Sharing DICOM studies with Orthanc

Alain Mazy, Orthanc Team



Community:

- Public support + doc
- Orthanc dev
- Plugin dev
- Stone Viewer plugin

Funding:

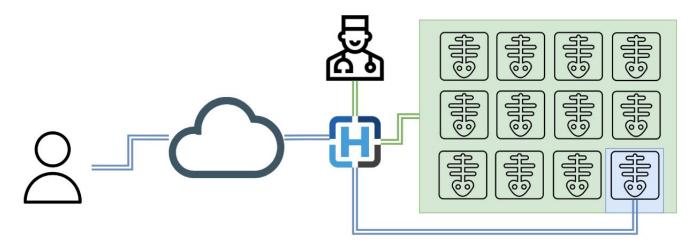
- Osimis
- Open Collective
- Customers

Customers:

- Dedicated support
- Orthanc + plugin dev
- Inter-hospitals transfers + CD-ROM importer
- Orthanc as a mini-pacs including ability to share studies

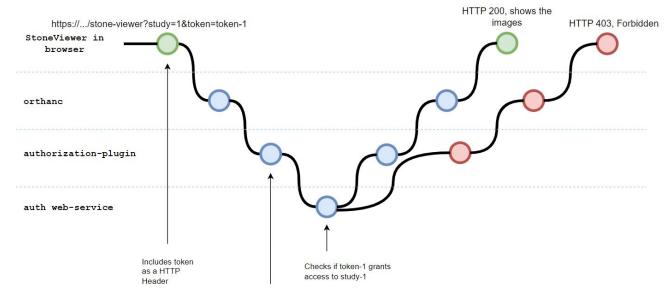
Sharing DICOM studies

- Share a secure link granting access to a single study
- Do not expose your full Orthanc to the world



Orthanc Authorization plugin

- Replaces basic authentication
- Based on HTTP headers
- Identifies the resource being accessed
- Delegates authorization to an external web-service



OrthancCon 2022, Nov 1

Calls the auth-web-service via a Rest API call

Authorization web-service

```
@app.post("/auth/validate")
def validate_authorization(validation_request: AuthValidationRequest, auth_header = Header(default=None)):
    granted = False
    if validation_request.dicom_uid == "1" and validation_request.token_value == "token-1":
        granted = True
    response = AuthValidationResponse(
        granted=granted,
       validity=60
    return response
```

More security: Json Web Token (JWT)

Encoded paste a token here

eyJhbGci0iJIUzI1NiIsInR5cCI6IkpXVCJ9.ey JkaWNvbS1pZCI6IjEifQ.LFJxSnJLDQdQtGL- ZBnkh3JtcBCKAtNhXH6FSr4ZQHM

Decoded Edit THE PAYLOAD AND SECRET

HEADER: ALGORITHM & TOKEN TYPE	
{ "alg": "HS256", "typ": "JWT" }	
PAYLOAD: DATA	
{ "dicom-id": "1" }	
VERIFY SIGNATURE	
HMACSHA256(base64UrlEncode(header) + "." + base64UrlEncode(payload), my-secret-key) □ secret base64 encoded	

Signature Verified

More security: token validation

```
@app.post("/auth/validate")
def validate_authorization(validation_request: AuthValidationRequest, auth_header = Header(default=None)):
    granted = False
    token_payload = jwt.decode(validation_request.token_value, "my-secret-key", algorithms="HS256")
    granted = validation_request.dicom_uid == token_payload["dicom-id"]
    response = AuthValidationResponse(
        granted=granted,
        validity=60
    )
    return response
```

More security: token generation

```
@app.post("/generate-token")
def generate_token(dicom_uid: str):
    token_payload = {
        "dicom-id": dicom_uid
     }
     token = jwt.encode(token_payload, "my-secret-key", algorithms="HS256")
     return token
```

Do not expose this web-service !!!!

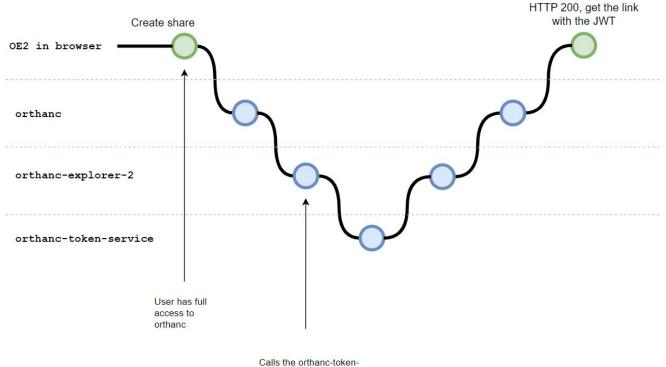
Need something more user friendly to generate tokens: OE2

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🍫 Settings		19291213	FIONA^CHURCHILL	ID-FIO-CHU-00000096	Study # 00000375	20211211	CR,DX,MR		5
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		19680224	TREVOR^OLIVER	ID-TRE-OLI-00000236	Study # 00000917	20000616	CR		2
		19580331	JOSEPH^MORGAN	ID-JOS-MOR-00000175	Study # 00000697	20171202	CR,DX		2
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Publication link from OE2

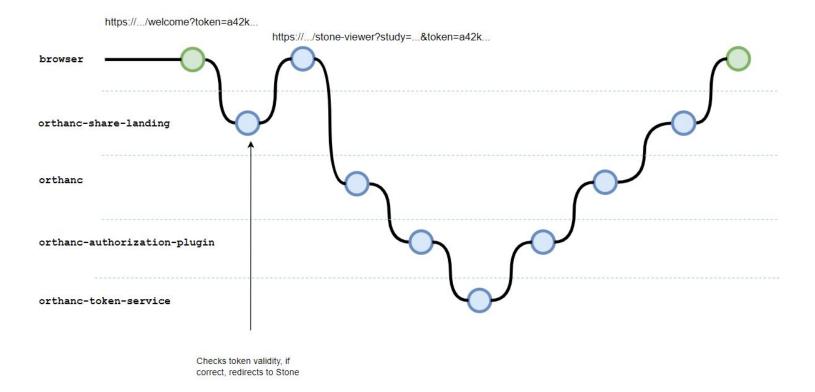
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Behind the scene: token generation



service via a Rest API call

Behind the scene: token validation



https://github.com/orthanc-team/orthanc-share

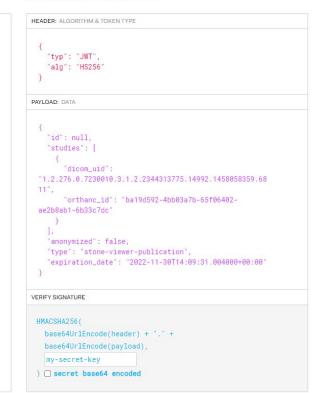
Complete set of web-services:

- orthanc-token-service to generate & validate tokens
- orthanc-share-landing to display user friendly messages if tokens are invalid
- Generates publication links for:
 - Stone Viewer
 - Osimis Viewer
 - MedDream Viewer (commercial CE approved)
- Handles expiration date
- orthanc-anonymizer to handle anonymized publications (still experimental, only works with the Osimis Viewer)
- Full demo setup including integration with Orthanc Explorer 2
- Boilerplate docker-compose.yml to bootstrap a setup
- Used in production

Real-life JWT from orthanc-share

Encoded PASTE A TOKEN HERE

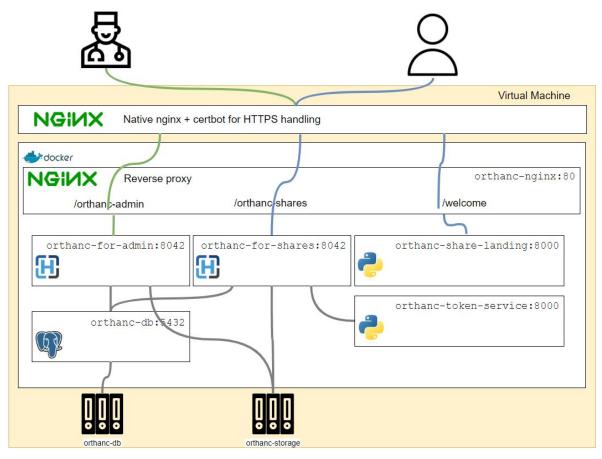
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 \odot Signature Verified

SHARE JWT

Full setup with Docker



Boilerplate docker-compose.yml

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Future steps for orthanc-share project

- Add extra validations when opening the link: password, patient birth-date
- Generates access codes that human can type (requires an additional DB)
- Reduce the number of web-services to ease deployment. 2 Orthanc on same DB -> can not use SQLite
- Include LetsEncrypt certificate renewal in orthanc-nginx
- Send mail with the publication link

Future steps for Orthanc Explorer 2

- Multi-language support
- Actions on multiple selections
- Edit DICOM Tags, split & merge
- Handle predefined user roles
- Handle external users (from KeyCloack ?)
- Edit modalities, peers, dicomweb-servers
- Labels

Questions?

Using Orthanc as part of your commercial activity ?

Why not support us on

c open collective

https://opencollective.com/orthanc