

# Veranstaltungen mit Ruby

## froscon mix

mm@koeln.ccc.de

Chaos Computer Club Cologne e.V.  
<http://koeln.ccc.de>

24.08.2014 Vortrag

Welcome to froscon froscon calendar - Account

### List of conferences

Search

Acronym	Title	Date	Email
D50F2	Chaoscon 2012	2012-11-18	<a href="#">Show</a> <a href="#">Edit</a> <a href="#">Delete</a>
E40F2	Chaoscon 2012	2012-11-18	<a href="#">Show</a> <a href="#">Edit</a> <a href="#">Delete</a>
D50F1	Chaoscon 2011	2012-11-18	<a href="#">Show</a> <a href="#">Edit</a> <a href="#">Delete</a>
D50AT08	Chaoscon 2008	2012-11-18	<a href="#">Show</a> <a href="#">Edit</a> <a href="#">Delete</a>
20C3	20th Chaos Communication Congress	2012-11-18	<a href="#">Show</a> <a href="#">Edit</a> <a href="#">Delete</a>
20c3-ee	20c3 workshops	2012-11-18	<a href="#">Show</a> <a href="#">Edit</a> <a href="#">Delete</a>
COSM1	Cofix 2011	2012-11-18	<a href="#">Show</a> <a href="#">Edit</a> <a href="#">Delete</a>
D50F14H	Chaoscon 2011 Jungbräu	2012-11-18	<a href="#">Show</a> <a href="#">Edit</a> <a href="#">Delete</a>
ICM16	ICM16	2012-11-18	<a href="#">Show</a> <a href="#">Edit</a> <a href="#">Delete</a>



Vorstellung

## About

SIGINT 2009 [People](#) [Events](#) [Reports](#) [Launch Call for Papers](#) [Schedule](#) [Settings](#) [Switch conference](#) [Account](#)

## Person: Mario Manno

[Edit person](#) [Add person](#)


[Profile](#) [User account](#) [Availability](#)

### Basic information

**First name:** Mario  
**Last name:** Manno  
**Public name:** mm  
**Gender:** male

### Contact information


**Email:** [mm@koeln.ccc.de](mailto:mm@koeln.ccc.de) (non-public)  
**Jabber:** [mm@jabber.ccc.de](xmpp:mm@jabber.ccc.de)





### Bio

**Abstract:**  
**Links:**  
**Description:**  
**Notes(admin):**

### Events in current conference

Title	Track	Event type	State	Created at	
 <a href="#">Abschlussveranstaltung</a> <small>by mm, Arup</small>		other	confirmed	2012-11-18	<a href="#">Show</a> <a href="#">Edit</a> <a href="#">Destroy</a>

### Events in other conferences

Title	Track	Event type	State	Created at	
 <a href="#">Sigint</a> <small>by arup, Arup, mm, arup, arup, arup, arup, arup</small>			confirmed	2012-11-18	<a href="#">Show</a> <a href="#">Edit</a> <a href="#">Destroy</a>
 <a href="#">Ruby</a> <small>by mm</small>	Hacking	lecture	confirmed	2012-11-18	<a href="#">Show</a> <a href="#">Edit</a> <a href="#">Destroy</a>



# TOC

- Was macht frab?
- frab Installation (ccc)
- Schnittstellen
- frab und media



frab

**<http://github.com/frab/frab>**



# Was macht frab?

- frab nimmt Einreichungen an
- frab erstellt den Programmplan
- frab speichert Bewertungen



## List of conferences

[Add conference](#)Search:  [clear](#)

Acronym	Title	Date	Email
DS2012	Datenspuren 2012	2012-11-18	<a href="#">Show</a> <a href="#">Edit</a> <a href="#">Destroy</a>
EH2012	Easterhegg 2012	2012-11-18	<a href="#">Show</a> <a href="#">Edit</a> <a href="#">Destroy</a>
DS2011	Datenspuren 2011	2012-11-18	<a href="#">Show</a> <a href="#">Edit</a> <a href="#">Destroy</a>
SIGINT09	SIGINT 2009	2012-11-18	<a href="#">Show</a> <a href="#">Edit</a> <a href="#">Destroy</a>
29C3	29th Chaos Communication Congress	2012-11-18	<a href="#">Show</a> <a href="#">Edit</a> <a href="#">Destroy</a>
29c3-ws	29c3 workshops	2012-11-18	<a href="#">Show</a> <a href="#">Edit</a> <a href="#">Destroy</a>
COSIN11	CoSin 2011	2012-11-18	<a href="#">Show</a> <a href="#">Edit</a> <a href="#">Destroy</a>
DS2011JH	Datenspuren 2011 Junghacker	2012-11-18	<a href="#">Show</a> <a href="#">Edit</a> <a href="#">Destroy</a>
ICMP6	ICMP6	2012-11-18	<a href="#">Show</a> <a href="#">Edit</a> <a href="#">Destroy</a>



# Programm

## Schedule

[View public schedule](#)
[Create custom PDF export](#)

 2012-12-27    **2012-12-28**    2012-12-29    2012-12-30

### Toggle rooms:

Saal 1

Saal 4

Saal 6

Hohl

#### Saal 1

04:00

05:00

06:00

07:00

08:00

ESXi Based

10:00

- Hacking .NET(C#) Applications: The Black Arts
- Hacking Philosophy
- Hacking Renewable Energies
- Hacking Is Dead - at least when it follows science
- Hash-flooding DoS reloaded: attacks and defenses
- HeteroSexismus hacken
- Hinter den Kulissen: Der NSU und das V-Leute-System
- How TV shaped the political debate
- How open should our genetic data be?
- IP wars: from filesharing to cancer drugs
- ISP's black box
- Improving Web Vulnerability Scanning
- Informationelle Gewaltenteilung
- Know Thine Enemy
- LanyFS
- Law & Octets 2012
- Learning to internet
- Lecture/Project proposal
- Lightning Talks 1
- Lightning Talks 2
- Lightning Talks 3
- Lockpicking als Sport
- Long live the proletariat!
- Lovepicking
- Marvin und der Blues
- Medien, Religionen und Politik hacken
- Meine Kleidung funk
- Meldegesetz
- Men who stare on bits
- Millions of Lessons Learned on Electronic Napkins
- Mobile Device attack graphs for fun and profit
- Modelling DDoS and attack operational methodology

10:00

10:00



# Formate

HTML

PDF

XML

JSON

ICAL

XCAL



# Akteure



Admin



Orga



Coordinator



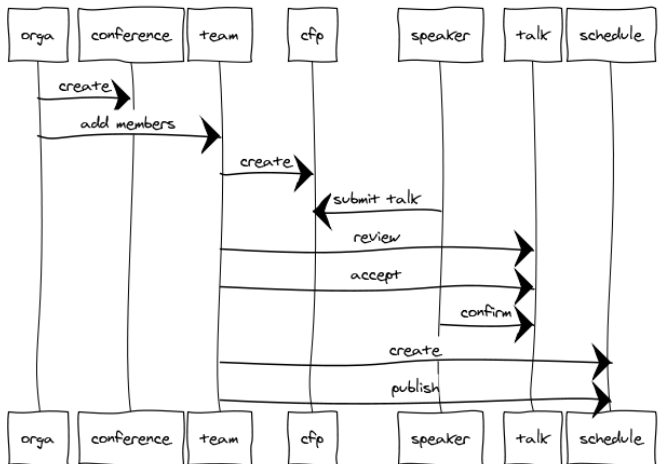
Reviewer



Submitter



# Aufruf bis Veröffentlichung des Programms



www.websequencediagrams.com



# Mehrere Konferenzen

- Konferenzen
- Teams

## Daten

Behält Daten von Einreichern um bei weiteren Konferenzen die Auswahl zu erleichtern.



# Was passiert mit den Daten

## Data Scrubber

### Personen

- entferne Email, wenn nicht public oder will info mails
- entferne Phone, IM Accounts, Notiz
- wenn nicht mehr aktiv in Konferenz des letzten Jahres, entferne abstract, description, avatar, links

### Konferenz

- entferne Veranstaltungsbewertungen



# Installation

# frab is rails

- Rails 3.2
- HAML
- twitter-bootstrap





# Requirements

## README

- Webserver (Production?)
- Datenbank
- JS Runtime
- Image Magick
- Aktuelles Ruby
- Ruby Applikationsserver



# Production Deployments

<b>Webserver:</b>	Apache	Nginx	
<b>Applikation:</b>	Passenger	Puma	
<b>Interpreter:</b>	MRI Ruby	MRI Ruby	



# Production Deployments

<b>Webserver:</b>	Apache	Nginx	Apache
<b>Applikation:</b>	Passenger	Puma	Tomcat?
<b>Interpreter:</b>	MRI Ruby	MRI Ruby	JRuby



# Applikationsserver

- Puma
- Passenger
- Thin
- Unicorn
- Mongrel



# Distribution nutzen?

- System Ruby?
- Gems oder Pakete?
- Nginx kompilieren für ?



# Bundler

## Gemfile

```
shotgun (0.9)
  rack (>= 1.0)
slop (3.5.0)
sprockets (2.2.2)
  hike (~> 1.2)
  multi_json (~> 1.0)
  rack (~> 1.0)
  tilt (~> 1.1, != 1.3.0)
sqlite3 (1.3.9)
sucker_punch (1.0.3)
  celluloid (~> 0.15.2)
thor (0.19.1)
uglifier (2.5.0)
  execjs (>= 0.3.0)
  json (>= 1.8.0)
```



# Konzept

- Ein User pro App
- Ein Ruby pro App
- Eigener Appserver pro App
- `bundle --help package`
- Kein System Ruby



Beispiel: Der CCCV frab



# Migration

## Der lange Pentabarf Import

Importing a 50gb postgresql dump.

- 79 Konferenzen in einer frab Instanz
- 2900 Users
- 4100 Personen
- 5300 Events



# Komponenten

- zwei physikalische Server
- internes Netzwerk
- Datenbank
- Webserver



# Software

- nginx,
- passenger
- MySQL(seamless database pool),
- memcache,
- RVM,
- nodejs,
- imagemagick,



# Nginx Passenger

```
server {
    listen 10.1.2.50:80;

    passenger_enabled on;
    passenger_user frab;
    passenger_pass_header X-Forwarded-Proto;
    client_max_body_size 50m;

    root /srv/frab/frab/public;
    index index.html;

    location ~ ^/(assets)/ {
        root /srv/frab/frab/public;
        gzip_static on;
        expires max;
        add_header Cache-Control public;
    }
}
```



# MySQL

## Master Slave Replication

- kopiert daten
- asynchron



# MySQL

## Seamless Database Pool

```
production:
  adapter: seamless_database_pool
  database: frab
  pool_adapter: mysql2
  encoding: utf8
  pool: 5
  username: frab
  password: passwort
  master:
    host: 10.1.2.50
  read_pool:
    - host: 10.1.2.60
```



# csync2

```
up frab
{
  host frab1;
  host frab2;
  key /etc/csync2.key;

  include /srv/frab;
  exclude /srv/frab/frab/tmp;
  include /srv/frab/frab/tmp/restart.txt;
  include /srv/frab/frab/tmp/static_export;
  exclude /srv/frab/frab/log;

  auto younger;
}
```



# Nginx frab.cccv.de

```
upstream frab.cccv.de {
    server 10.1.2.50:80;
    server 10.1.2.60:80;
}

server {
    root /srv/frab/frab/public;

    location / {
        proxy_set_header    X-Real-IP    $remote_addr;
        proxy_set_header    X-Forwarded-For $proxy_add_x_forwarded_for;
        proxy_set_header    Host        $http_host;
        proxy_redirect       off;
        try_files            /system/maintenance.html $uri $uri/index.html $uri.html @frab;
    }

    location @frab {
        proxy_set_header    X-Forwarded-Proto https;
        proxy_read_timeout  120;
        add_header          Front-End-Https    on;
        proxy_pass           http://frab.cccv.de;
    }

    # prevent displaying in frames, clickjacking
    add_header X-Frame-Options "DENY";
}
```





# Assets

```
location /system/attachments {
  if ($uri ~ "^/system/attachments/(.+)$") {
    set $filename $1;
  }
  add_header Content-Type "application/octet-stream";
  add_header Content-Disposition "attachment;filename=$filename";
}

location /storage {
  root /srv/frab/frab/tmp;
  internal;
}
```



# SSL

```
diff --git a/config/environments/production.rb b/config/environments/production.rb
index 1202574..5166978 100644
--- a/config/environments/production.rb
+++ b/config/environments/production.rb
@@ -1,6 +1,8 @@
  Frab::Application.configure do
    # Settings specified here will take precedence over those in config/application.rb

+  config.force_ssl = true
```



# SSL Cookies

```
--- a/config/initializers/session_store.rb
+++ b/config/initializers/session_store.rb
@@ -1,3 +1,3 @@
 # Be sure to restart your server when you modify this file.

-MediaBackend::Application.config.session_store :cookie_store, key: '_changeme'
+MediaBackend::Application.config.session_store :cookie_store, key: '_changeme', secure: true
```



frab Schnittstellen



Saal 1

Saal 2

Saal 6

Saal 6

17:15

**Mobile network attack evolution**

Karsten Nohl, Lu... Security & Safety [en]

**Kryptographie nach Snowden**

Was tun nach der mittelmäßigen Kryptographie-Apokalypse?

ruedi Security & Safety [de]

**Basics of Digital Wireless Communication**

Clemens Hopf... Hardware & Making [en]

**Policing the Romantic Crowd**

MaTu Ethics, Society & Politics [en]

18:00

18:15

18:30

18:45

19:00

19:15

19:30

**Bug class genocide**

Applying science to eliminate 100% of buffer overflows

Andreas Bogk Security & Safety [en]

**Hardening hardware and using a #goodBIOS**

Clean boot every boot - rejecting persistence of malicious software and tripping up the evil maid

Peter Stuge Security & Safety [en]

**Long Distance Quantum Communication**

Concepts and components for intercontinental communication with single photons.

C B Science & Engineering [en]

**Monitoring the Spectrum: Building Your Own Distributed RF Scanner**





Back

To Make Hearts B...



**Speaker** Daniel Molkentin

**Room** HS1

**Track** Security

**Time** 17:45 - 18:45

**Event link** [View original entry](#)

A tour-de-force through the real-life SSL-adversities faced by developers outside the ivory tower that are today's browsers. It's the tale of understaffed engineering teams, hard-to-educate administrators. It's the horror of broken and undocumented APIs, and contradicting standards. It's the nightmare of FIPS requirements. It's a story without a happy ending, but with a call to action.

In a hostile and broken Internet, cryptography is a basic foundation of communication. But cryptography has no value when it's not used correctly. Browser vendors have tried to improve usability, but even they can't fix

everything. Some of the improvements have



Version 0.07

Day 1

10:00

HS3

Mehr als E-Mails &gt;

Day 1

10:00

HS5

How to bring compute intensive  
C++ based apps to Android >

Day 1

10:00

HS4

Database Federation  
mit PostgreSQL >

Day 1

10:00

Workshc

eDiViDe &gt;

Day 1

10:00

HS1

Linux im interaktiven  
Funkstreifenwagen >

Day 1

11:15

Wie wir einmal 500 Server mit &gt;



Fahrplan



Speaker



Reminder



Next up



About

# JSON Builder

*app/views/public/schedule/*

```
json.schedule_speakers do
  json.version @conference.schedule_version if @conference.schedule_version.present?
  json.speakers @speakers do |person|
    json.id person.id
    json.image person.avatar_path
    json.full_public_name person.full_public_name
    json.abstract person.abstract
    json.description person.description
    json.links person.links do |link|
      json.url url_for(link.url)
      json.title link.title
    end
  end
  json.events person.public_and_accepted_events_as_speaker_in(@conference) do |event|
    json.id event.id
    json.guid event.guid
    json.title event.title
    json.logo event.logo_path
    json.type event.event_type
  end
end
end
```





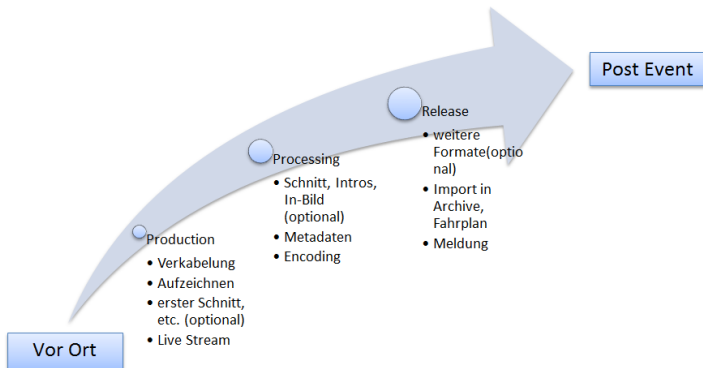
# rake -T

- bulk mailer
- conference scrubber
- conference import/export
- pentabarf import
- static schedule
- video import (via XML, itunes rdf)



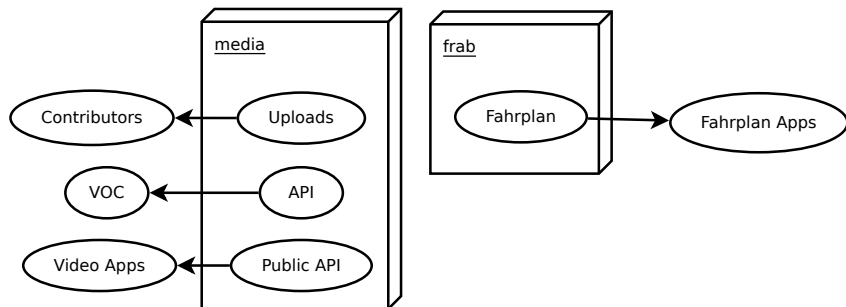
frab und media.ccc.de

# VOC Phasen

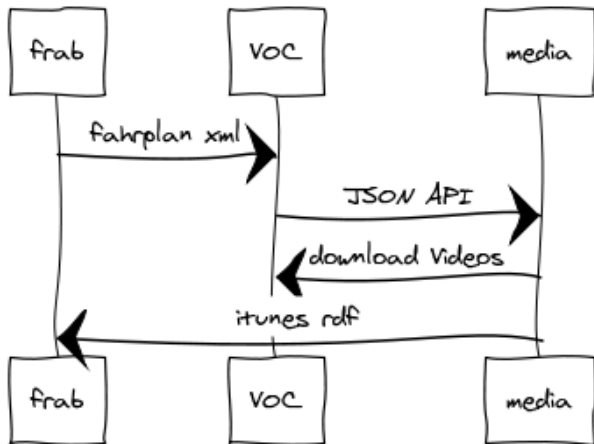


# Überblick

## Von Konferenz bis Video



## frab - VOC



www.websequencediagrams.com



# Was ist media?

- Frontend
- Backend
- Storage



# Systeme

Köln

Berlin

Frontend

Frontend

Uploads

CDN

FTP



# LXC

- libvirt + lxc
- interne bridge
- brain: mirrorbrain (gentoo mit apache)
- pinky: postgresql (debootstrap)





# Libvirt LXC

## define host.xml

```
<domain type='lxc'>
  <name>brain</name>
  <memory>332768</memory>
  <os>
    <type>exe</type>
    <init>/sbin/init</init>
  </os>
  <vcpu>1</vcpu>
  <clock offset='utc' />
  <on_poweroff>destroy</on_poweroff>
  <on_reboot>restart</on_reboot>
  <on_crash>destroy</on_crash>
  <devices>
    <emulator>usr/lib/libvirt/libvirt_lxc</emulator>
    <filesystem type='mount'>
      <source dir='/srv/vm/brain/rootfs' />
      <target dir='/' />
    </filesystem>
    <interface type='network'>
      <source network='default' />
    </interface>
    <console type='pty' />
  </devices>
</domain>
```



# Libvirt lxc

/etc/libvirt/qemu/networks/default.xml

```
<network>
  <name>default</name>
  <bridge name="virbr0" />
  <forward/>
  <ip address="10.0.1.1" netmask="255.255.255.0">
    <dhcp>
      <range start="10.0.1.2" end="10.0.1.254" />
    </dhcp>
  </ip>
</network>
```



media: Backend

**Running Jobs**

RESOURCE	METHOD	CREATED AT	RUN AT	LAST ERROR	ATTEMPTS
RECORDING	DOWNLOAD WITHOUT DELAY!	2014-08-20 17:37:53 +0200	2014-08-20 17:37:53 +0200		0
RECORDING	DOWNLOAD WITHOUT DELAY!	2014-08-20 17:37:52 +0200	2014-08-20 17:37:52 +0200		0
EVENT	DOWNLOAD IMAGES	2014-08-20 17:37:51 +0200	2014-08-20 17:37:51 +0200		0
EVENT	DOWNLOAD IMAGE	2014-08-20 17:37:33 +0200	2014-08-20 17:37:33 +0200		0
EVENT	DOWNLOAD IMAGE	2014-08-20 17:37:33 +0200	2014-08-20 17:37:33 +0200		0
EVENT	DOWNLOAD IMAGE	2014-08-20 17:37:33 +0200	2014-08-20 17:37:33 +0200		0

# Backend

- Active Admin
- Delayed Jobs
- Nginx
- Puma
- monit



# Nginx+Puma

```
server {
  listen [::]:80;
  server_name api.media.ccc.de;

  root /srv/backend/public;

  location / {
    proxy_set_header    X-Forwarded-For $proxy_add_x_forwarded_for;
    proxy_set_header    Host $http_host;
    proxy_set_header    X-Forwarded-Proto $scheme;
    proxy_redirect      off;
    proxy_pass           http://127.0.0.1:8234;
  }

  location ~* ^/assets/|favicon.ico|robots.txt {
    expires 1y;
    add_header Cache-Control public;
    break;
  }
}
```



# Puma / Upstart

```
description "start media backend api"
start on started networking
stop on runlevel [016]
respawn
respawn limit 3 30

setuid backend
setgid backend
umask 002

env RAILS_ENV=production
env HOME=/srv/backend
chdir /srv/backend

pre-start script
  bash -c '. "$HOME/.rvm/scripts/rvm" && bin/delayed_job start'
end script

script
  exec bash -c '. "$HOME/.rvm/scripts/rvm" && exec rails s puma --binding 127.0.0.1 --port 8234'
end script

post-stop script
  kill -9 `cat tmp/pids/server.pid`
  bash -c '. "$HOME/.rvm/scripts/rvm" && bin/delayed_job stop'
end script
```



# Monit

```
check process MediaBackend with pidfile /srv/backend/tmp/pids/server.pid
  start program = "/srv/backend-wrapper"
    as uid media-backend and gid media-backend
    with timeout 10 seconds
  stop program = "/bin/bash -c 'kill -9 `cat /srv/backend/tmp/pids/server.pid`'"
    as uid media-backend and gid media-backend
```





# APIs

CRUD	/api/conferences
POST	/api/conferences/run_compile
CRUD	/api/events
GET	/api/events/download
POST	/api/events/update_promoted
CRUD	/api/recordings
GET	/api/recordings/download
CRUD	/api/news



# Public API

GET	/public/mirrors
GET	/public/conferences
GET	/public/conferences/:id
GET	/public/events
GET	/public/events/:id
GET	/public/recordings
GET	/public/recordings/:id



# CDN: HTTP Redirector

Name	Location	Last Scan
berlin	eu/de	2014-08-17 23:30
c3media.vsos.ethz.ch	eu/ch	2014-08-17 23:30
darmstadt	eu/de	2014-08-17 23:30
fau.de	eu/de	2014-08-17 23:30
koeln	eu/de	2014-08-17 23:30
netcologne	eu/de	2014-08-17 23:30
oneEU	eu/de	2014-08-17 23:30
oneUS	na/us	2014-08-17 23:30
selfnet	eu/de	2014-08-17 23:30





..

Arte.tv

CCC-TV (media.ccc.de)

Giant Bomb

Mediathek

Rooster Teeth

TwitchTV

WDR Rockpalast

YouTube

Mehr...

### CCC-TV (media.ccc.de)



Autor: Tobias Gruetzmacher

Version: 0.0.1

Bewertung ★★★★★

This addon lists videos (mostly lecture recordings) from <http://media.ccc.de/>



media: Frontend

## URL

**`http://media.ccc.de`**





# camp2011

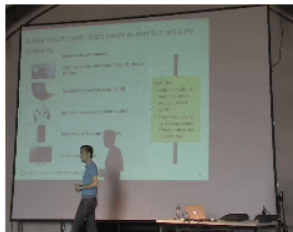
## Chaos Communication Camp 2011

name

duration

date

rand()



🕒 70 min 📅 2011-08-30

👤 Karsten Nohl

**Reviving smart card  
analysis**



🕒 48 min 📅 2011-08-14

👤 Andreas Schreiner, Clemens ...

**Moonbounce Radio  
Communication**



🕒 63 min 📅 2011-08-21

👤 Kat Braybrooke

**She-Hackers:  
Millennials and**

# Nginx

## Frontend

```
server {
    listen [::]:80;

    server_name koeln.media.ccc.de media.ccc.de static.media.ccc.de;

    root /srv/www/media.ccc.de/output;
    index index.html index.htm;

    location / {
        try_files $uri $uri/ /index.html;
    }

    location /ftp {
        rewrite ^/ftp/(.*)$ http://cdn.media.ccc.de/$1 permanent;
        autoindex on;
    }
}
```





# Frontend

- nanoc
- activerecord datasource
- feedgeneratoren
- stats



# Feeds

## Typen

- News Atom feed
- RSS 1.0 last 100 feed
- Podcast feed, die letzten zwei Jahre
- Podcast feed, älter als zwei Jahre
- Podcast feed pro Ordner



# act as file

```
class Conference < ActiveRecord::Base
  validates_presence_of :recordings_path
  has_attached_directory :recordings,
    via: :recordings_path,
    prefix: '/srv/prefix',
    url: 'http://t.est', url_path: 'web'
end
c = Conference.new recordings_path: 'base1'
assert_equal 'http://t.est/web/base1', c.get_recordings_url
assert_equal '/web/base1',           c.get_recordings_url_path
assert_equal '/srv/prefix/base1',    c.get_recordings_path
```



# act as file

```
class Recording < ActiveRecord::Base
  validates_presence_of :filename, :folder
  has_attached_file :recording, via: :filename, folder: :folder,
    belongs_into: :recordings, on: :conference
end
r = Recording.new filename: 'testfile', folder: 'mp3', conference: conference
assert_equal 'http://t.est/web/basel/mp3/testfile', r.get_recording_url
assert_equal '/web/basel/mp3/testfile', r.get_recording_url_path
assert_equal '/srv/prefix/basel/mp3/testfile', r.get_recording_path
```



# activerecord datasource nanoc

```
class MediaBackendDataSource < Nanoc3::DataSource
  identifier :media_backend

  def up
    ActiveRecord::Base.establish_connection(
      @site.config[:database]
    )
  end

  def items
    []
  end
end
```



media: Storage

# URLs

- <ftp://ftp.ccc.de> (1 host)
- <http://ftp.ccc.de> (mirrorbrain)
- <http://cdn.media.ccc.de> (mirrorbrain)



# sftp upload config

- sshd MatchGroup
- sshd ChrootDirectory
- rssh





# Nginx

## CDN

```
server {
    listen [::]:80;

    server_name cdn.media.ccc.de ftp.ccc.de;

    location /favicon.ico {
        alias /srv/www/cdn.media.ccc.de/images/favicon.ico;
    }

    location /images/ {
        alias /srv/www/cdn.media.ccc.de/images/;
    }

    location / {
        set $remote_addr_v4 $remote_addr;
        if ($remote_addr ~* ^::ffff:(.*)) {
            set $remote_addr_v4 $1;
        }
        proxy_set_header X-Forwarded-For $remote_addr_v4;
        proxy_pass http://10.0.1.10:80;
    }
}
```



# nginx

## FTP / CDN Mirror

```
server {
    listen [::]:80;

    server_name koeln.ftp.media.ccc.de;

    root /srv/ftp;

    location / {
        autoindex on;
    }

    location ~ /\.mp4$ {
        mp4;
    }

    location /favicon.ico {
        alias /srv/www/media.ccc.de/output/favicon.ico;
    }
}
```



# CDN - mirrorbrain

- Gentoo LXC Container
- HTTP Redirector
- vorher DNS RR

public api

```
curl http://api.media.ccc.de/public/mirrors
```



# Try it

```
http://cdn.media.ccc.de/events/sigint13/webm/  
konferenz_mp6_og_-_2013-07-05_14:00_-_parabolic_  
plane_flights_research_in_weightlessness_-_dr_jens_  
hauslage_-_5047.webm.mirrorlist
```

- .mirrorlist
- .torrent
- .meta4
- .magnet
- .sha256



Ende

# How to get involved

- mailing list: subscribe to `frab-subscribe@librelist.com`
- contact me directly via jabber: `mm@jabber.ccc.de`
- fork, develop and create pull requests on github



# Github URLs

- [mirrorbrain-overlay](#)
- [frab/frab](#)
- [ccc/media-frontend](#)
- [voc/media-backend](#)

## Apps:

- [tuxmobil/CampFahrplan ... 30C3](#)
- [johnjohndoe/CampFahrplan ... FOSSGIS, FrOSCon](#)
- [derpeter/FrOSCon](#)
- [cccc/plugin.video.media-ccc-de](#)
- <https://mkswap.net/fahrplan/>



# Werbung für Railscamp





# Ende

