

RIVERBED



Wide-Area Data Services - WDS

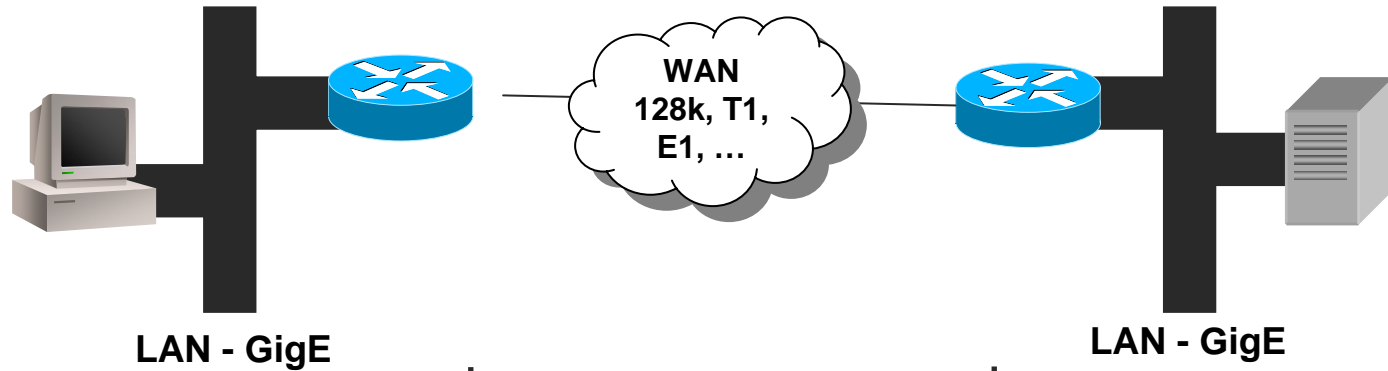
The Future of WAFS, WAN Optimization
and Application Acceleration on Wide Area Networks

Application Pain – New Tricks Needed

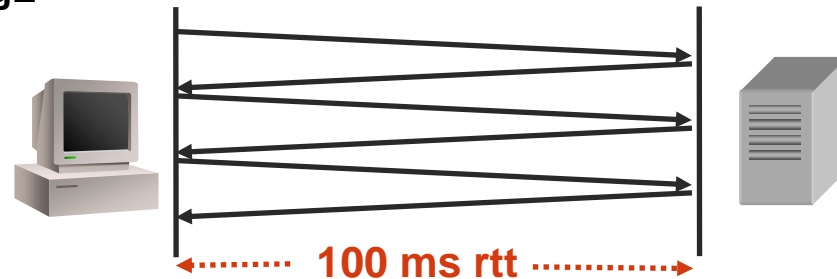
Company Case	File	Web	Mail	ERP	FTP	Replication
Global Financial Services	✓	✓	✓			✓
Oil and Gas	✓	✓	✓	✓	✓	
Architecture	✓	✓				
Healthcare	✓		✓			✓
Manufacturing		✓		✓	✓	✓
Professional Services	✓		✓			

Root Causes – Why is it Slow?

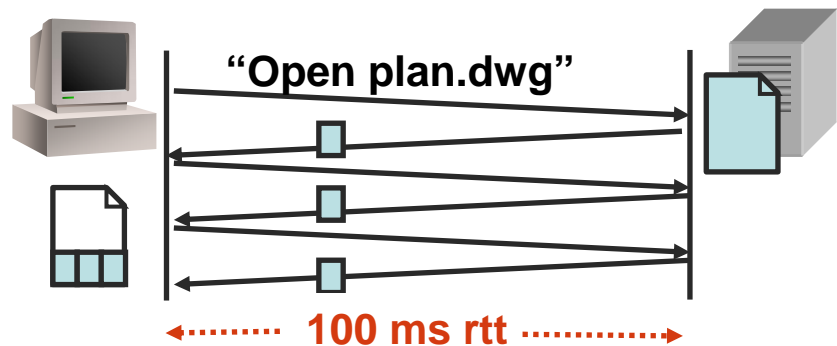
#1 – Limited Bandwidth



#2 – TCP Chattiness



#3 – Application Protocol Chattiness

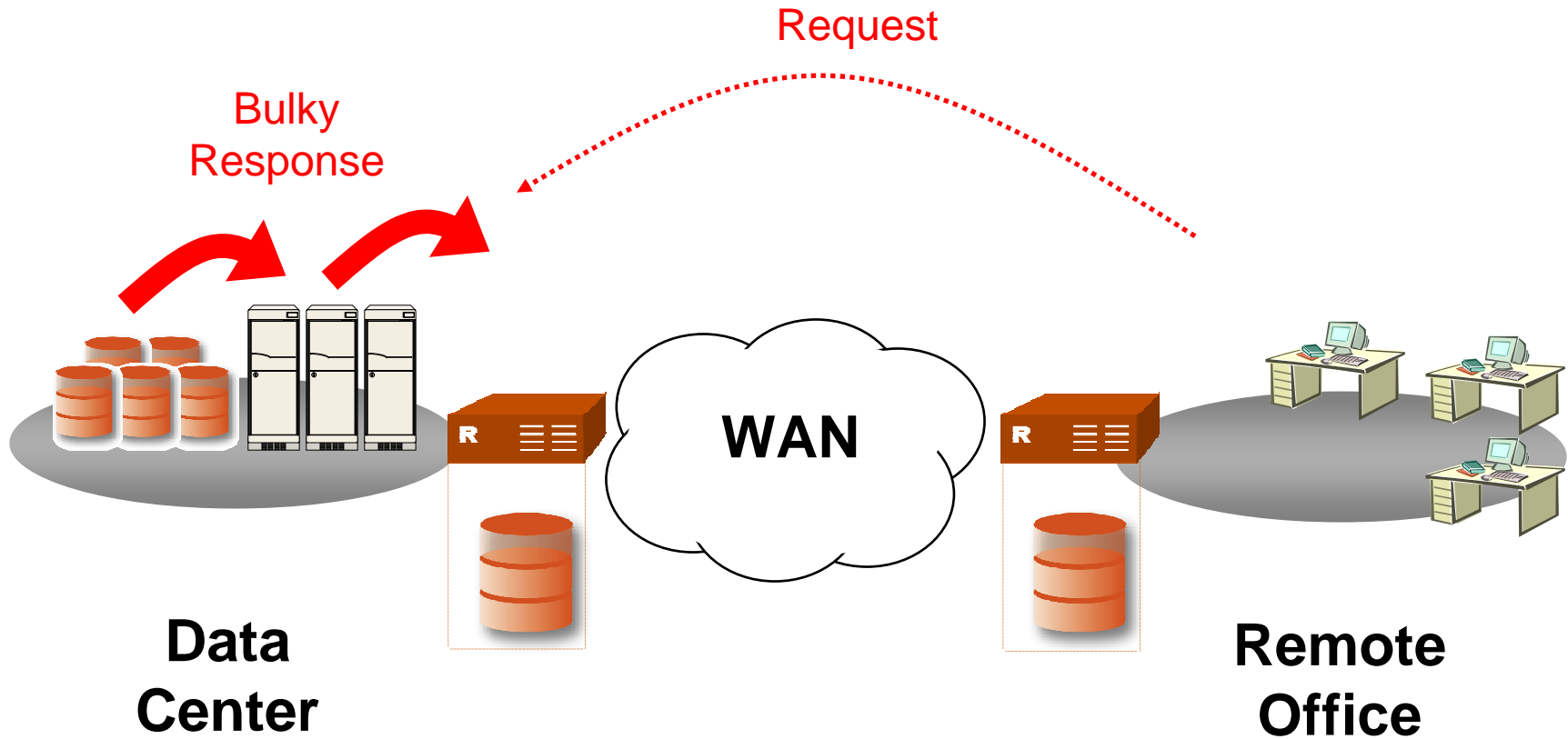


A Fresh Approach – Wide Area Data Services

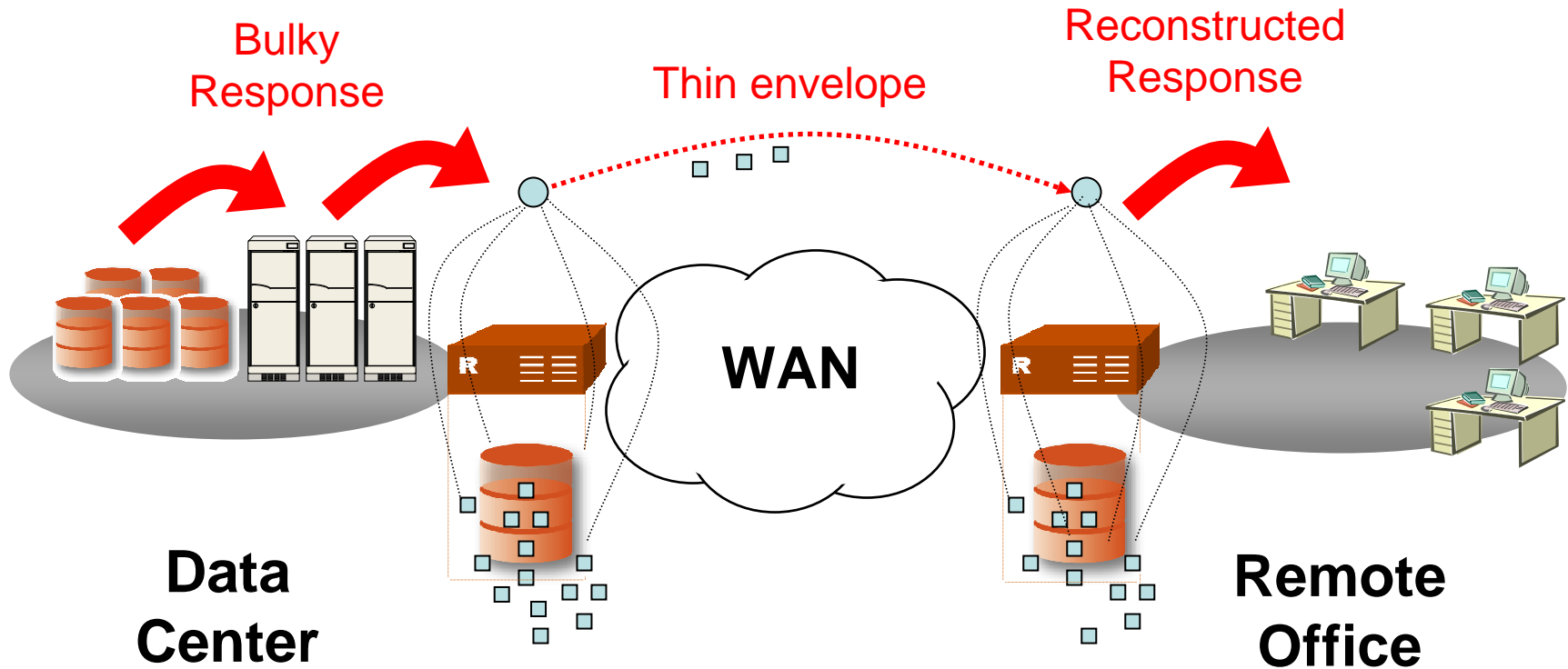
“Separate the Data from its Semantics”

- | | |
|-----------------------------|--|
| 1. Bandwidth | Scaleable Data Referencing |
| 2. TCP/Latency | Window Scaling
Virtual Window Expansion
High Speed TCP |
| 3. App Protocol/
Latency | Transaction Prediction |

Solving the Bandwidth Problem



Solving the Bandwidth Problem

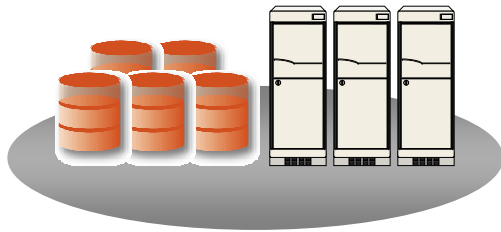


Scaleable Data Referencing (SDR)

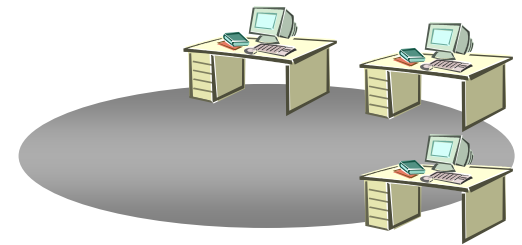
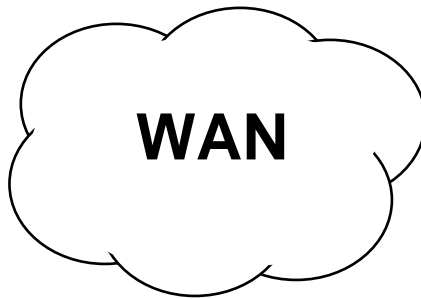
68-98% Data Reduction

Solving Application Chattiness Problems

Typical Application Chattiness
(CIFS – Windows)

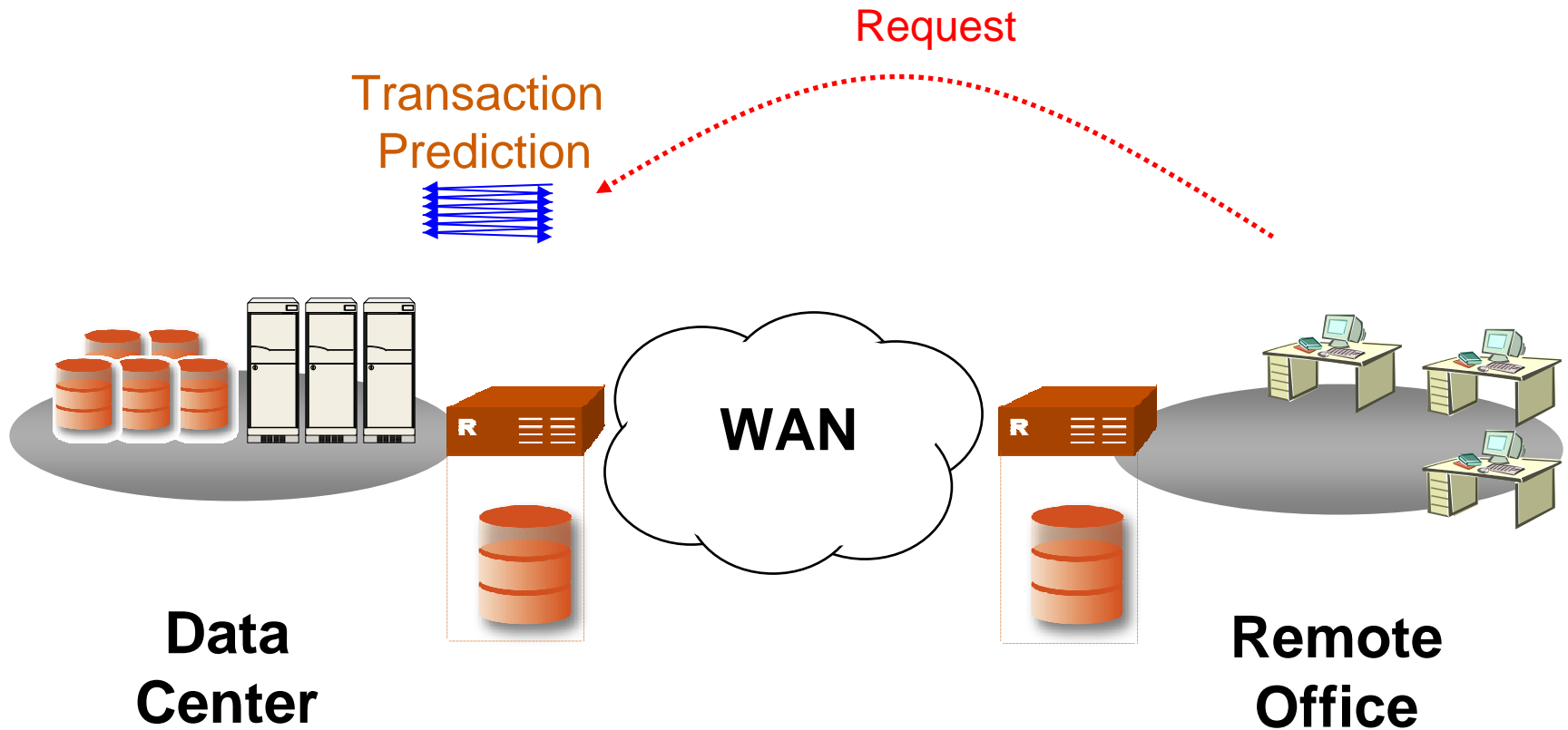


**Data
Center**

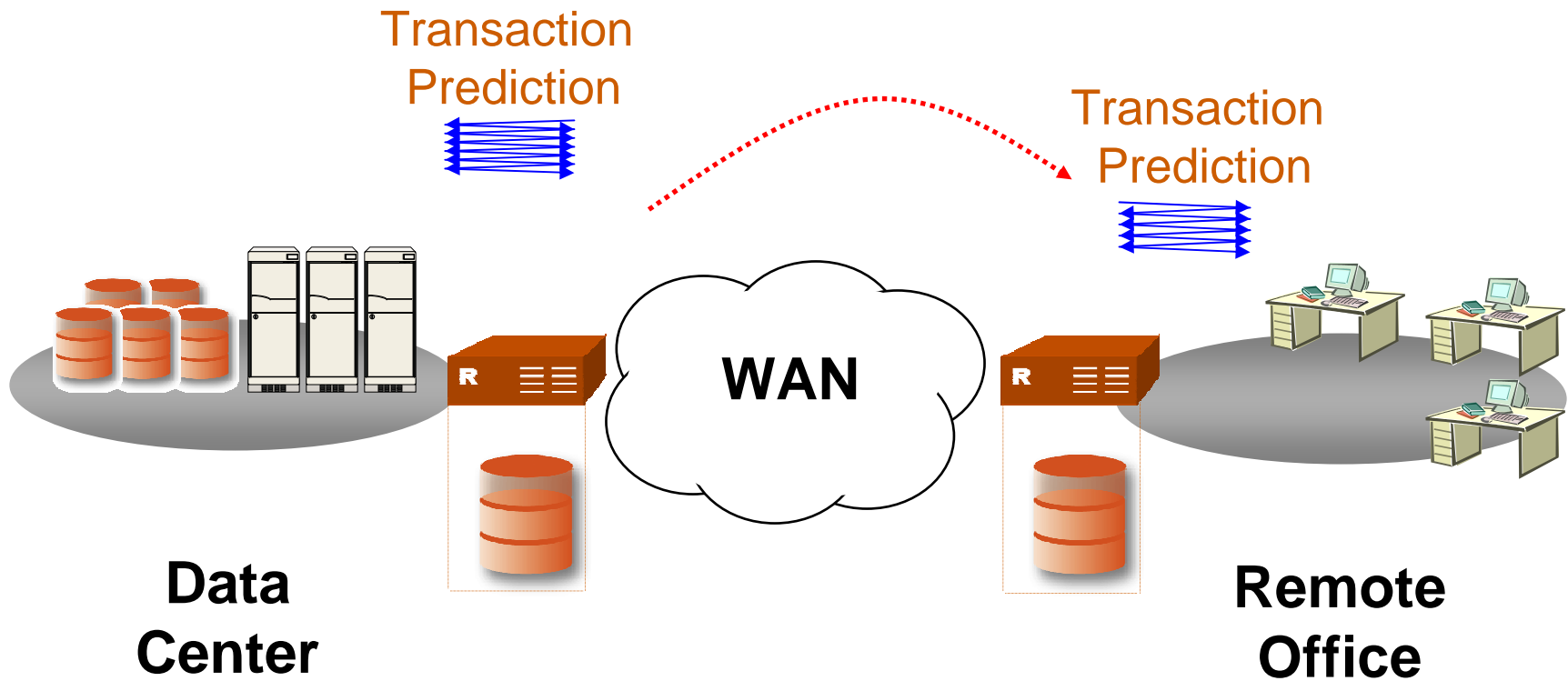


**Remote
Office**

Solving Application Chattiness Problems

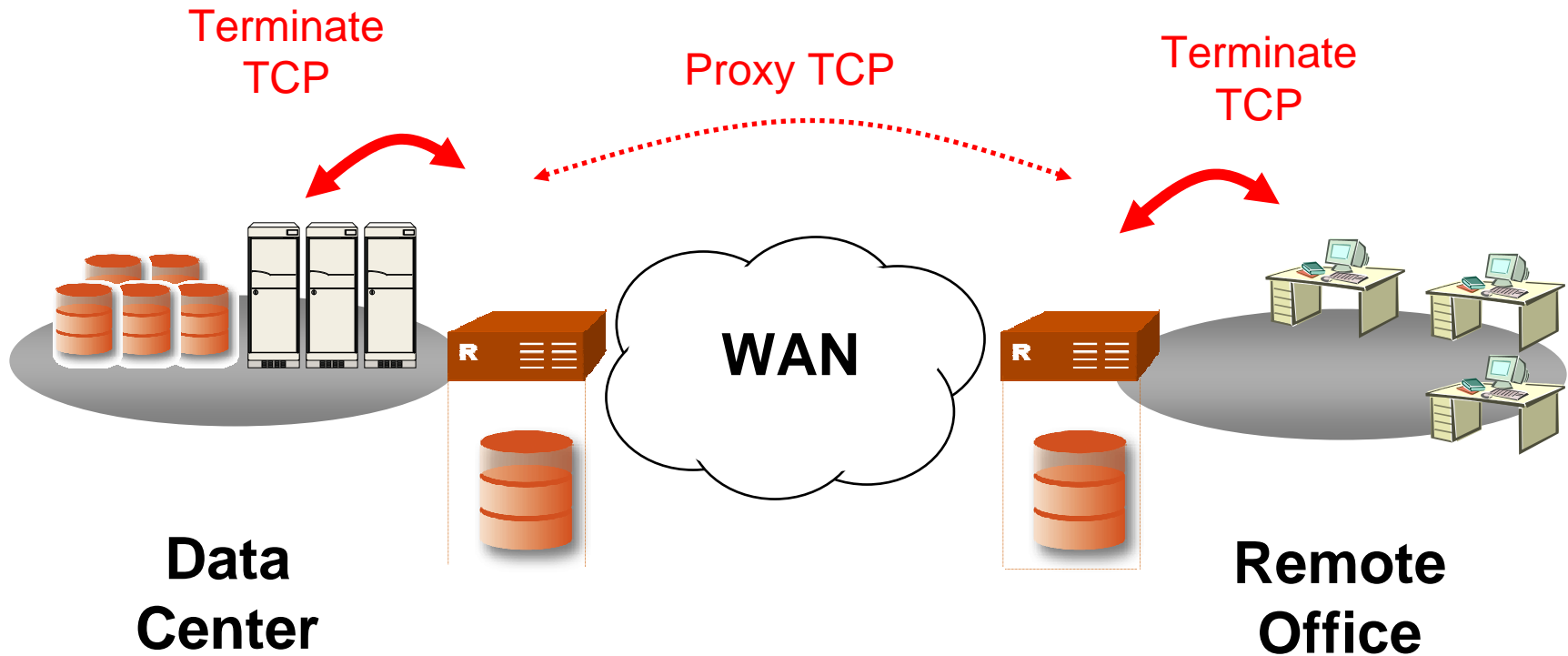


Solving Application Chattiness Problems

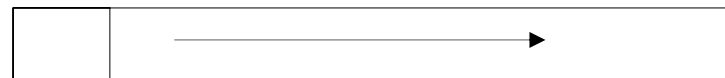


65-98% Reduction in Round Trips

Solving TCP Ch chattiness Problems

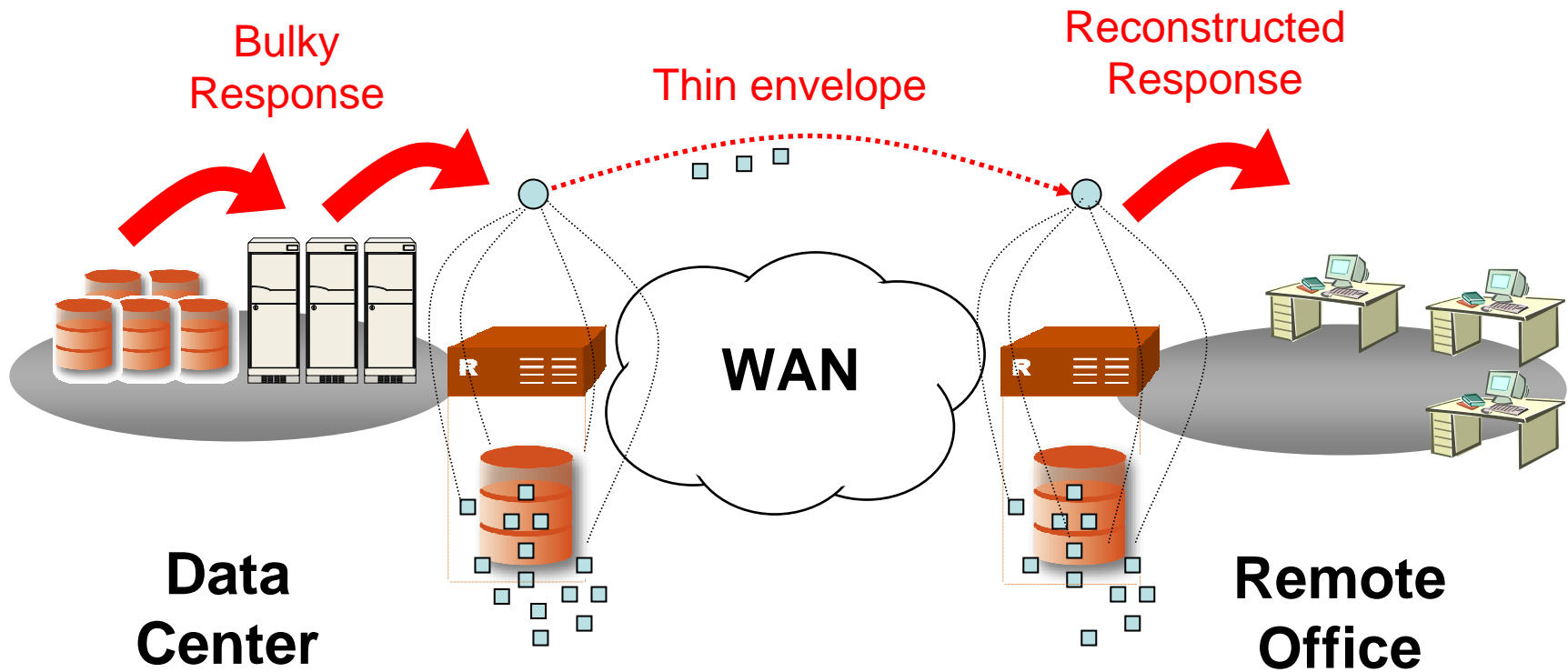


Make TCP Window Bigger



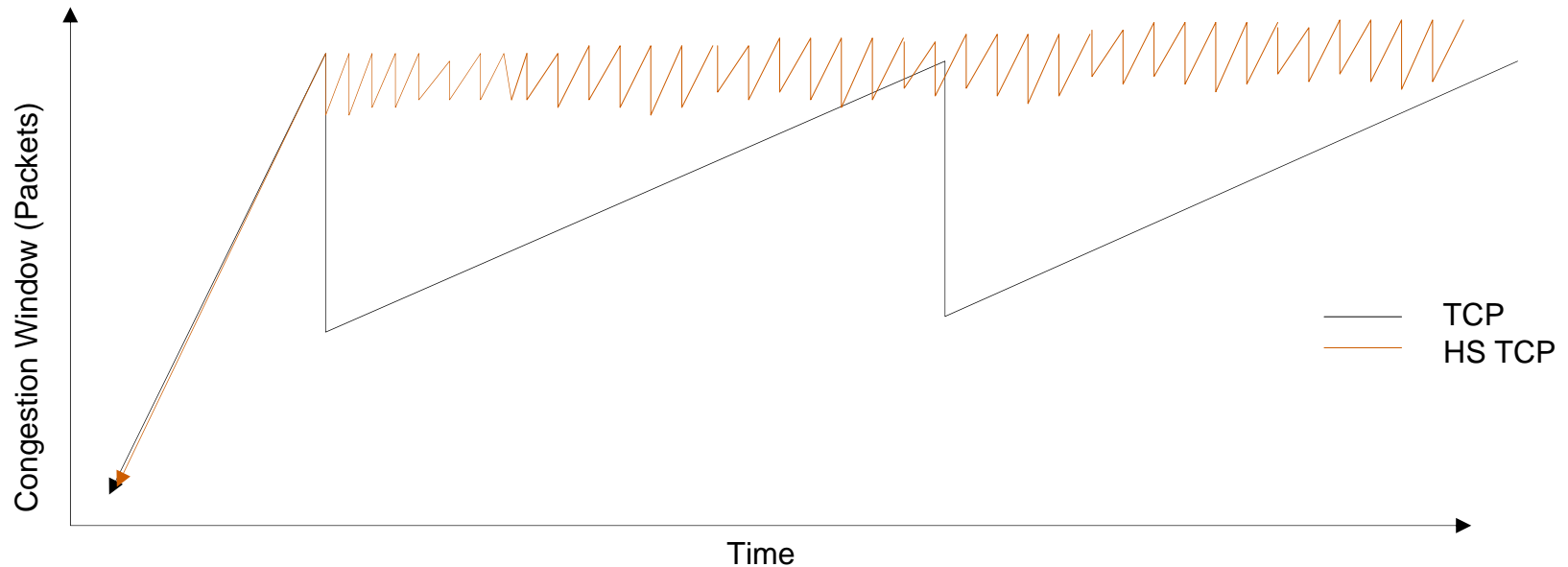
32KB to 100KB+

Solving the Bandwidth Problem



- Net Effect -
65-98% Reduction in Round Trips

Solving TCP Problems for LFNs



Use High Speed TCP

- Optimizes Congestion Control Dynamics
- Adds Order of Magnitude More Packets per RTT
- Keeps the Window Large by Backing off Less

Filling the Fat Pipe (OC-12)

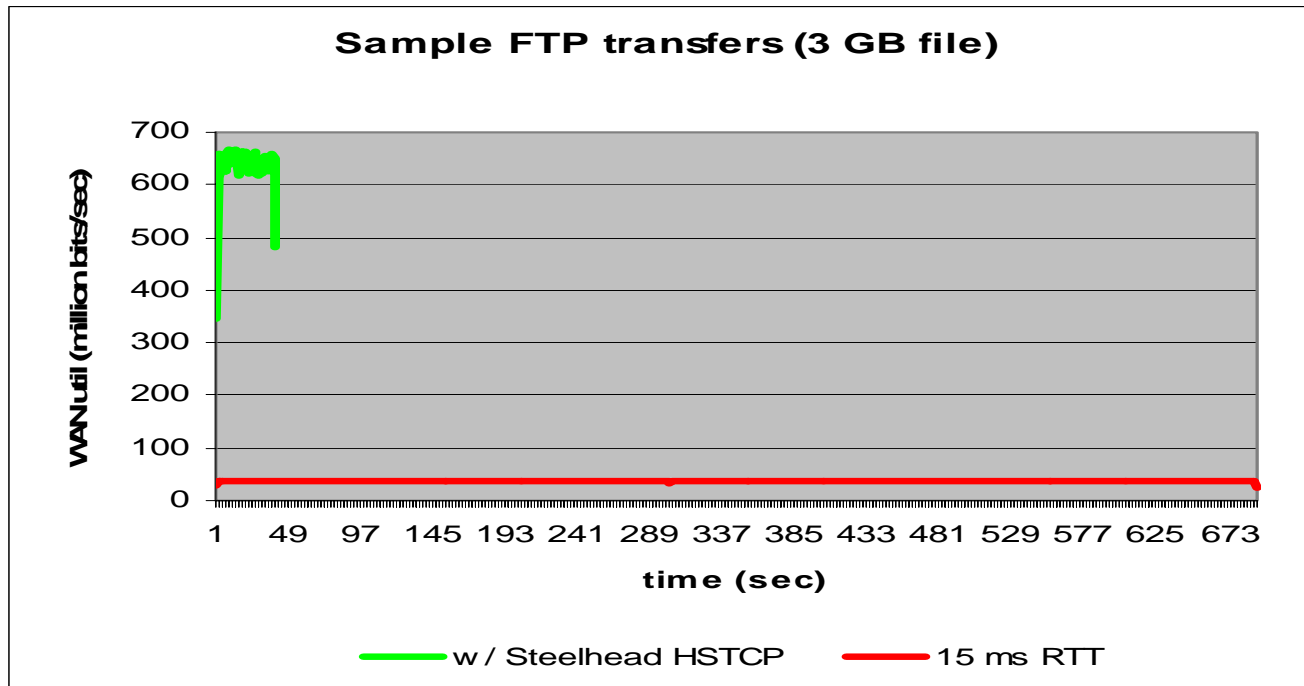
Over 100
Times
Faster

Network conditions

Throughput

15 ms RTT	36 mbps
100 ms RTT	5 mbps
w/ Steelhead	600+mbps

Sample FTP transfers (3 GB file)



Making Applications Faster

Company Case	File	Web	Mail	ERP	FTP	Replication
Global Financial Services	12x	8x	10x			40x
Oil and Gas	35x	18x	15x	3x	25x	
Architecture	70x	11x				
Healthcare	13x		10x			17x
Manufacturing		14x		5x	18x	23x
Professional Services	9x		12x			