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Smarter software for a Smarter Planet.

Domino Performance, Introduction and Best Practices

Zhi Qiang Sha(沙志强) | Manager, Lotus Notes/Domino, CDL



lotusknows.com

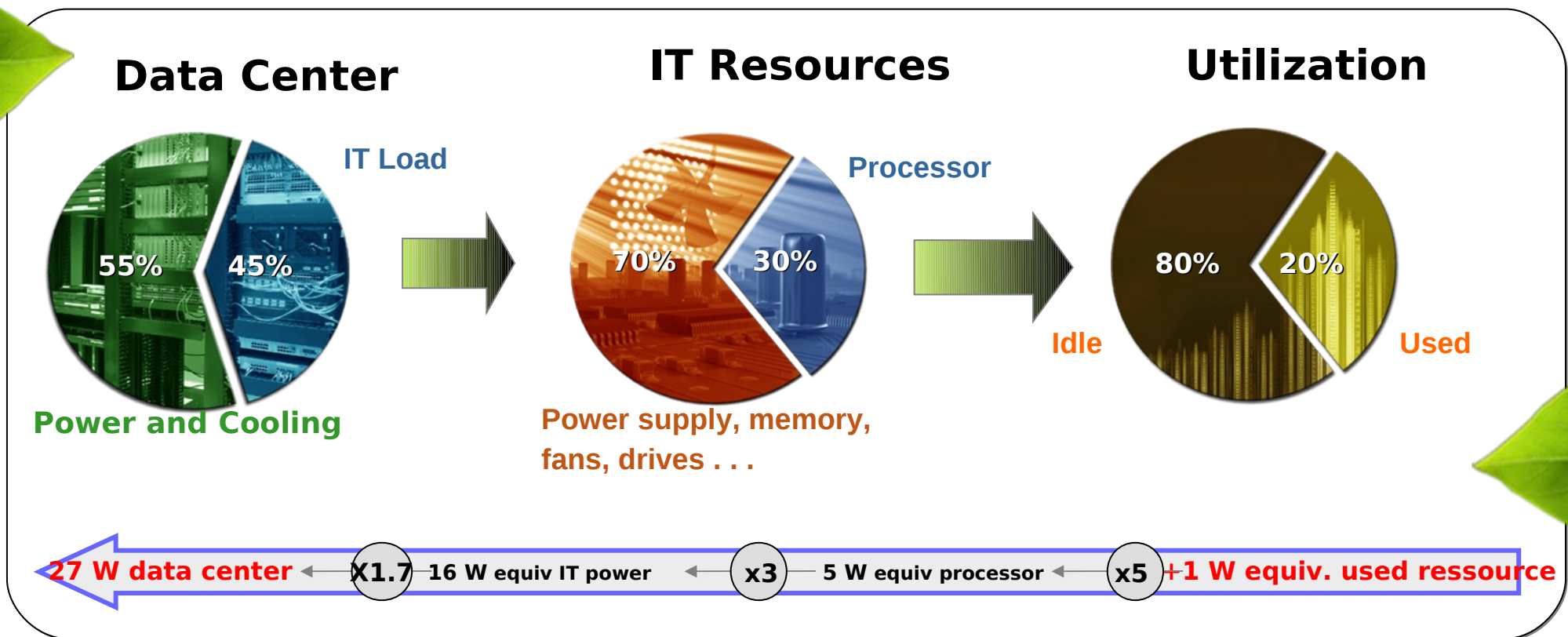


CREATED WITH LOTUS[®] SYMPHONY™

Agenda

- Introduction to Performance
- Domino Server Performance
- Domino Application Performance
- Domino Performance Testing
- Summary

1W application computing requires 27W of power – adding HW is insufficient



- Within the last five years, the total amount of energy utilized by all domestic US data centers has doubled.
- Insufficient Cooling and Insufficient Power are key datacenter issues
- Energy costs consume approximately 10-15% of most IT budgets and its rising*

Performance Big Picture: Small Issues Stack Up

- Performance Problems Are like snowflakes
 - Individually, they don't matter much at all
 - You notice them only once they stack up
 - They don't show up in Unit Test or FVT with low data population volume
- For example:
 - Poorly Performing Disk I/O
 - + large number of documents
 - + agents changing many documents
 - + many views (or BAD views) to update
 - == Very Slow System
- These kinds of problems create a feedback loop, which amplifies the problems

Performance from end user perspective

- If the user must wait for something, it will always seem slow – no matter how fast you make it.
- Nothing is worse than an hourglass cursor and a bar slowly moving across the screen

Performance metrics

- Throughput
 - Transactions per second
- Response Time (Latency)
 - Elapsed time per transaction from user's perspective
- Utilization
 - Percent of available resource consumed. Examples:
 - CPU
 - JVM heap
 - Disk capacity
 - Database server
 - LDAP server
 - Network
 - Etc.
- Concurrency
 - Number of concurrently executing scripts

Understand Your Environment!

- Know your dependencies
 - Directories (Active Directory, LDAP)
 - Third-party products (Domino add-ins, Portal adjuncts)
 - Back-end components (WCM, DB2, etc.)
- Know your data flow
 - What's handling your data, where, and when?
- Know your networking
 - Are you traversing firewalls?
 - Must you use proxy servers?
- Know where your load lies
 - What do clients do?
 - What do servers handle?

Understand Your “Everyday Life”

- First Question: What does “routine” work look like?
- Gather baseline performance statistics
- Make sure that your baseline includes at least one “peak use” time
 - Monday morning, 9 am?
- Use this baseline to understand where your system “pushes”
- Identify potential “pressure points”
 - e.g. Peak use of particular facilities, but not yet in the “danger zone”
- Track back to application-layer activities
 - System backups
 - Domino agents
 - Third-party scripts

Setting A Reasonable Goal

- Even the best designs can be stressed
- Changing demand
- New initiatives, new software, new users
- Most reasonable goal: Meet peak demand with (some) room to spare

It's a Repeating Cycle

- Focus on the basics
- Document every change made
- You can't do this once and call it finished
- As system load changes, we must adjust and adapt
 - Remember that load can change in volume, footprint, complexity or all of the above
- Revisit performance on a regular basis
 - Know what numbers are important for your enterprise
 - Know who supports what in your organization
 - Automate reports (monthly, bi-monthly)
 - Catch trends before they become problems
- Revisit performance on any significant change
 - New software releases
 - Changing OS (or OS version)
 - Networking changes in your enterprise

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Domino Performance Tuning - General

- Deactivate all services you do not need
- Remove all protocols and bindings you don't need
- Avoid network port filtering!
- Windows: Disable NETBIOS!
- No Screen-Savers - Just lock the console
 - Screen-Savers can keep the CPU busy
- Depending on your network you might want to check the MTU Size

Key Performance Choke Points

- Network
- Disk I/O
- System Resources
- Semaphore
- Views
- Agent

Consider network traffic

- Work with local replicas
- Establish high bandwidth / low latency connections between critical points in your environment
- Networking technology continues to evolve
- We take the network for granted
- Networking varies widely among locations/users
- More and more work being done with network appliances
 - Anti-spam, make sure your AV is Domino aware
 - Encryption
 - Compression
 - Data Validation
- Changes often occur without your knowledge
- Networking guys don't always understand your applications
 - Work with them to understand Bandwidth & latency and for them to understand app requirements

Domino Performance with local replica of mail databases

- Test was done with 100% server databases and 100% local databases on client
- Tested with 5 minute and 1 minute mail polling
- Domino version 8.5.1 with DAOS enabled
- N85mail workload running 3000 simulated users

	Server	Local	% change
Total CPU (%)	28	23	-19%
Disk I/Os	400	297	-26%
Network Bytes/sec	1428952	1021712	-28%

N85mail with 5 min polling for new mail

	Server	Local	% change
Total CPU (%)	30	25	-19%
Disk I/Os	391	304	-22%
Network Bytes/sec	1352207	1134746	-26%

N85mail with 1 min polling for new mail

Disk I/O

- One “Data” drive is used for too much
 - databases, index rebuilds, temporary files, and even transaction logging
- Transaction Logging used in conjunction with journaling file systems
- Poor choice of RAID configurations
- Too heavy reliance on Storage Area Networks

How to deal with it – Disk I/O

- **Disk I/O: Use Multiple Drives**
 - Put your transaction logging files on a separate drive
 - Move your view indexing temporary files to another drive
 - Consider moving disk-intensive applications to their own drive
 - Things that load once and are not re-accessed frequently do not need to be on high performance resources
 - The Operating System
 - Application Program Files
 - Archive Log Files
- The “Best-Case” is multiple drives on different drive controllers
- Rethinking RAID
 - Most RAID arrays are configured to improve redundancy, not necessarily speed.
 - Not all data requires redundancy
 - Memory Swap Files; Indexing scratch space; Temporary files; Cache files
 - Inexpensive SATA drives can be used for a real performance gain

How to deal with it – Disk I/O

- **Over Reliance on SANs**
 - the benefits of a SAN
 - Highly redundant storage
 - Single backup point
 - Consolidated free space
 - Performance?
- **Not all Domino Data needs these features**
 - Transaction Logs – Consider local RAID if possible
 - Indexing Scratch Space – Use Cheap, Local, Fast Drives
- **If you're already clustering Domino, only one of the clustered machines may need to be on the SAN**

How to deal with it – Disk I/O

- **Journaling: How Safe is Too Safe?**
 - RAID Configuration
 - Data is written twice (at least)
 - Formatted with a JFS
 - Data is written twice
 - Using Transaction Logging
 - Data is written twice
 - $2 \times 2 \times 2 = 8$ Times the Data Writes
- Now think about that on a pair of clustered servers

Scheduling resource use

- System sizing usually based on peak resource consumption
- Resources go unused during off peak times
- Problem is reduced by moving as much work as possible off of peak hours
- Balance workload across servers & time
- What can be scheduled off peak?
 - Scheduled Replication
 - Indexer
 - Server Archiving
 - Mail Router
 - Agent Manager
 - Administrative tasks (Adminp)
 - Domain Indexer
 - Directory Catalog Task
 - Database Utilities

Indexer Tasks

- is composed of
 - Update
 - Updall
- Use Notes Index Facility (NIF) and Full-Text services
- Applications cannot access a view while the Indexer is updating it.
- Possible symptoms :
 - Long delays when opening a database, opening a view, switching views, scrolling through a view, or saving a document
 - Performance problems throughout the working day, but excellent performance during the off-hours
 - Out-of-date full-text indexes

Updall & Update

- Updall
 - Runs once,
 - updates all out-of-date views in all databases,
 - full-text indexes
 - Discards expired view indexes
 - default at 2 AM
 - rebuilds every view in a database
 - Updall command option
- Update
 - Update is enabled, by default
 - Runs Update continuously in the background
 - one or more Update tasks
 - Suppression time

Settings for Indexer

- UPDATE_FULLTEXT_THREAD=1
- UPDATE_IDLE_TIME
- FTUPDATE_IDLE_TIME
- UPDATE_DISABLE_VIEWS=1
- UPDATE_DISABLE_FULLTEXT=1
- If a system has adequate system resources to perform updates, you can run multiple Update tasks.

Semaphore with performance

- Debug parameter
 - debug_capture_timeout=1
 - debug_threadid=1
 - debug_show_timeout=1
 - debug_show_blockingthreadcallstack=1
- Semaphore file
 - SEMDEBUG.TXT
- How to use semaphore file and nsd file

Annotated Output – SEM

```
<date/time> <log sequence number> THREAD [PID:VID-PTID] WAITING FOR SEM  
<SEM TYPE> <Description> (@<address>) (OWNER=PID:PTID) FOR 30000 ms
```

- 0266 NSF per-database full-text semaphore
- 4245 NSF database opening semaphore
- 030B NIF collection semaphore
- 430D NAMELookup semaphore

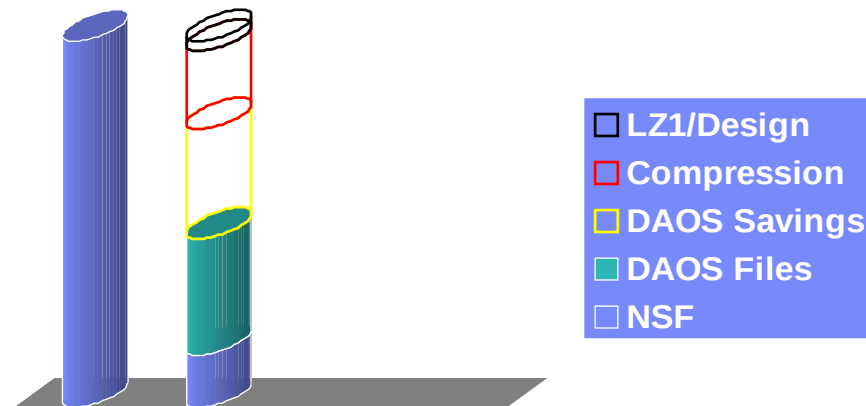
A word about add on products

- What is an “add on” product?
 - Any IBM or third party product or component designed to link into a Domino server.
 - Can be a silent killer of resources
- Know the impact before you begin
- IBM Lotus Enterprise Integrator (LEI) / Domino Enterprise Connection Services (DECS)
 - Provide the interface to back-end database systems
 - Can drive a high disk and network load
- API Tool Kit
 - Provide multiple ways to do the same task
 - With great flexibility comes great responsibility
- Extension Manager
 - Test, Test, Test
 - Use LotusScript when available

The Lotus Domino® toolbox

- LZ1 Attachment compression – default Lotus Notes® 8.5 mail template
- Design Document Compression – default Lotus Notes® 8.5 mail template
- Data Document Compression
 - Benchmarks tests compression increases CPU by 3-5%
 - Typical Lotus Domino® servers are i/o constrained and will benefit by using compression
- Domino Attachment and Object Service (DAOS)

Example: Combined Storage Savings



Before: 112.5 GB

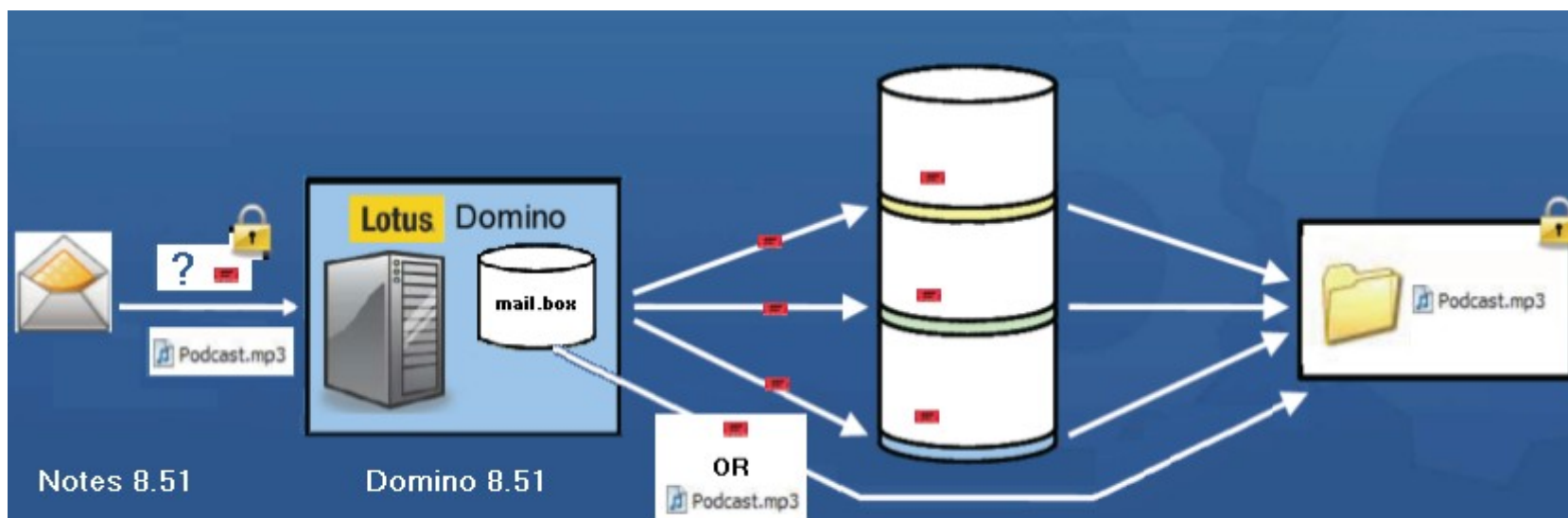
After: 17GB of NSF content, 35GB of DAOS remains

Domino Attachment and Object Service

- Targets: Disk Space, IO Bytes
- Removes attachments from mail files
- Stores each attachment as an individual file
- Stores each attachment (by content) only once per server
- Transparent to Lotus Notes® APIs
- Generically, duplicate attachments “discovered” after last byte written
- Optimization with inter-server operations (e.g. router when mail sent to multiple recipients during mail delivery)

How DAOS saves Network IO - 8.51

- If destination server already has NLO, reference sent instead

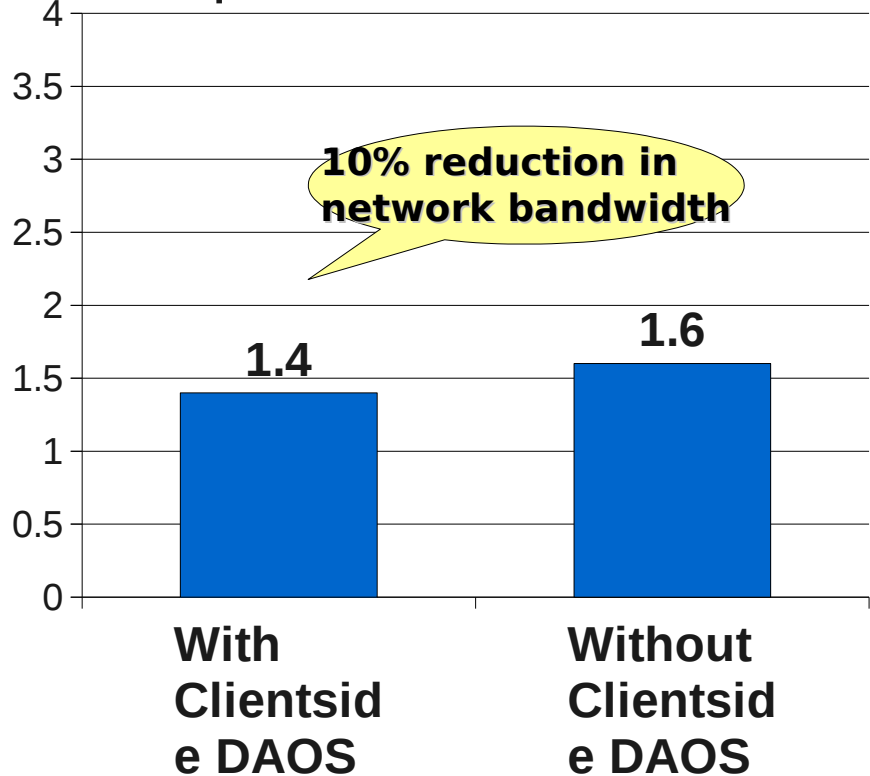


- Any 8.51 client or server (whether DAOS enabled or not) to a DAOS enabled server
- For example: Cluster Replication is now “DAOS” aware

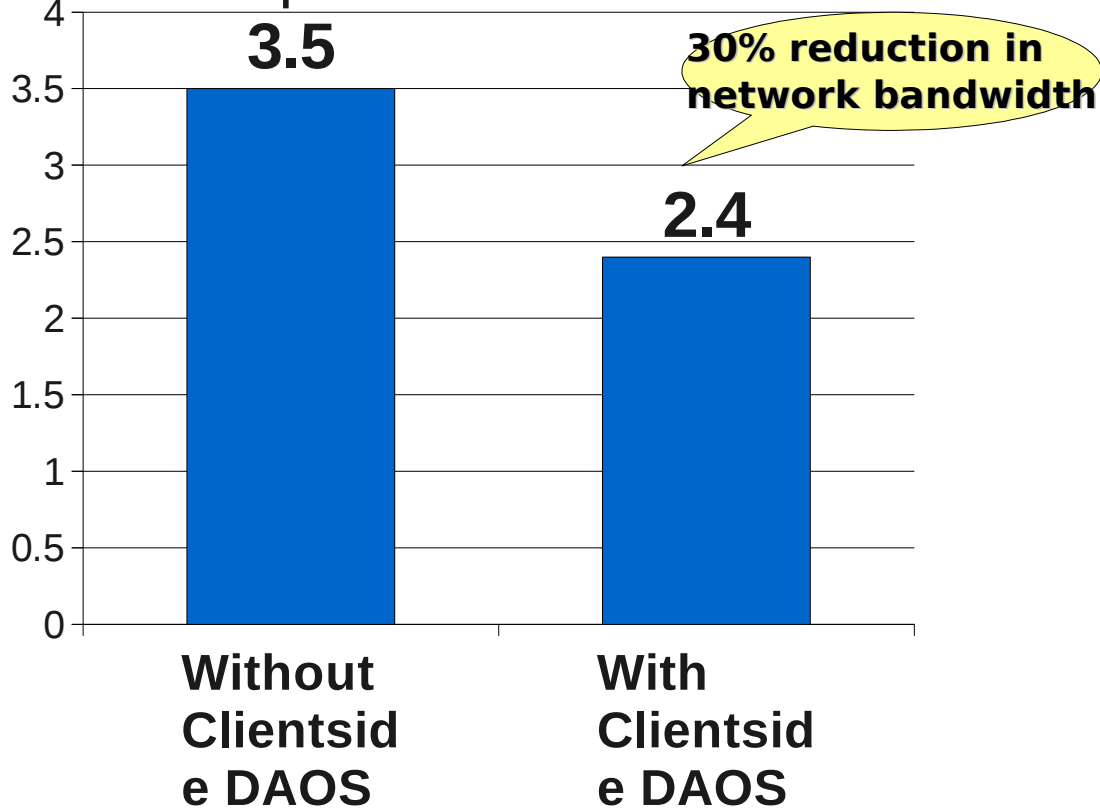
Domino® 8.5.1 client to server DAOS network bandwidth savings

3,000 concurrent N85Mail users, AIX 6.1

15% duplicate 512KB attachments



30% duplicate 3MB attachments



Domino® 8.5.1 DAOS

- Best DAOS Candidates:
 - Lots of Attachments
 - Lots of Duplication
 - Located on same server
- DAOS Estimator:
 - <http://www.ibm.com/support/docview.wss?rs=463&uid=swg24021920>
- More Domino® 8.5.x DAOS information
 - Article: http://www.ibm.com/developerworks/lotus/library/notes85-daos/index.html?S_TACT=105AGX13&S_CMP=EDU

Lotus Domino 8.5 – Performance snapshot

Domino 8.5 Performance Status for N85Mail Workload

10/15/2008

Platform	Domino	Workload	Users	Build	Date	CPU	Disk Ops	Disk kByte	Comments
AIX	32 Bit	n8mail	4000	Release 8.0	8/28/2008	36.0%	966	15,046	
	64 Bit	n85mail	4000	V85_10072008	10/9/2008	29.0%	758	8,100	
						-19.4%	-21.5%	-46.2%	DAOS enabled
Linux	32 Bit	n8mail	4000	Release 8.0	9/26/2008	24.0%	989	13,362	
	32 Bit	n85mail	4000	V85_10052008	10/6/2008	20.0%	804	7,698	
						-16.7%	-18.7%	-42.4%	DAOS enabled
Solaris	32 Bit	n8mail	4000	Release 8.0	8/28/2008	66.0%	827	27,087	
	32 Bit	n85mail	4000	V85_10012008	10/2/2008	56.0%	620	8,915	
						-15.2%	-25.0%	-67.1%	DAOS enabled
System i	32 Bit	n8mail	4000	Release 8.0	9/20/2008	26.2%	1,279	19,825	
	32 Bit	n85mail	4000	V85_10092008	10/11/2008	23.7%	1,117	15,306	
						-9.5%	-12.7%	-22.8%	DAOS enabled
Win64	32 Bit	n8mail	4000	Release 8.0	9/30/2008	34.7%	888	11,248	
	32 Bit	n85mail	4000	V85_10022008	10/7/2008	27.2%	739	7,196	
						-21.6%	-16.8%	-36.0%	DAOS enabled
zLinux	32 Bit	n8mail	4000	Release 8.0	10/2/2008	60.0%	1,007	11,562	
	64 Bit	n85mail	4000	V85_10092008	10/13/2008	58.6%	788	7,841	
						-2.3%	-21.7%	-32.2%	DAOS enabled

iNotes Performance

*Domino 8.5.x on Windows 2003

	Notes® Client User	iNotes® Full Mode User
CPU per user	1X	4X ←
Memory KB per user	360	310
IOPs per user	0.2	0.2 ←
Network Kbps per user	3.1 (NRPC port compression enabled)	2.5 (GZIP enabled by default) ←

1.5x to 4x CPU based on platform

I/O is the same

20% less network bandwidth

Why does iNotes® consume more Domino CPU?

- iNotes® must do this processing at the server, whereas Notes® client is able to do this at the user's workstation
 - Complex Notes® ODS structure traversal
 - MIME parsing/composition
 - Render with Form processing
 - LMBCS to desired charset conversions
 - Notes® formula evaluations
 - Name lookup coordination across multiple directories
 - Active Content Filter processing
 - Notes® or S/MIME encryption/decryption
- Notes® is able to keep some internal Notes® DB structures (like view indexes) open for an extended period of time
- Other iNotes® only processing which occur at server
 - Authentication/url validation on individual requests (stateless nature of HTTP makes this heavier)
 - Gzip compression
 - SSL encryption

Possible remedies for iNotes® increased CPU

- Upgrade to Domino 8.5.x if running older server release!
 - About 40% CPU savings from Domino 6 to 8.5.x
 - About 30 to 60% disk I/O savings from Domino 7 to 8.5.x
- Add CPU to upgradeable multi-CPU systems and virtual systems
 - Keeps server count equal and administration costs equal
- Load balance mail files in a cluster
 - Move subset of users to machine with more CPU

Mail Journaling overhead on Domino® 8.5.x

- Configurations
 - **100% mail journaled**
 - Local: 1 server for both mail and journaling
 - Remote: 2 servers, 1 for mail, 1 for journaling
 - 4,000 concurrent N85Mail users
 - AIX 5.3 and AIX 6.1
- Overhead on Mail Server
 - Local:
 - 15 to 20 % CPU increase
 - 10 to 15% IOPs increase
 - Remote
 - 15 to 20 % CPU increase
 - No impact on IOPs
- Recommendation for remote server - similar sized server as Domino® Routing Hub Server

CPU increase in both cases due to encryption for journaling done on mail server

Domino Configuration Tuner

- Easy to acquire, Easy to update, Easy to use
- Runs from your admin client
- Assess existing Domino deployments
- Requires no change to existing Server/Domain configuration
- Runs under/against Notes/Domino 7 and beyond
- Scans/evaluation can be initiated manually or scheduled
- Easy to expand rule catalog, frequently updated
- Rules are updated by IBM
 - New rules are pulled by you upon request
- Checks for low-hanging fruit in configurations
- Run it to help clean up an existing environment



Domino Configuration Tuner

Lotus Domino Configuration Tuner

dct.nsf is on Local (Rule Definitions: 11/19/2009)

▶

🔍

🌐

🔧

?

Current Report Change | Delete | Run again

Music

12/02/2008 02:08:37 PM EST

Filtered by 📄 Server Change

Show reports for all servers Change

⊕ ACDC/Iris

⊖ Aerosmith/Iris

- ⊖ Critical
 - notes.ini DEBUG_PD_NAGLE_OFF=1 will disable the TCP Nagle algorithm. When enabled the algorithm has undesired interaction with NRPC on some platforms (pre 8.5 exclusive)
 - notes.ini LOG_MAILROUTING specifies how much logging detail the mail router sends to the server console and log file
- ⊖ Warning (High)
 - database ODS version should be as high as possible
 - notes.ini DONT_CACHE_MONITOR_FORMULAS=1 will prevent caching of mail rule formulas to reduce memory consumption.
 - notes.ini FTG_USE_SYS_MEMORY reduces memory fragmentation related to full text index searching (post 6.5.4 inclusive)
 - notes.ini FT_FLY_INDEX_OFF=1 will prevent on-the-fly full text index creation thereby reducing disk I/O and CPU consumption
 - notes.ini SERVER_NAME_LOOKUP_NO_UPDATE can prevent unnecessary Domino Directory views updates (post 8.0.1 inclusive)
 - notes.ini UPDATE_FULLTEXT_THREAD enables using a separate thread to do full text indexing which can improve server performance.
- ⊕ Warning (Low)

⊖ Garfunkle/Iris

All Servers

Severity	Count	Percent
🚫 Critical	6	2.33%
⚠️ Warning (High)	25	9.69%
⚠️ Warning (Low)	56	21.71%
🟡 Normal	171	66.28%
🚫 Exception	0	0%

Servers Scanned:

ACDC/Iris
Aerosmith/Iris
Garfunkle/Iris

Servers Not Scanned:

Blood/Iris (Unable to find path to server)

Sweat/Iris (Unable to find path to server)

Tears/Iris (Unable to find path to server)

A Word About OS Patches

- Be very, very careful
- Some patches can introduce problems all their own
- Use a test environment whenever possible
- Keep abreast of new patches
- Be sure to spot-check performance numbers after patch installation

What About BIOS and Drivers?

- Keep system BIOS as close to “latest and greatest” as possible
 - Some vendors release new BIOS versions almost monthly
 - May address/optimize important subsystems
 - May resolve particular performance issues
- Watch for new device drivers as dictated by your performance
 - If you're disk-heavy, keep an eye out for SAN/controller drivers
 - If you're network-heavy, watch for advanced network drivers
- Partner with your hardware team!

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Views

- For application performance tuning, views are the first, second, and third place to look
- View indexing is very disk intensive - can amplify disk I/O contention
- To update a view, often a full database scan needs to happen
 - can be very very slow on large databases
- View performance problems grow exponentially with the volume of data
 - These problems are often not caught in UT or FVT with small DBs

Views Design Consideration

- Too Much Data
- Too Much Sorting
- Using TIME Values
- Highly Complex Formulas
- Too Many Views
- Simplify Default View

Views Design: data volume

- Use @AllDescendants instead of @Responses
 - NO visible difference to users
 - Can reduce view sizes drastically
- Can You Set a CUTOFF date?
 - Form = "Request" & @Modified < [01/01/2008]
 - Hardcode The Date
 - Change it by AGENT, Warning in DB Script if out of date
- Consider a CUTOFF data for MOST of the views, with just one or two for "Archival" data
- Does the SUBJECT really need to be in every view?
- Create one "Master" view with all the data, and several "Index" views with an Action Button to open the master view

Views Design: sorting

- EACH Sorted Column can as much as DOUBLE the size of the total view index
- Many views have all the columns sorted
- Multiple Column Click-To-Sort Views Can be WORSE than multiple views!
- Many SHARED columns are sorted
 - Developers often wrongly assume no downside

Views Design: highly complex formulas

- Consider a column formula with 10 steps
 - Now consider 100,000 Documents in it
 - That column must execute 1 Million steps for each view index rebuild – just in that column
- Many column formulas are much more complex, and serve many times that many documents
- Create Hidden Fields on the Document
 - At “Save” time, compute the value that would be on the view column in the hidden fields
 - Display the value of the hidden field as the view column formula
- What was a complex formula executing hundreds of thousands of times is now a single field value

Choke Points: @DBLookup

- Often set to “NoCache”
 - Cache times are very small,
 - does data really change on a second by second basis?
- Can be very chatty – a killer on high latency networks
- Requires more views to be up to date – big performance hit in databases that change a lot
- Many lookups on the same form, to the same place for different values?
 - Use it once to get the UNID, then use @GetDocValue
- Use a profile document, or local environment variables updated in the dbopen script to store commonly looked up data

Full Text Search: The Good, The Bad, and the Ugly

- The Good
 - It can be used in agents instead of db.search
 - Db.ftsearch() has a rich syntax and can be much faster
 - It let's users find things – of course
- The Bad
 - Ususally set to 'update immediately'
 - Agents that change many documents can cause intense Disk I/O at worse possible times
- The Ugly
 - It may not be up to date if used to gather documents in code

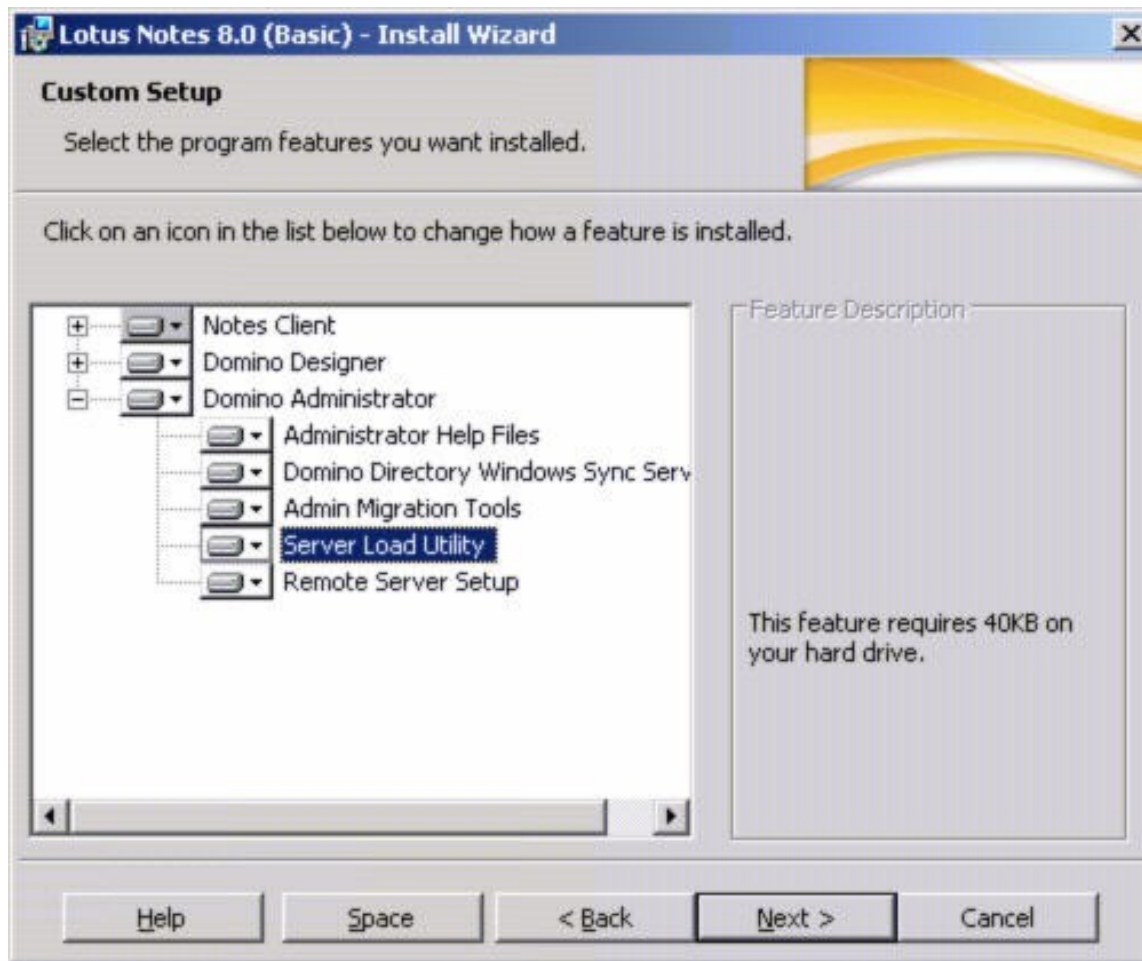
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Using Server.Load to develop custom scripts

- Server.Load is a Domino feature-based load generation tool to simulate the behavior of Lotus Domino client-to-server operations
- Get familiar with Server.Load
 - Understand how to use the tool, the concepts and the features
 - Understand how to collect data from a typical mail workload
 - Read the documentation which is in online help in the Administration Guide for Domino
- Select a workload script that is closest to the workload that needs to be written
 - “View Script” on any of the Server.Load preloaded scripts will show sample scripts
 - Save sample script to a text editor with .scr extension
 - Understand the flow of the script
 - Modify using the commands available
 - Use the manual option to try various commands

Installed with Administrator Client



Help documents in details

Lotus Domino Administrator 8.5 Help - Server.Load commands - IBM Lotus Notes

File Edit View Actions

Contents Index Search Tips

Indexed Search Search tips

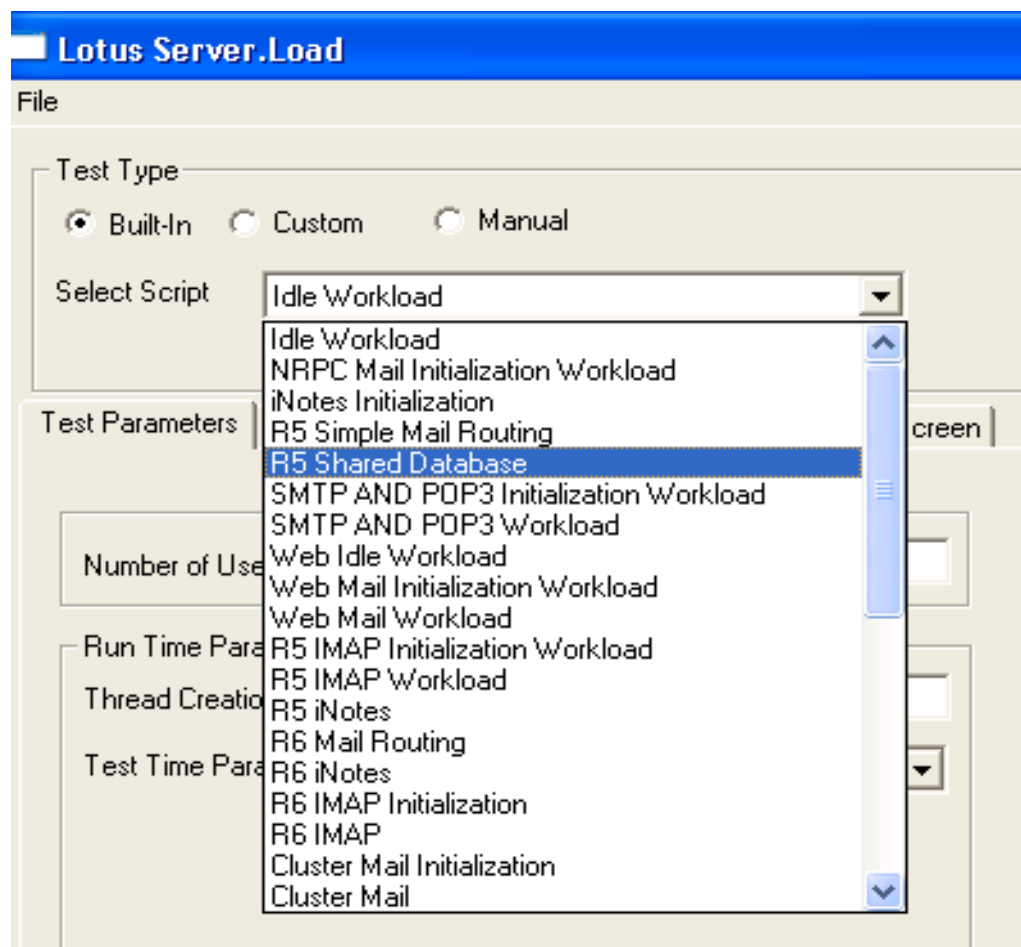
- What's new in IBM Lotus Domino 8.5?
- Domino Server Installation
- Network Configuration
- Notes Client Installation and Upgrade
- Configuring Widgets and Live Text
- User and Server Configuration
- Domino and DB2
- Maintaining the Domino and DB2 Environment
- Administration Tools
- Directory Services
- Mail
- Lotus iNotes
- Web Servers
- Security
- Clusters
- Domino Off-Line Services
- Service Provider
- Database Management
- Monitoring
- Performance
 - Activity Trends
 - Server.Load
 - Server.Load agents
 - Server.Load metrics and messaging statistics
 - Setting up clients and servers for Server.Load
 - Built-in and custom Server.Load scripts
 - Tips for running a Server.Load test
 - Server.Load test parameters
 - Running a custom Server.Load script
 - Modifying a built-in Server.Load script
 - Saving Server.Load settings
 - Testing a Server.Load command
 - Changing a Server.Load script variable
 - Setting a Server.Load stop condition
 - Running the built-in Server.Load workloads
 - Setting advanced database properties
 - Improving Domino server performance
 - Accessibility features for Domino Administrator
 - Troubleshooting

Server.Load commands

Server.Load scripts consist of statements in a simple command language, the Server.Load s language. Each command simulates an aspect of the IBM® Lotus® Notes® client functionali build a script containing a series of these commands to perform a complex task, such as rea deleting mail.

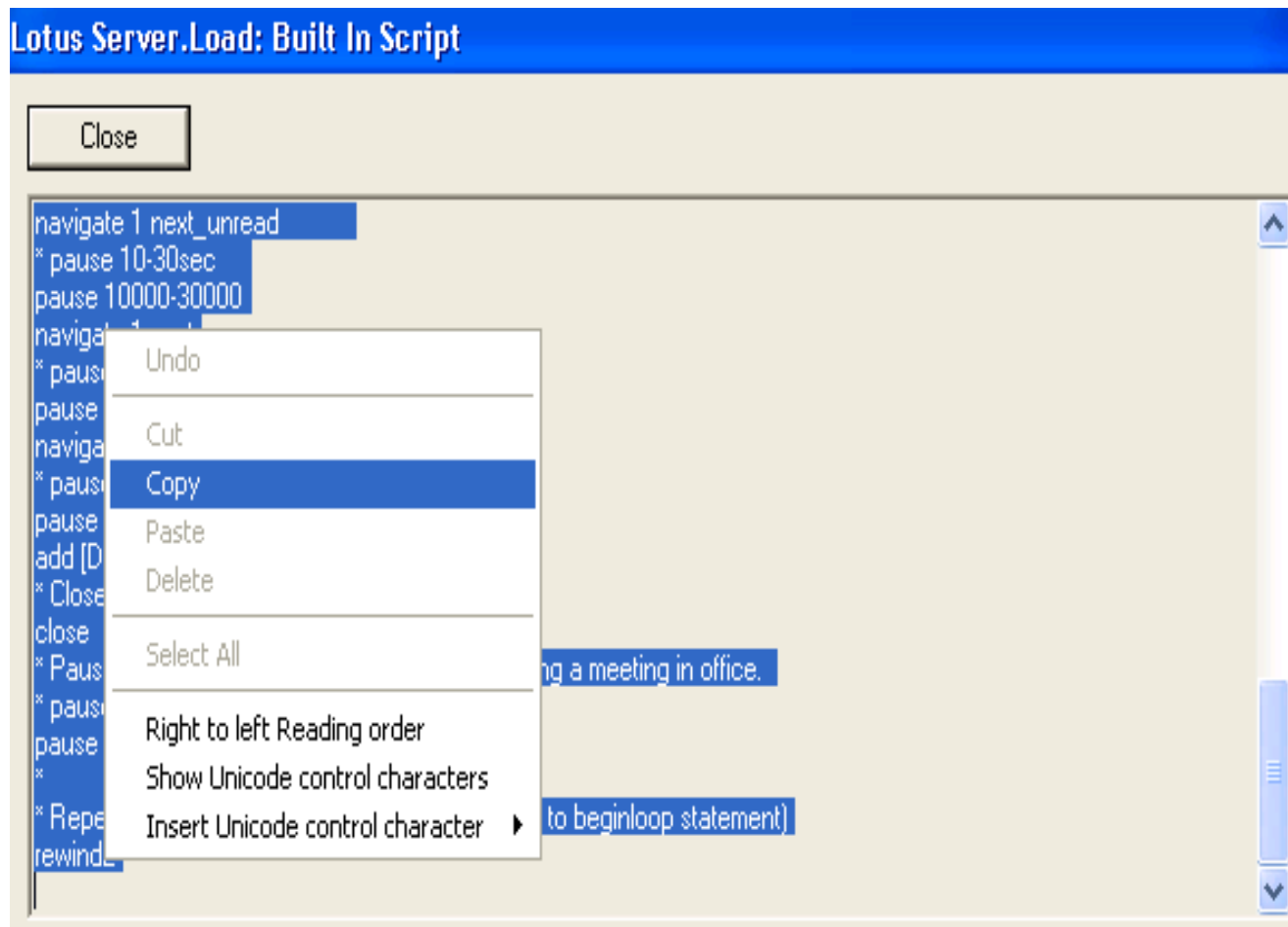
- [Add](#)
- [BeginCrit](#)
- [BeginLoop](#)
- [BeginLoop2](#)
- [Break](#)
- [Cal](#)
- [ChangeTo](#)
- [CheckForNewMail](#)
- [Close](#)
- [CloseColl](#)
- [ColFindKey](#)
- [ColorProfileAdd](#)
- [ColorProfileDelete](#)
- [Console](#)
- [DBCclose](#)
- [DbDelete](#)
- [DBGetModNoteInfo](#)
- [Delete](#)
- [DeleteFromColl](#)
- [Drop](#)
- [EndCrit](#)
- [Entries](#)
- [EntriesColl](#)
- [ErrorDelay](#)
- [FindDesignNote](#)
- [FindByKey](#)
- [FindByName](#)
- [FolderFind](#)

Drop down list of the built-in workloads



*Add SL_Enable_N85mail_workload=1 to ini to show more built-in tests

Script code about to be copied to the clipboard



Add a Pause and Delete command to script

```
Untitled - Notepad
File Edit Format View Help
populate [NumMailNotesPerUser]
close
* Open the current view
open
* Close the view
close
EndCrit
* Start the part of the script which loops.
beginloop2
* Open a discussion database
changeto "[MailServer]!![DiscussionDB]" [DiscTemplate] -KeepOpen
* open the current view
open
getall
entries 1 20
* wait 5-10 seconds to peruse the view
* pause 5-10sec
pause 5000-10000
* Page down the view 2 times spending 3-10 seconds to read each window
entries 21 20
* pause 3-10sec
pause 3000-10000
entries 41 20
* pause 3-10sec
pause 3000-10000
* Set the unread list to a randomly selected 30 documents
unread 30
* Open next 3 unread documents and read each for 10-30 seconds
navigate 1 next_unread
* pause 10-30sec
pause 10000-30000
navigate 1 next
* pause 10-30sec
pause 10000-30000
navigate 1 next
* pause 10-30sec
pause 10000-30000
add [DiscDbAddDocRate] 100
pause 10000-30000
*** Delete 1 document
delete 1
* Close the view
close
* Pause at the desktop for 4-8 minutes while having a meeting in office.
* pause 4-8min
pause 240000-480000
```

Commands for custom application workloads

- changeto/dbclose
- folderfind
- open/close
- opencoll/closecoll
- entries/entriescoll
- navigate/navigatecoll
- delete/deletefromcoll
- noteadd
- add
- index

Load text file as Custom Test Type and specify the number of simulated users
Note: 1 Server.Load instance can be run per client driver, for > 1K users, another client driver & Server.Load instance will be needed

Lotus Server.Load

File

Test Type

Built-In Custom Manual

Script Location: C:\notes\my_script.scr

Buttons: Edit Script, Execute, Browse

Test Parameters | Stop Conditions | Script Variables | Command Line Screen

Number of Users/Threads: 1000 Script Loop Count: 1

Run Time Parameters

Thread Creation Interval (sec): 1 Starting Thread No.: 1

Test Time Parameter: No time limit

Misc

Build Recipient List using Name and Address Book

Storage test output to

Lotus knows.

Smarter software for a Smarter Planet.

Specifying the file to contain the Server.Load console output

File contains all actions and responses back from script

Can enable notes.ini client_clock=1 for deeper debugging of script

Lotus Server.Load

File

Test Type

Built-In Custom Manual

Edit Script

Script Location: C:\notes\my_script.scr

Browse Execute

Test Parameters | Stop Conditions | Script Variables | Command Line Screen

Number of Users/Threads: 1000 Script Loop Count: 1

Run Time Parameters

Thread Creation Interval (sec): 1 Starting Thread No.: 1

Test Time Parameter: No time limit

Misc

Build Recipient List using Name and Address Book

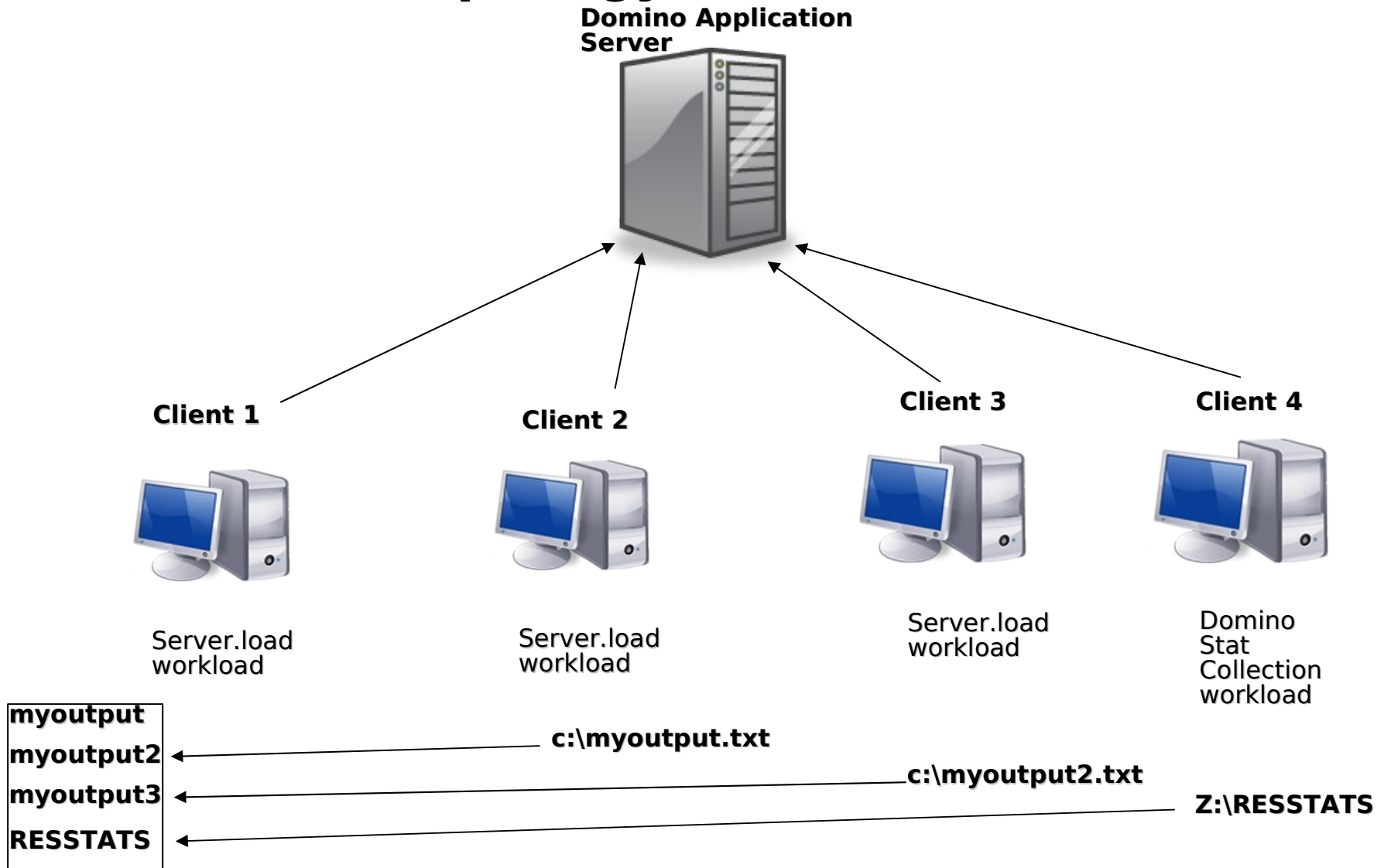
Browse

Storage test output to

c:\myoutput.txt

Browse

Server.load topology



S e r v e r S t a t C o l l e c t i o n S c r i p t

- B e g i n l o o p
- t i m e
- C o n s o l e [M a i l s e r v e r] s h s t a t s . t i m e . c u r r e n t
- C o n s o l e [M a i l s e r v e r] s h s t a t p l a t f o r m
- C o n s o l e [M a i l s e r v e r] s h s t a t s e r v e r . *
- C o n s o l e [M a i l s e r v e r] s h s t a t s e r v e r . v e r s i o n . *
- C o n s o l e [M a i l s e r v e r] s h s t a t s e r v e r . t i m e . s t a r t
- C o n s o l e [M a i l s e r v e r] s h s t a t d o m i n o
- C o n s o l e [M a i l s e r v e r] s h s t a t d a t a b a s e
- C o n s o l e [M a i l s e r v e r] s h s t a t d i s k
- C o n s o l e [M a i l s e r v e r] s h s t a t m a i l
- C o n s o l e [M a i l s e r v e r] s h s t a t m e m
- C o n s o l e [M a i l s e r v e r] s h s t a t N E T
- C o n s o l e [M a i l s e r v e r] s h t r a n s
- C o n s o l e [M a i l s e r v e r] p l a t f o r m t i m e 1 0
- C o n s o l e [M a i l s e r v e r] s h t r a n s r e s e t
- P a u s e 1 0 m i n
- R e w i n d



Performance debug parameter

- Server_Show_Performance=1
- LOG_UPDATE=2
- Console_Log_Enabled=1 (DEBUG_OUTFILE=C:\tmp\notes.log)
- Console_Log_Max_kbytes=5000000
- debug_capture_timeout=1
- debug_show_timeout=1
- debug_show_blockingthreadcallstack=1
- Debug_ThreadID=1
- CLIENT_CLOCK=30

Simulate the real life

- Split operations
- Identify major loads
- Simulate the loads with Server.Load
- Plus GUI automation test if needed

General information on using Server.Load

- http://www.ibm.com/developerworks/lotus/documentation/domino/d-ls-serverload/index.html?S_TACT=105AGX13&S_CMP=EDU
- http://www.ibm.com/developerworks/lotus/library/domino8-serverload/index.html?S_TACT=105AGX13&S_CMP=EDU

Agenda

- Introduction to Performance
- Domino Server Performance
- Domino Application Performance
- Domino Performance Testing
- Summary



Summary

- No “one right answer” across systems or applications
 - There is no “RUN_FASTER=1”
 - No Super Storage Network
 - No Ultimate Network Switch
- Performance configuration and tuning is driven by your users, your data, your network
 - Performance is not magic – it's planning !
 - Know your environment !!
- Partner with network/hardware teams for best effect
- It's a repeating cycle !

Lotus knows.

Smarter software for a Smarter Planet.

Questions?



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