

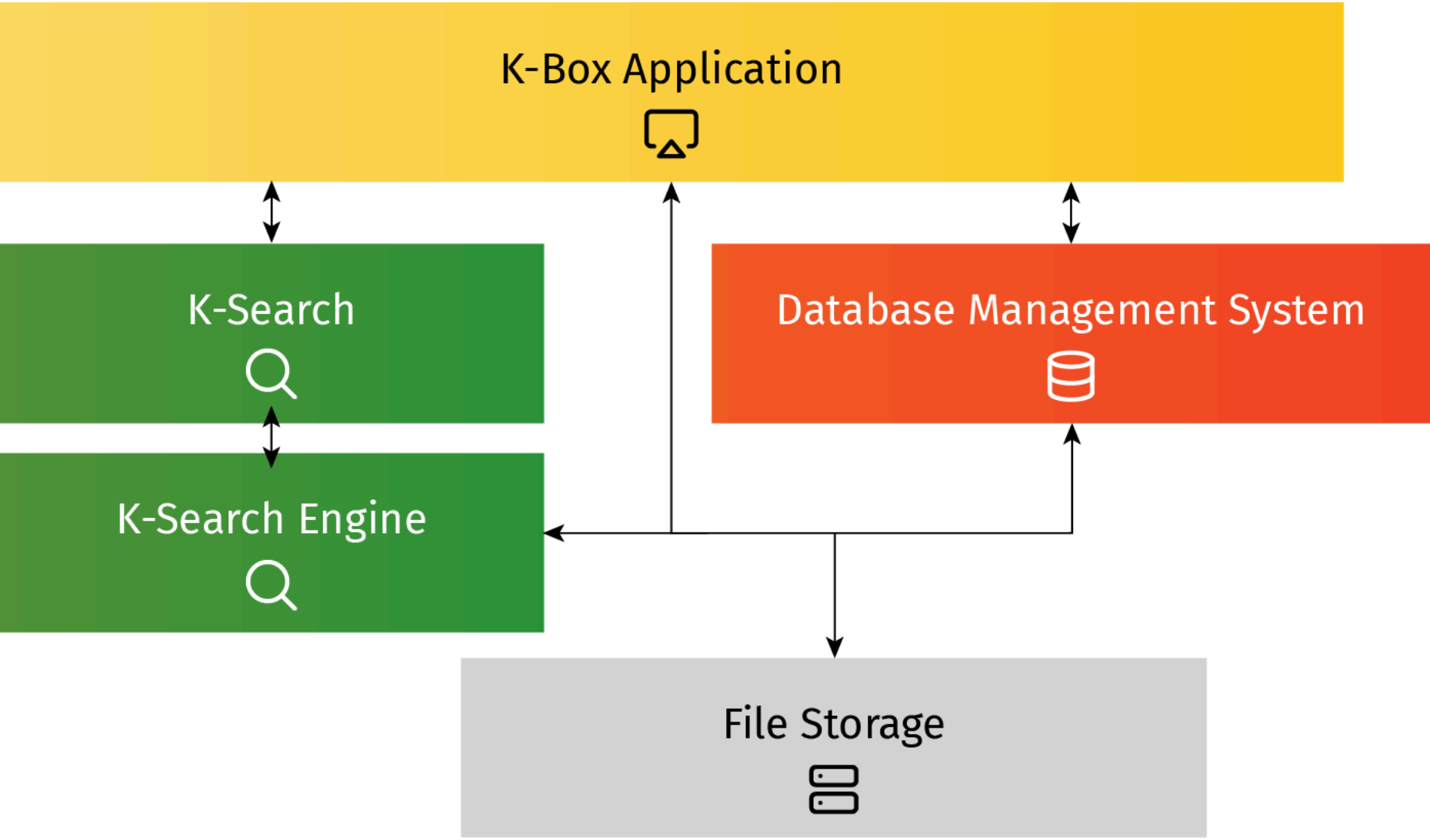
K-Box and K-Link Deep Dive

Alessio Vertemati

Dive in some K-Box and K-Link internals

- Inside the K-Box application
- How we handle documents and videos
- Inside the K-Link
- Deploy strategies

K-Box

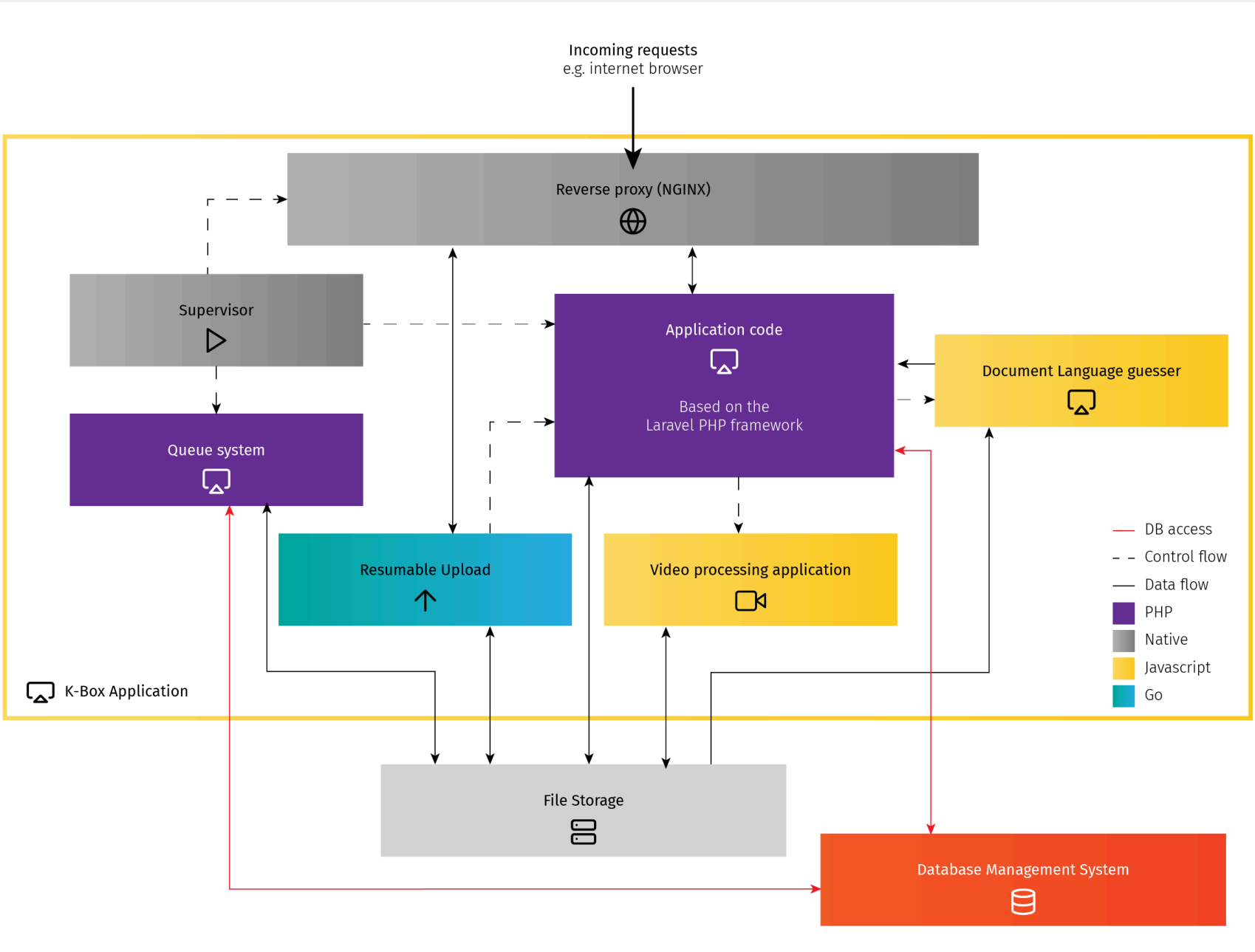


Outside of the K-Box

- the K-Search
- the K-Search Engine
- Database

inside the K-Box

- Video Processing
- Language Guessing
- Resumable upload
- Queue System
- Supervisor
- Web Server



Incoming requests
e.g. internet browser

Reverse proxy (NGINX)

Supervisor

Application code

Based on the
Laravel PHP framework

Document Language guesser

Queue system

Resumable Upload

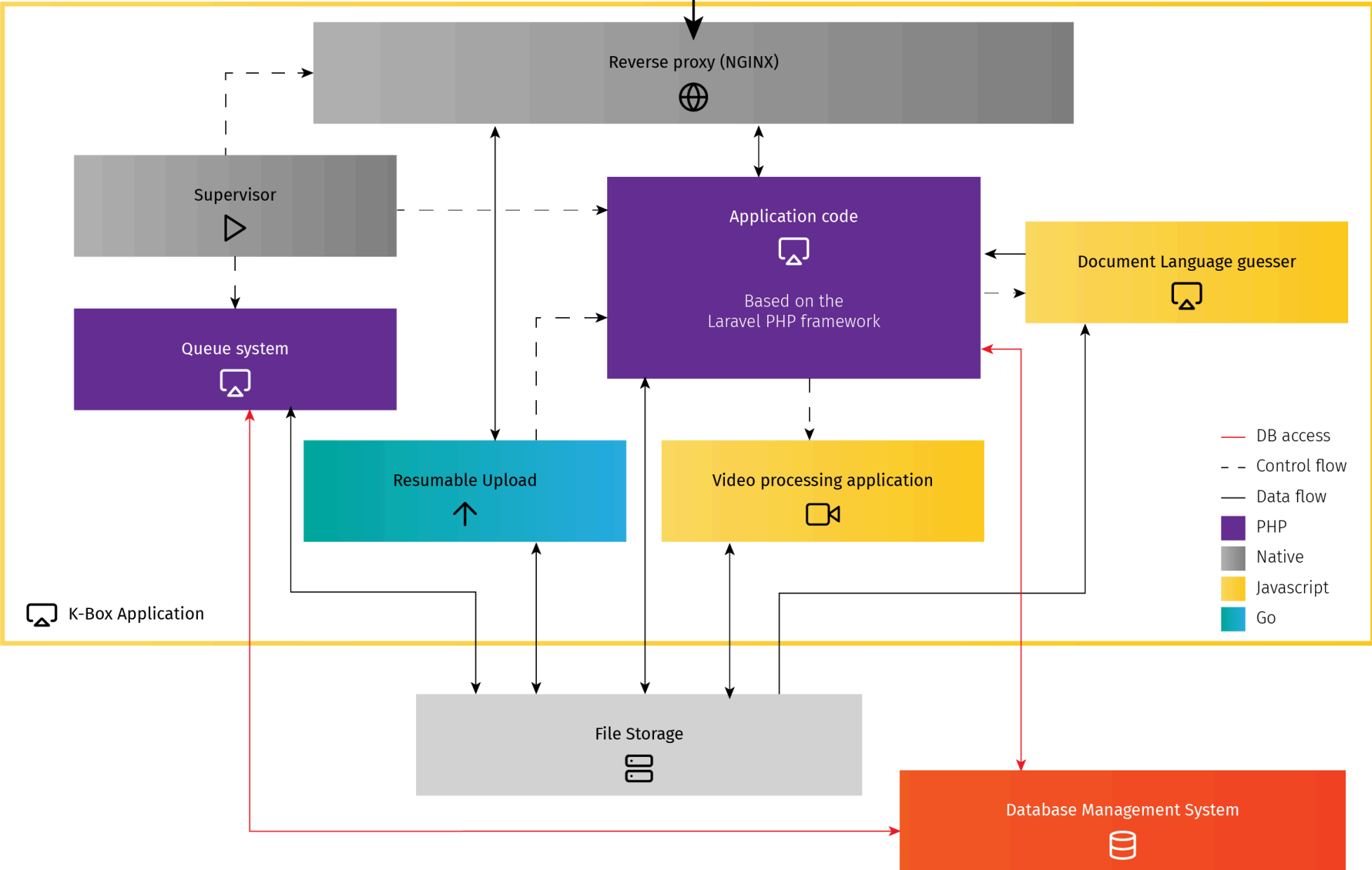
Video processing application

K-Box Application

File Storage

Database Management System

- DB access
- - Control flow
- Data flow
- PHP
- Native
- Javascript
- Go



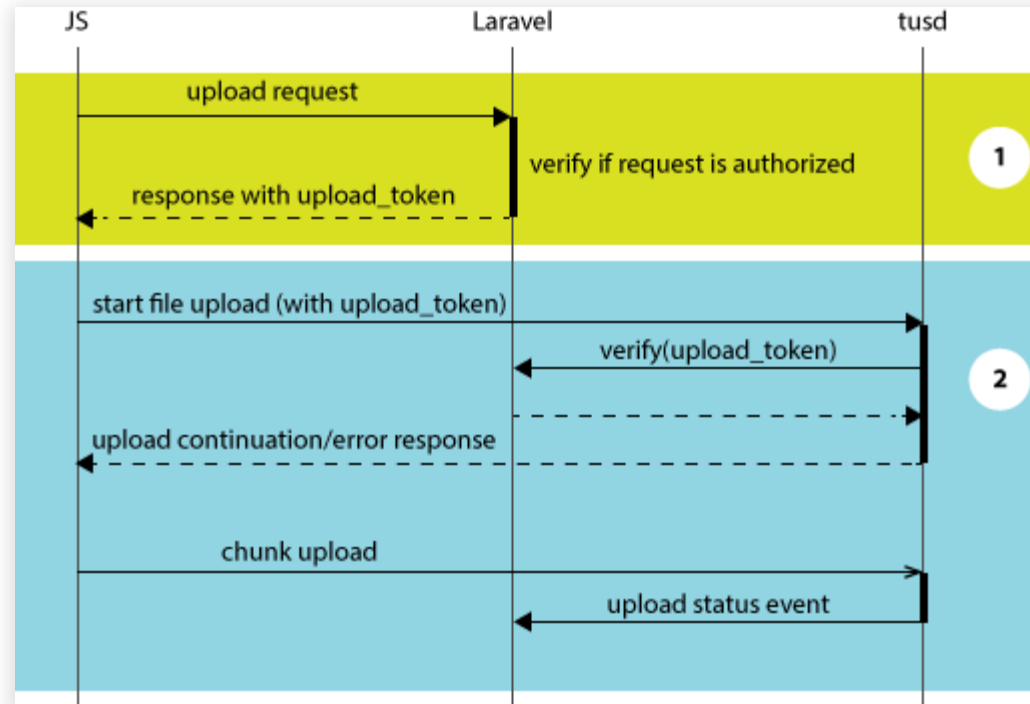
Document upload and processing

1. File is uploaded
2. **UploadCompleteEvent** is raised
3. A pipeline of actions are performed

File Upload

Drag and drop via **Form upload** or **Resumable Upload**
Protocol

Upload of Large files



tus.io

<https://github.com/OneOffTech/laravel-tus-upload>

Document elaboration pipeline

```
protected $actions = [  
    Actions\ExtractFileProperties::class,  
    Actions\GuessLanguage::class,  
    Actions\AddToSearch::class,  
    Actions\GenerateThumbnail::class,  
    Actions\ElaborateVideo::class,  
];
```

github.com/k-box/k-box/blob/master/app/DocumentsElaboration/Kernel.php

Language Detection

Identify in which language a document is written

186 languages recognized

GitHub - woorm/franc: x

GitHub, Inc. [US] | <https://github.com/woorm/franc>

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woorm / franc

Watch 46 Star 2,617 Fork 134

Code Issues 0 Pull requests 0 Insights

Natural language detection <http://woorm.com/franc>

javascript natural-language language-detection nlp natural language detection detect

297 commits 3 branches 36 releases 6 contributors MIT

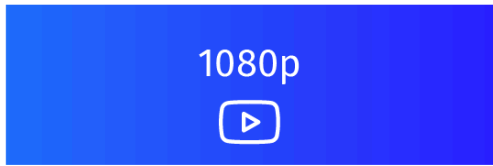
Branch: master New pull request Find file Clone or download

woorm	franc-cli: 5.0.0	Latest commit 71b741d 10 days ago
packages	franc-cli: 5.0.0	10 days ago
script	Update `udhr`	10 days ago
test	Update `udhr`	10 days ago
.editorconfig	Add `.editorconfig`	a year ago

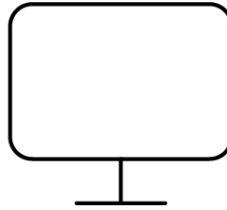
<https://github.com/woorm/franc>

Video processing

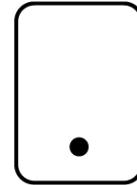
Delivering video to the browser



1GB
1 - 2 Mbit/sec



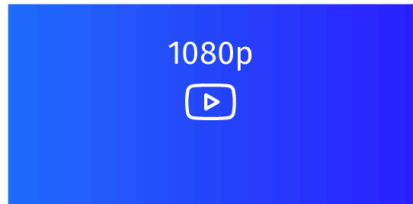
Desktop
ADSL, Fiber
2 - 100 Mbit



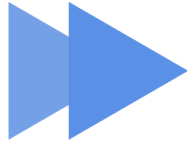
Smartphone
3G
0,7 - 1 Mbit

original

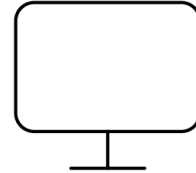
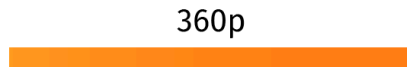
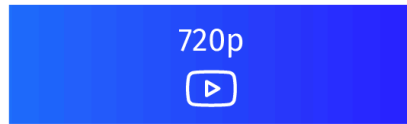
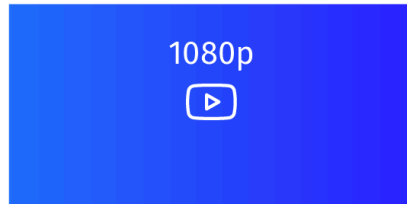
Dynamic Adaptive Streaming
over HTTP



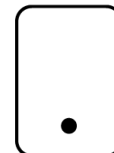
1GB
1 - 2 Mbit/sec



1GB
1 - 2 Mbit/sec



Desktop
ADSL, Fiber
2 - 100 Mbit



Smartphone
3G
0,7 - 1 Mbit

We Open Source a command line tool

it uses FFmpeg and Shaka Packager

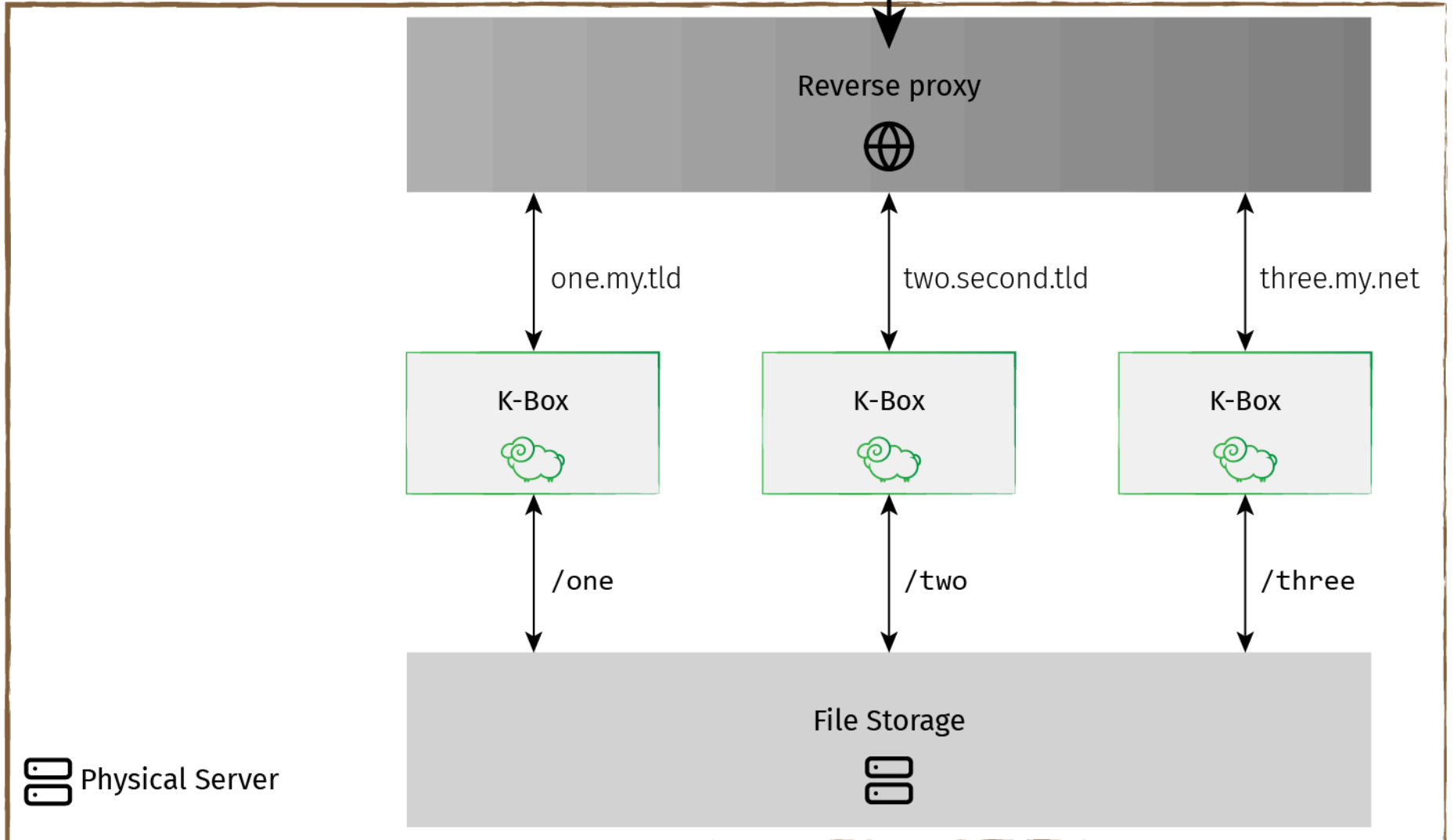
it is written in Javascript and packaged as a cross platform binary

github.com/OneOffTech/video-processing-cli/

K-Box deployment

- Memory: 2GB RAM minimum; suggested 4 GB.
- Minimum of 5GB of free storage space for installation.
- CPU: x86-64 processor. H264 acceleration is optional, but recommended if the optional video streaming service is enabled.

Incoming requests
e.g. https://one.my.tld, https://two.second.tld

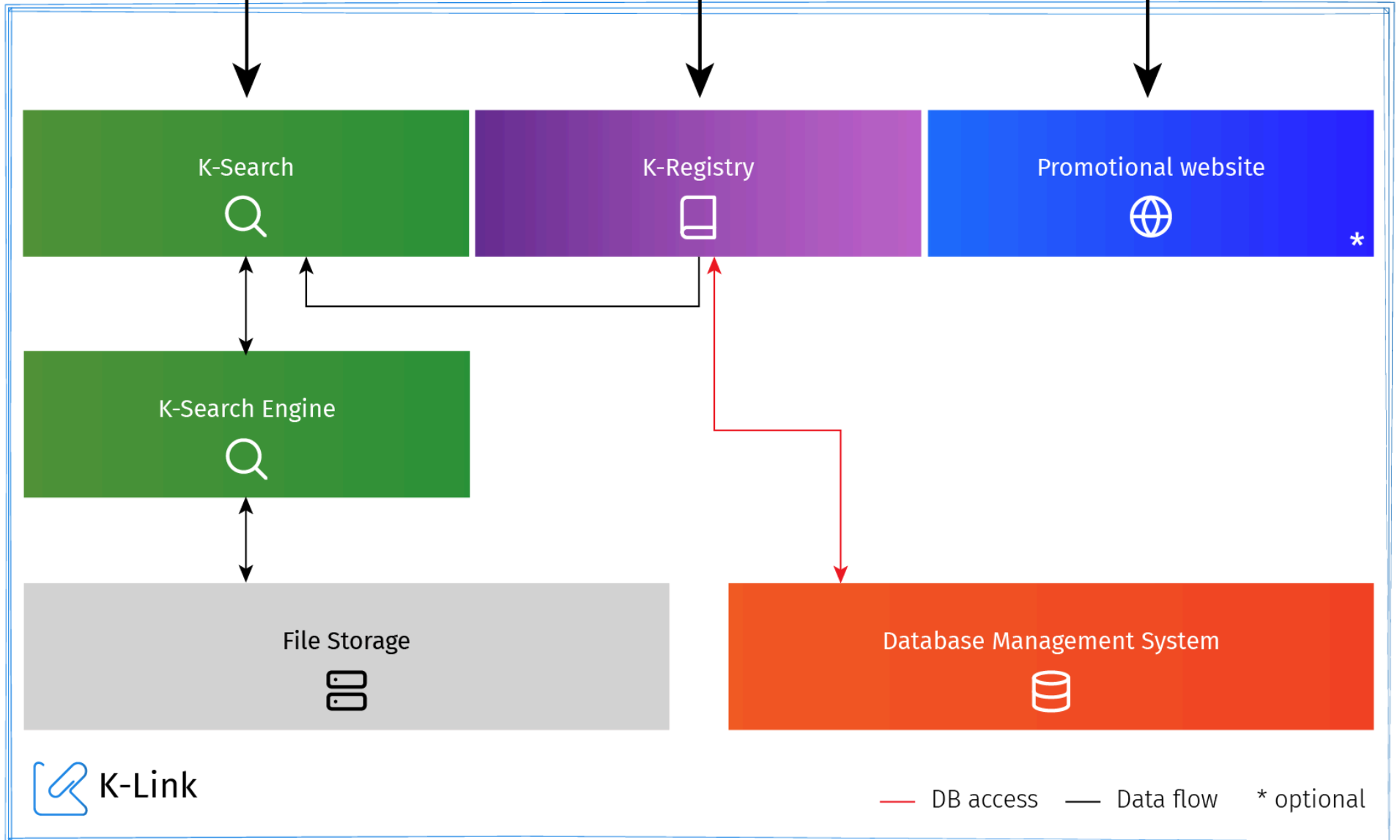


K-Link

Incoming requests
e.g. internet browser

Incoming requests
e.g. internet browser

Incoming requests
e.g. internet browser



K-Search


defines the data that can be searchable


intermediates between the full text search and the
clients/components


connect the metadat of the api with the content of the
files configuration


Swagger UI x


localhost:8181/docs

POST /api/3.0/data.delete Delete piece of data from the search index. 

POST /api/3.0/data.get Get detailed information of piece of data in the search index. 

POST /api/3.0/data.status Get the status information of a Data piece in the search index. 

POST /api/3.0/data.add Add piece of data to the search index. 

POST /api/3.2/data.search Allows to query the index and returns search results. 

Allows to query the index and returns search results. This API requires the `data-search` permission.

Parameters Try it out

Name	Description
------	-------------

body * required

(body) Example Value | Model

```
{
  "params": {
    "search": "Sherlock Holmes",
    "filters": "properties.language:en AND properties.created_at:[\"2008-07-28T14:47:31Z\" TO NOW] AND properties.updated_at:[\"2008-07-28T14:47:31Z\" TO NOW] AND properties.size:[717589 TO 717591] copyright.owner.name:\"KLink Organization\" AND copyright.usage.short:\"MPL-2.0\"",
    "aggregations": {
      "properties.language": {
        "limit": 5,
        "counts_filtered": false
      }
    },
    "copyright.usage.short": {
      "limit": 4,
```

```
"repositories": [  
  {  
    "type": "vcs",  
    "url": "https://git.klink.asia/main/k-search-c  
  }  
],
```

```
"k-box/k-search-client-php": "3.0.*",  
"php-http/guzzle6-adapter": "^1.1",  
"guzzlehttp/guzzle": "~6.2.0",  
"ramsey/uuid": "^3.7",
```

```
return hash_file( 'sha512', $filePath );  
return hash( 'sha512', $content );
```

```
use Carbon\Carbon;
use Ramsey\Uuid\Uuid;
use KSearchClient\Client;
use KSearchClient\Model\Data\Data;
use KSearchClient\Model\Data\Author;
use KSearchClient\Model\Data\Uploader;
use KSearchClient\Http\Authentication;
use KSearchClient\Model\Data\Copyright;
use KSearchClient\Model\Data\Properties;
use KSearchClient\Model\Data\CopyrightOwner;
use KSearchClient\Model\Data\CopyrightUsage;

const KSEARCH_URL = 'http://localhost:8181/';
const APP_URL = 'http://localhost:9000/data/';
```

```
$hash = KlinkDocumentUtils::generateDocumentHash($file);  
$uuid = Uuid::uuid4()->toString();  
  
$data = new Data();  
$data->hash = $hash;  
$data->type = 'document';  
$data->url = APP_URL . $title;  
$data->uuid = $uuid;  
  
$author = new Author();  
$author->name = 'Alessio';  
$author->email = 'alessio@oneofftech.xyz';  
  
$data->authors = [$author];
```

K-Link Registry

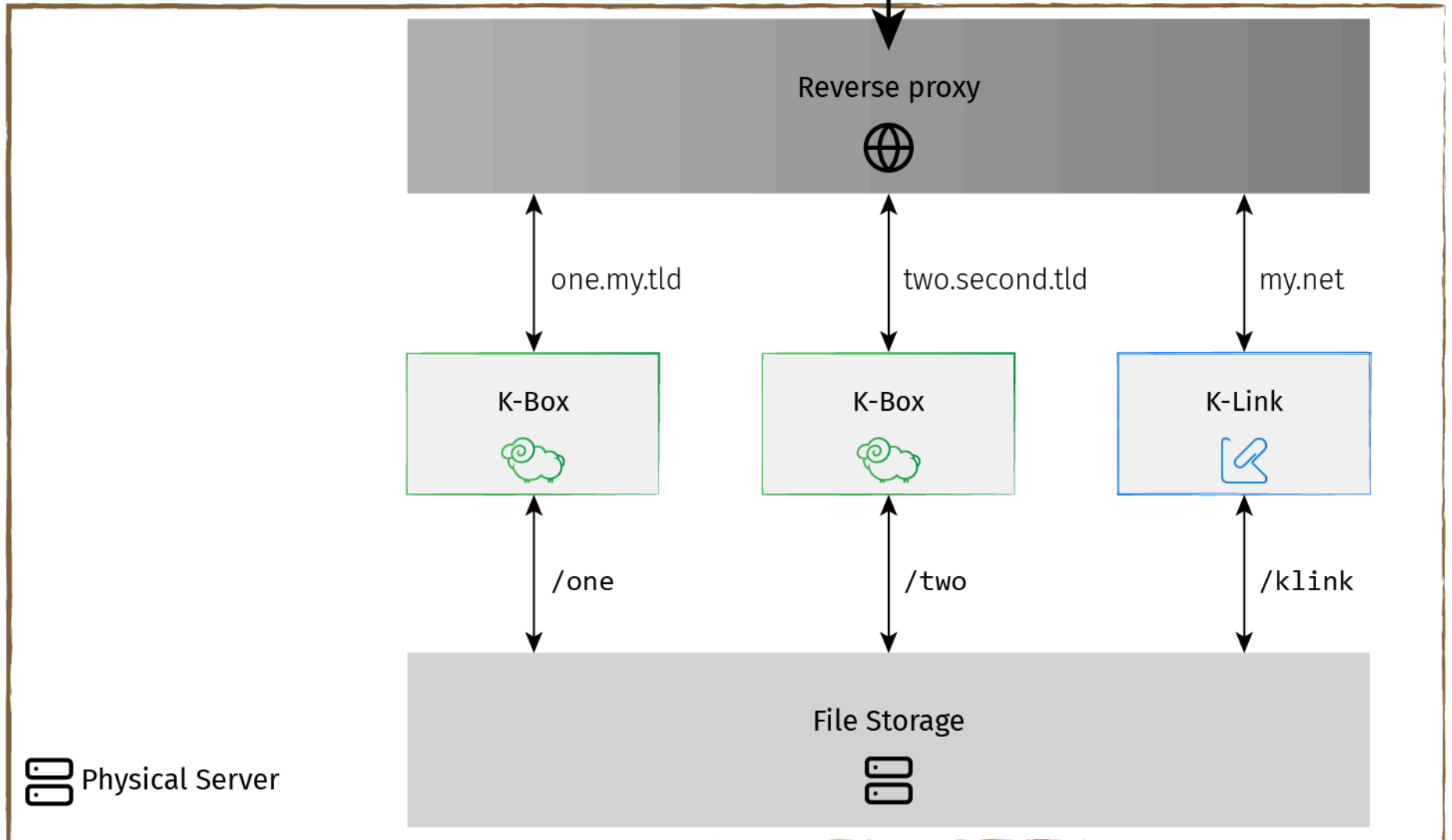


Applications

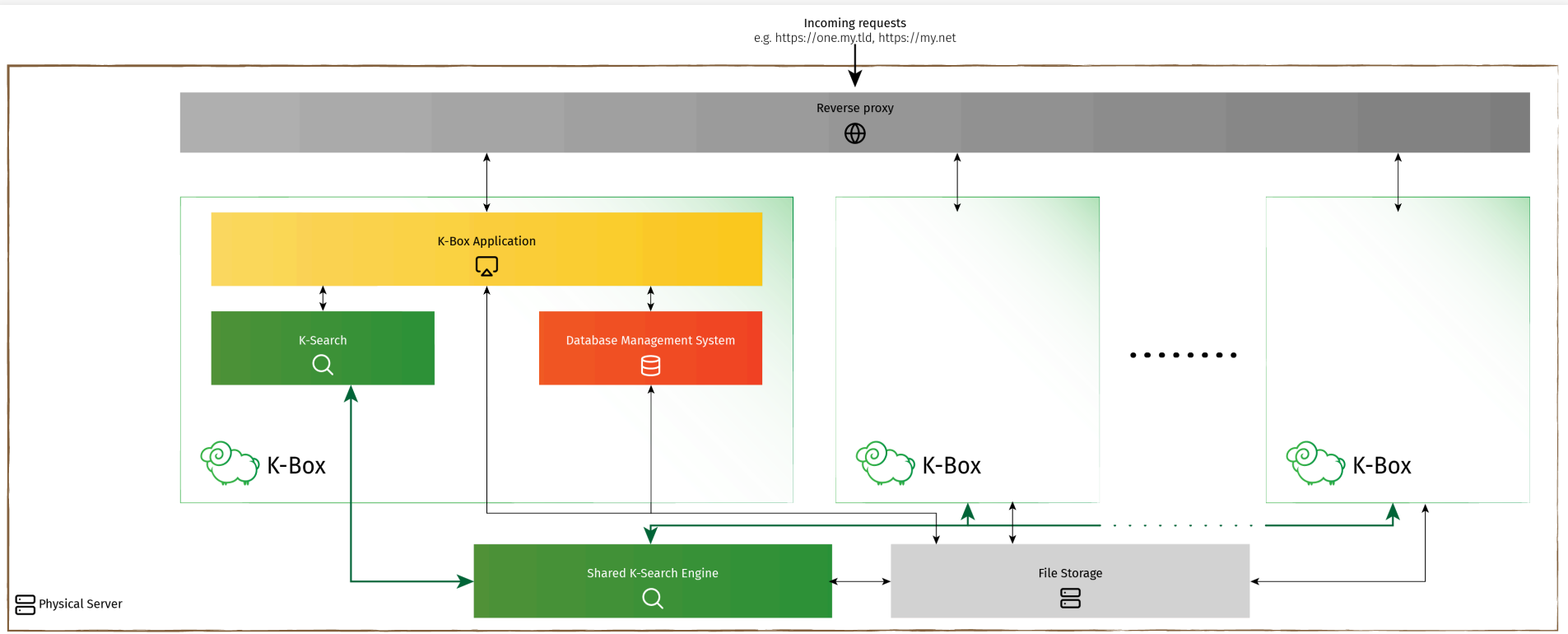
Add

Name	Domain	Permission(s)	Status	Action
OneOffTech	https://oneofftech.xyz/	data-search, data-view	Enabled	-

Incoming requests
e.g. https://one.my.tld, https://my.net



Sneak peak on what we are working on



What we saw

- We covered some K-Box and K-Link internals
- We saw some deployment strategies

