



Avoiding the Train Wreck of Boxes: Is a Performance Improvement Platform Right for You?

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- IT Trends and the Remote Office
- Remote Office WAN Challenge
- WAN Characteristics
- HTTP Application Response Times
- WAN Acceleration Techniques
- Sorting it Out
- Integrated WAN Acceleration Device
- Summary

Server Consolidation

- Remove individual servers from remote locations
 - Reduce to several redundant data centers
 - Grid of server blades in the data center
- Backup and compliance centrally performed

HTTP/S-based Line-of-Business Applications

- Easier to manage and deploy
- Stateless and more secure client systems
- Context-sensitive content to assist user

Continued Use of Legacy Applications and Network Traffic Flows

Reduce Cost of Remote Office Infrastructure and Management

Application Owners

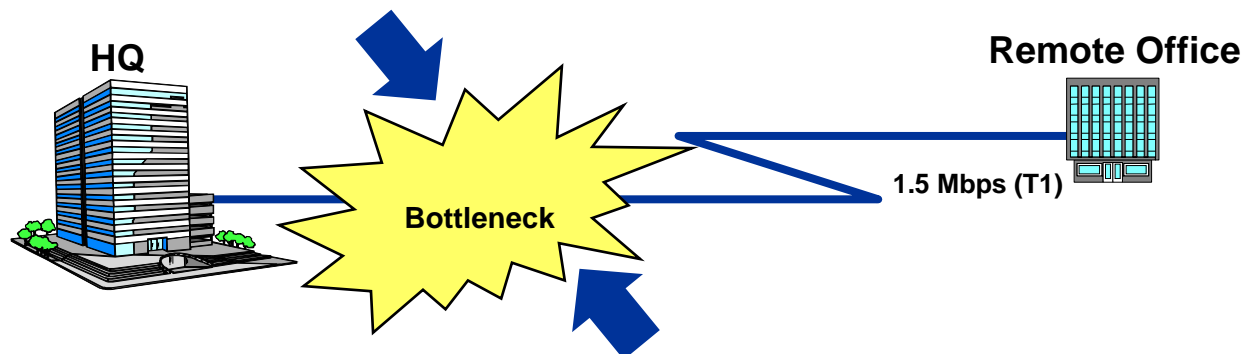
- Quickly deploy new applications
- Poor performance limits usability, acceptance and productivity

Network Owners

- Insufficient WAN performance to support enterprise goals and initiatives

So Enterprises ...

- Acquire better WAN connectivity – *expensive, not always possible, and does not address fundamental WAN latency*
- Deploy remote serves – *expensive, at odds with server consolidation*
- Or deploy WAN acceleration devices



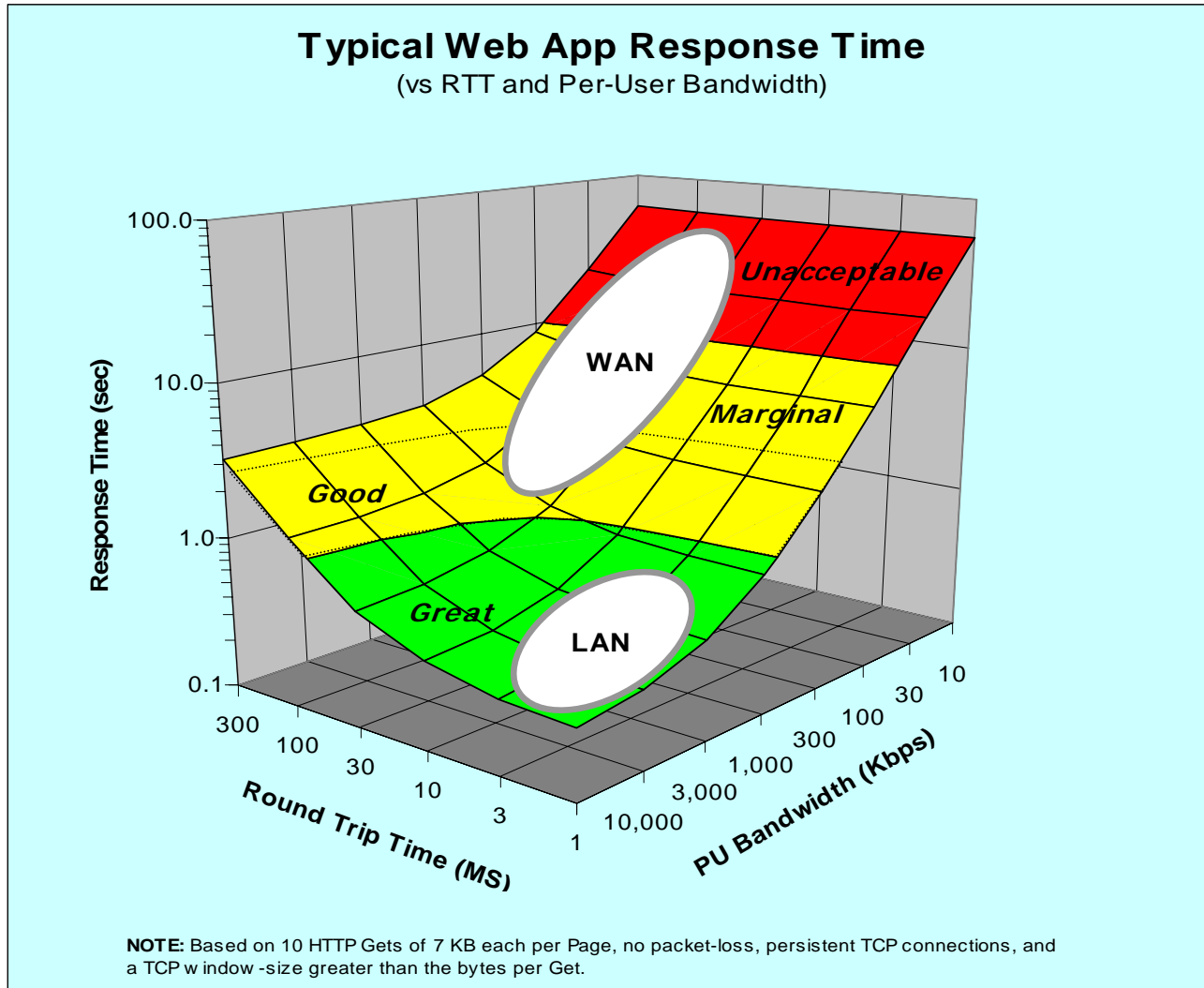
WAN Bottleneck due to a combination of

- Network Latency – round trip time of 70 to 300 milliseconds
- Packet Loss – up to several percent on international links
- Limited Bandwidth – T1 (1.5 Mbps) or less per office
- Congestion and Contention – 10 to 100's of users
 - Average 0.015 Mbps (15 Kbps) or less per user
 - Higher peak to average ratios

LAN Comparison (*not the bottleneck, server is*)

- Network Latency – round trip time of 1 to 3 milliseconds
- Packet Loss – virtually none
- Bandwidth – 10/100 Mbps client, 1 Gbps server, 100 Gbps switch fabric
- Congestion and Contention – 1,000 to 10,000's of users
 - Average 10 Mbps per user (or server limited)

HTTP Application Response Times



- Traffic Control
- Small Packet Aggregation
- Packet Compression
- Deep History-based Packet Difference with Compression
- TCP optimizations and persistent connection pooling
- Forward Error Correction
- Static HTTP caching
- Dynamic HTTP/S acceleration
 - Application specificity provides best acceleration
 - Streaming difference and compression of bi-directional data flow
 - 1+ weeks of historical data flow
 - Requests authenticated by origin server
 - Predictive pre-fetching of historical server responses

The Real World

- Mix of applications with different network requirements
- Varied WAN characteristics by location
- And all will change over time

Which techniques to use

- Value of particular acceleration techniques depends on the above
- High interaction between different techniques
- Encryption complicates the use of compression and difference

Approaches

- A single “niche” or “point” device is of limited value
- Deploying a series of “point” boxes is:
 - Expensive and almost impossible to manage
 - Uncontrolled interaction reduce acceleration
- Next generation Integrated Acceleration Device

Combine All Acceleration Techniques

- Greatest acceleration at application network level
- Selectable methods for different applications and traffic
 - Extensible for new application-specific acceleration methods
- Lower-level acceleration techniques also critical

One Box

- Easier to deploy, configure and manage
- Fully monitor, manage and accelerate all traffic between locations
- Optional VPN functionality

Symmetrical Peer-to-Peer Network Topology

- Device in the data center, another in the remote office
- Deploy inline or off a L4 switch or router

Deliver 10-35x WAN Acceleration for Typical Traffic Mixes

The WAN is a “Real” Bottleneck Gating IT Initiatives and Success

Integrated WAN Acceleration Device

- Lower cost and easier to deploy and manage
- Applies best techniques for particular traffic types
- Includes new dynamic HTTP/S acceleration methods
- Delivers meaningful LOB acceleration gains of 10-35x

To Answer the Session Question

- **Yes**, a performance improvement box is right for you and your enterprise’s remote office users
- But **no** train wreck – one box combines a mix of standard acceleration techniques and dynamic HTTP/S acceleration
- Finally, select a solution that maximally accelerates your LOB applications and can adapt and grow with your needs