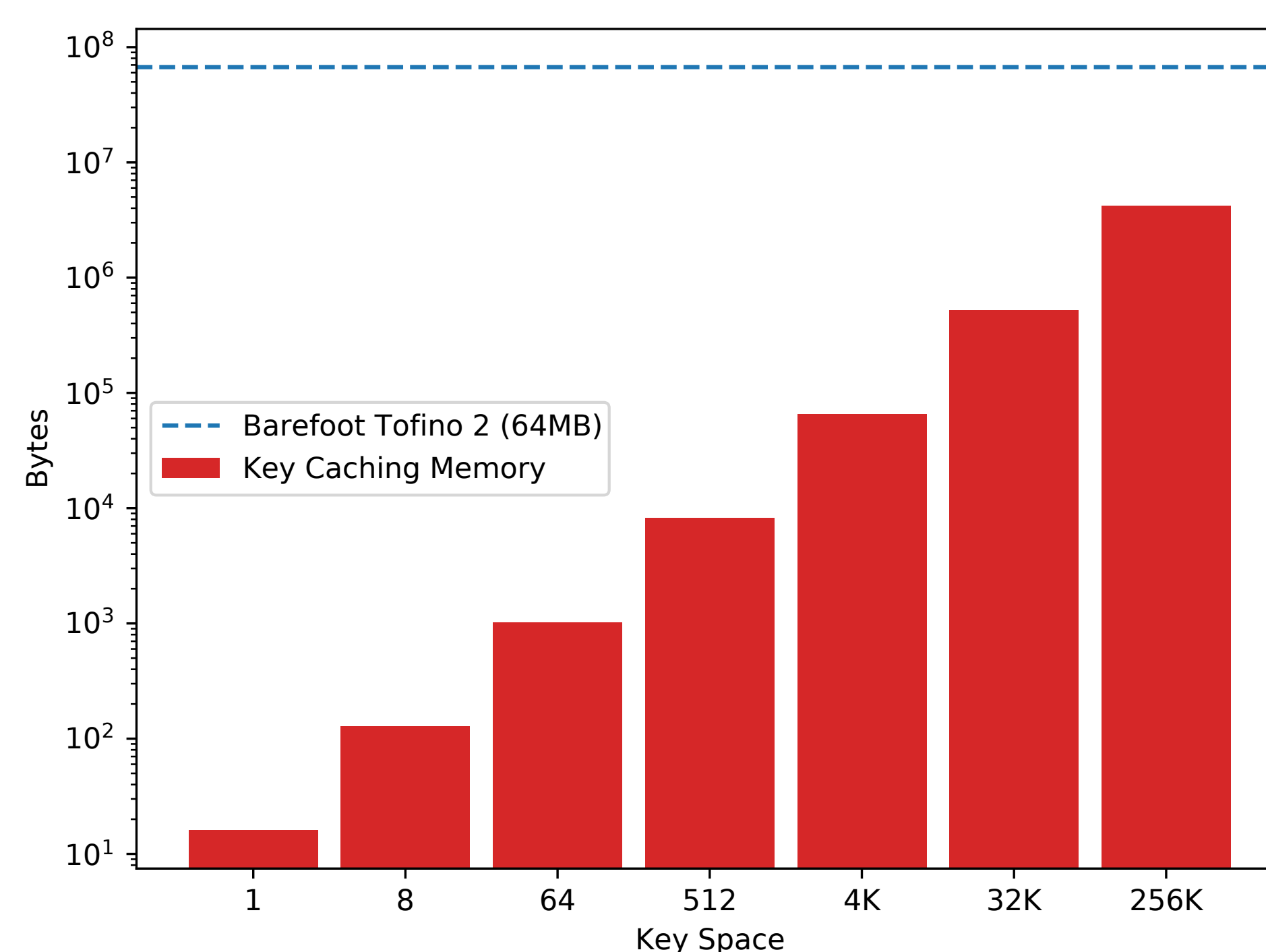


## Memory Usage

### Performance vs Cache Size



### Memory Footprint



THANKS!!

Networks Can Improve Remote Memory Performance

**Github**



**Paper**

