

# RE: Slow Network Speed over WAN

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<http://www.tech-archive.net/Archive/Windows/microsoft.public.windows.server.networking/2008-01/msg00279.html>

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- *From:* David <ca29086b-2136927634@xxxxxxxxxxxxxxxxxxxx>
  - *Date:* Tue, 15 Jan 2008 12:06:03 -0800
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Ryan – thanks for your time on this. I have checked for MTU, and it remains unfragmented to 1472 (I'm testing the network across the unencrypted WAN, not through a VPN tunnel).

I haven't looked at SMB yet because of the huge disparity on performance. At less than 1% network utilization I don't think that the 30% SMB overhead is causing the problem.

My ISP is saying there is no limitation or QOS, and so I'm further at a loss.

"Ryan Hanisco" wrote:

Hi David,

Have a look to make sure you are not fragmenting encrypted packets on either end of the tunnel. If the packets are put into the VPN or otherwise encrypted, they'll grow, potentially pushing them past your MTU. This means that they'll fragment as they are shipped into the WAN. This is further complicated by Windowing as it allows more packets through before it validates making the reassembly processor intensive. You can lose half of your bandwidth ore more due to retransmits and the routing of nearly empty fragments. This theorem is supported by the fact that wrenching up the window size makes the problem less visible.

You could attack this by dropping the MTU on the servers or by forcing the encryption after fragmentation. The latter option is done on your router (or switch if you're running one of the big ones for IP distribution -- sup 720 or the like).

Finally, you might also look at your QoS -- it is possible that you are being bumped in the transfer or aren't maintaining priority. Check this both locally and as you enter the IP cloud.

Oh, and looking at SMB signing might also be worth while -- you can see a 30% overhead there.

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Ryan Hanisco

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Remember: Marking helpful answers helps everyone find the info they need quickly.

"David" wrote:

1. West Coast Site and Remote Site are on Gigabit Ethernet LAN with Gigabit to the public Internet and are interconnected to each other by private IP transport (Routed Gigabit). Both are connected directly to the external router, bypassing the Firewall (Public IP addresses entered directly on the Windows NIC). They each also have a second interface/NIC on our private LAN (10.x.x.x IP range).
2. Each site has a Fibre-connected gigabit router, no rate limit set.
3. The servers can communicate with each other by either their public interface or their private interface. The private interface uses the private IP transport (effectively a site-to-site VPN), the Public interface uses the internet. Both have the same performance.
4. Copies from the West Coast server to another in the same site happen at the expected speed (20%–40% utilization of the max interface speed), the same is seen at the remote site.
5. Any server in the West Coast site has the same performance limitations when communicating with any server in the remote site.
6. When using some of the available network speed performance test websites, I've gotten speeds of:  
Download Speed: 201673 kbps (25209.1 KB/sec transfer rate)  
Upload Speed: 18124 kbps (2265.5 KB/sec transfer rate)  
Those speeds are representative of either site (when testing against a test site geographically close).

Additional information: When I test using iPerf, I can see 30%–40% NIC utilization when I adjust up the TCP window size. I can also see this performance when using multiple simultaneous copy operations (either FTP or Robocopy).

"Jian-Ping Zhu [MSFT]" wrote:

1. Please describe the detailed Network Topology.
2. Is there any routing/NAT devices between your two Windows Servers? If yes, please check whether there are any bandwidth limitation policies set on them.

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3. Please tell me the way how these two Servers communicate with each other. (Though VPN or WAN connection directly.)
4. Please test the copy speed between two Windows Servers in the same local LAN and check whether the issue still occur.
5. Please choose a different Windows Server located in remote side and test the copy speed between local site's Windows Server and remote site's Windows Server via WAN connection.
6. Please try to download some big document from the internet on local site's Windows Server and test the download speed.