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http://www.dovecot.org/
Talk Overview

• Quick introduction
• v2.1: Statistics, Full Text Search changes
• v2.1/v2.2: dsync-based replication
• v2.1: IMAP Adaptor
• Questions
Dovecot?

- IMAP, POP3 mail server
- Mail delivery agent + LMTP
- Sieve mail filtering language + ManageSieve (by Stephan Bosch)
- (No SMTP. Postfix/Exim is fine)
Dovecot Features

• High performance (low disk I/O usage)
• Highly configurable/flexible
• Modular code, plugins can do ~anything
• Easy migration from other servers
• Admin-friendly
  – All errors are logged
    • Error log should stay empty!
  – Understandable error messages
  – Automated fixing of (corruption) errors
v2.1: Statistics gathering

• Keeps track of everything:
  – User & system CPU, page faults, context switches
  – /proc/pid/io: Disk input/output bytes (real I/O), read/write syscall counts+bytes
  – For mail data: open()/stat()/fstat()/read count/ read bytes/dovecot.index.cache hits
v2.1: Statistics gathering

- stats plugin tells stats process per-session stats (every n secs)
- imap_stats plugin tells per-IMAP command stats
- stats process has max. memory usage limit
- doveadm stats dump: Dump per-domain/user/IP/session/command stats (tab-separated fields)
- [http://dovecot.org/tools/stats-top.pl](http://dovecot.org/tools/stats-top.pl) gives “top” for users
- Interactive web-based stats viewer with ability to zoom/sort/etc would be nice. Volunteers?
v2.1: Full Text Search changes

- Two recommended backends:
  - Solr (Java server)
  - CLucene (library, each user has one index)
  - Squat is deprecated
- FTS plugin can finally optimize all IMAP searches (where useful)
- Attachments can be indexed
- Fuzzy search (IMAP FUZZY extension)
dsync-based replication

• dsync does two-way merging of mailboxes
  – Both sides can do changes => no data loss
• v2.2: Redesigned dsync
• Replication triggers running dsync asynchronously when needed
• Mainly two ways to run:
  – Single site NFS cluster
  – Geographically distributed cluster
• Details: http://blog.dovecot.org/2012/02/dovecot-clustering-with-dsync-based.html
Dovecot Clustering with dsync-based replication (with Dovecot Directors)

1. Replication plugin detects changes in mailbox and
2. Aggregator process proxies change notifications through a single connection to master replicator process running on one of the proxies.
3. Master replicator process on Dovecot proxy uses a priority queue to determine the replication order by priority.
4. Replicator initiates dsync replication on the proper backend server through doveadm server connection.

Replication priority queue
- Priority: High User: user1
- Priority: High User: user2
- Priority: Low User: user3
- Priority: Low User: user4
- Priority: Low User: user5
- Priority: Low User: user6

Replication state distribution
Dovecot Clustering with dsync-based replication (over SSH)

1. Replication plugin detects changes in mailbox and
2. Replicator process uses a priority queue to determine the replication order by priority.
3. Replicator initiates dsync replication through dovecot server connection.
dsync-replication failure handling

• Incoming connections go to Dovecot proxy
  a) From load balancer
  b) By giving multiple IP addresses to DNS record

• Dovecot proxy looks up user’s backend server and proxies there
  – If the primary backend is down, use another backend
  – With geographic clusters prefer local backend
dsync-replication advantages

- Advantages over block-level filesystem replication:
  - FS corruption is not replicated
  - Cold restart finds changes quickly
  - Split brain won’t result in downtime or data loss
  - Possibility to operate in asynchronous multi-master mode
v2.2 dsync redesign

- v2.1: One brain, two dummy workers
- v2.2: Two nearly identical brains
  - Export my changes
  - Import your changes
  - At the end of import the mailboxes are identical
    - Unless changes occurred during dsync. Then they will be identical after next sync.
v2.2 dsync redesign

• 3 dsync modes:
  – Export all mails in all mailboxes
  – Export all mails in changed mailboxes
    • Not 100% reliable if both sides have changed
  – Export only changes since last dsync
    • Saved state requires 32 bytes per mailbox
    • Very fast!
v2.2 dsync redesign

• Latency vs. bandwidth
  – Message bodies can be sent when remote requests it, or always among metadata

• dsync ready for very high latency communication:
  – Earth-Mars!
  – Syncing via USB sticks
  – Incremental backups
IMAP Adaptor

- `mail_location=imapc:/var/cache/imapc/%u`
Fixer IMAP Adaptor

• Dovecot is 100% IMAP RFC compliant (AFAIK)
• If client A doesn’t work with server B, user can:
  – Try to convince client developer to fix it
  – Try to convince server developer to fix it
  – Switch client
• A new option: Dovecot IMAP Adaptor!
Perfect Migration Tool

- dsync + imapc + pop3c = perfect migration from any IMAP/POP3 server to Dovecot
  - IMAP UIDVALIDITY, UIDs, MODSEQs
  - POP3 UIDLs
  - Avoids IMAP/POP3 clients redownloading mails
  - http://wiki2.dovecot.org/Migration/Dsync
Exchange-killer?

• OpenChange implements Exchange MAPI
• SOGo groupware integrates OpenChange to provide native Outlook MAPI support
• Dovecot + SOGo + OpenChange = 100% open source Exchange-replacement
• We’re planning an easy to install all-in-one package
Questions?

Picture by Cyril Thomas