

A vertical stack of several dominoes, arranged in a slightly curved line, with the top domino showing a white face with black dots.

Worst Practices in IBM Lotus Domino

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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, you can find us near the bar...

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

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
 - Limit access based on experience and knowledge 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 critical application sits on all servers at a large Multinational
 - 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

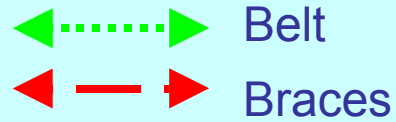
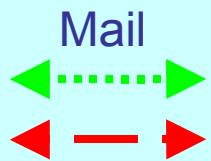
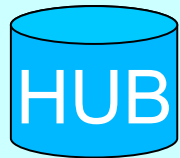
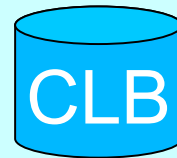
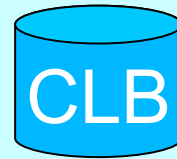
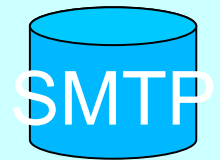
- The Story
 - Large Application migration project upgrading from v4.5.x to v6.5.x
 - Migrating platform from W32 to iSeries
 - Applications refuse to work on new servers.
- Investigation
 - 18% of all applications used hard-coded server and database names in LotusScript and formula language.
 - Windows-specific 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.

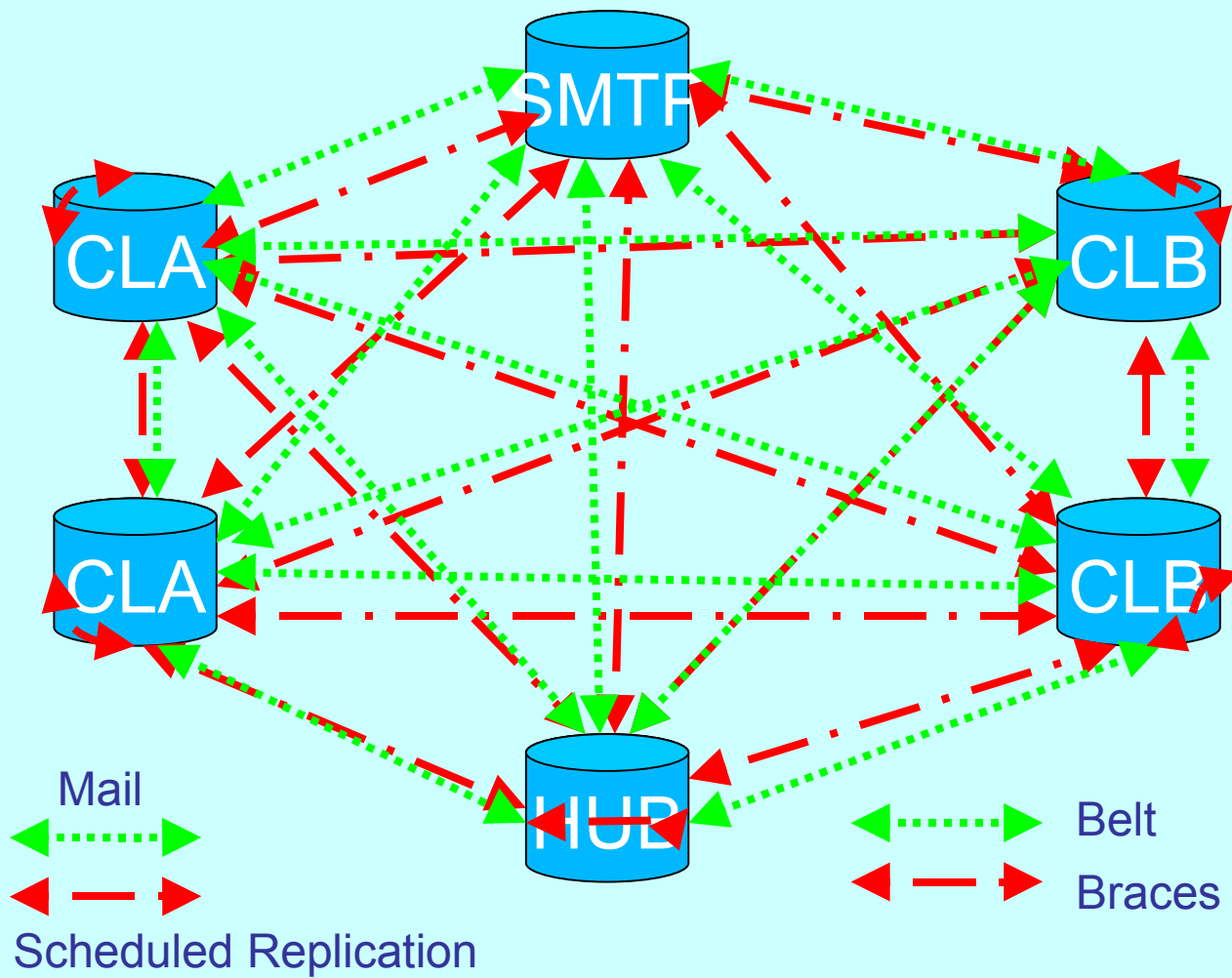
6: Application Migration

- Lessons learned
 - Keep an application register of all applications showing:
 - Who “owns” the application
 - Any dependences outside the application – such as OLE, platform, other 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.
 - 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
 - 2 x 2way Domino clusters, 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





- 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 - 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
 - App - 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 system 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 10:43			11,085
11/02 10:44			18,957
11/02 10:48			2,145,397,995
11/02 10:51			5,432
11/02 10:52			8,284
11/02 10:54			6,902
11/02 10:56			1,694
11/02 10:56			9,439
11/02 10:56			32,467
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...
 - Then cluster replica would replicate onto the cluster server.
 - Credit to a fantastic mail routing/cluster engine
- Lessons learned
 - Limit the internal mail attachments
 - Configuration document – set mail priority
 - Customise mail template?
 - Mail Rules

12: The Domino Virus

- The Story
 - All mail routing and replication stopped.
 - 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

- 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 cleanup agent on the Domlog.nsf file
- Dont cluster over 64k/bit links...

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 domains.
 - Especially if they are 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

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...



Thank you

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