

# HCL Notes 11.0.1 FP2

## Performance Boost Re-Reloaded

КРИСТОФ АДЛЕР / CHRISTOPH ADLER

# Christoph Adler - Senior Consultant at panagenda



**19+ years of Lotus / IBM / HCL Digital Solutions experience**

## **Focused on**

- Notes Client Management (incl. HCL Nomad)
- Analysis and Optimization of Notes/Domino infrastructures
- Application Modernization
- Cloud Migrations

## **Good to know**

- Obviously German (accent)
- Bass player & geek
- Likes music, football (soccer) and beer





SlideShare

<https://www.slideshare.net/christophadler50>

# Agenda

1. HCL Notes
2. Performance – [Tips & Tricks](#)
3. What makes the Notes Client [START](#) slow
4. What makes the Notes Client [PERFORM](#) slow
5. Performance Measuring
6. Bonus
7. Summary
8. Q & A



A silver laptop is open on a dark, reflective desk. To its left is a pen holder with three pens. In front of the laptop is an open book. To the right is a white mug. The background is a large window with a view of a city skyline at sunset or sunrise, with warm light filtering through. A thin blue vertical line is positioned to the left of the text "HCL Notes".

# HCL Notes

# HCL Notes

- **HCL Notes 11.0.1 FP2**
- **Standard**, Basic, Admin- & Domino Designer-client
- HCL Client Application Access 3.0.3 (HCAA)
- Single & **Multi-User**

# HCL Notes 11.0.1 FP2

**HCL**



## Notes 11



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# HCL Notes – Directories

- **Program directory**

C:\Program Files(x86)\HCL\Notes → Windows 64Bit

C:\Program Files\HCL\Notes → Windows 32Bit

- **Shared data directory**

C:\ProgramData\HCL\Notes\Data\shared

- **Data directory**

C:\Users\%USERNAME%\AppData\Local\HCL\Notes\Data



# HCL Notes 11.0.1 FP2



Workspace - HCL Notes

File Edit View Create Tools Window Help

Search All Contacts

Home

Startpage MarvelClient SecurityInsider SmartChanger Trash

on Local (nsf) Bookmarks (11)

on Local Christoph Adler

Physical nsfs 1, 2, 3, ... n

Workspace

Replication and Sync

Enabled	High Priority	Application	Schedule	Scope	Summary
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Christoph Adler	05:40 PM Today		0 Received, 0 Sent with server1/panagenda-demo
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Send outgoing mail	05:40 PM Today		0 Pending, 0 Sent
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Synchronize Contacts	05:40 PM Today		0 Received, 0 Sent with server1/panagenda-demo
<input checked="" type="checkbox"/>	<input type="checkbox"/>	demo's Directory	05:40 PM Today		0 Received, 0 Sent with server1/panagenda-demo

Workspace Properties

- Create Workspace Page
- Remove Workspace Page
- Open Application...
- Arrange Icons
  - Stack Replica Icons
  - Show Unread
  - Show Server Names
- Refresh Unread Count
- Background
  - None
  - Default
  - Choose...

on Local Adler's Contacts

Online



# Performance – Tips & Tricks

# Why your Domino servers might have been using 30% more CPU recently – and how to fix it



- A new feature added in Notes 9.0.1 FP9 (still exists in V10 and V11 Beta-1) called “Delegated mail files are refreshed automatically”
  - Even though the documentation states “Ask your administrator to enable this feature.”, the functionality is turned on by default
- When an end-user opens another user’s calendar, HCL Notes will automatically add some notes.ini entries
  - DELEGATED\_MAIL\_FILE1=Christoph Adler\_server1/panagenda-demo!!mail\cadler.nsf\_10/24/2020
  - DELEGATED\_NEWMAIL\_SEQNUM1=7
- **Impact**  
HCL Notes opens many different user mail files upon client startup and regularly thereafter
- **Fix**  
Remove all **DELEGATED\_\*** entries in notes.ini  
Add **DEBUG\_DISABLE\_AUTO\_REFRESH\_DELEGATED\_INBOX=1** to notes.ini to disable the feature

## More information:

<https://www.panagenda.com/2019/01/why-your-domino-servers-might-have-been-using-30-more-cpu-recently-and-how-to-fix-it/>

# HCL Notes 11.0.1 FP2 - jvm.properties file

To speed up the HCL Notes JVM it's important to optimize memory settings

Open %ProgramFiles(x86)%\HCL\Notes\framework\deploy\jvm.properties

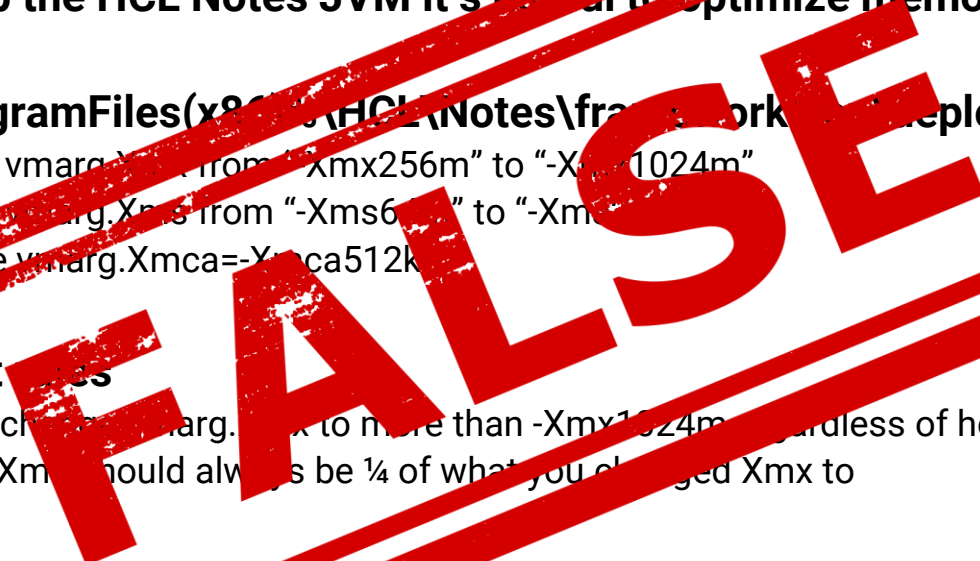
- Modify vmarg.Xmx from "-Xmx256m" to "-Xmx1024m"
- Modify vmarg.Xms from "-Xms64m" to "-Xms256m"
- Change vmarg.Xmca=-Xmca512k

The implicit rules

- Do not change vmarg.Xmx to more than -Xmx1024m regardless of how much memory you have
- vmarg.Xms should always be ¼ of what you changed Xmx to

No

- The above defaults have been changed by IBM/HCL over the last couple of Notes releases. You might find other values than Xmx256m and Xms64m in your setups.



# The Out Of Memory Mystery In Notes 11

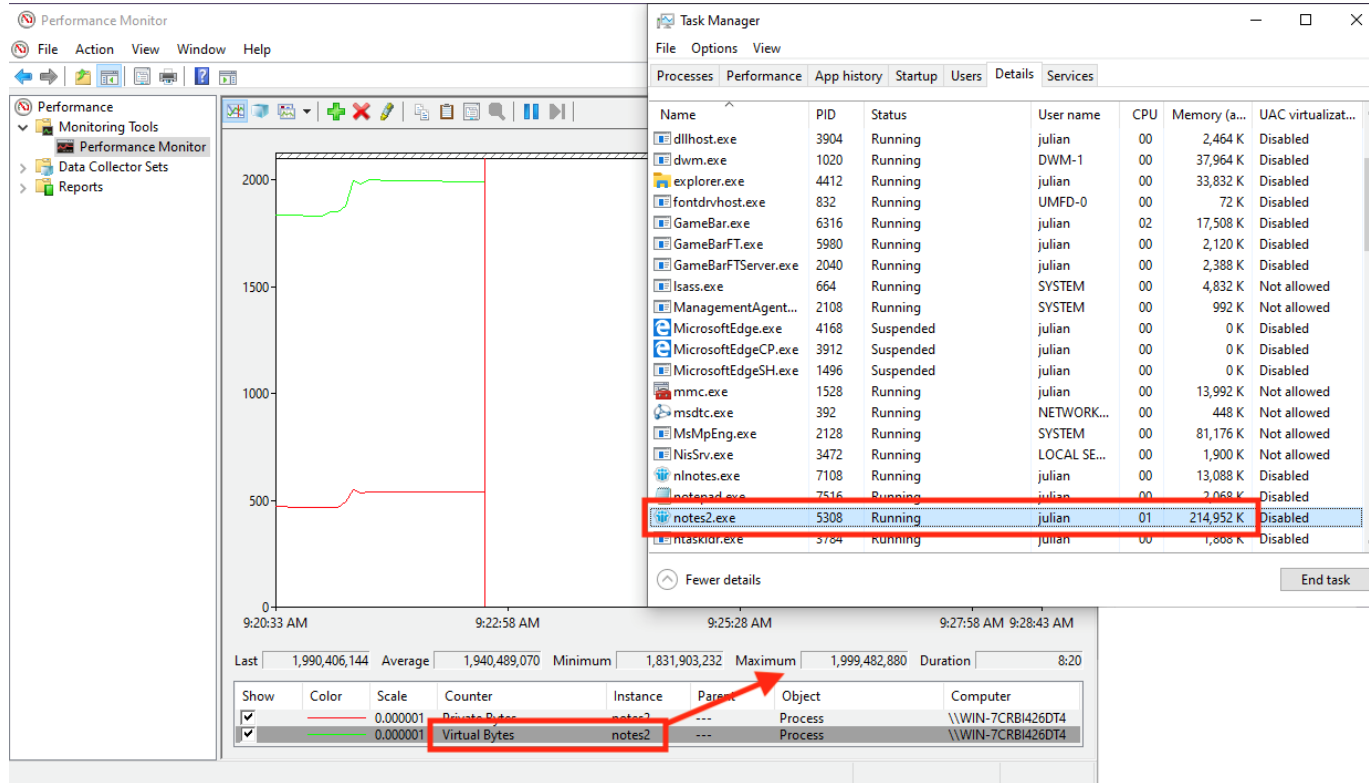


- Some of our customers who upgraded to Notes 11 have experienced out of memory errors in the Notes client. That always ended up in freezes or crashes of HCL Notes 11.x
- The weird thing about this:
  - The computer had plenty of available memory, and
  - Task Manager showed that Notes was using a normal amount of memory, like 250MB or so
- **Using Performance Monitor for more detailed troubleshooting**
  - “Private Bytes” - the amount of committed memory the application is using
  - “Virtual Bytes” - the amount of virtual address space the application has reserved

## More information:

<https://www.panagenda.com/2020/08/the-out-of-memory-mystery-in-notes-11/>

# The Out Of Memory Mystery In Notes 11 (cont.)



More information:

<https://www.panagenda.com/2020/08/the-out-of-memory-mystery-in-notes-11/>

# The Out Of Memory Mystery In Notes 11 (cont.)



- When we were testing, we found that out of memory errors were happening at the point that the client hit the 2GB mark in the virtual address space monitor.
- This 2GB mark is important because the Notes client is still a 32-bit application. One of the side-effects of this is it only has 2GB of virtual address space to play with (really 4GB, but half of that is claimed by the kernel). 64-bit applications have a much, much larger virtual address space (they sometimes reserve terabytes of space), but 32-bit applications need to be careful.
- **SIDEBAR: A few clarifications about virtual address space:**
  - it's completely different from virtual memory
  - it doesn't tell you how much memory the application is actually using
  - it has nothing to do with how much memory is on the computer
  - it's a way of mapping memory that might be used by the application
  - More information here about virtual address space  
<https://docs.microsoft.com/en-us/windows-hardware/drivers/gettingstarted/virtual-address-spaces>

## More information:

<https://www.panagenda.com/2020/08/the-out-of-memory-mystery-in-notes-11/>

# The Out Of Memory Mystery In Notes 11 (cont.)

- **Solution**

- The immediate fix was to reduce the Java heap size used by the Notes client  
vmarg.Xmx=-Xmx512m
- See HCL's Technote about this:  
[https://support.hcltechsw.com/csm?id=kb\\_article&sysparm\\_article=KB0038188](https://support.hcltechsw.com/csm?id=kb_article&sysparm_article=KB0038188)

- **Why wasn't this a problem before?**

- When you compile a 32-bit application, there is a flag you can set called /LARGEADDRESSAWARE. This allows the application's process to use a full 4GB of virtual address space on a 64-bit operating system, instead of the 2GB we were seeing above.
- It turns out that the java.exe and notes2.exe files on the Notes 9 client were compiled with the /LARGEADDRESSAWARE flags, but the java.exe and notes2.exe files on the Notes 11 client were not.
- Notes 9 used the IBM version of the Java JVM but Notes 11 uses the OpenJDK OpenJ9 version. The OpenJ9 32-bit distribution wasn't compiled with /LARGEADDRESSAWARE until just recently (version 8u262, from June 2020), so the Notes 11 client didn't compile with that flag either.
- In other words, Notes 9 had a full 4GB virtual address space, but Notes 11.x only has 2GB.

**More information:**

<https://www.panagenda.com/2020/08/the-out-of-memory-mystery-in-notes-11/>



# HCL Notes 11.0.1 FP2 - jvm.properties file



To speed up the HCL Notes JVM it's useful to optimize memory settings

**Open %ProgramFiles(x86)%\HCL\Notes\framework\rcp\deploy\jvm.properties**

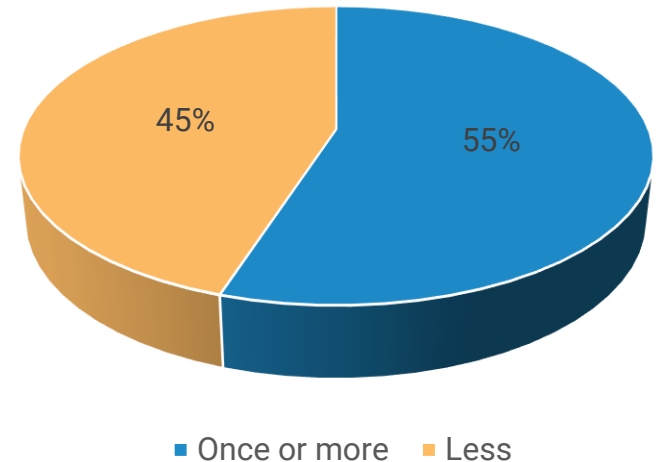
- Change vmarg.Xmx=-Xmx512m → or maybe to -Xmx768m
- Change vmarg.Xms=-Xms256m
- Change vmarg.Xmca=-Xmca512k

# Antivirus real-time scanning in Data directory

~55% of the entire data volume in the Data directory changes on a DAILY basis in most setups

- 5 - 10% in Data\workspace (up to 300 files)
- DISABLE Antivirus scanning for at least
  - \*.ns\*
  - \*.ndk
  - \*.xml
  - \*.properties
  - \*.jarin Data Directory.

Data directory:  
File changes per day





What makes the  
Notes Client **START** slow

# What makes the Notes Client START slow



## Client crashes/database fixups

- Especially bad for network-based data directories clients

## Outdated Hardware

- You need **>4 GB memory** if you want to use Notes AND something else
- Old fixed disks with fragmentation → **SSD's will help!**

## Tons of startup programs/scripts launching during the “boot storm”

- If the disk is unable to keep up, it's not Notes' fault

# What makes the Notes Client START slow (cont.)



## Outdated Data directories

- Virtually 100% of all NTFs (Laptops: 90%) can be removed by
  - Cleaning up old Notes 4+5+6+7+8+9+10 templates

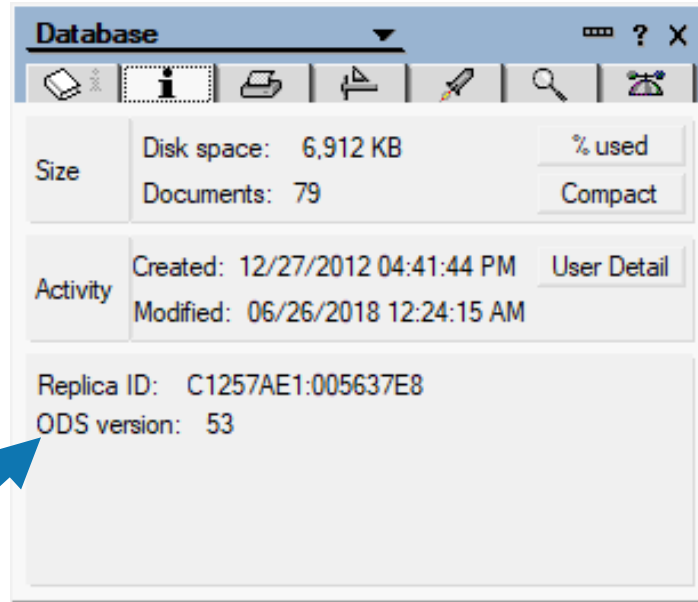
## Operating System

- Windows 8.1 boots ~20% faster than Windows 7
- **Windows 10** ~15% faster than 8.1

# ODS of local databases

## ODS = On Disk Structure

- ODS 16 = Notes 2
- ODS 17 = Notes 3
- ODS 20 = Notes 4
- ODS 41 = Notes 5
- ODS 43 = Notes 6 & 7
- ODS 48 = Notes 8
- ODS 51 = Notes 8.5 & 9
- ODS 52 = Notes 9.0.1
- **ODS 53 = Notes 10 & 11**



**The difference between ODS 43 and 53 = up to 80% LESS FILE I/O**

This helps with ANY client AND server hardware

## ODS of local databases (cont.)



### CAUTION: The ODS is **not** automatically updated when upgrading clients

- ODS 53 requires Notes >= 10 and CREATE\_R10\_DATABASES=1 in notes.ini for NEW db's

### Good News for Notes (since 8.5.x)

- Use NSF\_UpdateODS=1 with CREATE\_R10\_DATABASES=1 for a one-time upgrade of most local databases
  - **NOTE:** USE WITH EXTREME CARE IF YOUR DATA DIRECTORIES ARE ON A NETWORK DRIVE!
  - **NOTE:** End users can't access databases during compact OR databases will be ignored if in use

### Manually upgrade ODS of local databases/templates

- Run the following command line:  
`ncompact.exe -C -ODS -* -Client -UpdateIndexes`



What makes the  
Notes Client **PERFORM** slow



# What makes the Notes Client PERFORM slow



## Again

- ODS of local databases
- Hardware

## Notes.ini

- EXTMGR\_ADDINS = (not just) local virus scanners
- Disable Notes “plugins” like virus scanners etc.
  - They increase Network traffic by up to 200 – 250% and will cause much more CPU load and File I/O

## Data directory on the network vs. fixed disk

- Disk performance is the #1 bottleneck

# Port settings

## Port settings are included in the notes.ini

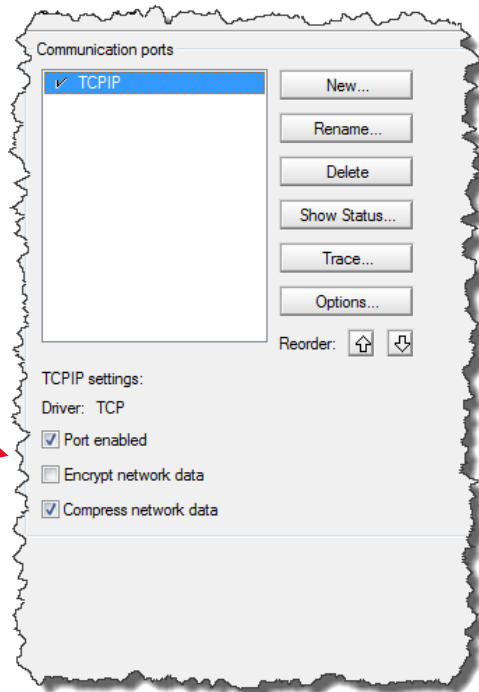
- Type / Active / Encryption / Compression / Timeout

## Legacy

- LAN0 / COMx / DisabledPorts → should be removed!

## Good idea

- Use TCPIP according to the client type
- PORTS = TCPIP
- TCPIP = TCP,0,15,0,,12320, → Desktops
- TCPIP = TCP,0,15,0,,45088, → Laptops
- TCPIP = TCP,0,15,0,,12288, → Citrix / VDI



Don't forget the **Domino** servers!

# What makes the Notes Client PERFORM slow (cont.)



## Domino Roaming Users

- Try replicating 80MB each time you logon to Notes before use!

## Connection documents

- Pointing to outdated server names or IP addresses
- Low priority connection documents, which can cause connectivity failures

## Location documents

- IP addresses for mailserver → breaks Policies
- Outdated mail and home server information
- Outdated mail file path
- Catalog server (think db links, doc links, new bookmarks)

# Why is the Catalog important?



## Ever wondered what exactly happens when you click on db links / doc links / view links

1. Notes checks whether you already have a workspace icon pointing to the replica ID in the link. If yes, the topmost icon on the stack decides on which server the db will open
2. If there's no icon on the workspace, Notes asks the catalog server in your currently selected location document where the db is to be found. So, make sure your catalog is up to date! No catalog server? Notes will ask your home mail server!
3. Are you replicating your catalog.nsf across all servers? Bad news: If 2.) applies, Notes will open the database on the server it finds first in the catalog – which is sorted alphabetically. In global infrastructures that might be a server far far away, e. g. in Asia

**Make sure to use an appropriate catalog server in your location documents!**



# Performance Measuring

Make Your Data Work For You

# Performance Measuring with Client Clocking



## **NOTE:**

All of this should only be done on “ONE” client – slows down client, creates huge log files!

## **Use the following to see and measure client performance**

- CLIENT\_CLOCK=1
- CONSOLE\_LOG\_ENABLED=1
- Debug\_Outfile=c:\debug.txt
- Debug\_Console=1
- DEBUG\_TCP\_ALL=1 (use only if needed)

## **Fileserver or local disk Performance Debugging is virtually impossible**

- If on >= 8.5 try adding DEBUGGINGWCTENABLED=16386 in Notes

# Performance Measuring with Client Clocking (cont.)

## Client\_Clock=1 leads to a debug file of the following format:

```
[AD10:0002-7828] (1-7 [1]) NAME_LOOKUP32(CN=christoph adler/O=panagenda,00000200): (Connect to mail01/panagenda: 0 ms) (Exch names: 0 ms) (Authenticate: 0 ms.)
[AD10:0002-7828] (OPEN_SESSION: 33 ms)
[CSAO:0002-1E00] 06.02.2017 00:34:03 Dynamic Client Configuration started
[AD10:0002-7828] 32 ms. [204+292=496]
[CSAO:0002-1E00] 06.02.2017 00:34:03 Initializing Dynamic Client Configuration
[AD10:0002-7828] (2-7 [2]) OPEN_DB(CN=mail01/O=panagenda!mail\cadler.nsf): [CSAO:0002-1E00] (1-7 [3]) NAME_LOOKUP(CN=christoph adler/O=panagenda,00000102): (Opened: REPC1257A84:003EC752) 33 ms. [138+294=432]
[AD10:0002-7828] (3-7 [3]) DB_REPLINFO_GET(REPC1257A84:003EC752): 30 ms. [18+36=54]
(Connect to mail01/panagenda: 134 ms) (Exch names: 0 ms) (Authenticate: 0 ms.)
[CSAO:0002-1E00] (OPEN_SESSION: 33 ms)
[CSAO:0002-1E00] 32 ms. [260+88=348]
[CSAO:0002-1E00] (2-7 [5]) NAME_LOOKUP(CN=christoph adler/O=panagenda,00000100): 33 ms. [356+198=554]
[CSAO:0002-1E00] 06.02.2017 00:34:03 Dynamic Client Configuration updating policy information
[CSAO:0002-1E00] (3-7 [6]) SERVER_AVAILABLE_LITE(CN=mail01/O=panagenda): 31 ms. [30+104=134]
[CSAO:0002-1E00] (4-7 [7]) SV_INFO_GET_RQST: 31 ms. [18+52=70]
[CSAO:0002-1E00] (5-7 [8]) OPEN_DB(CN=mail01/O=panagenda!names.nsf): (Opened: REPC12572D7:004CB9E3) 33 ms. [138+294=432]
[CSAO:0002-1E00] (6-7 [9]) GET_DBINFO(REPC12572D7:004CB9E3): 31 ms. [18+20=38]
[CSAO:0002-1E00] (7-7 [10]) FINDDESIGN_NOTES(REPC12572D7:004CB9E3): 31 ms. [48+20=68]
[CSAO:0002-1E00] (8-7 [11]) ISDB2_RQST(REPC12572D7:004CB9E3): 29 ms. [18+20=38]
[CSAO:0002-1E00] (9-7 [12]) OPEN_COLLECTION(REPC12572D7:004CB9E3-NT00000882,0000,0000): 32 ms. [46+38=84]
[CSAO:0002-1E00] (10-7 [13]) UPDATE_COLLECTION(REPC12572D7:004CB9E3-NT00000882): 30 ms. [28+16=44]
[CSAO:0002-1E00] (11-7 [14]) READ_ENTRIES(REPC12572D7:004CB9E3-NT00000882): 33 ms. [80+866=946]
[CSAO:0002-1E00] (12-8 [15]) CLOSE_COLLECTION(REPC12572D7:004CB9E3-NT00000882): 0 ms. [16+0=16]
[CSAO:0002-1E00] (13-8 [16]) SV_INFO_GET_RQST: 35 ms. [18+52=70]
[CSAO:0002-1E00] (14-8 [17]) GET_POLICY_RQST(REPC12572D7:004CB9E3): 32 ms. [1050+28=1078]
[CSAO:0002-1E00] (15-8 [18]) SV_INFO_GET_RQST: 30 ms. [18+52=70]
[CSAO:0002-1E00] (16-8 [19]) GET_POLICY_RQST(REPC12572D7:004CB9E3): 34 ms. [1050+28=1078]
[CSAO:0002-1E00] (17-8 [20]) SV_INFO_GET_RQST: 34 ms. [18+52=70]
[CSAO:0002-1E00] (18-8 [21]) GET_POLICY_RQST(REPC12572D7:004CB9E3): 33 ms. [1050+28=1078]
[CSAO:0002-1E00] (19-8 [22]) SV_INFO_GET_RQST: 38 ms. [18+52=70]
[CSAO:0002-1E00] (20-8 [23]) GET_POLICY_RQST(REPC12572D7:004CB9E3): 34 ms. [1050+28=1078]
[CSAO:0002-1E00] (21-8 [24]) SV_INFO_GET_RQST: 31 ms. [18+52=70]
[CSAO:0002-1E00] (22-8 [25]) GET_POLICY_RQST(REPC12572D7:004CB9E3): 35 ms. [1050+3364=4414]
[CSAO:0002-1E00] (23-8 [26]) SV_INFO_GET_RQST: 32 ms. [18+52=70]
[CSAO:0002-1E00] (24-8 [27]) GET_POLICY_RQST(REPC12572D7:004CB9E3): 39 ms. [1050+28=1078]
[CSAO:0002-1E00] (25-8 [28]) SV_INFO_GET_RQST: 31 ms. [18+52=70]
[CSAO:0002-1E00] (26-8 [29]) GET_POLICY_RQST(REPC12572D7:004CB9E3): 32 ms. [1050+28=1078]
[CSAO:0002-1E00] (27-8 [30]) SV_INFO_GET_RQST: 30 ms. [18+52=70]
[CSAO:0002-1E00] (28-8 [31]) GET_POLICY_RQST(REPC12572D7:004CB9E3): 33 ms. [1050+28=1078]
[CSAO:0002-1E00] (29-8 [32]) SV_INFO_GET_RQST: 31 ms. [18+52=70]
[CSAO:0002-1E00] (30-8 [33]) GET_POLICY_RQST(REPC12572D7:004CB9E3): 33 ms. [1050+28=1078]
[CSAO:0002-1E00] (31-8 [34]) SV_INFO_GET_RQST: 31 ms. [18+52=70]
[CSAO:0002-1E00] (32-8 [35]) GET_POLICY_RQST(REPC12572D7:004CB9E3): 32 ms. [1050+28=1078]
[CSAO:0002-1E00] 32 ms. [1050+28=1078] (Session Closed)
[CSAO:0002-1E00] 06.02.2017 00:34:04 Dynamic Client Configuration updating location information
[CSAO:0002-1E00] 06.02.2017 00:34:04 Dynamic Client Configuration shutdown
```

# Performance Measuring with Client Clocking (cont.)



## OpenNTF – NRPC Parser

### Link:

<https://www.openntf.org/main.nsf/project.xsp?r=project/Notes%20RPC%20Parser>

### Last Update:

v1.0.14 – Nov 10, 2016

### Developed by:

Jamie Magee, MartinScott Consulting LLC, US


Andrew Magerman, Magerman Collaborative Software GmbH, Switzerland



# Performance Measuring with Client Cloning (cont.)

## OpenNTF – NRPC Parser

**NRPC Parser**




Most recent  
History  
Configuration


---

**Usage**

- Enable RPC in notes.ini  
Restart Notes Client
- Test your application
- Disable RPC in notes.ini  
Restart Notes Client
- Parse NRPC file  
optionally, clear the cache

---

 **Martin Scott**

 **magerman**  
collaborative software

[About NRPC Parser](#)

<input checked="" type="checkbox"/> Enable RPC in notes.ini <input checked="" type="checkbox"/> Disable RPC in notes.ini <input type="checkbox"/> Close Notes Client <input type="checkbox"/> Parse NRPC file <input type="checkbox"/> Jump to slow entries (unread marks) <input type="checkbox"/> Export view to Excel <input type="checkbox"/> Clear Cache.ndk (optional)										
Thread	Line	Server Name	Database Title	Note Type	Note Title	Command	ms	Rec'd	Sent	original line
30	13	[0094-0006-6540:wrepl]					8.210	4K	682K	
	13	[0094-0007-D24C:wrepl]					190	1K	1K	
	138					Opens database	0	0K	0K	[0094.0007-D24C:wrepl] (1-36 [91]) OPEN_DB(CN=mail01/O=panagenda!):
	142						0	0K	0K	[0094.0007-D24C:wrepl] (OPEN_SESSION: 33 ms)
	144						32	1K	1K	[0094.0007-D24C:wrepl] (Opened: REP00000000.00000000) 32 ms [138+294+432]
	145					Scan the server for databases to replicate	30	1K	1K	[0094.0007-D24C:wrepl] (2-36 [94]) DBGETREPLICAMATCHES(REP00000000.00000000): 3
	146	mail01				Opens database	35	1K	1K	[0094.0007-D24C:wrepl] (3-36 [95]) OPEN_DB(CN=mail01/O=panagenda!mail/cadler.nsf):
	147	mail01				close database	0	1K	0K	[0094.0007-D24C:wrepl] (4-37 [96]) CLOSE_DB(REP1257A84.003EC752): 0 ms [18+0+18]
	148					close server session	0	1K	0K	[0094.0007-D24C:wrepl] (5-37 [97]) CLOSE_DB(REP00000000.00000000): 0 ms [18+0+18]
	154					Opens database	31	1K	1K	[0094.0007-D24C:wrepl] (6-37 [98]) OPEN_DB(CN=mail01/O=panagenda!): (Opened:
	155					Scan the server for databases to replicate	30	1K	1K	[0094.0007-D24C:wrepl] (7-37 [99]) DBGETREPLICAMATCHES(REP00000000.00000000): 3
	156	mail01				Opens database	32	1K	1K	[0094.0007-D24C:wrepl] (8-37 [100]) OPEN_DB(CN=mail01/O=panagenda!mail/cadler.nsf):
	157	mail01				close database	0	1K	0K	[0094.0007-D24C:wrepl] (9-37 [101]) CLOSE_DB(REP1257A84.003EC752): 0 ms [18+0+18]
	158					close server session	0	1K	0K	[0094.0007-D24C:wrepl] (10-37 [102]) CLOSE_DB(REP00000000.00000000): 0 ms [18+0+18]
	229						0	1K	0K	[0094.0007-D24C:wrepl] 0 ms [18+0+18] (Session Closed)
23		[0094-0008-3964:wrepl]					443	1K	14K	
1		[25C8-0002-498C]					0	0K	0K	
2		[25C8-0004-1FC0]					0	0K	0K	
4		[42E0-0002-5898]					0	0K	0K	
2		[42E0-000F-C224]					0	1K	1K	
147		[AD10-0002-7828]					5.596	385K	831K	
4		[AD10-0009-D95C-AsyncView]					47	1K	11K	
40		[C5A0-0002-1E00]					1.007	13K	6K	
5		[D624-0002-D2F4]					0	0K	0K	
12		[no thread ID found]					48	1K	5K	
	0						0	0K	0K	OK In_debug_CADLER-T540P_2017_02_06@00_33_54.txt
	9						0	0K	0K	OK (Connect to mail01/panagenda: 134 ms) (Exch names: 0 ms)(Authenticate: 0 ms.)
	81					Opens database	48	1K	1K	[29-29 [62]) OPEN_DB(CN=mail01/O=panagenda!mail/cadler.nsf): 48 ms [18+80+98]
	107						0	0K	0K	OK [30+28+58] (No documents have been modified since specified time.)
	140						0	0K	0K	OK Connect to mail01/panagenda: 234 ms) (Exch names: 0 ms)(Authenticate: 0 ms.)
	143						0	1K	5K	39 ms [52+4772+4824]
	160						0	0K	0K	OK (12-39 [103]) GET_SERVER_NAMES: (Connect to mail01/panagenda: 95 ms) (OPEN_SESS
	175						0	0K	0K	OK [78+68+146] (Special database object cannot be located)
	179						0	0K	0K	OK [20+20+40] (Special database object cannot be located)
	186						0	0K	0K	OK [38+54+92] (Folders in database are up to date)
	205						0	0K	0K	OK [72+68+140] (Cache entry not found)
	214						0	0K	0K	OK [0+0+0] (Remote system no longer responding)



**Bonus**

# Performance Tuning – Understanding cache.ndk



## We've all been “advised to”/guilty of deleting the cache.ndk in an effort to cure Notes performance problems/symptoms

- Some companies even delete cache.ndk on a scheduled basis

## HOWEVER, let us explain the impact of that on Notes performance ...

- Increases traffic between client and server by 4,000% (forty times more traffic, yes) (10,000+% if the data directory is on a network drive)
- The more databases end users use, the worse it gets
- There is always a root cause – deleting cache.ndk only fixes symptoms
- Let's look at some detailed traffic analysis for just ONE application (the mail file) of ONE user ...

# Performance Tuning – Understanding cache.ndk (cont.)

After deleting cache.ndk			Keeping / NOT deleting cache.ndk		
MS	SENT	RECEIVED	MS	SENT	RECEIVED
2,723	5,998	1,553,446	111	1,510	38,214

100 users =  
150 MB vs. 3,7 MB

1000 users =  
1.5 GB vs. 37 MB

*Excluding Fileservers!*

The background of the slide is a 3D-rendered scene with white, rectangular steps that recede into the distance. On the left side, a white step ladder with blue caps on its rungs is leaning against the steps. A thin blue vertical line is positioned to the left of the word "Summary".

# Summary

# Summary



**Update/clean out your ODS, databases and templates and hardware**

**Standardize whenever and however possible**

- This will save you hugely on support time/cost

**Keep your user's Notes version, fix/feature packs current (if stable)**

- Each release brings performance improvements but also resource demands

**Any challenge can be overcome with Knowledge and Tools**

- All client issues are solvable

# panagenda booth / café

Open after every panagenda session here at RNUG for ~60min



<https://panagenda.zoom.us/my/dominikpanagenda>

# Вопросы и ответы / Q & A



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**Спасибо / Thank you**



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