TU Berlin: migration from ownCloud to Nextcloud

Dr. Thomas Hildmann | tubIT – IT Service Center | Nextcloud Conference 2017
Agenda

2. The Call for Tender: Why?
3. The Mission: What?
4. The Way to Nextcloud 11: How?
5. The Result: The day(s) after...
6. The End: Lessons learned
Introduction: TU Berlin, tubCloud, DFN-Cloud

THE SITUATION
Rahmenbedingungen

TU Berlin
- 35.000 students
- 10.000 stuff
- 50 buildings

tubIT – IT Service-Center
- Departments: Support, User-Services, Identity Management, Infrastructure

Department Infrastructure
- ~23 Admins + 1 „Over“head
- Network, Windows- / Linux-Server, Virtualization (OpenStack, HyperV, Vmware), Storage, Backup, ...
Hardware

- Two Datacenter in Berlin (Productive and Backup-DC with 40GBit-Connection) each 50% performance
- One Datacenter in El Gouna (Egypt)
- Servers: Cisco UCS und IBM X Serie
- SAN: IBM SVC, 1.7 PB (for system disks etc.)
- GSS Cluster ~330 TB Brutto (data for tubCloud/DFN-cloud)
- Tape-Library (1700 Tapes) in strong-room
tubCloud / DFN-Cloud

**tubCloud**
- 22.000 User
- 70TB
- Täglich 100.000 File-Changes
- 100 Millionen Dateien

**DFN-Cloud**
- Erster Partner: UdK Berlin
- Die meisten Nutzer: FU Berlin (startet im April durch)
- Aktuell 17 DFN-Cloud Kunden
tubCloud: The early tapes

Mar. 2012
- Evaluation of Sync & Share systems

Dec. 2012
- Betatest
- ownCloud 4
- 150 Users

May 2013
- Rollout
- ownCloud 5
- ≤ 40,000 Users
tubCloud: The next years

Sep. 2014
• ownCloud 6
• Enterprise Edition

Mar. 2015
• ownCloud 7
• Quota extended to 20, 100 and 250 GB

Apr. 2017
• ownCloud 9
• 16 DFN-Cloud partners
Why?

THE CALL FOR TENDER
Support Contract

- First support contract ended in May 2017
- March, 31st 2017: issued a tender to most popular sync-n-share providers
- Contained requirements
  - Technical infrastructure (now and planned)
  - Support for TU Berlin and DFN-Cloud members
  - Functional requirements
  - Nice-to-have features
- Nextcloud won,
  - the most cost-efficient offering
  - fulfilling all must- and should-requirements
What?

THE MISSION
Migration of what?

<table>
<thead>
<tr>
<th>old</th>
<th>new</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apache/2.2.15</td>
<td>nginx/1.10.2</td>
</tr>
<tr>
<td>PHP 5.6.30</td>
<td>PHP 7.1.4</td>
</tr>
<tr>
<td>shibboleth 2.6.0</td>
<td>Nextcloud App user_saml</td>
</tr>
<tr>
<td>ownCloud 9.1.0.4</td>
<td>Nextcloud 11.0.3</td>
</tr>
</tbody>
</table>
Never forget the clients!

**Desktop Clients**

<table>
<thead>
<tr>
<th>Platform</th>
<th>Version: 2.2.4 Build: 97534</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Windows</strong></td>
<td>From Windows 7 upwards</td>
</tr>
<tr>
<td>md5: 1bc4f4e5d89471954761e214f2bcbd</td>
<td>64-Bit</td>
</tr>
<tr>
<td><strong>MACOS</strong></td>
<td>From macOS 10.10 upwards</td>
</tr>
<tr>
<td>md5: 4e7530066ec44d750e9aae8adbe0a3</td>
<td>64-Bit</td>
</tr>
<tr>
<td><strong>LINUX</strong></td>
<td>For all major Distributions</td>
</tr>
<tr>
<td>md5: d1782235164282a1eb4b0b0a4d885245 (32-Bit)</td>
<td>32-Bit / 64-Bit</td>
</tr>
<tr>
<td>md5: 8b25956b13537fabb8f1b9b81860b (64-Bit)</td>
<td>32-Bit / 64-Bit</td>
</tr>
</tbody>
</table>

**Mobile Apps**

Die Clients für Android und iOS können Sie über den Google Play Store oder iOS App Store herunterladen. Dort erhalten Sie auch die notwendigen Updates.
How?

THE WAY TO NEXTCLOUD 11
Step 0: The migration tests

- **Testenvironment**
  - MySQL-Cluster
  - Frontend-Server
  - Redis, LDAP, ...

- **Migration process**
  - What? When?
  - Apache → NGINX
  - PHP Version
  - etc.

- **Testing and Debugging**
  - Show-stopper
  - How make it shorter?
  - Something going wrong?
Found during migration tests

LDAP issue

- Too many entries 50,000+ in LDAP repository
- Workaround: Local LDAP copy with „longer“ timeouts
- Fixed before migration day
- [https://github.com/nextcloud/server/pull/5104](https://github.com/nextcloud/server/pull/5104)

Minor local issues

- Some test runs to
  - work around local issues
  - get faster (whole process in a few hours)
Step 1: Support

Preparing the tubIT support

- Testing of tubIT-Support at test-environment
- Changing web-pages
- Checking howtos
- Knowing the GUI / (minor) changes

Get a Nextcloud Standby-Support

- Asked for someone to call in case of ...
- (Spoiler Alter!) Wasn‘t called.
Step 2: Migration (parallel)

The Clients

1. Send customization to Nextcloud
2. Got the new clients
   - Desktop
   - Mobile (Android, iOS)
3. Internal testing
4. Deployment
   - Store
   - Webpage
5. Mailing to users

The Servers

1. Disable Service
   - Load-Balancer
   - Cronjobs, Puppet, Monitoring
2. Backup everything
3. Upgrade oc 9.1.4 to nc 10.04
4. Upgrade nc 10.0.4 to nc 11.0.0
5. Upgrade nc 11.0.0 to nc 11.0.3
6. Exchange hosts
   - NGINX, PHP 7, ...
7. Enable new Services
The day(s) after...

THE RESULT
Found two bugs

**LDAP Module disabled automagically**

- PHP 7 throws exceptions (PHP 5 just died in these cases)
- Exception-handling had to be added
- [https://github.com/nextcloud/server/pull/5421](https://github.com/nextcloud/server/pull/5421)

**Spontaniously heavy load on all frontends and db-nodes**

- User attributes where updated using LDAP requests even if not changed
- [https://github.com/nextcloud/server/commit/999455c1aa8fc4a02a2fd778cd25fe3e4a1843ac](https://github.com/nextcloud/server/commit/999455c1aa8fc4a02a2fd778cd25fe3e4a1843ac)

Both bugs fixed by Arthur Schiwon <blizzz>
DB-Cluster load (two weeks)

ownCloud 9

Nextcloud 11
Situation today (August 2017)

- **4 server running Nextcloud**
  - tubCloud
  - 8 DFN-cloud instances
  - < 50% CPU (16 vCPUs) and < 75% RAM (25 GB)
- **6 server running ownCloud**
  - 9 DFN-cloud instances
  - < 5% CPU (16 vCPUs) and < 50% RAM (33 GB)
  - Will be recycled after migration.
- **Database situation**
  - Galera Cluster for tubCloud < 12% CPU (32 CPUs)
  - MySQL Cluster for DFN-Cloud < 5% CPU (8 CPUs)
- **1-2 tickets a day**
  - often: restores accidental deleted files
  - a /Shared issue (from older days)
Cooperation with Nextcloud

– We needed new clients in 4 weeks because of license issues (old contract ended).
  • We just got them.

– We opened a view tickets during migration.
  • Solved and closed due to our priorities.

– Talked about future plans.
  • Part of the roadmap, now or work in progress.
Lessons learned

THE END
Outlook

– 150% increase of users are expected in the next 12 month
  • With ownCloud 9.1 we reached our limit according the DB-performance.
  • Using Nextcloud 11 we have space to extend.
– Testing Collabora, Chat and some more collaboration tools.
  • Migration to Nextcloud 11 was a maintenance update.
  • The next update will be a feature update for our users.
– Continue the Project: Multi-Protocol-File-Access
  • Vision: Access Files via NFS, Samba, WebDAV, Nextcloud, RSYNC, SFTP, ...
  • Combine e.g. CEPH, Sharepoint, Windows Fileserver, etc.
– Better User-Experience in Terminal rooms and VDI environments
Conclusion

- **The Migration has been worthwhile**
  - Userexperience: faster, more reliable
  - Improved security features
  - More flexibility for used components (e.g. NGINX)
  - Headroom for new features and growing number of users

- Migration feels like a „normal“ major upgrade.

- We had great experiences with Nextcloud cooperation!