2b Appointment Lookup

Wayfinder

Exported on 01/21/2025

Table of Contents

We hadn't previously covered this as a separate step, but adding the details here for completeness.

1 Background / business process

When an appointment is created or changed for a patient, we need this information to be findable by the NHS App. To support this, a FHIR DocumentReference resource needs to be added to NRL, this is done via a supporting BaRS endpoint.

2 Trigger events

- Creation of a new appointment for a Patient
- Change to an existing appointment
- Cancellation of an existing appointment

3 Requestor

Wayfinder Aggregator

4 Responder

NHS England BaRS Proxy API acts as an intermediary, the National Record Locator is the actual Responder.

5 Endpoint

The actual endpoints are defined here: https://digital.nhs.uk/developer/api-catalogue/booking-and-referral-fhir/v1_1_0#get-/DocumentReference .

[15 Jan 2025]: Some provided examples (request body) are incorrect (more specifically for the POST and PUT calls). The examples also need to be FHIR R4 compliant.

All API pages are currently under review by the BaRS team who will shortly make corrections and updates.

The request will take the form of a FHIR R4 RESTful Search, with search parameters of Patient identifier (NHS Number) and pointer type (Appointment Booking):

GET https://api.service.nhs.uk/booking-and-referral/FHIR/R4/DocumentReference?subject.identifier=https://fhir.nhs.uk/Id/nhs-number|9876543210&type=http://snomed.info/sct|749001000000101

6 Authentication

Uses **Application Restricted** as defined at https://digital.nhs.uk/developer/guides-and-documentation/security-and-authorisation/application-restricted-restful-apis-signed-jwt-authentication

7 Payload

None as this is a GET request

8 Request Headers

Name	Description	Type
X-Request-Id	An ID for the request, this is mirrored back in the response.	UUID
X-Correlation-Id	An ID that can be used internally by the client to correlate to internal business processes.	UUID

Name	Description	Type

NHSD-End-User-Organisation	Requesting Organization described in an object based on a FHIR 'Organization' resource (Base64 encoded JSON).
	
	Example (unencoded):
	
	`{`
	`  "resourceType":`
	`"Organization",`
	`  "identifier": [`
	`    {`
	`      "https://fhir.nhs.uk/Id/`
	`ods-organization-code",`
	`      "value": "X26"`
	`    },`
	`  "name": "NHS ENGLAND – X26"`
	`  ]`
	`}`
	
	Example (Base64 encoded):
	
	ewrCoCAicmVzb3VyY2VUeXBlIjogIk9yZ2FuaXphdGlvbiIsCsKgICJpZGVudGlmaWVyIjogW
	wrCoCDCoCB7CsKgIMKgIMKgICJodHRwczovL2ZoaXIubmhzLnVrL0lkL29kcy1vcmdhbml6YXRpb24tY29kZSIsCsKgIMK
	gIMKgICJ2YWx1ZSI6ICJYMjYiCgoKwqAgwqAgfSwKwqAgIm5hbWUiOiAiTkhTIEVOR0xBTkQgLSBYMjYiCsKgIF0KfQ==
		Base64 encoded JSON object

9 Example Response

Example Response

```json
{
  "resourceType": "DocumentReference",
  "id": "Yorkshire Ambulance Service|423456781055",
  "masterIdentifier": [
    {
      "system": "urn:ietf:rfc:3986",
      "value": "urn:uuid:27e2b1c8-ecd8-48f8-9958-8e614cc7ad73"
    }
  ],
  "identifier": [
    {
      "system": "https://fhir.nhs.uk/Id/BaRS-Identifier",
      "value": "8c63d621-4d86-4f57-8699-e8e22d49935d"
    },
    {
      "value": "2000072491",
      "system": "https://fhir.nhs.uk/Id/dos-service-id"
    },
    {
      "system": "https://fhir.nhs.uk/id/product-id",
      "value": "0B475C"
    }
  ],
  "status": "current",
  "type": {
    "coding": [
      {
        "system": "https://snomed.info/ict",
        "code": "749001000000101",
        "display": "Appointment (booking)"
      }
    ]
  },
  "category": [
    {
      "coding": [
        {
          "system": "http://ihe.net/xds/connectathon/classCodes",
          "code": "History and Physical",
          "display": "History and Physical"
        }
      ]
```
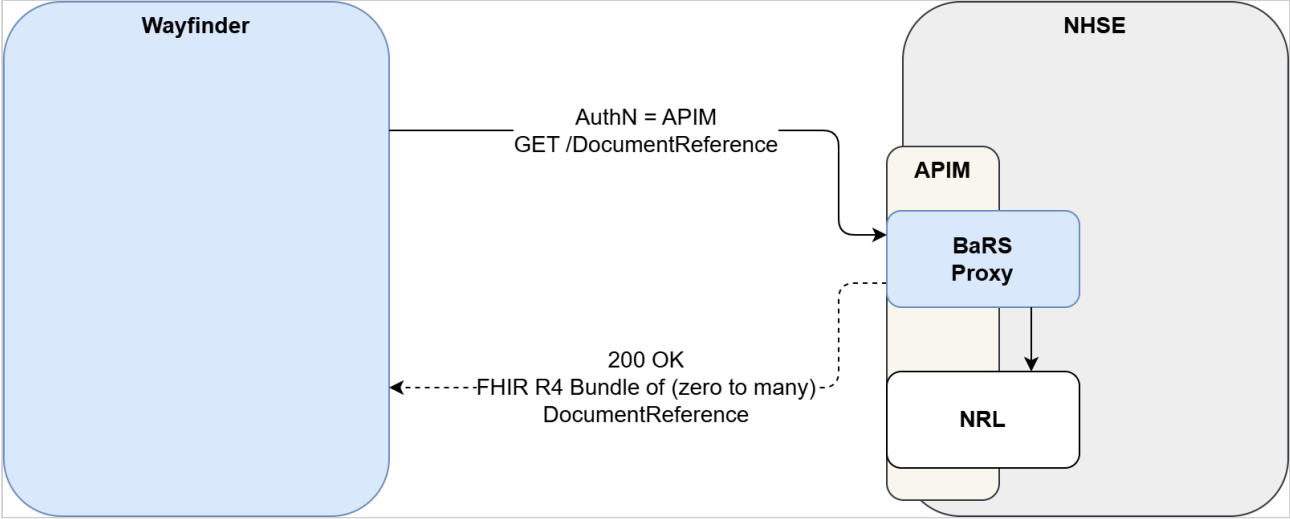
```
          }
        ],
        "subject": {
          "identifier": {
            "system": "https://fhir.nhs.uk/Id/nhs-number",
            "value": "$nhs-number"
          }
        },
        "custodian": {
          "identifier": {
            "system": "https://fhir.nhs.uk/Id/ods-organization-code",
            "value": "$ods-code"
          }
        },
        "content": [
          {
            "attachment": {
              "language": "en-UK",
              "url": "https://api.example.com/booking-and-referral/FHIR/R4/Appointment/
8c63d621-4d86-4f57-8699-e8e22d49935d",
              "creation": "2005-12-24T09:35:00+11:00"
            },
            "format": [
              {
                "coding": [
                  {
                    "system": "https://fhir.nhs.uk/CodeSystem/message-events-bars",
                    "code": "booking-request"
                  },
                  {
                    "system": "https://fhir.nhs.uk/CodeSystem/message-category-
servicerequest",
                    "code": "referral",
                    "display": "Transfer of Care"
                  }
                ]
              }
            ]
          }
        ],
        "context": {
          "period": {
            "start": "2020-11-10T19:57:26.961Z",
            "end": "2021-11-20T19:57:26.961Z"
          },
          "practiceSetting": {
            "coding": [
              {
                "system": "http://www.ihe.net/xds/connectathon/practiceSettingCodes",
                "code": "General Medicine",
                "display": "General Medicine"
              }
```

```
        ]
      }
    }
  }
```

Wayfinder

NHSE

AuthN = APIM
GET /DocumentReference

APIM

BaRS Proxy

200 OK
FHIR R4 Bundle of (zero to many)
DocumentReference

NRL

10 Sequence Diagram

```
@startuml

box NHSE
participant "NHS App" as app
participant "Wayfinder\nAggregator" as agg

participant "APIM Auth" as auth
participant "BaRS Proxy" as bars
participant NRLF
end box

activate app
app->agg: Request Appointments\nFor Patient 9876543210
activate agg
agg->agg: Create signed\nJWT
agg->auth: POST: https://api.service.nhs.uk/oauth2/token (JWT)
activate auth
agg<--auth: Access Token
deactivate auth
|||
agg->bars: GET /FHIR/R4/DocumentReference?\nsubject.identifier=https://fhir.nhs.uk/
Id/nhs-number|9876543210&\ntype=http://snomed.info/sct|749001000000101
activate bars

bars->NRLF: GET /DocumentReference?\nsubject.identifier=https://fhir.nhs.uk/Id/nhs-
number|9876543210&\ntype=http://snomed.info/sct|749001000000101
activate NRLF
bars<--NRLF: FHIR Bundle of 0..* DocumentReference resources\nOptionally paginated
deactivate NRLF
agg<--bars:  FHIR Bundle of 0..* DocumentReference resources\nOptionally paginated
deactivate bars
app<--agg: List of appointments\nOptionally paginated
deactivate agg
deactivate app

@enduml
```

NHSE

NHS App → Wayfinder Aggregator: Request Appointments For Patient 9876543210

Wayfinder Aggregator: Create signed JWT

Wayfinder Aggregator → APIM Auth: POST: https://api.service.nhs.uk/oauth2/token (JWT)

APIM Auth ⇢ Wayfinder Aggregator: Access Token

Wayfinder Aggregator → BaRS Proxy: GET /FHIR/R4/DocumentReference?
subject.identifier=https://fhir.nhs.uk/Id/nhs-number|9876543210&
type=http://snomed.info/sct|749001000000101

BaRS Proxy → NRLF: GET /DocumentReference?
subject.identifier=https://fhir.nhs.uk/Id/nhs-number|9876543210&
type=http://snomed.info/sct|749001000000101

NRLF ⇢ BaRS Proxy: FHIR Bundle of 0..* DocumentReference resources
Optionally paginated

BaRS Proxy ⇢ Wayfinder Aggregator: FHIR Bundle of 0..* DocumentReference resources
Optionally paginated

Wayfinder Aggregator → NHS App: List of appointments
Optionally paginated