



Virtuell - schneller und besser!

Notes V10 auf Citrix & VMWare

Christoph Adler - panagenda

Christoph Adler - Senior Consultant at panagenda



17 years of IBM (Lotus) solutions experience

Focused on

- IBM Notes Client Management
- Analysis and Optimization of ICS infrastructures
- Cloud onboarding
- Application Modernization

Good to know

- From Germany 🇩🇪
- Frequent traveler ✈️
- Geek 🧐
- Don't give energy drinks → squirrel mode 🐿️

IBM CHAMPION 



Introduction



What are virtual environments (in this case)

Examples

- VDI – Virtual Desktop Infrastructure
 - VMWare Horizon View OR Citrix XenDesktop
- TS – Terminal Services/Server
 - Citrix XenApp



What I typically see at customers

Aged IBM Notes installations in virtual environments that are working “somehow”

- mostly Notes data directories on network drives which cause
 - long startup times of IBM Notes (up to 60 sec)
 - hangs and wait times due to interruptions and poor network latency
 - high network traffic as IBM Notes is constantly reading / writing data
 - frequently corrupted local applications
 - permanently occupied disk space on file servers / SAN / NAS
 - **at least** 120MB per user
 - often because of old and outdated files, even templates

What I typically do at customers

- Sparking their enthusiasm for IBM Notes
 - especially in virtual environments, IBM Notes can be optimized to start up fast, run smooth and contribute to a positive end user IT experience by
 - switching to local Multi-user installations
 - frequently maintaining contents of IBM Notes data folders
 - relieving network, file servers and/or SAN/NAS systems
- Encouraging administrators to spend a little more time on troubleshooting and analyzing IBM Notes
 - Solve root causes, not symptoms!

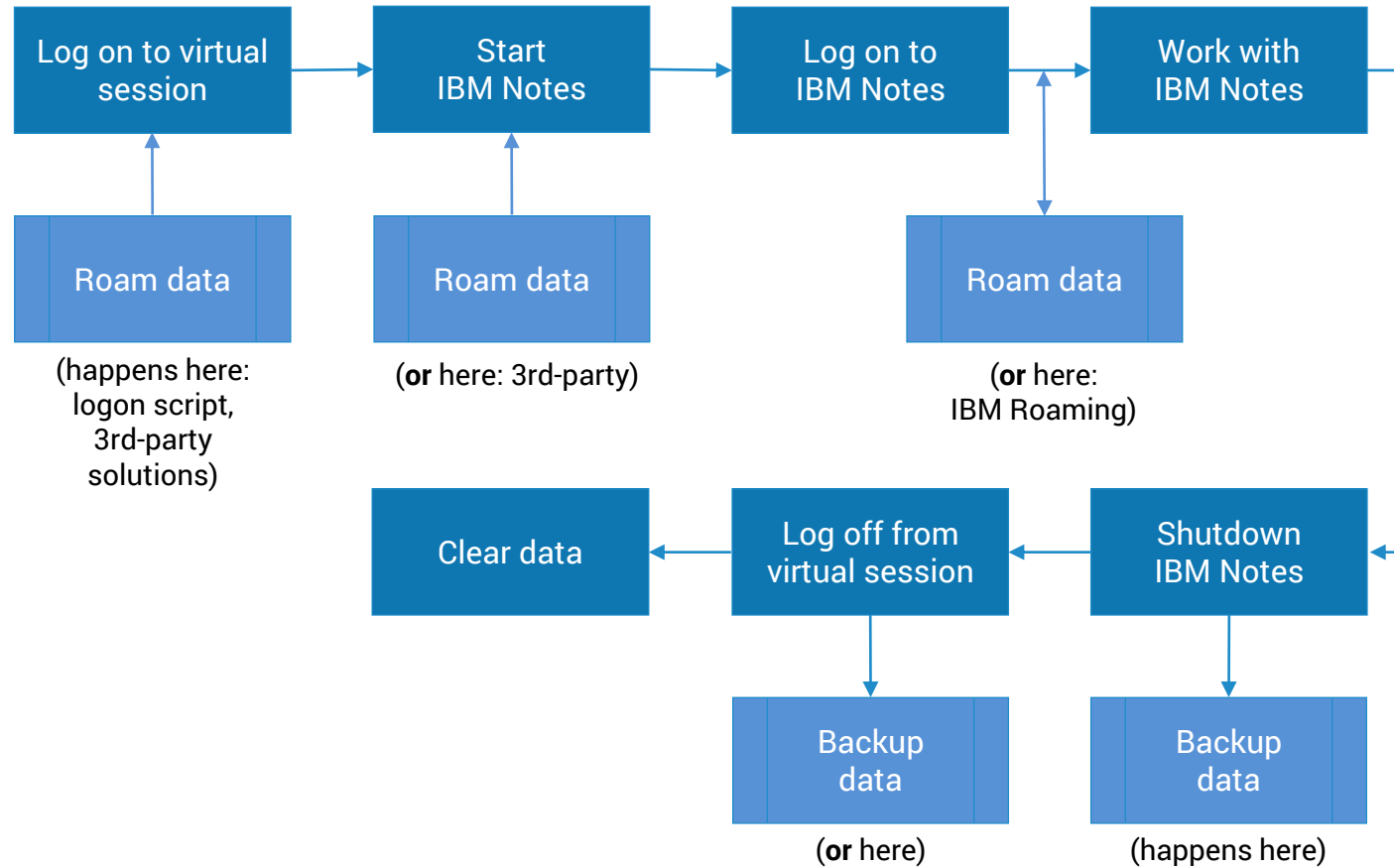
To roam or not to roam: that is the question

- Given the previous reasons why IBM Notes in virtual environments should not have any files in the network, the following logical questions arise
 - How can personal IBM Notes data folders of end users be maintained locally on the virtual environment servers?
 - Think of having N servers in the farm where personal end user data potentially needs to be on every single server
- How do end users get their most recent IBM Notes configuration no matter on which server in the farm they log on?
- How to ensure that disk space used by IBM Notes data folders is cleared after log off?

To roam or not to roam: that is the question (cont.)

- How to avoid transfers of large IBM Notes data folders per user during log on and log off which increase wait times and cause network traffic?
- The answer is: Roaming!
 - To provide end users with their latest IBM Notes configuration, their data needs to be roamed onto the server they log on to start their session
 - Roaming can be achieved through own procedures (e. g. logon script), Domino Roaming or third-party solutions

To roam or not to roam: that is the question (cont.)



IBM Notes V10 Installation



Make Your Data Work For You

Basic stuff

- Use IBM's default paths
 - Program directory
C:\Program Files(x86)\IBM\Notes
 - Shared data directory
C:\ProgramData\IBM\Notes\Data\shared
 - Data directory
C:\Users\<USERNAME>\AppData\Local\IBM\Notes\Data
- MultiUser install only → **please!**
- Use Install parameter "CITRIX=1" (if TS involved)
- No need to make changes to MSI package (scripts can help here)

Command line(s)

- Uninstall & cleanup first
 - IBM NICE (Notes Install Cleanup Executable):
<https://www-01.ibm.com/support/docview.wss?uid=swg21459714>
 - "C:\Install\NotesV10\nice.exe" -rp -wipe -qn
 - rd /S /Q "C:\Program Files (x86)\IBM\Notes"
 - rd /S /Q "C:\Program Files (x86)\IBM\Lotus"
 - rd /S /Q "C:\ProgramData\Lotus"
 - rd /S /Q "C:\ProgramData\IBM\Notes"
- Install
 - "c:\temp\Install\ibm_notes_V10_win32_beta2.exe" -s -a /s /v"SETMULTIUSER=1 CITRIX=1 /qn /lime "c:\temp\Install\msiinst_NotesV10-Beta2.log"

Improvements



Make Your Data Work For You

ODS53

ODS = On Disk Structure

ODS 16 = Notes 2

ODS 17 = Notes 3

ODS 20 = Notes 4 (or templates)

ODS 41 = Notes 5

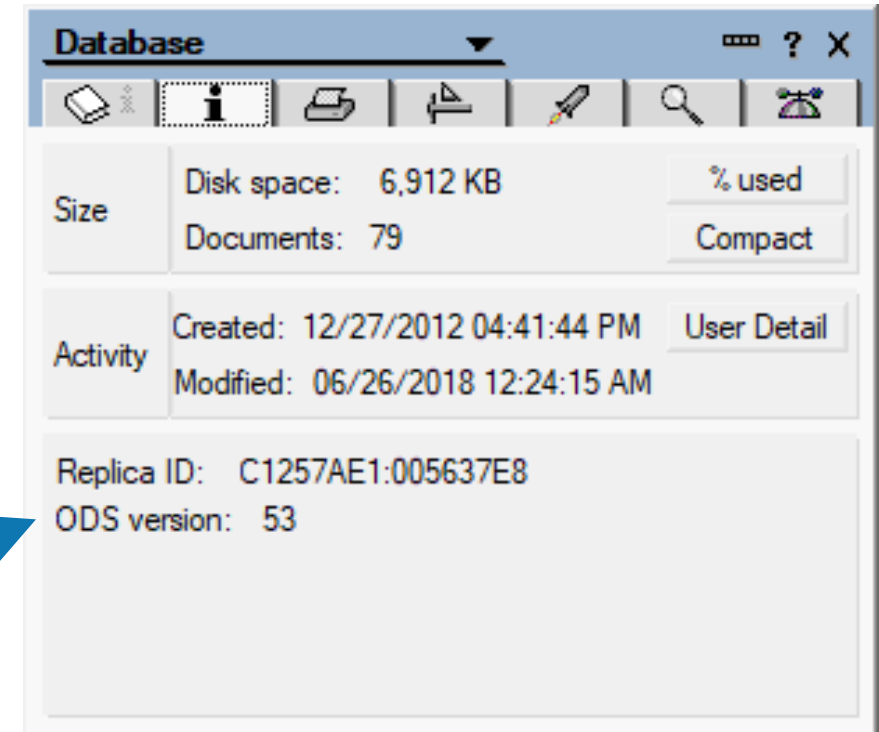
ODS 43 = Notes 6 & 7

ODS 48 = Notes 8.0

ODS 51 = Notes 8.5 / 9.0

ODS 52 = Notes 9.0.1

ODS 53 = Notes 10



The difference between ODS 43 and 53 = up to 80% LESS FILE I/O
50% less on average

ODS53 (cont.)

To upgrade the ODS of all shared templates in a virtual IBM Notes Multi-user installation you can follow these steps (includes ODS 53 for new databases created by the user)

- Add the following line to the shared notes.ini in %ProgramData%\IBM\Notes\Data
 - CREATE_R10_DATABASES=1
- Make sure that the Administrator account used to log on to the virtual server does not have a personal IBM Notes Data directory yet (in %LocalAppData%)
- From a command prompt type the following commands
 - cd "%ProgramData%\IBM\Notes\Data\Shared"
 - "%ProgramFiles(x86)%\IBM\Notes\ncompact.exe" -C -ODS -*

Notes.ini

- A properly configured shared notes.ini can be essential for smooth running virtual IBM Notes environments
- The shared notes.ini is used by every IBM Notes client session for which there's no personal IBM Notes data folder yet
- It is located in %ProgramData%\IBM\Notes\Data
- It is used as a template notes.ini out of which all parameters are transferred into a users personal notes.ini upon the very first IBM Notes start
- Find some useful shared notes.ini parameters on the next slide
(additionally to the standard entries)

Notes.ini (cont.)

- Ports=TCPIP
- TCPIP=TCP,0,15,0,,12288,
 - Note that this sets port compression to OFF, which is appropriate in virtual environments; Port compression adds 5% CPU overhead and with 60 concurrent sessions this would result in needing 3 dedicated CPUs for just port compression
- DISABLE_CLIENTRECORD=1
 - This disables logging of client information back into the public address book as all virtual environment users share the same servers in the farm anyway

Notes.ini (cont.)

- `CREATE_R10_DATABASES=1`
 - Enables IBM Notes 10 to use the latest ODS version for newly created local applications. Make sure to not use `CREATE_R85_DATABASES` (IBM Lotus Notes 8.5) or `CREATE_R9_DATABASES` (IBM Notes 9.0.1) to avoid the use of an older ODS in IBM Notes 10
- `Log=,1,0,7,40000`
 - This disables logging, which is optional but gains a slight performance improvement
 - This could cause issues when applications needs a existing log.nsf (please check before)
- `ConfigFile=C:\ProgramData\IBM\Notes\Data\config.txt`
 - For ConfigFile details see next topic

Notes.ini (cont.)

All parameters for copy & paste

Ports=TCPIP

TCPIP=TCP,0,15,0

DISABLE_CLIENTRECORD=1

CREATE_R10_DATABASES=1

Log=,1,0,7,40000

ConfigFile=C:\ProgramData\IBM\Notes\Data\config.txt

[always keep a blank line at the bottom!]

Config File

- IBM Notes can be set up unattended by using a so called ConfigFile – often referred to as config.txt or setup.txt
- The ConfigFile needs to be referenced in the shared notes.ini using the parameter ConfigFile=Drive: or UNC\folder\filename.txt (see previous topic)
- For more details the following IBM KnowledgeBase entry provides some very good examples on how to create a ConfigFile as generic as possible
 - https://www.ibm.com/support/knowledgecenter/bs/SSKTMJ_9.0.1/admin/inst_settingupnoteswithhascriptablesetup_c.html

Config File (cont.)

Example ConfigFile for copy & paste

```
Username=%USERNAME%  
Domino.Name=Hubserver/Acme  
Domino.Address=servername.acme.com  
Domino.Port=TCPIP  
Domino.Server=1  
AdditionalServices=-1
```

ShareClasses Improvement

- In IBM Notes the jvm.shareclasses file (*xpdplat_.jvm_G35) is stored in each users Data\workspace\.config\org.eclipse.osgi folder and has a fixed size of 64MB
- To optimize file I/O, speed up the IBM Notes Client start and save storage (960MB per server == 15users), this file can be shared across all users of the virtual environment server
 1. Create the following folder "%ProgramData%\IBM\Notes\Data\ShareClasses" and set folder rights for "everyone" to read / write access
 2. Change the value of this parameter "jvm.shareclasses.loc=" in %ProgramFiles(x86)%\IBM\Notes\framework\rcp\deploy\jvm.properties
 - from "\${rcp.data}\.config\org.eclipse.osgi"
 - to "C:/ProgramData/IBM/Notes/Data/ShareClasses" it's important to use "/" instead of "\"

JVM memory allocation

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

- Open %ProgramFiles(x86)%\IBM\Notes\framework\rcp\deploy\jvm.properties
 - Modify vmarg.Xmx from “-Xmx256m” to “-Xmx1024m”
 - Modify vmarg.Xms from “-Xms64m” to “-Xms256m”
 - Change vmarg.Xmca=-Xmca512k
 - Remove from “SingleJVM” in vmarg.Dshare
- 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

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

Workspace Improvement

- Every IBM Notes Client start in a virtual environment is a first (setup) start and takes at least 23 sec on average
- ~65% - 70% of time during first starts is used to build the workspace folder (at least 15 sec)
- A typical new workspace folder (IBM Notes 10) consists of
 - >400 files
 - >180 folders
 - >85 MB (including 64MB *xpdplat_.jvm_G35 file)
- Building the workspace folder causes lots of file I/O

Workspace Improvement (cont.)

Accelerate the IBM Notes Client start to be >50% faster (with less file I/O)

- With a non-admin user (Windows + IBM Notes) run an initial setup of IBM Notes
- Start IBM Notes and wait for 1,5 minutes
- Exit IBM Notes
- Start IBM Notes again and wait for another 1,5 minutes
- Exit IBM Notes
- Create the following folder %ProgramData%\IBM\Notes\Data\Common
- Copy the workspace folder from %LocalAppData%\IBM\Notes\Data to %ProgramData%\IBM\Notes\Data\Common

Workspace Improvement (cont.)

8. Delete the following files / folders in
%ProgramData%\IBM\Notes\Data\Common\workspace
 - a) UDM
 - b) Logs → all but .prov2install
 - c) .metadata\plugins\com.ibm.collaboration.*
 - d) .metadata\plugins\com.ibm.rcp.personality.framework
 - e) .metadata\plugins\com.ibm.rcp.security.auth
 - f) .metadata\plugins\com.ibm.rcp.managedsettings

Workspace Improvement (cont.)

Important:

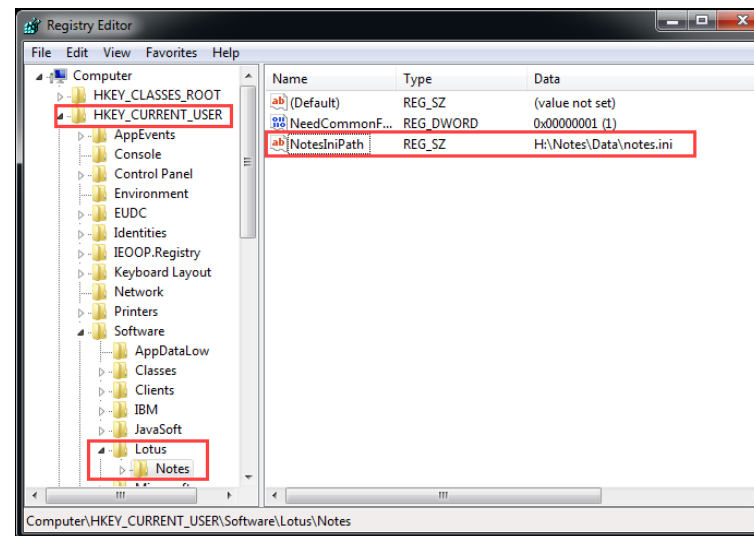
- You have to recreate the workspace folder when you Installation changes (another Notes version, Sametime embedded, etc.)
- If you want to include the workspace folder to your installation package, you also have to include the following file:
 - C:\Program Files (x86)\IBM\Notes\framework\rcp\rcplauncher.properties

Windows Registry

If you change the Data Directory –
let's say from “H:\Notes\Data” to “%LocalAppData%\IBM\Notes\Data”

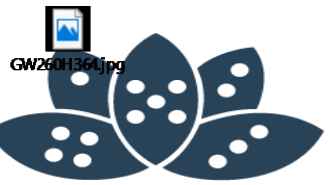
- Please ensure that the following Registry-Entry will be deleted during Windows-Logon (always)

HKEY_CURRENT_USER\Software\Lotus\Notes\NotesIniPath



DEP

- Data Execution Prevention
- Exclude
 - C:\Program Files (x86)\IBM\Notes\notes.exe
 - C:\Program Files (x86)\IBM\Notes\nlnotes.exe
 - C:\Program Files (x86)\IBM\Notes\nsd.exe
 - C:\Program Files (x86)\IBM\Notes\framework\rcp\eclipse\plugins\com.ibm.rcp.base_10.0.0.20180705-1111\win32\x86\notes2.exe



Q & A



Vielen Dank !



Danny Crane