Migration of UNIX mail + MS-Exchange ➔ Zimbra groupware system

Some experiences

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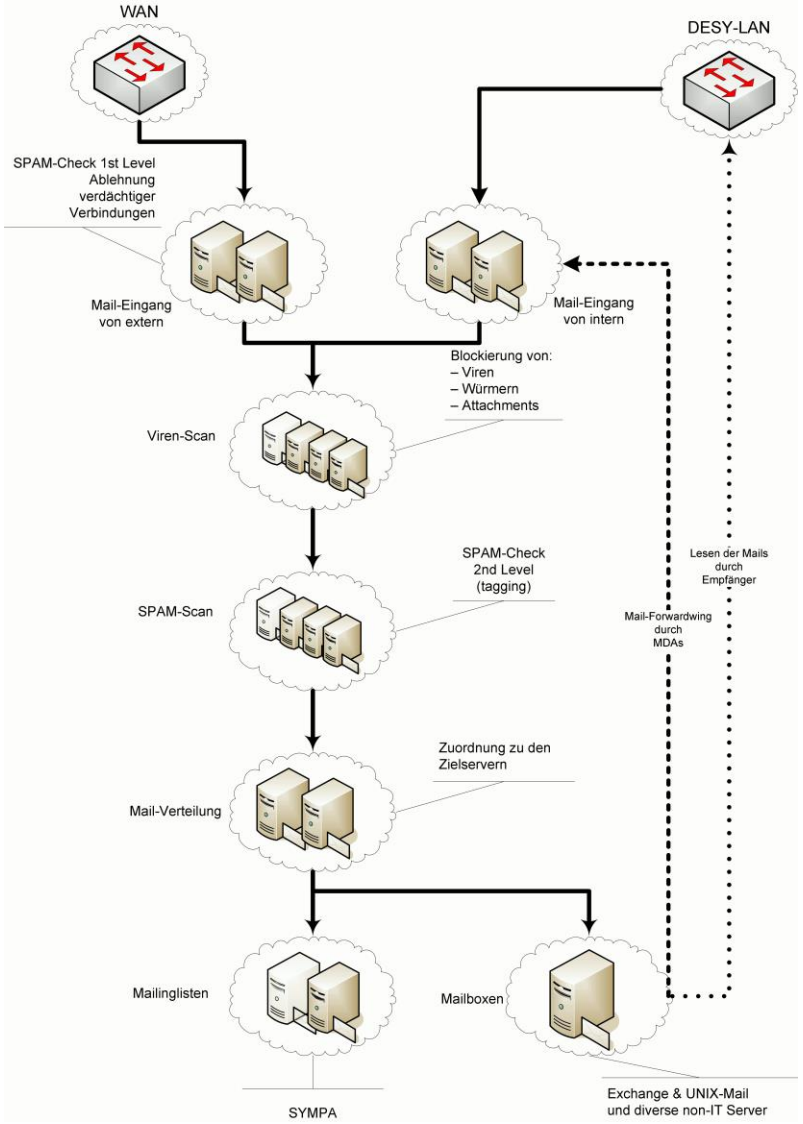
HELMHOLTZ GEMEINSCHAFT

DESY

e-mail at DESY – building blocks

- DMZ: “incoming” e-mail
  - restrictive filtering (reject)
- intranet “incoming” e-mail
  - anything will be ok
- virus scan & quarantine
- SPAM-filtering & -tagging
- mail hub
  - **central mailbox server**
  - mailing list server
  - other mail server



motivation to replace the existing mail services

> Exchange 2003

- OS: 32bit, 3.5GB RAM ➔ slow
- once hit maximum number of transaction logs
- WebUI not attractive
- no support any longer (but really recommendable)
- Hardware aged ➔ raw iron

> Dovecot 2.0

- is an IMAP service “only”
- no WebUI
- good support
- continuous development
- merger of Dovecot and Open-Xchange

➔ chance for consolidation of two services

➔ consolidation means a third instance in the first place

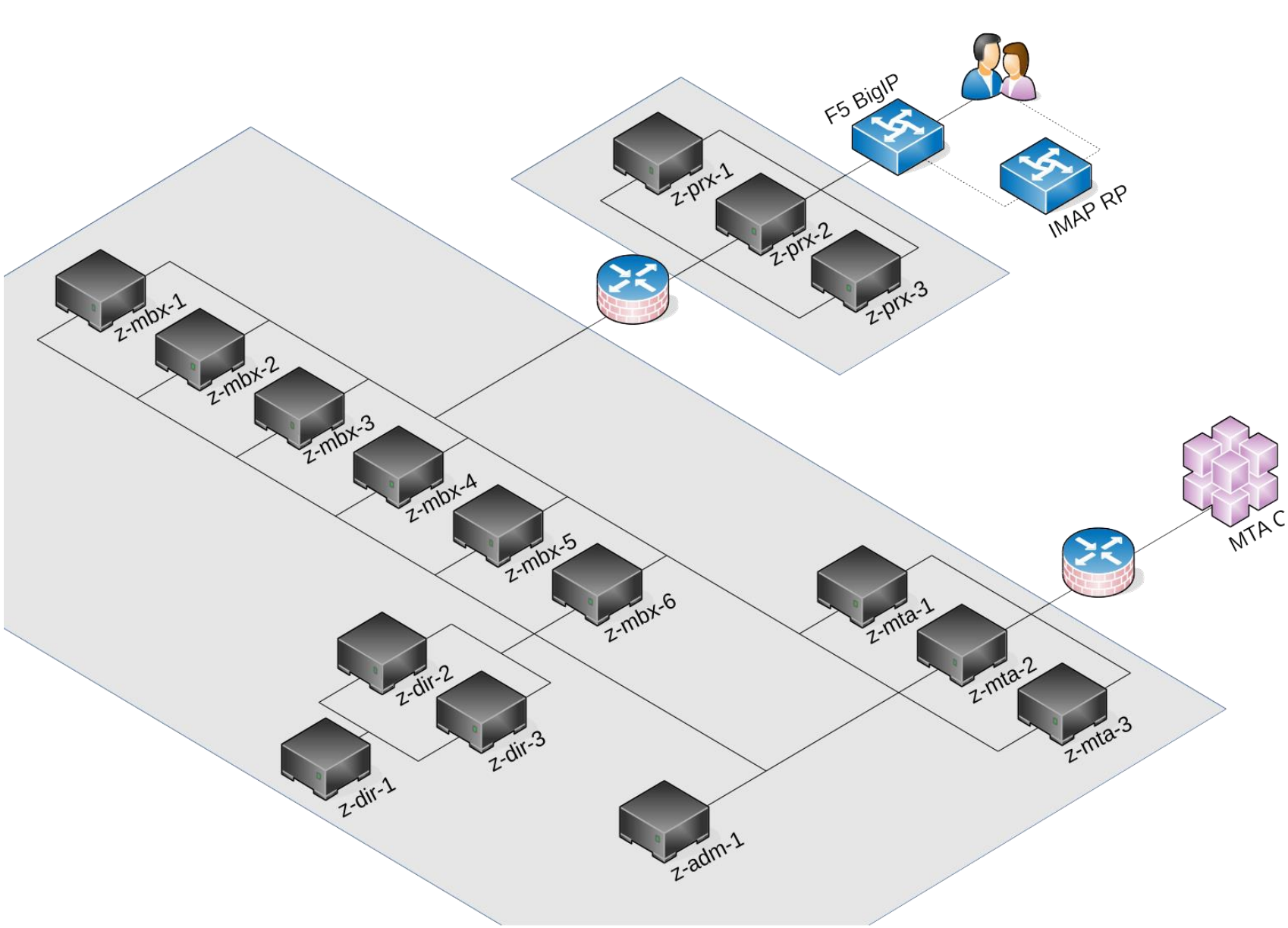
Zimbra as successor of Exchange 2003 & Dovecot

- Zimbra's feature list may be found somewhere else … ☺
- functional replacement of Exchange
  - details are implemented differently, but functionality exists in principal
  - public folder ➔ shared mailbox, but this is true for Exchange 2013, too
  - support of Microsoft Outlook
  - support of ActiveSync (and meanwhile Exchange web services)
- open standards and open protocols
- automation and integration interfaces are existent && well documented
- attractive web interface
- standard OS clients may be used
- server platform is Linux
- support of virtualized installations
  - VMware virtualization w/ SAN storage
  - two locations for business continuity

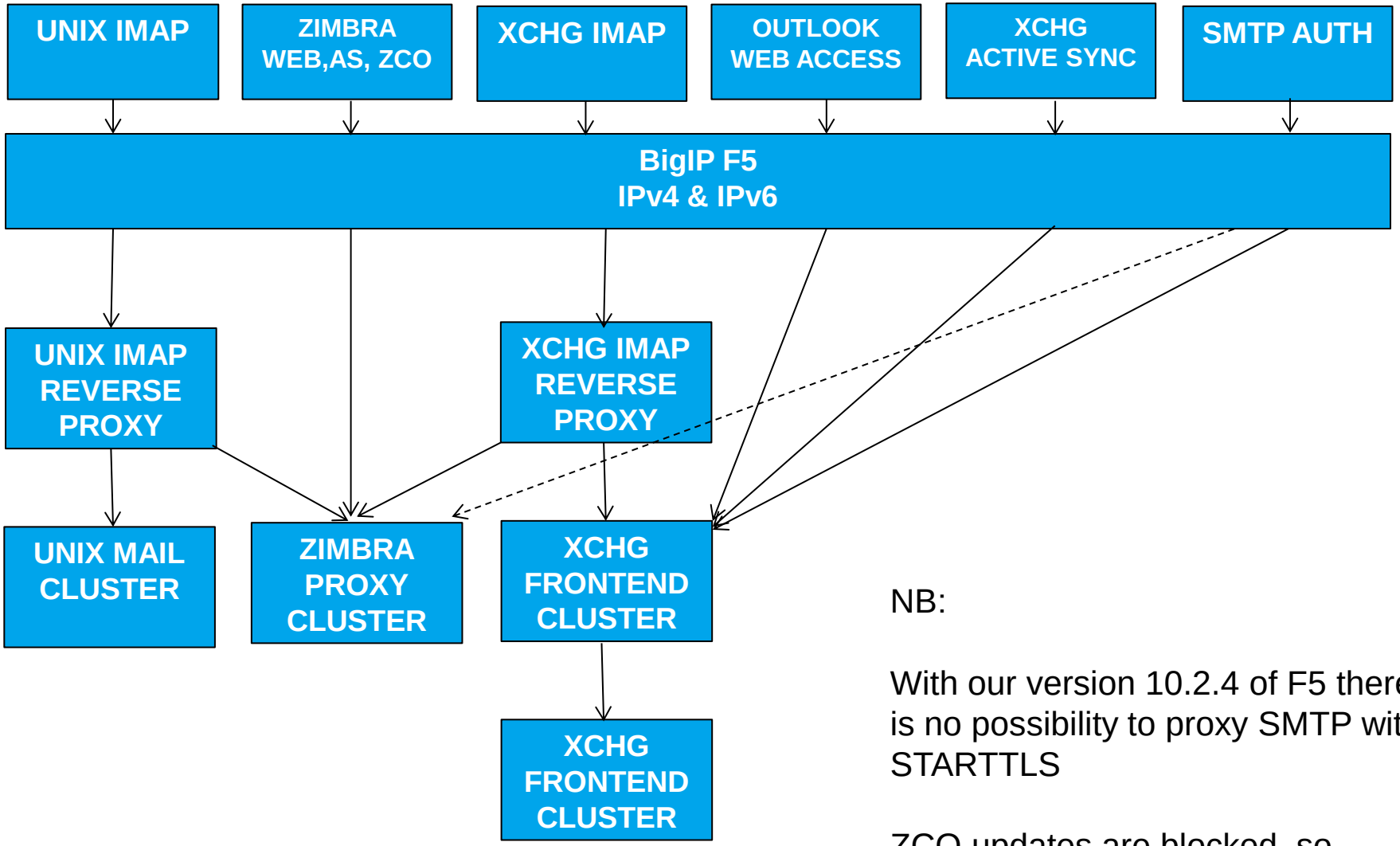
VMware – considerations

- VMware vSphere was already in production for telecommunications SW (WebEx, Cisco Call Manager)
- good experiences with VMware
  - also with Xen Sever (some 700+ VMs) but VMware was the “natural” solution
- foreseeing increasing numbers of VMs and stable number of staff
  ➔ automation for provisioning, operation and monitoring is vital
- also other business critical software is installed with VMware
- integrates nicely with NetApp and Cisco (Storage, VLAN/SW-switch)
- co-location
  - on campus and even across sites is possible
  - storage solution is needed for this
- VMs
  - 6 mailbox server: 64GB RAM, 8 vCPU, store 1 TB, index 128GB, db 128 GB
  - others: 16 GB RAM, 4 vCPU

Zimbra – architecture overview



stable hostnames – realization with F5



NB:

With our version 10.2.4 of F5 there is no possibility to proxy SMTP with STARTTLS

ZCO updates are blocked, so NetInstall will be used

migrating to Zimbra – preparations

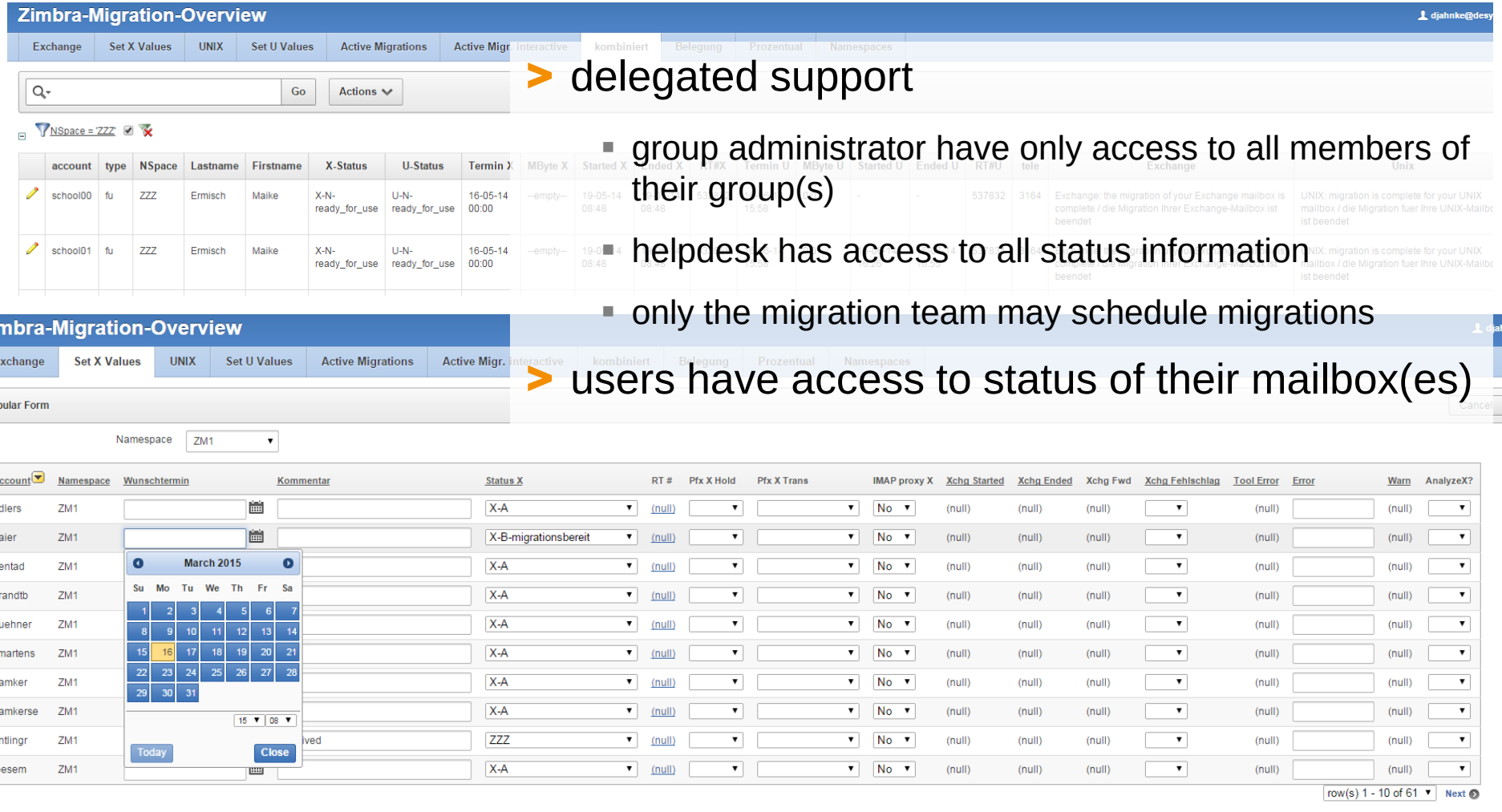
- set up of a team for installation and first support questions
- single server test installation
- first users are using the test installation for their daily work
- information of committees which might be or are involved
- invitation of non-IT and “friendly” power users for tests
- first migrations from Exchange to Zimbra

- extensive test phase planned
- it took even longer, as
  - Zimbra was sold from VMware to Telligent and support teams changed and some of the development group
  - in course our problems with esp. the Zimbra Migration Tool were addressed slowly
  - access to ZMTs source code for our solution partner gave us a working solution

migrating to Zimbra – preparations

- development of automation programs (1+1 ➔ 1)
  - database to hold status of each mailbox
  - provisioning of Zimbra using Oracle-DB directly via SOAP-API
  - procedures for Exchange to Zimbra migration
  - procedures for UNIX mail to Zimbra migration
  - considerations of other mail infrastructure being involved (MTAs)
- setup of necessary other components
  - Web-Interfaces for the user, the group admins and helpdesk people (Oracle-APEX)
  - IMAP reverse proxies and provisioning of proxies and MTAs with routing tables
  - machines for synchronization software: Zimbra Migration Tool (ZMT), imapsync
  - software for analysis of synchronization reports
  - feedback into database
- compose not-too-terse and not-to-phony e-mails for end-users and admins with most import information
- setup FAQs and manuals

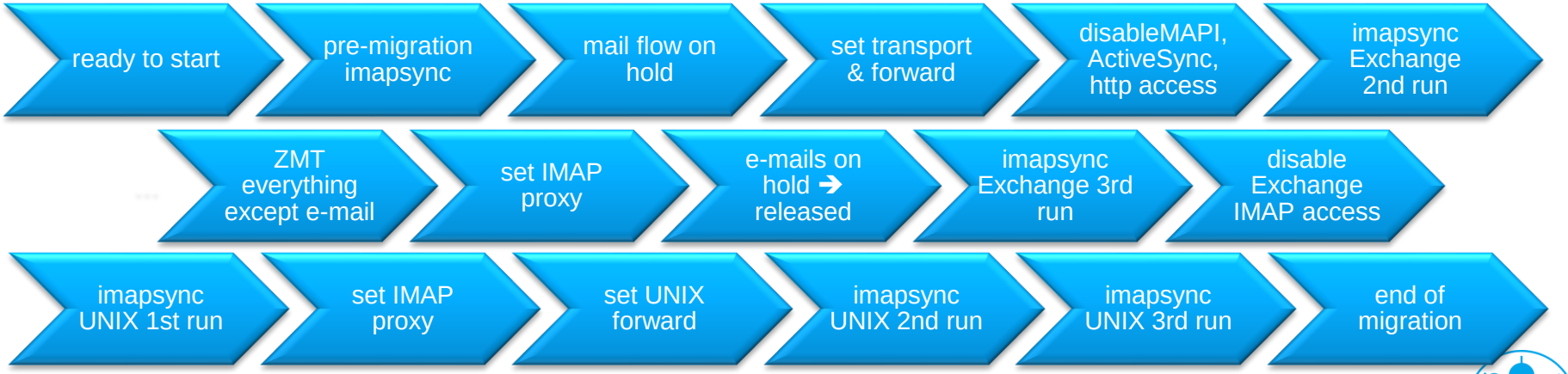
WebUI – Oracle APEX for DB-driven WebUIs



- delegated support
  - group administrator have only access to all members of their group(s)
  - helpdesk has access to all status information
  - only the migration team may schedule migrations
- users have access to status of their mailbox(es)

migration procedure

- migration by groups, so shared mailboxes may be shared within groups first
- information of group administrators and users approx on week beforehand
- only small changes necessary for users
  - Outlook requires Zimbra Connector for Outlook (ZCO)
  - mobile devices have to alter hostname for ActiveSync
- pre-migration of e-mails keeps off-line phase relatively small (~2h)
- calendars, contacts, tasks, rules, OOO ➔ ZMT
- e-mails synchronized via imapsync in several runs



imapsync – migration of e-mails

- ideal for implementing a two-phase migration of e-mails
  - needs to track on which server the first migration tool place, so imapsync cache information is present!
  - imapsync cache implies one file for each mail(!) ➔ XFS with inode64 mount option
- no “/” in mail folder names
  - those are invisible to IMAP
  - changing “/” to e.g. “_” before the last imapsync run helps
  - end even later…

```
/srv/imapsync/bin/imapsync \
--noreleasecheck \
--tmpdir /XFSspool/$account@win \
--pidfile /XFSspool/$account@win.pid \
--pidfilelocking \
--usecache --useuid --buffersize 8192000 \
--nosyncacls --syncinternaldates \
--nofoldersizes --noauthmd5 --noexpunge \
--exclude "^Public\ Folders/" \
. . .
--regextrans2 's,[:],--,g' \
--regextrans2 's,\s+(?=/|$),,g' \
--regextrans2 's,\",'\'',g' \
--regextrans2
's,^(Attachments|Briefcase|Calendar|Chats|Con
tacts|Emailed
Contacts|Notebook|Notes|Tasks)(?=/|$),$1
(Renamed on Migration),ig' \
. . .
--regexflag 's/(.*)/$1 X2Zmig/' \
. . .

... no --delete2 ...
```

Zimbra Migration Tool – experiences with appointments

- we have a working configuration and stay with it
- this was hard work, esp. from our solution partner
- mostly problems with calendar entries
  - all day events were scheduled one day too early; DESY is UTC+0100 (UTC+0200)
  - originally start time 31-10-2014 23:00 UTC
    ➔ 01-11-2014 00:00 MET
  - “truncation” && all-day-event
    ➔ 31-10-2014 00:00
- two different access methods via MAPI within Exchange
  - Outlook object model gives correct date/time
  - fall back if OOM does not work (for whatever reason) gives sometimes incorrect date/time

    ➔ “counter” measure
  - complete logging of all XML SOAP requests/responses
  - identify potential(!) candidates
  - inform user about possible mismatches

Zimbra Migration Tool – experiences with contacts etc.

- sometimes no contacts were migrated
  - sometimes an unhandled exception terminates the loop which migrates e-mails, appointments, tasks, contacts as if the whole process ended w/o any error
    (verified in ZMT source code)
  - scanning the XML data could identify this problem
  - manual intervention needed and ad-hoc creativity also
- Exchange has entries with UUIDS > 255 bytes
- backup of mailboxes switches them into “maintenance” mode
  - ZMT looses connect and will not connect again
- migration of e-mail
  (DESY does not use this)
  - all e-mails get an HTML part
  - S/MIME mails will be broken, (but all info is still there, just some LFs added…)
- bugs and RFEs might have been corrected by now . . .

Outlook considerations

- Zimbra Connector for Outlook is required
  - uses https/SOAP
- data is stored on disk
  - ZDB is a PST
    ➔ CIFS is a non option
  - plain text e-mails are enriched automatically by Outlook with an HTML- and RTF-part
    ➔ bloated file consumes space
- first synchronization takes a lot of time for huge mailboxes
- header-only mode
  - may save some space
  - complex searches with action download lots of content
- terminal server installation
  - problems with multi-node setups
    ➔ synchronization on node-hop
- long periods between outlook starts may lead to “too far out of date” (90d)

  ➔ server tombstone retention time raised to 182d
  (domain trust for clients expire after 180 days)

Outlook considerations (ctd.)

- huge mailboxes may render Outlook unusable (50GByte)
  - max. PST size may be adjusted
- synchronization of signatures are disabled
  - two way-synch && HTML à la Outlook gives funny results
  - via NetInstall
- encoding scheme set to UTF-8
  - mails sent in western encoding iso8859-1 via ZCO to Exchange 2003 are interpreted as UTF-8
- extra tab for Zimbra
  - rules & signatures
- Global Address List
  - Zimbra's GAL
  - AD-GAL
  - other LDAP source

Zimbra's briefcase and Zimlets

- up- and download files
- share them internally
  - DESY: distribution lists for group handling, provided by DESY-registry
- share them externally
  - during migration a no-option: first external share, then (after migration) internal would confuse users
- feature disabled, as there is only one quota possible
  - we do not use quotas for mail
  - same storage backend as mail
- Zimlets are client apps for the WebUI
  - they are provided by the server
- used for
  - search highlighting
  - contact handling
  - S/MIME on request
- S/MIME Zimlet
  - Java applet – not fashionable
  - Chrome vs. Firefox vs. IE

mobile devices – a different class of experiences

- shared calendars are not available with CalDAV
- CardDAV only allows one address book
- . . .
- nightly builds of Cyanogen
- ancient Android versions
- iOS behaviour differs between versions

- device encryption
  - ActiveSync on iOS requires encryption
  - iOS devices are always encrypted

    ➔ “allow encryption” on Zimbra

  - “allow encryption” on Zimbra is misinterpreted by older Android versions as “require encryption”

    ➔ this is not accepted by some users

    ➔ use IMAP, CalDAV, CardDAV

check Microsoft interoperability pages for ActiveSync

- many problems are not related with Zimbra, esp. ActiveSync
  check Microsoft's URLs!

  - http://support.microsoft.com/kb/3015401/en-us
    "Known calendaring issues with iOS 8.x and iOS 7.x devices"
  - http://support.microsoft.com/kb/2563324/en-us
    "Current issues with Microsoft Exchange ActiveSync and third-party devices"
  - https://support.apple.com/en-us/HT203209
    "iOS: Troubleshooting Exchange ActiveSync 'Push' issues"

operations – monitoring – operating system

- stable operations, no surprises so far
- mostly self-contained software stack
- integration into IT's standard monitoring environment
  - Nagios for OS & services
  - icinga underway
  - internal reporting capabilities
- patching causes 15-30min downtimes
- authentication proxied by OpenDJ-LDAP to Kerberos
- vmWare is operated by separate team
- operating system is Red Hat Enterprise Linux 6
  - expertise through Scientific Linux in HEP
- 1st-level support by user help desk
- separate migration queue in Request Tracker

résumé

- Zimbra server operates stable with good performance
- open standards and open protocols
  very much facilitates integration into DESY's environment
- continuous development
  - that means:
    new functionality as well as correction of many little and some very annoying bugs
  - you can subscribe to Zimbra's bugzilla to stay informed; this is a plus!
- migration hurts ; this is a one-off effort, but it's worth it
  - delay mostly caused by Zimbra Migration Tool deficiencies and adopting it and writing workarounds/extended analysis tools
  - the change of Zimbra from VMware to Telligent was an extra obstacle

questions & answers

- thank you for your attention