



BP106

Worst Practices in IBM Lotus Domino - Learning From the Mistakes of Others

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Lotus. software

Some wise words....

“ Learn all you can from the mistakes of others. You won't have time to make them all yourself ”

▪ Alfred Sheinwold

**“ Experience is learning from your mistakes. Competence is learning from other peoples mistakes
Professionalism is knowing that you can make mistakes, and accept that they will happen. ”**

“PHB” Says....

“There is no mistake, there has been no mistake; and there shall be no mistake.”

- Wellingtoniana, 1852

“Perhaps I can find new ways to motivate you.”

- Darth Vader, long long ago

Agenda

- For each case study, we shall
 - Review some of the more “unusual” topology/application configuration errors that have occurred
 - Diagnose the problem
 - Determine the problem
 - How was it resolved
 - What lessons can be learned
- We have 12 case studies, and some short cases near the end.
- We cover both infrastructure and development...
- Remember: We only have time for limited questions at the end – so if you have more, we shall be in the Speakers room after this session

Case Studies

- Directory Designs
- Roaming, Roaming...
- Greenfield grief
- A Very Secure Environment
- Hell's Agent
- Application Migration
- Spaghetti Junction
- The Long Way Round
- Time travel for beginners
- Lucifers' Lotusscript
- The eMail from hell
- The Domino Virus

Story Number 1: Lets play with the Directory....

- The Story...
 - A support call comes in - no mail routing
 - Many errors appearing on console
 - Server document not found / path errors
- The Investigation
 - Lets see the log file
 - Access the console remotely
 - Assess the errors
 - Ask administrator to open directory
 - “what do you see there”...
- Gotcha!
 - Inbox, Drafts, Sent, All Documents etc.....

1: Lets play with the Directory....

- The Cause

- Administrator replaced design of directory with mail file template by accident

- Resolution

- Replace design back manually on all servers or restore from backup...
- Restart Servers
- Force Replication

- Lessons Learned...

- Limit Manager rights to the Domino directory
 - Break down access based on experience and knowledge/Rank within department
 - ND6 has excellent granular access levels within the directory
- LocalDomainServers does NOT require manager access to the Nab
 - Hub and spoke topology....
 - Grant manager access rights to the servers from which you manage the domain
 - Spokes need minimum editor access
 - Prevents breakout of directory design problem

2: Roaming, roaming

■ The Story

- Many companies use “network home drives” for users’ notes data directories, so that they can “roam” between workstations. Whilst not supported, it does work..
 - New users get a “default” notes data directory – an image copy...
 - Lotus notes “Roaming” was switched on.
- Everyone started to see each others personal name and address book entries..

■ The Investigation

- Lotus Notes roaming places replica copies of the users personal address books on the server.
- The Domino server started replicating.

■ Gotcha!

- Since all the personal address books had the same replica ID, the notes server was quite rightly replicating...

2: Roaming, roaming

- Resolution
 - Change the replica ID's in all personal address books
- Lessons Learnt
 - Unlike Domino v5, Domino v6 will quite happily replicate with multiple databases on the same server with the same replica ID
 - Understand, think through and test your processes and data for any “discovered check” style problems such as this.

3: Greenfield grief.....

- The Story
 - Brand new domain
 - Fresh rollout of hardware/network/domino
 - Administrator had no previous knowledge of Domino
 - Domino server communication not working
 - Certificate errors on all servers/clients
- The Investigation
 - The Domino directory seemed to be replicating fine at the first look
 - All data was synchronised
 - Certificate errors and cross certificate requests appearing constantly
 - Multiple certificate documents in directory with same name – different keys
- Gotcha!
 - Asked the administrator a couple of questions...

3: Greenfield grief.....

■ The Cause

- The administrator installed each new server as “First server in the domain”
- He created each server with same domain/certificate names
- He “replicated” all data by copying in all server documents/certificate documents manually every evening

■ Resolution

- Reinstall environment.

■ Lessons learned

- Education! Education! Education!
- Understand at least the basics of a product before installing it
- Use the resources at hand
 - Help files
 - Lotus Support
 - LDD forums
 - Blogs

4: A very secure site

■ The Story

- A huge environment had just been constructed – lots of new servers, in many countries
- 2 hours before handing over to the customer, everyone was locked out!
- The project team decided to switch on “Public Key Checking” in the hours before handover.

■ Gotcha!

- It had locked everyone out of the environment.

■ Resolution

- One person had left a laptop logged in, and could edit the Directory. The first server came back up, just as the customer entered their building....

4: A very secure site

■ Lessons learned

- Don't lose Certificate passwords half way through deployment, then just quietly create a new certificate key of the same name and hope no-one spots it....
- As any project nears completion, there should be more and more resistance to making any changes to the plan.
- Change Control!
- Wide, sweeping changes to infrastructure should be tested in labs in advance. Well in advance!

5: Hell's agent!

■ The Story

- A large Multinational
- A critical application sits on all servers
 - 3GB Database / 65,000 documents
 - Replicates from three global hub clusters to all spokes hourly
- All server communication grinds to a halt
- No Mail routing/replication
- Application grows to 28GB
 - Masses of replication conflicts

■ The Investigation

- Check application for design changes
- Check replication history and schedule
- Check server tasks
 - Sniff the bandwidth

■ Gotcha!

- New scheduled agent

5: Hell's agent!

- The cause
 - Developer wanted to modify all documents
 - Built an all documents view
 - Wrote an agent to modify a field
 - Agent set as scheduled “every hour”
 - Set agent to run on

ALL SERVERS

- Ran on Hub first...
- Hub replicated with all spokes on 1-hour replication schedule
- Then ran on all servers
- Then continued to run and replicate for the weekend
- 4.8 Million documents per hour!

5: Hell's agent!

■ Lessons Learned

- Developers must never change design on production systems
 - Even basic agents
- Have separate development domain/UAT/Production domains
 - Developers should NOT have designer access on UAT/Production domains
- Domino is very powerful, and WILL do whatever you tell it to do – no matter how stupid..
- Never leave new code unsupervised

6: Application Migration

■ The Story

- Application migration project upgrading from v4.5.x to v6.5.x
 - Migrating platform from W32 to iSeries
- 18,000 + Applications
- Applications refuse to work on new servers.

■ Investigation

- Approximately 18% of all applications used hard-coded server and database names in LotusScript and formula language.
- Windows-specific OLE style calls executed on the server

■ Gotcha!

- Hard-coded server and database names in applications should be kept to a complete minimum

■ Resolution

- Analyse every single application for code weaknesses and Fix those applications with issues.

6: Application Migration

■ Lessons learned

- Keep an application register of all applications showing:
 - Who “owns” the application
 - Any dependences outside the application – such as OLE, platform, other lotus notes databases, file transfer directories.
 - Any business critical processes around this application.
- Monitor applications for usage, and retire or archive the ones no longer used.
 - Activity analysis
- Use Profile documents for application configuration
- Use separate Development/UAT/Production environments, where the developers have NO access to UAT/production databases.
 - This will FORCE all hard coded dependencies to the surface.

7: Spaghetti Junction

■ The Story

- Server performance issues even after hardware upgrade
- Six domino servers
 - All in one single Domino Named Network
- Busy site
 - 3 way Domino cluster
 - Over 1000 concurrent users
 - Very high specification hardware
- We were called in to have a peek....

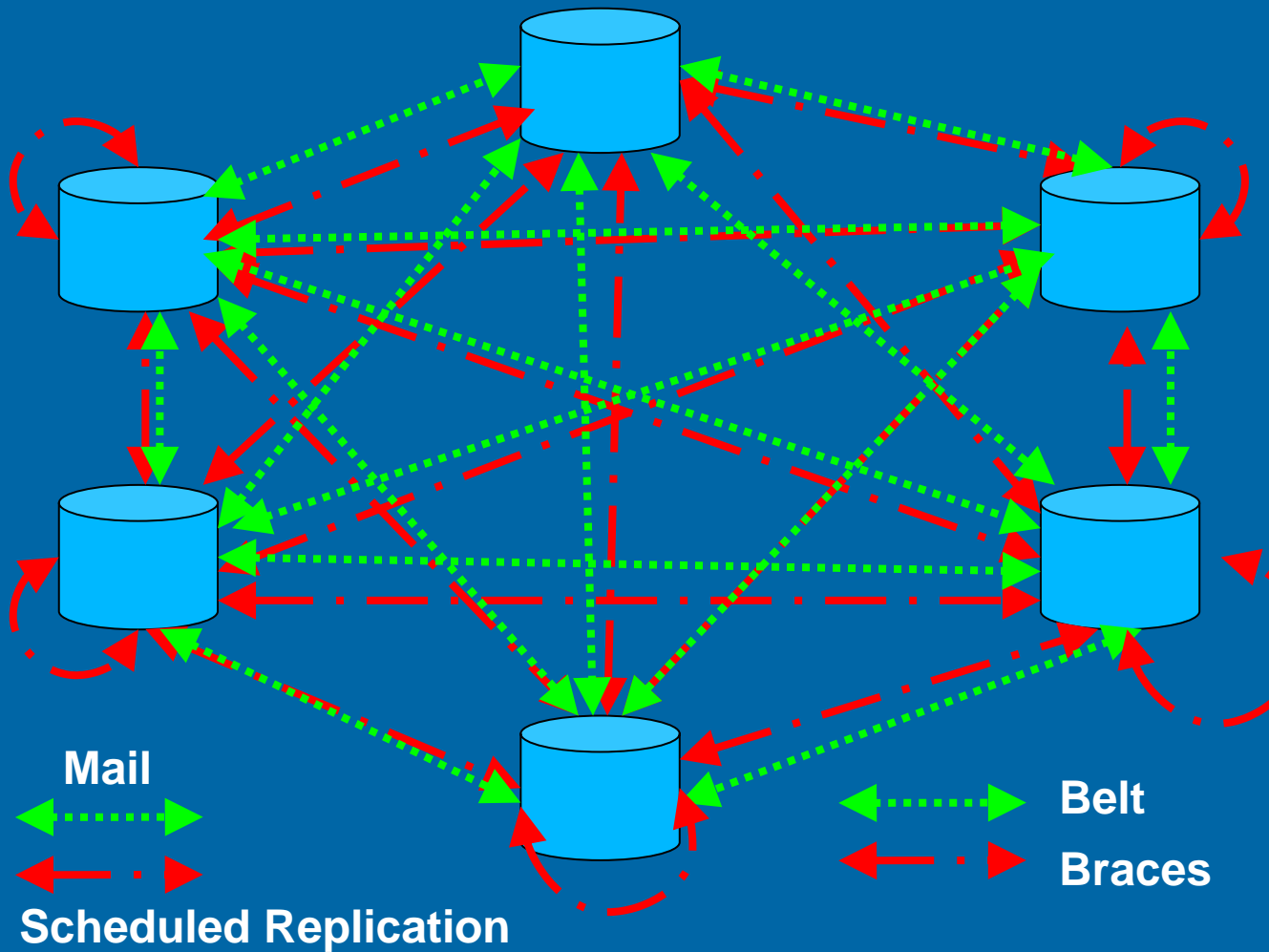
■ The Investigation

- Checked server performance
 - Win2k “perfmon”
 - Log files
 - Server analyser
 - Trend analysis

■ Gotcha!

- Checked directory

7: Spaghetti Junction



- 96 Connection Documents

- Servers replicate with all servers every 5 minutes

- Maintenance tasks running during office hours

- Transactional logs on same Raid array as Domino data

- No data quotas whatsoever

- All servers running multiple DEBUG parameters

7: Spaghetti Junction

■ Resolution

- No mail routing connections were required
 - It's a Domino Named Network!
- Maintenance tasks changed and schedules modified
- Transaction logging moved to separate Raid Arrays
- Replication connection documents drastically reduced
- Logging reduced
- Multiple CPU's utilised on servers

■ Lessons learned

- Never be afraid of the manual
- Education! Education! Education!
- Understand the basics of Domino and it is an easy environment to manage
- Never implement a feature without researching it thoroughly
 - For example Transactional logging and disk arrays

8: The Long Way Round

- The Story
 - A new custom application.
 - Failed to execute scheduled agent within the 15-minute limit.
- The Investigation
 - Very large data collection exercise – thousands of documents to be scanned and reported on.
 - A nightly task.
- Gotcha!
 - The Developer was NOT using ANY views!
- The Cause
 - The developer was unaware of views and was parsing ALL documents in ALL databases
 - Re-reading documents from previous days.

8: The Long Way Round

■ Resolution

- Application, when ran on workstation, against live data – took 9 HOURS.
- When re-written to actually use views (but still open each document in turn) – 2 hours.
- When re-written to use view information – executed within 15 minutes.

■ Lessons learned

- “But it worked in testing” is not a valid excuse
- Testing data has to be representative at UAT (User Acceptance Testing) stage
- A proper Development/UAT/Production environment should be set up.
- Developer should learn more about Notes before being given task of this complexity.

9: Time Travel for Beginners

■ The Story

- SMB Domino site
 - Fully intranet based
 - Domino Web Access/Custom applications
 - Three-way Domino cluster
- W32 based OS on all servers
- Time zone issues on system default profile
 - Common for non-US customers
 - DMY comes up as MDY
- Local Admin runs some testing over weekend
- Data stops replicating to other servers

■ The Investigation

- Replication tasks and logs checked - Seems to be fine
- ACL's checked - All correct

9: Time Travel for Beginners

- Gotcha!
 - Replication history checked...
 - Last successfully replicated at 10.48 am, 11/8/2057 on applications
- The Cause
 - Administrator was baffled by Time/Date issue on server consoles
 - Reset date to 2057 as a test
 - Brought domino server back up on cluster LAN
 - Went to lunch.....
 - Server replicated
 - When the date is returned to the present, Domino sees no need to replicate!
- Resolution
 - Replication history has to be purged from all databases on server
 - Deletion stubs must be purged from databases

9: Time Travel for Beginners

- Lessons learned

- Domino servers rely on the OS date configuration/settings
- Domino servers and replication architecture rely on replication history
- Never go forward in time on a domino server.
 - In fact, this is true of all database systems where timestamps are used. This is not restricted to Domino!
- All time/date work on a Domino server must be done on a simulated environment

10: Lucifers' Lotusscript

■ The Story

- A large application migration project from v4.5 to v6.5
- Application server had just been migrated,
- Developer is informed that his agent has failed
- Developer contacts administrators and tells them to fix problem, without examining code.

■ Gotcha!

- Agent used OLE calls to Oracle database, and no documentation existed to show external linkage.
- Mix of back-end and front-end code in scheduled agent
- No error handling
- Hardcoded Data link names, server names, database path names.
- Domino v6 “agent security” was set to “1 – do not allow restricted...”

■ Resolution

- Recode agent.

10: Lucifers' Lotusscript

■ Lessons learned

- Separate Development/UAT/Production environments
- Applications that depend on anything outside their own database should have installation documentation.
- The following should be mandatory in your development best practices:
 - “Option Declare”
 - “Errorhandling”
 - Logging of critical errors to some monitored Log.
 - Documentation
 - DONT have 300-lines of code in “initialize”. Try and structure ?
 - DONT mix front-end and back-end code in a scheduled agent.
 - Time-sensitive events such as the web events should not have heavy duty code such as OLE links to Oracle embedded in them.
- You can write the best code in the world, but if your administrators cannot manage it, its wasted effort.

11: The email from hell

- The Story
 - Domino server becomes very slow/almost unresponsive
 - Users complaining
 - All users eventually fail over to cluster server and continue working
- The Investigation
 - Go to Server
 - “Nrouter.exe” claiming 97% CPU constantly
 - Show Tasks on console
 - Router in “Dispatching messages” mode
- Gotcha!
 - Open mail.box (or mail1.box, mail2.box, etc) on server

11: The email from hell

2,145,397,995
Bytes!



11/02 10:18			11,000
11/02 10:44			18,957
11/02 10:48			2,145,397,995
11/02 10:51			5,432
11/02 10:52			8,264
11/02 10:54			6,902
11/02 10:56			1,604
11/02 10:56			9,459
11/02 10:56			12,467
11/02 10:56			1,916,417

11: The email from hell

■ The Cause

- A sales rep had mailed the contents of his H:\User directory to HIMSELF
- Was moving desk

■ Resolution

- Stop router task, Delete the mail from “mail.box”
- Reload router task, Compact “mail.box” - “tell router compact”
- Monitor mail routing and cluster task

■ Small Point.

- Router would have delivered this email...
- Cluster would have then clustered this email - Inbox and sent view – almost 5GB
- Credit to a fantastic mail routing/cluster engine

■ Lessons learned

- Limit the internal mail attachments
- Configuration document – set mail priority
- Mail Rules
- Customise mail template?

12: The Domino Virus

■ The Story

- All servers in this large environment stopped mail routing and replication
- User access and administration access was fine.

■ Investigation

- Mail was building up on main routing hubs, and on all servers.

■ Gotcha!

- A Junior administrator had dropped “LocalDomainServers” into the “Terminations” group.
- As the directory replicated, it would successfully update other servers, then disallow server to server access.

■ Resolution

- Administrators had to edit the “Terminations” group in each and every server in order to allow server to server communication.

12: The Domino Virus

- Lessons learned

- Inexperienced administrators should NOT be allowed open access to directories in large environments.
- Education! Education! Education!
- PHB's think that ANYONE can be trained to do ANY job.
 - Sometimes, someone with NO computer experience whatsoever cannot be trained to be a Lotus Domino administrator in 4 weeks...

Shorties

- When you have more than one Notes domain, try and make sure the domain names are unique...
- Dont allow developers to sign agents in production environments.
 - Especially if they are contractors on short term assignments.
- Lotus notes Name fields used in messaging ONLY support ASCII characters. Really!
 - Use “Alternate names” for non-ASCII names, and using Ampersands (“&”) in names causes pain.
- Notes domain names shouldn’t really have dots in them.
- Certificate/Server names should not have spaces
- Beta software in a live domain is not always a good idea
- Never leave the client up on a server.
- Don’t switch id on a server. Ever.
- Be careful what ports you stop on the server
- -Default- = Manager = Bad Idea!
- Allow Anonymous Notes connections = Bad idea
- Enable the cleanup agent on the Domlog.nsf file
- Dont cluster over 64k/bit links...

What have we done here

- We've passed on a few experiences
- Learned a few lessons on what *not* to do
- Felt a bit better about any mistakes you may have made
- Remember. Mistakes will happen. No-one is perfect. Its how you deal with them that defines your professionalism.
- Never make sweeping changes under time pressure.
 - You'll just dig a deeper hole...
 - “Measure Twice, Cut Once”

Time for some questions ?

- Remember – we will listen to your confessions in the speaker room...