

LG LAN FAULT REPORT

D. Wozny. 23rd September, 1996

BACKGROUND

LG's network comprises of two file servers running Windows NT Server v3.51 and approximately 180 clients running Windows for Workgroups v3.11.

Both servers are of the same hardware specification and are configured identically. One of the servers is classed as the primary domain controller (PDC) and the other the backup domain controller (BDC). All file serving is performed on one machine with the other machine kept in sync for the event of a failure, in which case that machine would take over the role of file serving. Print serving is usually performed by the non-file server, although either machine can do this task. Full file and system backups are performed each Friday, differential backups are run every weekday evening.

The servers have had numerous upgrades to operating system, service packs, hardware driver updates, etc. and it was agreed to re-install the operating system on both machines prior to installing some new backup software (Palindrome) and directory synchronization software (Octopus).

In early July, one of the servers (GSEP22) was successfully upgraded and was tested for four weeks with no faults apparent whatsoever. It was then decided to upgrade the other server (GSEP21) and this was done at the end of August on a Friday evening an everything went according to plan. The server was available on the network and working correctly over the weekend.

FAULTS

Monday 2nd September

On the following Monday morning (2/9/96) at 08:20 ALL of the PCs that were logged onto the domain went into a 'hanging' condition i.e. screen savers froze or the application that they were working on froze. Inspection of the server revealed that a system error (Redirector time-out) had occurred. This error was reported on GSEP21 as being a timeout to GSEP22 and on GSEP22 as being a timeout to GSEP21. Both servers were up and available for work at the server console. A re-boot of GSEP22 was carried out. Users were asked to attempt to log on again, but were receiving messages telling them that their password was invalid or that a server was unavailable for validation. It was decided to re-boot GSEP21. This was done and this time users could access the servers and a message was relayed to users to inform them that the PC network was available again.

At 11:07 the redirector on both machines timed out in the exact same way as at 08:20 and the same fault condition was apparent on all PCs on the network. Both machines were again re-booted and users were able to access the network.

At 14:05 the same fault occurred again. It was decided to take all users of the network and this was done by disconnecting them from the two servers using the switch on the DELNI. Both servers were then promoted and demoted from domain controller status to fully synchronize their databases.

At 14:38 both servers were re-booted but browser problems were still appearing in the event log on GSEP21. It was decided to take GSEP21 off the LAN.

At 15:21 the servers were made available to users again and they were informed to start using the network again.

Tuesday 3rd September

GSEP22 was used as the sole server and no faults were forthcoming on this day.

At approximately 16:00, GSEP21 was re-introduced to the network.

Rockliff advised that there were some known problems with the hardware drivers (v1.17) that were currently installed and advised to install v1.18 - this was done.

The EASAMS network team used the 'Sniffer' to perform an analysis of the cabling and traffic and they reported that there was an apparent ambiguity in the way that IP frames were encapsulating Netbios frames. No conclusive explanation could be found from this. A recommendation was made to move DOS based applications from the server to the local PCs, however, in the absence of conclusive evidence that this was causing a problem this recommendation has not been carried

out.

Wednesday 4th September

At 08:05, timeouts to GSEP22 were reported and all of the PCs on the network suffered the 'hang' condition. GSEP21 was taken off the network and GSEP22 re-booted.

Users were informed that the network was available again.

Thursday 5th September

Early Thursday morning, all users reported the 'hang' condition. The decision was made to transfer users and their data onto GSEP21. This was completed at 10:37. The network was made available to users, with GSEP22 powered off the network.

An engineer from AZLAN arrived and suggested extending the re-director timeout from the default setting of 45 seconds to 240 seconds. All users were taken off the network and this change was made at lunchtime (12:00 - 13:00 on both servers). Additionally, on GSEP22 (the server that was off the network) the network card drivers were removed and re-installed.

The servers were brought back on-line and both servers appeared to be working OK.

At 21:15, redirector timeouts were reported on both servers to GSEP22. With no support staff available to effect any changes, these timeout repeated all night at alternating ten minute and five minute intervals.

Friday 6th September

A whole raft of errors were experience on GSEP22 during the previous evening, largely pertaining to the failure of network services such as TCP/IP, netbios, Wins, etc. These were attributed to the re-installation of the network card drivers.

GSEP22 was removed from the LAN.

GSEP21 was then re-booted and users informed that the network was available again.

GSEP22 was obviously in a mess, much more serious than had been experienced during the week and it was decided to re-build the server.

At 09:17, GSEP21 was promoted to PDC in anticipation of re-building GSEP22.

No further errors were reported on GSEP21 during Friday.

GSEP22 was re-built during late Friday morning and was completed at 14:24. It was made available on the network.

No faults were reported during the weekend.

Monday 9th September

No faults were reported this day, both servers were fully available on the network. GSEP21 being the PDC.

Tuesday 10th September

At 08:13, the re-directors on both servers timed out a request to GSEP21. Note: it has been observed that timeouts have only been experienced on timeouts to the server whose role is PDC. GSEP22 was taken off the network and GSEP21 re-booted. Users were informed that the network was available again.

At 12:14, GSEP21 time out a request to GSEP21, necessitating a server re-boot.

No further faults were experienced. However, temporary seizure of PCs on the network was experienced - this was something that had not been experienced earlier in any significant way.

Wednesday 11th September

No faults were reported at all. Users were experiencing temporary seizures on their PCs.

A support analyst from Lynx investigated the faults and drew the immediate conclusion that the problem was that the servers were under specified for the number of users and the amount of work that they were doing. The suggestion to increase RAM to 128MB was accepted and an evaluation set of memory chips was ordered.

Increasing the size of the paging file was suggested and this was accepted, necessitating a re-boot the following morning for the changes to take effect.

Thursday 12th September

The planned re-boot took effect at 07:00. The server service hung causing the dependant netlogon, browser and replicator services not to start. Users could not log onto the network without these services started. This was not identified until 07:50, at which time they were manually started. It is not believed that this fault is directly related to the timeout error, but is still a fault that needs to be addressed promptly.

At 08:37, GSEP21 time out a request to GSEP21, necessitating a server re-boot.

No further faults were experienced. However, temporary seizure of PCs on the network was still experienced.

Friday 13th September

At 08:25, GSEP21 time out a request to GSEP21, necessitating a server re-boot.

No further faults were experienced. However, temporary seizure of PCs on the network was still experienced.

Saturday 14th September

Increased RAM installed.

Monday 16th September

The system is no longer crashing but is still experiencing regular seizures. Azlan have been advised by Microsoft that they will not look at monitor figures until latest service pack installed.

Fix 'ELNK3.386 'Corrects problem with systems that hang with non-802.3 packets' installed, to take effect at logon Tuesday 17th Aug. Lynx analyst recalled.

Tuesday 17th September

Lynx engineer on site, he stated that service pack 4 at same time as investigating problem further. It is suspected that the overloaded mail system (supplied with Windows) may be cause of problem, it polls every 10 minutes. Depending on engineers recommendations, mail may be temporarily removed from network. System hung for users, while running of PDC only. Redirector did not time out. BDC was re-introduced to the network at approximately 15:00.

Mail post office was moved to GSEP22 (mail files still on GSEP21).

Wednesday 18th September

Re-director timed out at 08:25 on both servers, necessitating a re-boot of both servers. No further re-director faults were experienced, but frequent slow downs were experienced in isolated areas. Mail was suspended from use at approximately 17:30 by removing the WGPO share.

Thursday 19th September

No adverse network performance was experienced. In general, network performance was very good. This could point to mail being the source of the problem.

At 13:00, the mail post office was re-introduced and there were no serious faults, although a few treacle spells were experienced.

Friday 20th September

Heavy mail users were identified by their respective mail message files and were asked to stagger their mail logons. This appeared to stop serious faults developing during the day, but treacle spells were experienced by some throughout the day.

Monday 23rd September

All day Monday, very few treacle spells were experienced - everything was running very smoothly.

Tuesday 24th September

Treacle spells were experienced on a fairly regular basis throughout the day, but never in a concentrated manner, the problem seemed to be more distributed than before. i.e. whereas previously when a treacle spell occurred many users were affected simultaneously, now it was happening to individuals.

Wednesday 25th September

Similar faults to Tuesday 24th were experienced. Compaq SSD 1.19 was added to both servers in the evening. NT service pack 4 was added to GSEP22 but failed to fully install successfully.

Thursday 26th September

Both servers were booted in the morning to enable the SSD update to take effect.

DIGITAL engineer was on-site to troubleshoot.

There were very few treacle spells experienced, this was probably attributable to the server bounces. In an attempt to generate some treacle spells Geoff Smart & I bombarded each other and Arnie Bishop with mail messages containing large quantities of PowerPoint attachments. This did not result in any significant slow down.

The only person experiencing significant treacle spells was Arnie Bishop, and his PC was monitored by the DIGITAL engineer. At the time of the treacle spells his PC was broadcasting a significant amount of Express Meter frames, many of which related to trying to find a POOLLOCK.RW file in the library directory that does not exist. I have raised the issue with the suppliers and in the meantime have disabled Express Metering (at 16:00).

Friday 27th September

No hanging reported whatsoever by any user.