Domino Administration for Newbies

Kim Greene kim@kimgreene.com Michelle Smith msmith@kimgreene.com

Kim Greene - Introduction

- Owner of Kim Greene Consulting, Inc.
 - www.kimgreene.com
- HCL Collaboration Solutions
- Services offered include:
 - System and application performance optimization
 - Administration
 - Upgrades

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- Troubleshooting
- Health, performance, security, etc. reviews
- Custom development
- Enterprise integration
- Migrations
- Blog: www.dominodiva.com
- Twitter (X): iSeriesDomino





Michelle Smith - Introduction

- Owner of an IT consulting company
 - M.E.Smith Consulting
- Started fixing IT issues during University work terms and learned I loved solving the 'puzzles'
- First exposure to Lotus Notes and Domino was migrating a non-Y2K compliant email environment to Domino... wow that was a while ago!
- Focus areas:

- HCL collaboration software portfolio
- Work with Kim to support a group of amazing clients!



Agenda

- What exactly IS Domino?
- Understanding the Domino infrastructure
- Mail routing
- Calendaring & Scheduling
- Monitoring your servers
- Critical server maintenance
- Security fundamentals
- Domino high availability
- Domino replication

What Exactly IS Domino?

What Can You Do with HCL Domino?

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Domino Infrastructure – Server, Configuration, Connection, Person, Group Documents

The Heart of Your Server

Key databases

- Names.nsf
- Admin4.nsf
- Log files
- Mail.box(es)
- Events4.nsf
- Statrep.nsf
- DDM.nsf
- Catalog.nsf



The Heart of Your Server

- Critical documents
 - Server

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- Configuration
- Internet Site
- Connection
- Program
- Person
- Group



• Notes.ini

Names.nsf

- The "Domino Directory" or "Primary Address Book"
- Contains a variety of documents that describe objects in the Domino domain
 - Person documents
 - Group documents
 - Server documents
 - Configuration documents
 - Connection documents
- Also includes:
 - Certificates
 - Access control lists for security
 - Replication schedules

Admin4.nsf

- The Administration Process (AdminP)
 - Automates administration tasks
 - Examples:
 - Name management
 - Renames, deletions, recertification
 - Mail file management
 - Deleting, moving, replica deletion
 - Server document management
 - CPU count, platform, build and network information
 - Roaming user management
 - Setup, moving to other server, upgrading and downgrading

Admin4.nsf

- Controlling AdminP settings
 - In Server document

Basics Security Ports Server Tasks	Internet Protocols Misc	cellaneous Transactional Logging DAOS Notes Traveler NIFNSF	Administration
Administration Process Agent Manager	Domain Catalog Directory	Cataloger Internet Cluster Manager Web Retriever Remote Debug	Manager
Destas		M-361- D-1-6	
Maximum number of 3 threads:		Interval between purging mail file and deleting when using object store:	day(s)
Normal Request Settings		Delayed Request Settings	
Interval: minutes		Start executing on:	Sun day(s)
Execute once a day requests at:		Start executing at:	
Miscellaneous		Mail Inbox Maintenance	
Mail file moves expire after: 21 days		Start executing Inbox Maintenance agent on:	Sat day(s)
Store Admin Process log No entries when status of no change is recorded:		Start executing Inbox Maintenance agent at:	01:00 AM
Suspend Admin Process at:		O Maintain inboxes for only these selected users on this home serve	r
		 Maintain inboxes based on policies 	
Restart Admin Process at:			

Log Files

Log.nsf

- Reports server activity
- Provides detailed information about databases and users on the server

Server Log ▼	🕀 Expand All 🖙 Collapse All
	Date # Starting Time
Miscellaneous Events	Notes
🛐 Mail Routing Events	04/30/2025
Replication Events	± 05/01/2025
Security Events	
Newsgroups Events	1 05/04/2025
Passthru Connections	⊞ 05/05/2025
🗄 📄 Usage	05/06/2025
🗉 🐊 Phone Calls	⊞ 05/07/2025
🔍 Log Analysis Results	
🔍 Security Log Analysis Resu	

Log Files

- Domlog.nsf
 - Logs all Domino Web server activity and
 - Tracks information about each HTTP request



Mail.box(es)

- Container for mail to be delivered to users
 - Delivery and transfer of messages handled by Router task
 - Delivery
 - Transfer of messages from Mail.Box into local mail file
 - Transfer
 - Sending messages from Mail.Box across to another server

Catalog.nsf

- Controls which databases and file systems get indexed for Domain Search
- Great administrative tool

Application Catalog	Add Bookmark 🔊 Open ?Help
 Domain Search Access Control Lists Content Applications by Category by Hierarchy by Replica ID by Server by Title Domain Indexer Status File Systems All Apps by Title to FLAG 	Title Server Replica ID * Active Directory Password Sync Requests * Activity Trends (8) * Activity Trends (NotesOSS4) * Admin Quick Requests * Admin Quick Requests * Administration Requests (11.0) * Administration Requests (12.0) * Administration Requests (12.0) * Administration Requests (12.0) * Agent Log (8) * App Manager (2025-01) * Application Library (12) * Application Library (12) * AUT Catalog * Bazaar 2.0.6 * Billing * Board Content * Catalog (12) * Catalog (14) * Cluster Analysis (12.0.1) * Cluster Directory (10) * Collaboration Today * Connector LotusScript Extensions Guide * Connectors and Connectivity Guide * Database Analysis * Decommission Server Reports

More on Catalog.nsf



The Server Document

- Document that defines:
 - Server name & Domain name
 - Security settings for the server
 - Network definitions
 - Configuration for many server tasks including
 - Adminp
 - Amgr
 - Etc

- Web Server configuration
- Transaction logging

The Server Document

Server: Notes	3/1 notesc J	10101 (SS-)	001010101010
Basics Security Ports	Server Tasks Internet Protocols Miscellaneous Transaction	nal Logging DAOS Notes	Traveler NIFNSF Administration
Basics			
Server name:	Notes /N	Server build number:	Release 14.0FP3HF34
Server title:		Routing tasks:	Mail Routing
Domain name:	Notes	SMTP listener task:	Enabled
Fully qualified Internet host name:	noteso	Server's phone number(s):	
Cluster name:	Notes Cluster 2	CPU count:	4
Load Internet configurations from Server\Internet Sites documents:	Enabled	Operating system:	Linux 6.1.0-15-amd64 #1 SMP PREEMPT_DY
Maximum formula execution time:	120 seconds	Is this a Sametime server?	No

Internet Sites

- Internet sites are used (primarily) to allow one Domino server to host multiple web sites
 - www.mydomain.com
 - www.acme.com

- www.domain2.com
- Once Internet sites are enabled for a server, all protocols must have an internet site document configured
 - Internet Sites are enabled in the Server document -> Basics tab

Server: Notes			notes		
asics Security Ports	Server Tasks	Internet Pr	otocols	Miscellane	ous
Basics					
Server name:	Notes No				
Server title:					
Domain name:	Note				
Fully qualified Internet host name:	note				
Cluster name:	Notes				
Load Internet configurations from Server\Internet Sites documents:	Enabled				
Maximum formula execution time:	120 seconds				

Internet Sites

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• Remember to create an internet site document for each protocol using



The Configuration Document

• This document contains:

- Mail Routing configuration
- Domino Web Access configuration
- Diagnostic configuration
- SMTP & router configuration details
- Notes.ini settings

Configuration Settings : Notes					1010		010010	010101010		
Basics	Security	Client Upgrade	Router/SMTP	MIME	NOTES.INI Settings	HCL iNotes	IMAP	SNMP	Activity Logging	Diagnostics

Basics	
Group or Server name:	Notes
Type-ahead:	Enabled
International MIME Settings for this document:	Enabled
IMAP server returns exact size of message:	Enabled
POP3 server returns exact size of message:	Disabled
License Tracking:	Disabled

The Connection Document

- A connection document is used for many things:
 - Describing how servers are accessed

- Providing an Internet Address to use if the DNS does not contain an entry for the remote server
- Controlling scheduled replication between servers
- Controlling mail routing settings for server not in the same Notes Named Network
- Forcing one Notes Server to act as a router for other servers (Passthru)

The Connection Document

Server Com	ion/Routing Schedule	Comment		INDIES WINDIES	2
Basics	Server Connection	n: Note	s /No	tes to Notes //Notes	
Connection typ _E Source server:	Basics Replication/Rout	ing Sche	dule Commen	ts Administration	
Source domair	Replication	~	0		
Use the port(s)	Replication task:	Server	r Connectior	n: Notes /Notes to Notes //	ting
	Replicate databases of:	Ranica F	Paplication/Rout	ing Schedule Commente Administration	jes pending
	Replication type:	Dasics 1	replication/riout	Ing Schedule Comments Administration	
	Files/Directory paths to replicate:	Schedu	uled		У
	Files/Directory paths to NOT replicate:	Schedul	le:	Enabled	
	Replication time limit:	Connect	t at times:	12:00 AM - 11:59 PM each day	2
	-	Repeat	interval of:	5 minutes	
		Days of	week:	Sun, Mon, Tue, Wed, Thu, Fri, Sat	

More On Connection Documents

• Do I need a connection document to route mail between Domino servers?

- Only when the Domino server are in different Notes Named Networks
- View the Notes named Network value in the Server Document -> Ports -> Notes Network Ports

Basics Security	Ports Server Tasks Ir	nternet Protocols Miscellar	neous Transactional Lo	gging DAOS Not
Notes Network P	orts Internet Ports Proxi	es		
Port	Protocol	Notes Network	Net Address	Enabled
TCPIP	TCP	TCPIP Network	N , M	Enabled
			Notes	Disabled

Program Documents

- Use to automate running server tasks
 - Specify task to run with which options
 - Define schedule

Program: o	lbmt				22	22.
Basics Administ	ration					
Basics				Schedule		
Program name: Command line:	Program: fixu	р				and a
Server to run on	Basics Administration					
Comments:						
	Basics				Schedule	
	Program name:	fixup			Enabled/disabled:	Enabled
	Command line:	-F -J dem	nos/demodb.nsf		Run at times:	03:00 AM each day
	Server to run on:	Notes	Notes		Repeat interval of:	0 minutes
	Comments:				Days of week:	Sun

Person Document

- Contains information about a person
- Created when registering a person

Person: Domin	o Administrator/KGCI	Domino Administrator/KGCl@KGC	DI	and the second	
Basics Work/Home C	other Miscellaneous Certificates Roan	ing Administration			
Basics		Mail			
First name:	Domino	Mail syste	em:	Notes	
Middle name:		Domain:		KGCI	
Last name:	Administrator	Mail serve	er:	domtest1/KGCI	
User name:	Domino Administrator/KGCI	Mail file:		mail/dadminis	
	Domino Administrator	Forwardin	Forwarding address:		
Alternate name:		Internet ad	Internet address:		
		Format pr	reference for	Keep in senders' format	
Short name/UserID:	dadminis	incoming	mail.		
Personal title:		When rec	eiving		
Generational qualifier:		before sto	pring in vour	No	
Internet password:		mailfile:			

Group Document

- List of users, groups, or servers
- Used for access control lists or mailing lists
- Simplify administration
- Can be nested

Multi-purpose g	roup : LocalDomainServers	en sig
Basics Comments Adm	inistration	
Basics		
Group name:	LocalDomainServers	
Group type:	Multi-purpose	
Category:	Administration	
Description:	This group should contain all Domino servers in your do servers in this group Manager access.	omain. Many databases give
Mail Domain:		
Internet Address:		
Auto Populate Method:	None	-
Members:	domtest1/KGCl testkim/KGCl domtest2/KGCl domtest3/KGCl	

Notes.ini

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Server configuration file

Contains settings that define how the server is configured

[Notes] Directory=/domtest4/data KitType=2 NPN=1 UNICODE DISPLAY=1 FaultRecovery_Build=Release 12.0.2FP6 SHARED MAIL=0 DisableLDAPOnAdmin=1 NSF Buffer Pool Size MB=600 Passthru_LogLevel=0 Console_LogLevel=2 DefaultMailTemplate=mail12.ntf Preferences=32 ServerTasks=COLSRV400,Update,HTTP,AMgr,AdminP,CalConn,Replica,Router,Sched,Stats,RnRMgr ServerTasksAt1=Catalog,Design ServerTasksAt2=UpdAll ServerTasksAt5=Statlog KillProcess=1

Mail Routing and Mail Clients

Mail Routing

- Two types of routing protocols
 - Notes / Domino routing
 - NRPC (Notes Remote Procedure Call)
 - Internet routing
 - SMTP (Simple Mail Transfer Protocol)

Functions of Domino - Mail

Notes Mail

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- Also called internal mail or NRPC
- Mail that is sent from one Notes user to another
- User may be a user on the same Domino server or another Domino server in your environment across the country or world

SMTP Mail

- Also called external mail or internet mail
- Mail that is sent from one company to another
- Standard used for all mail sent to and from the Internet
- Not related to Notes Mail
 - All Domino servers send Notes mail, most are optionally configured to send and/or receive SMTP mail

Functions of Domino - Mail

- POP3 (Post Office Protocol Version 3)
 - Allows users running a POP3 client to access mail in their Domino Mail file
 - Uses SMTP to send mail through Domino server
 - POP3 clients cannot access Domino applications
 - Well, unless you are using your Notes client as a POP3 client
- IMAP (Internet Message Access Protocol)
 - Allows users running an IMAP client to access mail in their Domino Mail file
 - Enables disconnected client operation, resynchronizes with server
 - Uses SMTP to send mail

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Uses LDAP to access the Domino Directory

Functions of Domino - Mail

HTTP Mail

- Web mail is e-mail accessed completely through a browser
- Examples: Yahoo!, Gmail
- Can access a notes mail file and send mail using a browser
 - iNotes
 - Verse
- HCL Traveler
 - Mobile Devices
 - Traveler for Microsoft Outlook

Mail Routing

Router task

- Routes mail internally and to other Domino servers
- How router works:
 - Monitors MAIL.BOX databases for new messages
 - Transfers messages to other servers
 - Delivers messages to local mail files
 - Can transfer mail using NRPC or SMTP
 - Converts message format between Notes rich text and MIME as needed
 - Maintains routing table comprised of information derived from Domino Directory and NOTES.INI file

Mail Routing

SMTP

- Internal or external mail routing
- Allows Domino to send/receive mail to/from other SMTP servers
- How SMTP works:
 - Sending server checks recipient's address (name@domain.com), looks up domain in Domain Name System (DNS)
 - 2. DNS returns Mail Exchanger (MX) record for domain; indicating IP address of servers in domain accepting mail over SMTP
 - 3. Sending server connects to destination server over TCP/IP, establishes SMTP connection on port 25, transfers message, closes connection
Mail Routing

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Calendaring & Scheduling

Calendaring & Scheduling

- Provides free time look-up, scheduling of meetings, reserving of rooms & resources
- Utilizes these tasks:

- Schedule Manager (Sched)
- Calendar Connector (Calconn)
- Free Time system (combo of Sched, Calconn, and nnotes tasks)
- Resource & Reservations (RnRMgr)
- Free Time databases
 - BUSYTIME.NSF for non-clustered mail servers
 - CLUBUSY.NSF for clustered mail servers

Rooms & Resource Manager

RNRMGR task

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- Processes all Rooms and Resources activities
 - Meeting invitations
 - Reschedules or cancellations
 - Updates busytime.nsf or Clubusy.nsf database accordingly

• Tip:

 Make sure you update the design of your Resources database when upgrading your Domino server

Monitoring Your Servers

Active Tasks

eople & Groups Files Serve	Messaging	g Replication Configuratio	n	
tatus Analysis Monitoring	Statistics Per	formance		
Server: Notes /	Notes	6 1 0-15-amd64		
Server Tasks	61 10 401 Endx	Taska A	Restant.	CPULINATION
A Notes Users	05	Post TOPIP	Listen for connect requests on TCPIP	CFO Ouization S
Database Users	100	Database Server	Perform console commande	
lotemet Users	100	Database Server	Cluster Manager in idle	
Server Console	668	Database Server	Cluster Manager Is Idle	
Schedules	600	Database Server	Land Manifestia idla	
Programs	600	Database Server	Databasa Disastas Managas Casha Rafashas is idla	
Q ₂ Agents	600	Database Server	Organization Name Casha Refresher is idle	
Mail Bouting	958 (D)	Database Server	Les Russe Tech is idle	
Replication	659	Database Server	Log Purge Task is idle	
	669	Database Server	Defendent Inread	
LOF DOM	63	Database Server	Perform Database Cache maintenance	
	629	Database Server	Recovery Manager Checkpoint Thread	
	659	Database Server	Recovery Manager DB Flushing Thread	
		Database Server	Recovery Manager Deterred RRV Thread	
		Database Server	Platform Stats is idle	
	653	Database Server	Metric Task	
	6.53	Database Server	Shutdown Monitor	
	63	Database Server	Process Monitor	
	-	Database Server	Thread pool utility task on TCPIP	
	-	Database Server	Remote live console task on TCPIP	
	-	Admin Process	Idle	0%
	-	LDAP Server	Listen for connect requests on TCP Port 389	0%
	0	LDAP Server	Utility task	0%
	- C3-	CertMgr	Idle	0%
	-	Admin Process	AdminCentral Control:Idle	0%
	-	DominoMeter	Idle	0%
	603	Cluster Replicator	Idle	0%

Monitoring via Domino Administrator

- Quickly see health of multiple Domino servers
- Easily see if a task is not running
- Hover to view last error

Peop	People & Groups Files Server Messaging Replication Configuration																		
Statu	s Ar	nalysis Monitoring Statis	stics	Perf	oma	nce													
	В	y State	Sho	w m	e pa	st err	ror st	ates	only	,	/					N	Monitoring pro akh Domain	ofiles:	- Stop
\$	Hea	07:36:42 AM - 08:21:42	Adm	Age	Dat	Eve	Ind	Rep	Rou	Sta	нтт	Roo	User 🗘	Dead 🗘	Hold 🗘	Waitir 🗘	Availability 🗘	ElapsedTime	Catalog
<u>→</u> []!		domserver1/akh	٩	٩		0	()>	٩	٩	٩	0		3	0	0	0	100	1 day 20:48:50	Synchroniz
		08:21:42 AM - 08:23:	٩	•	٩	٠		٩	0	٩	٩		3	0	0	0	99	1 day 20:28:34	Synchroniz
	1	08:18:02 AM - 08:21:						٩		٩	٩	4	3	0	0	0	85	1 day 20:24:32	Synchroniz
	1	08:16:12 AM - 08:18:		•			4	٩	٩		٩	4	3	0	0	0	100	1 day 20:22:32	Synchroniz
		domtest5/akh	٩	٩	٩	٩	٩	٩	٩		٩	-	4	0	0	0	100	12 days 22:35:33	

Creating a Monitoring Profile

- By default you will get an "All Servers" and domain profile
- Create your own profile by adding the server(s) you want to

 File
 Edit
 Administration
 Monitoring
 Help

 Image: Imag

Save your profile with the updated

server list.

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monitor





Monitoring via Domino Administrator

File \rightarrow Preferences \rightarrow Administration Preferences

Administration Pref	erences ? 🗙
Basics	Global settings for Monitoring Do not keep more than 4 MB of monitoring data in memory (4-99 MB)
🖳 Monitoring	Not responding status displayed after 5 minutes of inactivity
Registration	Generate server health statistics and reports
Statistics	Location specific Monitoring settings
	When using location: Online ~
	Monitor servers: • From this computer Collection Server • From server
	Poll servers every <u>1</u> minutes (1-60 mins) Automatically monitor servers at startup

Keeping Your Server Up & Running

Server document \rightarrow Basics tab

Automatic Server Recovery	
Run This Script After Server Fault/Crash:	ீ ு (This script must not run NSD)
Run NSD To Collect Diagnostic Information:	▼ Enabled
Automatically Restart Server After Fault/Crash:	☑ Enabled
Cleanup Script / NSD Maximum Execution Time:	[©] 600 ₂ seconds
Server Shutdown Timeout:	[™] 300 <u>a</u> seconds
Maximum Fault Limits:	[™] 3 ∎ faults within [™] 5 ∎ minutes
Mail Fault Notification to:	[™] kim@kimgreene.com LocalDomainAdmins 」 ▼

Automatic Diagnostic Collection

Configuration document → Diagnostics tab

Diagnostic Collection Options

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Mail-in Database for diagnostic reports:	^C Lotus Notes/Domino Fault Reports 🖃
Maximum size of diagnostic message including attachments (in MB):	ິ 20 ຼ
Maximum size of NSD output to attach (in MB):	ິ 10 ຼ
Maximum amount of console output file to attach (in KB):	ີ 10240 ຼ
Diagnostic file patterns:	
Remove diagnostic files after a specified number of days:	^r Yes▼
Number of days to keep diagnostic files:	^r 90 _
Fault Analyzer	
Run FaultAnalyzer on Fault DBs on this server:	^r Yes _ ▼
Run Fault Analyzer on:	🖥 Specific mail-in databases 🛛 💌
Databases to run fault analyzer against:	^C Lotus Notes/Domino Fault Reports _
Remove attachments from duplicate	^r No.₁ ▼

faults:

Fault Reports Database

- Use to easily see when the Domino server has crashed and the status of the crash
- Various views to easily navigate to crash reports
- If you've enabled the Fault Analyzer, crashes have some level of analysis completed
 - Task causing the crash
 - Number of occurrences of the crash
 - Easily findable call stack
 - Etc.



Monitoring the Console is Essential!

Console errors can't be ignored

- admin4.nsf has not replicated (PUSH) with ANY server since MM/DD/YYYY HH:MM:SS (1681 hours ago)
- admin4.nsf has not replicated (PULL) with ANY server since MM/DD/YYYY HH:MM:SS (1681 hours ago)
- Error validating execution rights for agent 'Notify' in database 'subdir/dbname.nsf'. Agent signer 'XXX01/YYY', effective user 'XXX01/YYY'. Agent signer.
- RnRMgr: The design of Rooms.nsf is not one supportable by RnRMgr. Autoprocessing is being disabled for this DB.
- Directory Cataloger finished processing DirectoryCatalog.nsf: File does not exist
- Agent Manager: Full text operations on database 'mail/myfile.nsf' which is not full text indexed. This is extremely inefficient.

Monitor Traveler Status

tell traveler status

- Great "tool" for knowing how healthy a traveler server is
- Three statuses:
 - Green

- The desired status
- Yellow
 - Not of immediate need, but should be remedied soon
- Red
 - Needs immediate attention
- Example status messages
 - The current native memory usage is 94 percent of the total available memory
 - 17,238 errors have been logged for user CN=Joe Tester/OU=Test/O=HCL

Events4.nsf

- Monitoring and configuration database
 - Where you determine what gets monitored on your server
 - Includes information about statistics, statistic thresholds, and event messages



Statrep.nsf

- Monitoring results database
- Stores gathered statistics



DDM.nsf – Domino Domain Monitoring

- Means to quickly monitor and determine health of an entire domain
 - From a single UI location
- Enabled in Monitoring Configuration database (events4.nsf)
- Feature-oriented view of domain status in DDM.nsf
- Provides for quick problem resolution
 - How?

- Automates problem determination/analysis by feature
- Roll-ups, prioritizes and resolves problems across servers
- Hides details until you need them
- DDM checks and reporting are configurable and flexible



- Used for all domino domain monitoring configuration
- Domino domain monitoring probes generate Event report documents that get consolidated and reported into the DDM database

Domino Domain Monitoring Report - Example

🔏 Assign	🔞 Change State 🔻 📝	Add Comments
Open E (This event is	e not assigned to anyone)	Generated by: notes I/notes For server: Notes Notes in Domain: Notes Database: UpdateViewIndex Event class: Enhanced User:
Most Recei	nt Event	
I Failure	Monday, May 13, 2 Agent Manager, Ex	024 - 8:01:11 PM (2 occurrences, first seen at Monday, May 6, 2024 - 5:44:18 PM) ecution time limit exceeded by Agent 'updateViewIndex' in database ' Agent signer '
	Explanation	
	Reported by:	Agent Manager
	 Severity and type: 	🜗 Failure in Application Code 🛅
	Probable cause:	The agent exceeded the time limit set in the Server Record. For agent manager agents: Server Record/Server Tasks/Agent Manager/ Max execution time. For web agents: Server Record/Internet Protocols/Domino Web Engine/Web Agents. For router agents: Configurations/Router SMTP/Restrictions and Controls/Delivery Controls/Pre-delivery agent timeout.
	 Possible solution: 	Increase the agent run time limit in the Server document for Notes Notes. Examine agent performance by profiling it. To enable profiling edit the agent and then select 'Profile this agent' option on the second tab of the agent's properties. The next time this agent will run it will generate profile information which can be viewed from Designer's Agent menu by selecting 'View profile results'.
		Increase maximum time mail agents are allowed to run in the Router for Notes votes, by editing a configuration document.
		Reported agent problems can sometimes reference private agents. While in the Domino Designer, only the author of a private agent can see that agent. However, you can gain access to that agent if you 1) close all Notes clients, 2) launch the Domino Administrator, 3) switch to Full Access Administration, 4) open the target database in the Domino Designer.
	Corrective action:	Increase maximum time mail agents are allowed to run in the Agent Manager for Notest Notest by editing a configuration document.
		Increase maximum time web agents are allowed to run in the HTTP Server for Notes Notes by editing a configuration document.
		Increase maximum time mail agents are allowed to run in the Router for Notest I/Notes by editing a configuration document.

Critical Server Maintenance

.NSF Maintenance

• Fixup

- Check integrity of Domino databases
- Resolve corruption problems
- Especially important if not using transaction logging
- Updall
 - Updates view/full text indexes
 - Runs at 2AM by default

Fixup

- Reads all database items (data notes, design notes, view indexes, and so on)
- Verifies that it is consistent with what is expected for that type of item.
 - Inconsistent item is either repaired (this does not happen very often) or purged
- Verifies views
 - If they are found to be inconsistent, they are marked for rebuild
 - FIXUP does not rebuild the view, it only marks it for rebuild
 - Only UPDALL -R rebuilds the view
- FIXUP will not run on a database that is open (in use)

Updall

- Updates views/full text indexes set to "once a day" updates
- Runs at 2 AM by default, but can be modified (ServerTasksAt2=updall)
 - Avoid running during backups
- Use –r (rebuild views) option if view corruption is suspected to rebuild views
- Use –x (rebuild full text index) option if corruption is suspected in the full text index

.NSF Maintenance

Compact

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- Equivalent to a "Defragment" for a Domino database
- Rearrange database or reduce file size

Customer example

Compacted databases after upgrade, recovered 418 GB of disk space, a 42% reduction!!

<u>DataBase</u> <u>Maintenance</u> <u>Tool</u> (DBMT)

- DBMT task streamlines database maintenance
 - Domino Server Add-In Task (n)dbmt process
- What does it do?

- Runs copy-style compact operations
- Purges deletion stubs
- Expires soft deleted entries
- Incremental view indexing
- Full text index updates and rebuilds
- Reorganizes folders
- Merges full-text indexes
- Updates unread lists
- Ensures critical views are created for failover
- Fixes corruption



DataBase Maintenance Tool (DBMT)

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Increase number of threads for faster execution as appropriate

Program: dbm	t		and and
Basics Administration			
Basics		Schedule	
Program name:	dbmt	Enabled/disabled:	Enabled
Command line:	-compactThreads 4 -updallThreads 4 -ftiNdays 10 -compactNdays 5	Run at times:	02:00 AM each day
Server to run on:	Notes /Notes	Repeat interval of:	0 minutes
Comments:		Days of week:	Sun, Mon, Tue, Wed, Thu, Fri, Sat

Monitor execution through server tasks in Administrator Client

	DBMT Compact	Compacting mail\dretherf.nsf (Dean Retherford), -compactThreads 4 -timeLimit 120 -force 1
	DBMT Compact	Compacting mail\drehn 2.nsf (Dave Rehn), -compactThreads 4 -timeLimit 120 -force 1
-	DBMT Compact	Compacting mail\drolli.nsf (Dave Rolli), -compactThreads 4 -timeLimit 120 -force 1
	DBMT Compact	Compacting mail\kcoppeja.nsf (Kathy Coppejans), -compactThreads 4 -timeLimit 120 -force 1
-	DBMT Manager	Processing -compactThreads 4 -timeLimit 120 -force 1
	DBMT Updall	Idle -compactThreads 4 -timeLimit 120 -force 1
^		-

Traveler Database Maintenance

- Use DBMAINT to defrag traveler database
 - Tell traveler dbmaint set interval 7 **

- 11/19/2024 09:37:02 Traveler: DB maintenance will be performed every 7 days.
- Tell traveler dbmaint set time 23:00
 - 11/19/2024 09:39:58 Traveler: Time of day for DB maintenance has been set to 23:00
- Tell traveler dbmaint set day Sunday
 - 11/19/2024 09:51:40 Traveler: Day is now configured to Sunday.
- Tell traveler dbmaint set auto on **
 - 11/19/2024 10:12:27 Traveler: Automatic maintenance of your database has been set.
 - 11/19/2024 10:12:27 Traveler: The next maintenance is scheduled for 2024-11-22 23:00.
 - 11/19/2024 10:12:27 Traveler: Maintenance will be performed every 7 days at 23:00.
- ** Only options available for Derby database

- Some maintenance can only be run while the server is down
 - Examples

- System databases are always locked by the server
- High use databases are always locked by user activity
- Procedure varies depending on the platform
- Output of commands are found in the Domino console

Running on Windows

- Change to directory where executables reside
 - cd C:\Program Files\HCL\Domino
- Specify full path of directory or file running maintenance on
 - nfixup.exe –F –J E:\HCL\Domino\data\names.nsf
 - ncompact.exe –c E:\HCL\Domino\data\mail\kgreene.nsf
- Provide password for Server ID file if prompted

Running on Linux

- Switch to the notes user
 - su notes
- Change to the Domino server's data directory
 - cd /local/notesdata
- Specify full path of maintenance executable
 - /opt/lotus/bin/fixup –F –J names.nsf
 - /opt/lotus/bin/compact –c mail/kgreene.nsf

• Running on IBM i

- Use RUNDOMCMD command
 - RUNDOMCMD SERVER(<Server_Name>) CMD(CALL PGM(QDOMxxxxx/FIXUP) PARM('names.nsf' '-F' '-J')) BATCH(*YES)
 - RUNDOMCMD SERVER(Server_Name) CMD(CALL PGM(QDOMINOxxxxx/COMPACT) PARM('mail/kgreene.nsf' '-c')) BATCH(*YES)
 - Note: xxxxx corresponds to the release of Domino you are running, for example QDOM120002

Security Fundamentals: Levels of Security

Levels of Domino Security



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Server-Level Security

- Access Control List (ACL) for each server
- Server document defines who can access/administer server



Database-Level Security

- Each Domino database has its own Access Control List (ACL)
- Roles and Access Types assigned to Persons, Groups, Servers
- Database encryption for data at rest

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Document-Level Security

- Readers fields limit who can see a document
- Authors fields limit who can edit a document

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-	-	-	

Field-Level Security

• Field-level encryption

Server Level Security

Who Can Access the Server?

Server document -> Security tab

Server Access	Who can -
Access server:	🗹 users listed in all trusted directories
	and Kim Greene/Kim Greene Consulting Kim Greene/BHWS Mary Warner/BHWS LocalDomainServers
Not access server:	Not Access Server
Create databases & templates:	BHWS Work Mike Gordon/KGCI Kim Greene/Kim Greene Consulting Coffee Mug/KGCI LocalDomainServers
Create new replicas:	BHWS Work Mike Gordon/KGCI Kim Greene/Kim Greene Consulting Coffee Mug/KGCI LocalDomainServers
Create master templates:	BHWS Work Kim Greene/Kim Greene Consulting LocalDomainServers
Allowed to use monitors:	*
Not allowed to use monitors:	
Trusted servers:	LocalDomainServers \$Archive_Servers
Database Level Security

Database Level Security

- ACL = Access Control List
- Access Levels

- Manager
- Designer
- Editor
- Author
- Reader
- Depositor
- No Access
- Roles
 - Defined by application designer



Default as Manager

Not a good idea

- Check, you'll be surprised at how many databases this applies to!
- Check HCL supplied templates too
- Customer example:

	Apps1	Dev2	Good	Mail1	Mail2	Sametime	Traveler
Anonymous Missing	855	202	15	346	44	58	18
Anonymous Manager	3	4	1	2	1	3	1
Default Manager	27	27	10	54	10	14	9
OtherDomainServers Manager	141	107	4	31	19	6	5

Anonymous Access

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Should web users be able to view the database??

• Set "Anonymous" to "No Access" for all databases except public databases



• Without this entry, anyone can see public calendar entries within your mail files!!

Enforce Consistent ACL is Key

Ensures ACL stays consistent across all replicas

Access Control	List to: Kim Greene ? 🗙							
Basics Roles	Administration server O None O Server Action Do not modify Names fields							
	If you wish to change the Administration Server for this Notes database, it is recommended that you change the replica on Mail/SGA.							
	Enabling 'Enforce a consistent Access Control List across all replicas' will ensure that an ACL remains identical on all Notes database replicas.							
	Maximum Internet name and password Editor							
	Look Up User Types for 'Unspecified' Users							
	Pressing this button will perform a Domino Directory lookup for each user in the Access Control List who is listed as an 'Unspecified' user type. If the name is found, the appropriate user type (e.g. Server, Person, etc.) will be set in the ACL.							
Last change: According to:	Kim Greene on 07/31/2020 08:29:21 PM OK Cancel							

Document Level Security

Document Level Security

Authors Fields

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- Applies only to users with Author access to the database
- Allows authors to edit a document
- Common example is allowing users to edit their own person document

erson: Kim C	Greene/Kim Greene Consulting Kim Gree
asics Work/Home	Other Miscellaneous Certificates Roaming Administration
Administration	
Administration <u>Dwners:</u>	Domino Administrator/KGCI

Both "Owners" and "Administrators" are Author fields

- Readers Fields
 - Defines who can see the document
 - Applies to all ACL levels
 - Commonly used in custom applications

Field Level Security

Field Level Security

Encryption

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- Can configure a field to be encrypted so only specific users can see the data
- Not found in default templates
- Want to know more?

https://help.hclsoftware.com/dom_designer/14.0.0/basic/H_ENABLING_ENCRYPTION_FOR_A_FIELD.html

Secure Workstations with ECL Management

Administration ECL

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 Administration ECL is the "template" for the <u>Execution Control List</u>, which dictates what can happen at the Notes client level for end users

When code is signed by:	Allow access to:	
-Default-	Eile system	Network
-No Signature-	External code	External programs
BT Mail and Calendar Migration Tools/Lotus N	Current Notes database	Non-Notes databases
Domino Template Development/Domino	<u>Environment</u> variables	<u>G</u> eolocation
Enterprise Connector Products/Lotus Notes Co	Allow ability to:	
Jesse Gallagher/IKSG	Send <u>m</u> ail	Export data
Lotus Fax Development/Lotus Notes Companie	Read other Notes databases	Modify other Notes database
Lotus Notes Template Development/Lotus Not	Read from property broker	Write to property broker
Sametime Development/Lotus Notes Companie TASP-Mail01/System/TAProduce Ytria Development Team/YTRIA	Modify your Execution Control	l List
	Configure Widget capabilities	
	Load Java code	
	Execute HTTP/HTTPS regue	ests

Administration ECL

Two ways to edit it

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Actions -> Edit Administration ECL

-OR-



• Edit / Manage through security settings document

Security Setting	s : Higher password scale
Basics Password Manage	ement Execution Control List Keys and Certificates
ECL	
Admin ECL:	-Default-
Update Mode:	^Г Refresh ▼
Update Frequency:	🖥 When Admin ECL Changes 🛛 💌

Administration ECL

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• WARNING: be careful when working with the ECL



- ALWAYS use an ID that is already in the ECL!!
 - Even just viewing the ECL, signs the ECL, which can cause Execution Security Alerts (ESAs)

ID Handling

Recertifying Users

• Recertify users **BEFORE** they expire

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 Use Certificate Expiration view in the Domino Directory to see which users are due to expire, click 'Recertify Selected People'



• Alternatively, navigate to People & Groups Tab -> Recertify tool in the Domino Administrator client

Domino Directories Vignation Science	Add Pers	on 🖉 Edit Pers	on 🔨 Delete I	Person DCopy	to Personal Addres	ss Book 🛛 🖅 Ser	•	People	
People	Search in	View 'People	Show results	By relevance	💌 🔘 Index	ed ? >	Reg	ister	
▶ SS Groups	Search for				0	-	Mov	e to Another Se	erver
Mail-In Databases and R	Searchinor				~	<u> </u>	Ren	ame	
V Policies		Nan	ne ^	Telephone		Company ^	Dele	te	
Vian Dynamic Policies		Access.					Rece	ertify	
by Person/Group		Admin , Flui	in inc				Set	nternet Addres	SS
by Category		Administrato	or				Valio	late Internet Ar	ddress
								and integration and	

ID Vault

• Do you:

- Use multiple workstations and want your ID files to be automatically synchronized (passwords, name changes, etc.)?
- Want a way for your Help Desk to reset passwords easily?
- Want a way for users to reset their own Notes.id password?
- If so, ID Vault is for you!

ID Vault

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• Use it!

- Customer scenarios to explain why:
 - Lost ID because PC crashed, had to go back to original ID on network drive, which was created under different certifier than current certifier
 - Forgotten passwords
 - Setting up new / existing users, Notes client setup pulls ID from vault, no manual handling of ID file

Securing Web Access

Internet Password Lockout

- Set threshold for Internet password authentication failures for HTTP users
 - Note: Not enabled by default

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Setup in Configuration document -> Security tab



Internet Lockout	
Enforce Internet Password Lockout:	^Г Yes 」▼
Also enforce lockout based of	on IP address
Count user name failures als	so as IP address failures
Log Settings:	 Lockouts Failures
Default Maximum Tries Allowed:	ິ <mark>5</mark> _
Default Lockout Expiration:	ິ0 ຼິ Minutes ຼ 💌
Default Maximum Tries Interval:	ິ1 ຼິDays ຼ 💌

Securing HTTP Passwords

- Hashing algorithm to encode HTTP passwords stored in person documents
 - V1 used prior to Domino 6

- V2 introduced in Domino 7
- V3 introduced in Domino 8
- HTTP passwords can be vulnerable if not properly protected

Upgrading HTTP Password Hash

• Step 1: Edit Directory Profile

- Actions -> Edit Directory Profile -> Security tab
 - Note: Not enabled by default



Upgrading HTTP Password Hash

Step 2: Upgrade person documents to use 'more secure internet password'

>

>



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Click OK to confirm

Set Secure Internet Password Format	×
Selected person document(s) will be upgraded to more secure internet password(s).	
OK Cancel]

Adjusting HTTP Methods

Prevent TRACE method on public servers

- If enabled, can provide valuable information for would be hackers
 - Ex: Disabling 'Trace' prevents cross-site scripting attacks

We	b Site Demo	1000 / 10 0 0			
Basics	Configuration Domino Web Er	ngine Security	Comments	Administration	1
	Allowed Methods				
	Methods:	i Get I Head	POST		DELETE

Domino High Availability: Clustering

Domino High Availability

- Domino HA is provided by the built-in Clustering capability
- What is a Domino cluster?

- A collection of 2 to 6 servers which provides high availability and/or workload balancing
- Each server contains replicas of the applications to be clustered
- If user attempts to access a clustered application and it is not available, Notes opens a replica of the database on a different cluster server

Types of Clustering

Failover

- Provides HA solution for Domino servers
- Server in Domino cluster provides services while primary server is unavailable
- Workload balancing
 - Spreads workload among servers
 - Limits how busy a specific server will become
 - Provides more consistent performance for end users

Clustering Tasks

- **CLREPL** = Cluster Replication
 - As the name implies, performs cluster replication
- **CLDBDIR** = Cluster Database Directory
 - Responsible for maintaining clustered version of the database directory, cldbdir.nsf

How Failover Works

How Domino Failover Works



Load Balancing

- Ways to achieve workload balancing:
 - Limiting amount of work on a server
 - Changing maximum number of users who can use a server at the same time
 - Moving databases to other servers
 - Planning number and placement of replicas in a cluster to create more replicas of busy databases

Domino Clustering

Cluster Database Directory

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 Database directory (dbdir.nsf) gets converted to cluster database directory (cldbdir.nsf)

Cluster Directory	⊘ Tool:	s 🕐 He	lp			
		ID	Server	File	Title	Cluster Replication ^
🔲 🛅 Databases by Pathname		▼ 85:	25768F:000367E4			
🔲 Databases by Replica ID	*		domtest1	FRS_RS\RainbowSync.	n: RainbowSync ©SGA/LavaTech v1.1	Enabled
🔲 🔟 Databases by Server	*		domtest2	FRS_RS\RainbowSync.	n: RainbowSync©SGA/LavaTech v1.1	Enabled
🖉 🔲 Detebecos by Filo Nemo		🔻 85:	25783A:007215CA			
	*		domtest1	updatesite.ntf	Eclipse Update Site (8.5.3)	Enabled
2	*		domtest2	updatesite.ntf	Eclipse Update Site (8.5.3)	Enabled
		💙 85:	257842:0054FA86			
2	*		domtest1	Indfr.ntf	IBM Notes/Domino Fault Reports	Enabled
	*		domtest2	Indfr.ntf	IBM Notes/Domino Fault Reports	Enabled
2 2		🔻 85:	2578D9:0001BE70			
2 2	*		domtest1	help\help85_client.nsf	IBM Lotus Notes 8.5.3 Help (Basic Co	nfigEnabled
2	*		domtest2	help\help85_client.nsf	IBM Lotus Notes 8.5.3 Help (Basic Co	nfigEnabled
2		🔻 85:	2578EA:0010DE26			
2	*		domtest1	statmail.nsf	domtest1 Stats/KGCI	Enabled
		🔻 85:	2578EA:001142F9			
2	*		domtest1	schema.nsf	Domino LDAP Schema (6)	Enabled
	*		domtest2	schema.nsf	Domino LDAP Schema (6)	Enabled
2		🔻 85:	2578EA:00136A69			
	*		domtest2	Indfr.nsf	Lotus Notes/Domino Fault Reports	Enabled

Only ddm.nsf is disabled "out of the box"

Managing a Cluster Database Directory

Enable and disable replication as appropriate on databases

Cluster Directory	Tools - CHelp
	Enable Cluster Replication on Selected Databases
🔲 Databases by Pathname	Disable Cluster Replication on Selected Databases
Databases by Replica ID	Enable Repair on Selected Databases
Databases by Server	Disable Repair on Selected Databases
Databases by File Name	асамнулта пососос

Domino Replication

Replication

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- Allows you to have multiple instances of an application on servers or clients where data is kept synchronized by the Domino server
- Controlled by the ReplicaID on a given DB

File \rightarrow Application \rightarrow Properties



Replication Types

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- Push: Send changes here to the remote server
- Pull: Receive changes from the remote server
- **Rep**: Performs a pull followed by a push to send and receive changes to and from the remote server

Rep Remote_Server App.nsf

• The ACL still rules! If the server does not have authority to read the updates or write to the database, replication will not work as expected.
Replication Stubs

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- When creating replicas you may see a "replication stub"
- Empty "shell" with properties
- Database will be populated the first time it is replicated

	Title 🗘	Filename 🗘
	Help Desk	hdesk.nsf
	Joe User	juser.nsf
	Archive Me	ame.nsf
	Lotta Mail	Imail.nsf
	* 85257894:001146D7	dadmin.nsf
\bigcirc	User One	uone.nsf

Quotas

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- Cluster replication will ignore database quotas
- Quotas are unique to a given server
 - Will only get set on cluster when replica is first created
 - Changes do not replicate
- You must set the quota on the cluster server to match quota of file on primary server



KIM GREENE





Contact Information



www.linkedin.com/in/kimgreeneconsulting



k k

kim@kimgreene.com