

# Solving performance problems in a slow lan assignment



This paper describes possible solutions for slow LAN performance. This paper is written in partial fulfillment of the requirements of TCM 537 " Networks and Data Communications I, the 11th class in the MS CIS program at the University of Phoenix. Introduction

In a world where everything seems to be connected to a network, slow performance is one of the most irritating and solvable problems. For a person who is " learning the ropes" in troubleshooting workstation and LAN performance, the table of troubleshooting slow LAN issues and how to solve them, may come in handy. This set of troubleshooting scenarios assumes that this is a mostly Microsoft platform network, with Ethernet network interface cards. Troubleshooting a Slow LAN | Reasons: | Solutions: | | 1.

RAM in workstations. | • Increase RAM to prevent paging issues with virtual | | | memory. | | | • Increase virtual memory file to be at least 1. 5 times | | | the amount of RAM. | | 2. CPU in workstations. | • Get Pentium IV CPUs with L2 cache (512 KB) on the | | | processors to permit lightning fast data reuse. | | • Ensure that the bus speed on the motherboard is at | | | least 133 MHz or better. | | 3. Increase in number of nodes. | • Analyze network to discover traffic patterns, top | | | talkers, and top listeners. | | | • Segment the network into smaller segments to decrease | | | the possibilities of collisions. | | • Also, ensure that the NICs are 10/100 BaseT, and that | | | the cabling is a minimum of CAT-5 UTP. | | | •

Recommend switches over hubs, because of greater | | | throughput and better efficiency over standard hubs. | Reasons: | Solutions: | | 4. Increase in traffic and loading. | • Analyze network to discover traffic patterns, top | | | talkers, and top listeners. | | | • Segment the network into smaller

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segments to decrease the possibilities of collisions. Also, ensure that the NICs are 10/100 BaseT, and that the cabling is a minimum of CAT-5 UTP. Recommend switches over hubs, because of greater throughput and better efficiency over standard hubs. 5. Upgrades in applications (i.e., upgrade in Windows) Ensure that windows registry settings for TCP/IP are optimized. Ensure that each workstation has the most current NIC drivers for the operating system to be able to talk well to the NIC. Ensure that all necessary hot fixes, service packs and patches are applied, both for the operating system and all networked applications that are running on the workstation. Reasons: Solutions: 6.

New applications (i.e., access to Internet). Check the specs on bandwidth demands (if available) to ensure that the infrastructure supports it. Ensure that none of the new applications have modified any of the operating system files, system settings, and/or any pre-existing applications, such as Internet Explorer. Ensure that each workstation has the most current NIC drivers for the operating system to be able to talk well to the NIC. Ensure that all necessary hot fixes, service packs and patches are applied, both for the operating system and all networked applications that are running on the workstation. Reasons: Solutions: 7. Increase in graphics use. • Analyze network to discover traffic patterns, top talkers, and top listeners. Ensure that the WAN circuit will support the required bandwidth. Segment the network into smaller segments to decrease the possibilities of collisions. Also, ensure that the NICs

are 10/100 BaseT, and that the cabling is a minimum of CAT-5 UTP.

- Recommend switches over hubs, because of greater throughput and better efficiency over standard hubs.
  - Ensure that windows registry settings for TCP/IP are optimized.
  - Ensure that each workstation has the most current NIC drivers for the operating system to be able to talk well to the NIC.
  - Ensure that all necessary hot fixes, service packs and patches are applied, both for the operating system and all networked applications that are running on the workstation.
- Reasons: Solutions: 8.

Configuration problems.

- Ensure that the TCP/IP settings are correct:

Especially check:

- o IP address to be certain it is on the same network as the rest of the machines.
- o Gateway IP address

- o DNS IP address
- o Subnet mask
- Ensure that the DNS Server configuration is set up properly to forward external requests.

- Ensure that the internal IP networked resources that are needed are configured in the DNS.
- Ensure that the DNS is being updated as needed.
- Check the WINS settings on the client.
- Check the WINS Server is one is being used to ensure that it is configured correctly.

- If the network clients use DHCP, ensure that the DHCP Server is

configured properly to set up the following correctly:

- o IP

- o Subnet mask
- o Gateway IP
- o DNS Addresses " Primary and

- o Secondary
- o WINS Address
- o Desired leasing period

If the network clients use DHCP, ensure that the DHCP Client workstation

is configured properly to be a DHCP client.

- Ensure that windows

- registry settings for TCP/IP are optimized.
- Ensure that each

workstation has the most current NIC drivers for the operating system to be able to talk well to the NIC.

- Ensure that all necessary hot fixes, service packs and patches are applied, both for the operating system and all networked applications that are running on the workstation.
- Check for multiple protocols that may be bound to the NIC card, and eliminate all unnecessary protocols, for example if NETBEUI and/or IPX/SPX are present.

Conclusion This list, while not exhaustive, is a good start for understanding the complexities introduced by the conglomeration of various interacting hardware and software technologies required to make a LAN work properly. The successful mastery of LAN troubleshooting comes from years of working in a LAN support environment under the pressure, having to come up with solutions quickly and think on your feet.

The best advice for anyone who seeks such a position as LAN technical support, is to become an expert on how all these technologies interact, memorize the OSI networking model and how software and hardware components map to each layer, and avoid being too focused in just one area, such as only being an expert Windows XP Professional. I speak from experience, because besides having done LAN technical support at work, I have my own 35-node LAN at home, and I have had to troubleshoot various components in it on occasion, especially in the beginning, as I started to build it initially. Nevertheless, even if LAN technical support is not your primary job, it is a very worthwhile set of skills to have. Resources Zacker, C. (2000). *Upgrading and Troubleshooting Networks: The Complete Reference*. Berkeley, CA: Osborne McGraw-Hill.