



Wide-area Network Acceleration for the Developing World

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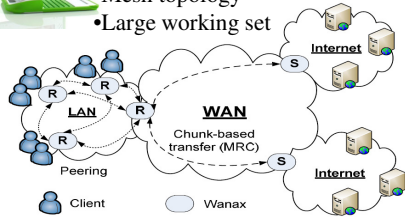
Wanax Overview



Cost-effective, high-performance WAN acceleration for the developing world

Challenges:

- Limited RAM
- Slow disks
- Mesh topology
- Large working set



Small chunk sizes (SRC-Small)

- High compression rate
- High memory pressure
- Low disk performance

93.75% saving
15 disk reads

15 cache entries



Large chunk sizes (SRC-Large)

- Low compression rate
- Low memory pressure
- High disk performance

75% saving
3 disk reads

3 cache entries



Multi-Resolution Chunking (MRC)

- Use multiple chunk sizes
- Use large chunks to reduce disk seeks and memory pressure
- Use small chunks to achieve high compression
- Make chunks fully independent

93.75% saving
6 disk reads

6 cache entries

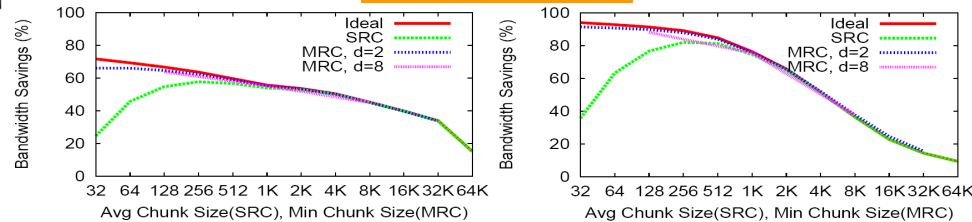
Intelligent Load Shedding (ILS)

- Adjust network and disk usage dynamically
- Maintain high performance even while disk is overloaded by shedding smallest chunks first

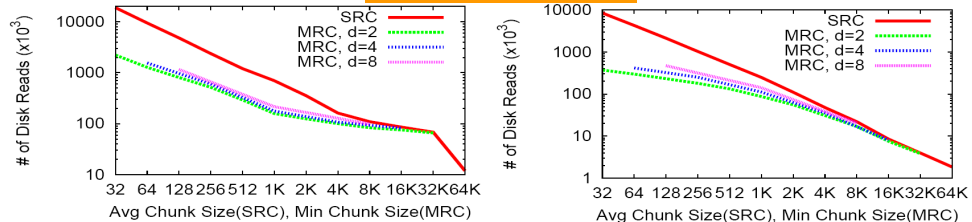
Peering with Highest Random Weight (HRW)

Simulation Analysis Results

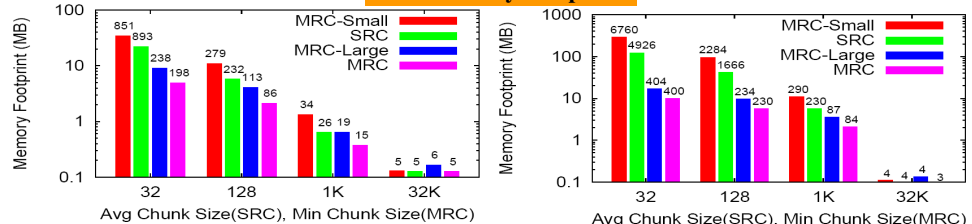
High Compression



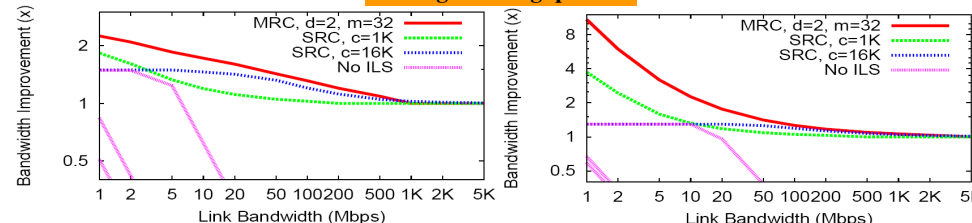
Low Disk Seeks



Low Memory Footprint

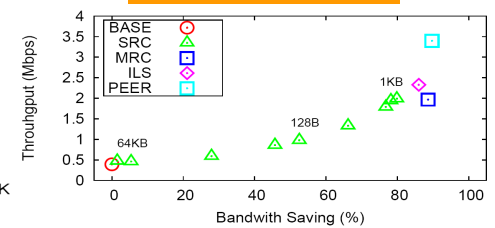


High Throughput

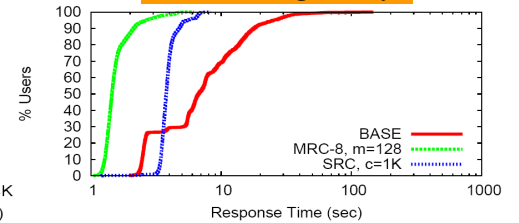


Evaluation Results

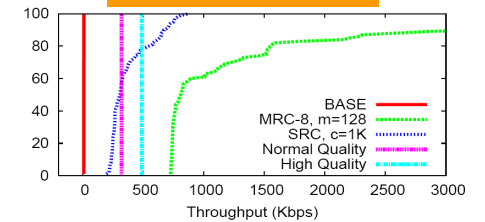
Microbenchmark



Web Browsing Activity



YouTube Workload



Enterprise Environment

