

On the way to Open Cloud Mesh 1.0

Striving for a first stable version, ready for mass adoption

About Me



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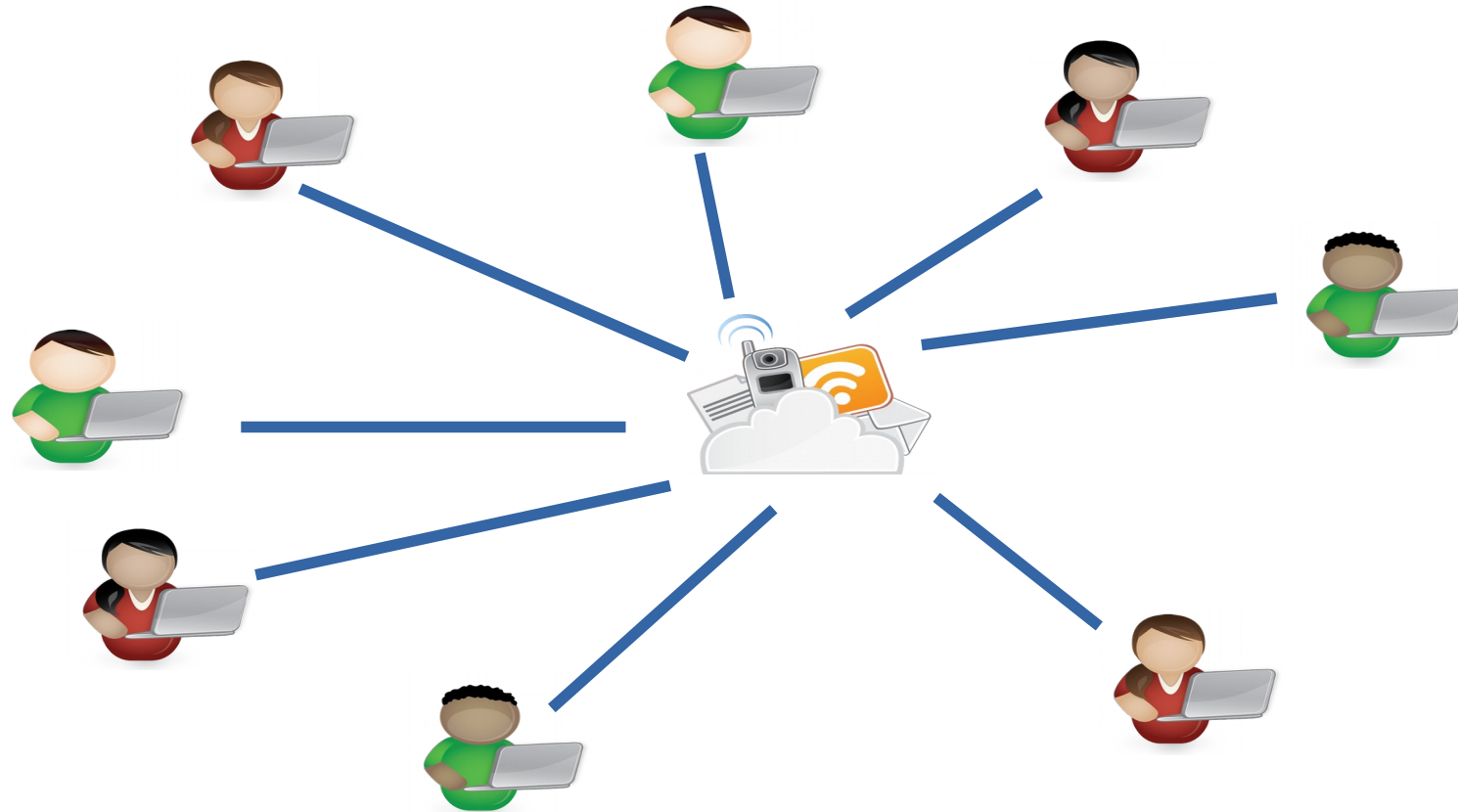
Sales Engineer at Nextcloud

6+ years experience with
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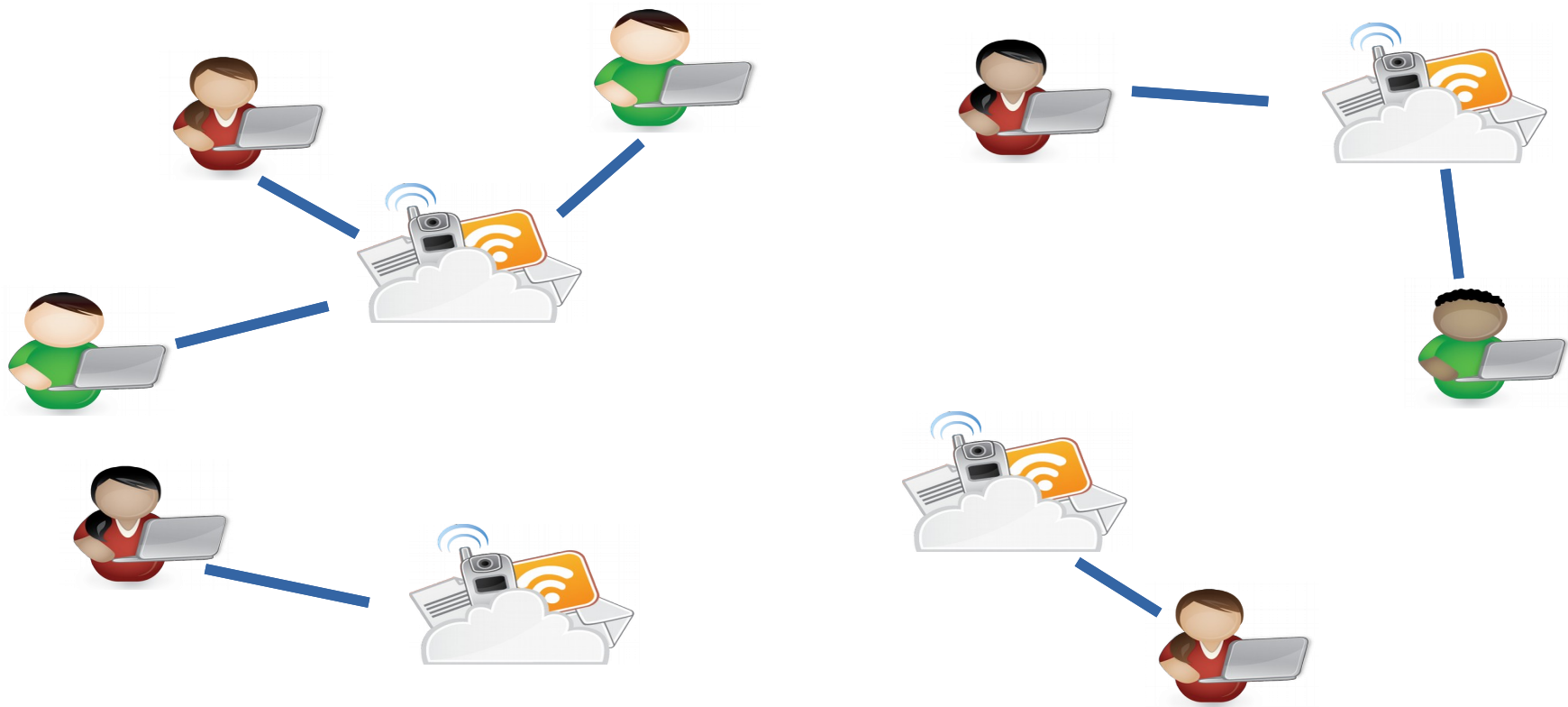
Developed the first version and
architecture of Federated Cloud
Sharing



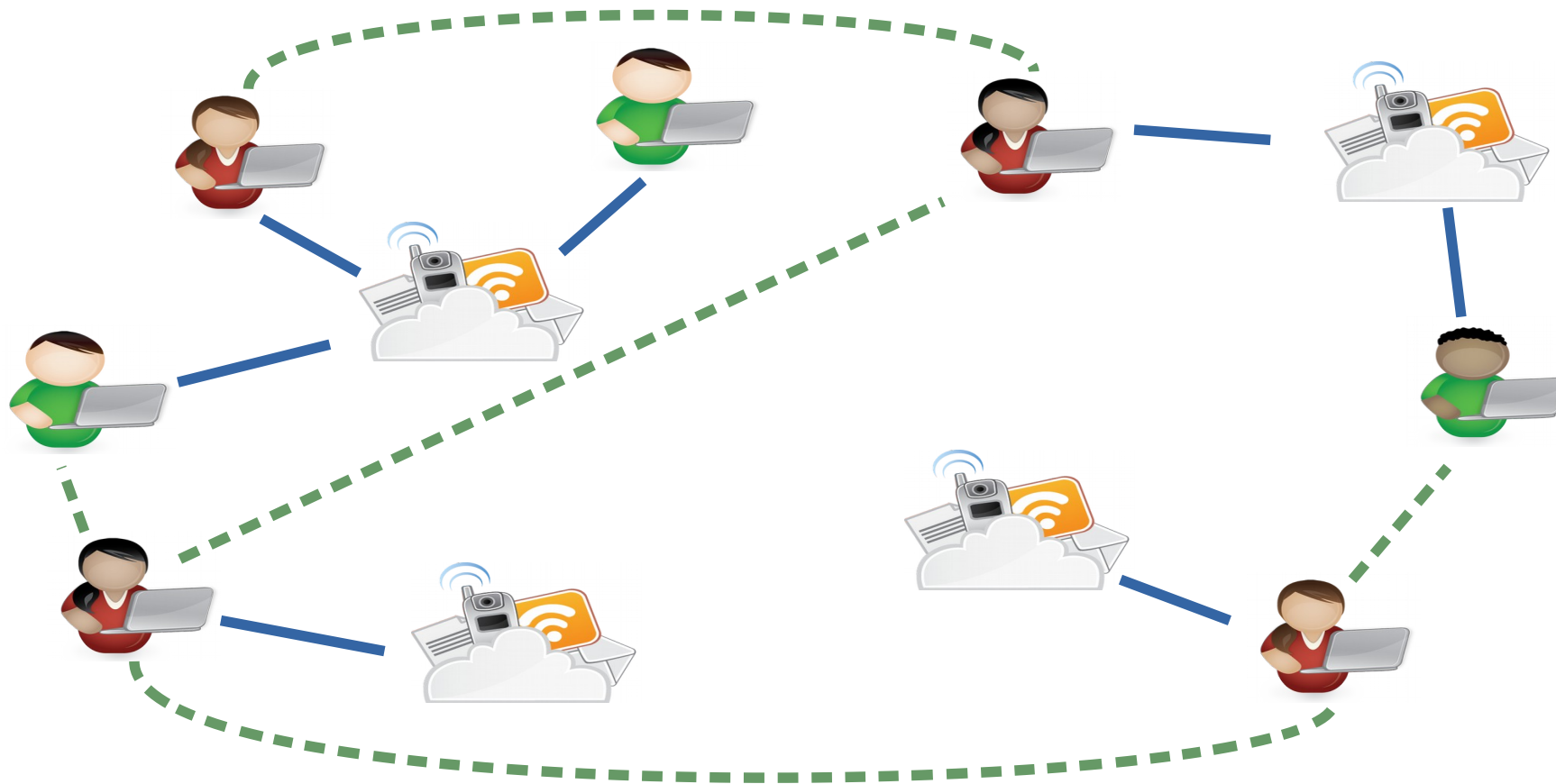
What is Cloud Federation



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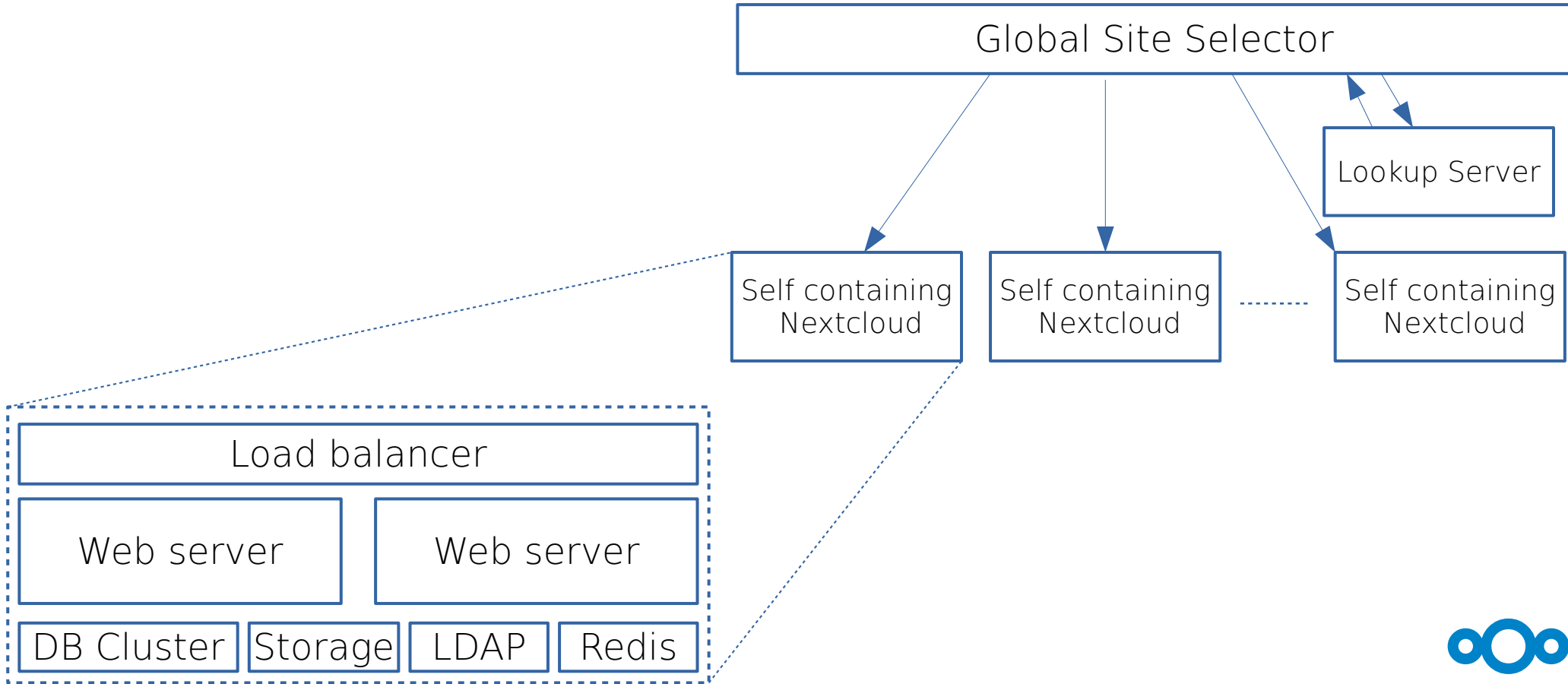


Cloud Federation at the heart of Nextcloud

- We strongly believe in the free, decentralized and open cloud
- Give people control back over their data and their privacy
- Still stay connected by enabling seamless communication across boundaries



Core Component of Global Scale



Cloud Federation Fast Forward (2014 - 2019)

- First release 2014 (Software turned into a Standard)
- Used by Nextcloud, CernBox, Pydio and ownCloud



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Community felt the need of a vendor neutral standard





OPENCLOUD**MESH**

A vendor neutral standard under the GÉANT umbrella



First OCM definition (v0.0.3)

- Developed with best practices for API's in mind
- Cleanup of existing API end-points
- Reduced to a minimum
- Become vendor neutral
- Easy to extend
- Published 2017



Shortcomings

- When we started to implement OCM we soon realized that...
 - Minimal API's are great, but also some basic stuff was missing (e.g. share type, end-point discovery, display names, possibility to distinguish between owner and sender,...)
 - Also the optional parts should be defined at least up to a point to not break existing use cases
 - How to extend the protocol should be clear to avoid everyone does something complete different and create new incompatibilities



What we did

- We started to implement OCM based on v0.0.3
- Make some parts of the specification more concrete
- Add additional end-point (but keep it as minimal as possible)
- Define optional “messages” to be able to implement the whole range of features
- Make sure that additional share types can be added
- Stay backward compatible in order not to break the existing ecosystem



Proposal of a OCM v1.0

- This led to a proposal we published as a pull request on GitHub to existing API specification
- Collected feedback from all stakeholders
- Iterated over it
- Current state:
 - Pull request still open.
 - But, we all agree that this is the way forward
 - Implementation exists on Nextcloud 14+ since September 2018
 - Implementations in development for other platforms
 - Projects are interested but are confused, what is the up-to-date version
 - Others are welcome to join



Open Cloud Mesh 1.0 Proposal

A walk-through



End-Point Discovery

GET: /ocm-provider/

Result:

```
{
  "enabled": true,
  "apiVersion": "1.0-proposal1",
  "endPoint": "http://localhost/server/index.php/ocm",
  "resourceTypes": [
    {
      "name": "file",
      "shareTypes": ["user", "group"]
      "protocols": {
        "webdav": "http://localhost/server/public.php/webdav/"
      }
    }
  ],
}
```



Create a new share

POST: /shares

Body:

```
{
  "shareWith": "peter.szegedi@geant.org",
  "name": "spec.yaml",
  "description": "This is the Open API Specification file (in YAML format)",
  "providerId": "7c084226-d9a1-11e6-bf26-cec0c932ce01",
  "owner": "dimitri@apiwise.nl",
  "sender": "john@apiwise.nl",
  "ownerDisplayName": "Dimitri",
  "senderDisplayName": "John Doe",
  "shareType": "user",
  "resourceType": "file",
  "protocol": {
    "name": "webdav",
    "options": {
      "sharedSecret": "hfiuhworzwnur98d3wjiwlr",
      "permissions": "{http://open-cloud-mesh.org/ns}share-permissions"
    }
  }
}
```



Send a notification

POST: /notifications

```
Body:  {
        "notificationType": "SHARE_ACCEPTED",
        "resourceType": "file",
        "providerId": "7c084226-d9a1-11e6-bf26-cec0c932ce01",
        "notification": {
            "message": "Recipient accepted the share",
            "sharedSecret": "hfiuhworzwnur98d3wjiwlr"
        }
    }
```

Completely optional, can be defined when new share types are introduced



Defined notifications for sharing files

- A share was accepted:

```
{
  "notificationType": "SHARE_ACCEPTED",
  "resourceType": "file",
  "providerId": "7c084226-d9a1-11e6-bf26-cec0c932ce01",
  "notification": {
    "sharedSecret": "hfiuhworzwnur98d3wjiwhr",
    "message": "Recipient accepted the share"
  }
}
```



Defined notifications for sharing files

- A share was declined / unshared from self:

```
{
  "notificationType": "SHARE_DECLINED",
  "resourceType": "file",
  "providerId": "7c084226-d9a1-11e6-bf26-cec0c932ce01",
  "notification": {
    "sharedSecret": "hfiuhworzwnur98d3wjiwhr",
    "message": "Recipient declined the share"
  }
}
```



Defined notifications for sharing files

- Owner unshares file from recipient:

```
{
  "notificationType": "SHARE_UNSHARED",
  "resourceType": "file",
  "providerId": "7c084226-d9a1-11e6-bf26-cec0c932ce01",
  "notification": {
    "sharedSecret": "hfiuhworzwnur98d3wjiwhr",
    "message": "File was unshared"
  }
}
```



Defined notifications for sharing files

- Recipient request a reshare:

```
{
  "notificationType": "REQUEST_RESHARE",
  "resourceType": "file",
  "providerId": "7c084226-d9a1-11e6-bf26-cec0c932ce01",
  "notification": {
    "sharedSecret": "hfiuhworzwnur98d3wjiwhr",
    "shareWith": "bjoern@cloud.nextcloud.com",
    "senderId": "9r48fh78-8r94f893-89483u89fh3",
    "message": "Recipient of a share ask the owner to
reshare it"
  }
}
```



Defined notifications for sharing files

- Change permission of a reshare:

```
{
  "notificationType": "RESHARE_CHANGE_PERMISSION",
  "resourceType": "file",
  "providerId": "7c084226-d9a1-11e6-bf26-cec0c932ce01",
  "notification": {
    "sharedSecret": "hfiuhworzwnur98d3wjiwahr",
    "permission": ["read", "write", "share"],
    "message": "inform owner/initiator about
permission change"
  }
}
```



Defined notifications for sharing files

- Undo a reshare:

```
{
  "notificationType": "RESHARE_UNDO",
  "resourceType": "file",
  "providerId": "7c084226-d9a1-11e6-bf26-cec0c932ce01",
  "notification": {
    "sharedSecret": "hfiuhworzwnur98d3wjiwhr",
    "message": "owner/initiator undo the reshare"
  }
}
```



Previous GET Request

- Retrieve a single share
- Retrieve all shares
- Retrieve a single notification
- Retrieve all notification



Previous GET Request

- Retrieve a single share
- Retrieve all shares
- Retrieve a single notification
- Retrieve all notification

Removed, they where no longer needed!



Result

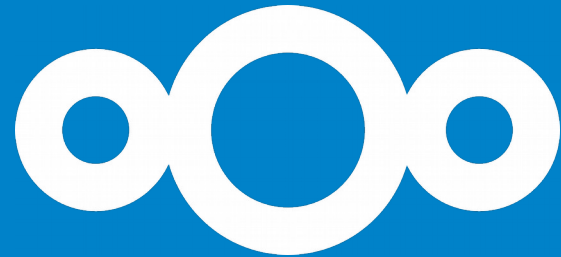
- API become even smaller (removal of unneeded GET requests)
- Things which were unclear before are now defined → makes it easier to write interoperable implementations
- Basic messages are defined (but still optional)
- Clear way how to move forward, e.g. add new share types, messages, etc



Whats Next?

- Nextcloud will work on additional share types (calendar, contacts, video/audio calls, chat) and publish them in a similar way.
- Let's get the pull request merged and let us publish the API so that others and can implement it as well
<https://github.com/GEANT/OCM-API/pull/37>
- You want to use/try OCM today? Install the latest Nextcloud and experience seamless sharing across instances with OCM.





Thank You!

Questions?