NextGen® Office
SMART APP Launch FHIR API
Developer Guide

for NextGen® Office

Prepared by NextGen R&D
May 29th, 2025

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Purpose of this document

This document is written for developers building client applications that connect to the NextGen® Office SMART APP Launch API. These API enables providers to allow vendors of their choice to obtain USCDIv1 data of a single patient.
This document covers the following:

1. How to register as a client application and gain access credentials.
2. A detailed walk-through of using the NextGen® Office SMART APP Launch API

How to register your client application to access NextGen® Office SMART APP Launch API

Send an email to nextgen-office-api@nextgen.com with the following information:

- Contact e-mail address
- Organization name
- Organization description
- Client application name
- Client application use-case description
- Client App Launch Url (should not include query parameters)
- Client App Icon Url (Max size < 128 kB, Aspect Ratio 1:1, Min 24px x 24px)
- OAuth Callback URL (should not include parameters)

The NextGen® Office API team will issue client credentials and/or request additional information.

Detailed walk-through of using the NextGen® Office Smart App Launch API

The following instructions are from an internal validation of the NextGen® Office SMART App Launch API. SMART App Launch APIs power the category of apps used by provider organizations to integrate with their NextGen® Office's EHR system. These apps can use SMART App Launch APIs to add value and functionality across a variety of clinical, administrative, and other functions.

To use the SMART App Launch APIs developers need to register the app with NGO with the correct details of the launch URL and Practice should have an active subscription for the registered App.

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The steps to Launch a Smart App from NGO's EHR are as below:

1. Login to EHR using user credentials.
   Provider: Testing, Provider

2. Search for a particular Patient and Open the Patient Chart

3. Launch the Smart App "EHR".

4. SMART APP will be launched in a New Tab.

When a Smart on FHIR App is launched from inside the EHR, a launch parameter is created in the URL. The **launch** parameter is a required parameter in the authorization URL along with the **aud** parameter to request for authorization code.
Launch parameter consists of **User ID, Session ID, Patient ID, Encounter ID (optional) and Provider Username,** encrypted and encoded into the URL for provider authentication which will be valid for 300 seconds only.

In postman select Authorization as Oauth2:

- **Grant Type**: Authorization Code (With PKCE)
- **Callback URL**: https://oauth.pstmn.io/v1/callback
- **Authorization URL**: https://idp-prod.prod.ngo.nextgenaws.net/auth/realms/nextgen/protocol/openid-connect/auth?launch=YTIwLmpJWEtFOWphczYzWkVDODZRSVBHTUE2ZGtDb1NTbTl0NVlLNndSVVhFcGs2cGNxdnFmVXVvL2RqZWRCQmU2UXRTOUFYQUxjU1MzaFVxM3hHUEZudThaT2tSWWdPVFBDaHh6a3RTaVQ4cmkxRmVRUHNhSVlJYlM3TUEwYWpNQzdFNmZRbklVOTBVakZ3Y0xBQTVsdi92L1g4OXFtSTloUUVuTkxKbms2NGRPOEhWdlNsN2tRNDc4OUo2NkU3K3ZyTUM0V2dTYjBzeEgwWmlIK2pZTjNCSFBLSWNuSEZqcUFDbG9iSjBQbzFQT1Y0a0d4ZUlBPT0=&aud=https://fhir.meditouchehr.com/api/fhir/r4
- **Access Token URL**: https://idp-prod.prod.ngo.nextgenaws.net/auth/realms/nextgen/protocol/openid-connect/token
- **Client ID**: <issued_client_id>
- **Client Secret**: <issued_client_secret>
- **Scope**: {Add Allowed scopes}
- **State**: Blank
- **Code Challenge Method:** SHA-256
- **Code Verifier:** {Verifier for the Code Challenge}
- **Client Authentication:** Send as Basic Auth header

Validation Process Steps

The steps below can be performed either manually with a tool like curl or using Postman which automates steps like OAuth token generation.

1. **Open Authorize URL in Browser:**
   The expected Authorize URL components are:
   a. **Endpoint**:
   https://idp-prod.prod.ngo.nextgenaws.net/auth/realms/nextgen/protocol/openid-connect/auth?launch=YTIwLklGbklSTjVxa1gyYXgxT054M3loaVVCalBFOFNjemczdkdaY0pTUGRBSE5NNWpsTkpqUTFFbWx2d0YzdlYyYkQ3eGl6SEVlUFZOUzRMaWtRQ2hDV2pqc3RsS3BXWUNqTjJOb3ZPUFVWVkRzZ2RkeEJNcFNDaE1KSUFUWDQ2c3J1cjBrM3ZHYnoxdE95UEhBS05CNTJyZzJ2cTc1L3FIQk9xeFRFQ2ZIdTVJRFVUM3Bna1hKYlNmdld4Vk9HZXpYSEY0MHh6YzhVenVJTkZPOG45QmZMVWZXMmJyTXZ2cG5XTHcxbk5nZFRXUm8yMGc9PQ==&aud=https://fhir.meditouchehr.com/api/fhir/r4

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b. **Parameters**:
   i. response_type=code
   ii. client_id={CLIENT_ID_ASSIGNED_TO_DEVELOPER}
   iii. redirect_uri={APP_REDIRECT_URL}
   iv. scope={APP_Requested_Scopes}
   v. code_challenge={RANDOM_STRING_WITH 43 TO 128 CHARS}
   vi. code_challenge_method=SHA-256

Example Authorize URL Launched by 3rd Party App:
https://idp-prod.prod.ngo.nextgenaws.net/auth/realms/nextgen/protocol/openid-connect/auth?aud=https://fhir.meditouchehr.com/api/fhir/r4&launch=YTIwLlBXQTA0L0U5QWtoZTJYckpwMitIdzJ3SU5ZRXNuWDlvVVdsNm9pa2V0Wk9pQk5vSHFGRVF1T1NIWVM1ZVovOWVwS3Q5UlRLbU1hQUZTR1QydmNqOTVJUXBUUEJTU3ZESnRYbGwvbFRRTmVmZTkrcmhOQlRBTGprTVJCQkVPd1RZTUcwOVZ0UHJVZmVlejZuc04yNmhoOTIvNFlZRmlZUGtJZ0JhZXFZSFZuSnZhd3pld29BU0hWaW1pVkJHOU5uWGxHYmlLK01iQVpxdEp0VXhNZFdUTjJEL05CdDI5TldtSFV2Z0RQQUZXWUl2UHk0PQ==&response_type=code&client_id=ngo-ehr&scope=openid%20launch%20offline_access%20fhirUser%20user%2F*.read&redirect_uri=https%3A%2F%2Fwww.getpostman.com%2Foauth2%2Fcallback&code_challenge=MF1fsmF2cla8enrsDw0kxWHkGzjNkDX1FoS-zuv859o&code_challenge_method=S256

2. **Scope selection page**:

Below screen displays the scopes requested by the Client App. Scopes are used to grant permission for clinical data of the patient that user can access.

Note:
Users can deny permissions by deselecting the options.

3. **Authorization Code is returned in URL upon successful authentication:**
   example-
   https://oauth.pstmn.io/v1/callback?session_state=e2f5354f-0c19-40ec-bf279f41fe6de65b&code={ISSUED AUTHORIZATION CODE}

4. **Exchange Authorization Code for Token:**

   a. The expected components of the request to the access token route are:
      i. **Method**: POST

      ii. **Endpoint**: https://idp-prod.prod.ngo.nextgenaws.net/auth/realms/nextgen/protocol/openid-connect/token

      iii. **Authorization:** Basic Auth {client_id:client_secret}

      iv. **Headers**:
         1. Content-Type=application/x-www-form-urlencoded
         2. A Basic Authorization header (Authorization=Basic {encoded string} using a base64 encoded representation of the following string: client_id:client_secret)

            Authorization_Header Example:
            Authorization=Basic {base64_encoded_representation_of_client_id:client_secret}

      vii. **Body**:
         1. grant_type=authorization_code
         2. code={ISSUED AUTHORIZATION CODE}
         3. redirect_uri={APP_REDIRECT_URL}

Example Request to /access_token (curl format):

```
curl --location --request POST ' https://idp-prod.prod.ngo.nextgenaws.net/auth/realms/nextgen/protocol/openid-connect/token' \

--header 'Authorization: Basic Y2xpZW50OnNlY3JldA==' \

--header 'Content-Type: application/x-www-form-urlencoded' \

--data-urlencode 'grant_type=authorization_code' \

--data-urlencode 'code=c8b55047-2275-4570-8a30-c56bedaf2564.6fd6bfcf-55a5-47f7b067-a233e178944c.52449374-f741-427d-859f-f88ca01dbea0' \

--data-urlencode 'redirect_uri=https://oauth.pstmn.io/v1/callback'
```

b. A successful call to /access_token will produce a response that includes:

- **i.** access_token
- **ii.** expires_in
- **iii.** refresh_expires_in
- **iv.** refresh_token
- **v.** token_type
- **vi.** id_token
- **vii.** not-before-policy
- **viii.** session_state
- **ix.** scope
- **x.** resource
- **xi.** patient
- **xii.** need_patient_banner
- **xiii.** practice_id
- **xiv.** smart_style_url
- **xv.** client_type
- **xvi.** encounter (optional)

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Example Response from /access_token


```
{
"access_token": "{access_token_value}",

"expires_in":(expressed_in_seconds),

"refresh_expires_in":(expressed_in_seconds),

"refresh_token": "{refresh_token_value}",

"token_type": "Bearer",

"id_token": "{id_token_value}",

"not-before-policy": 1661487077,

"session_state": "5113f956-1d90-45b1-b3ff-197533c4746b",

"scope": "{assigned_scope}",

"resource": "person/45678",

"patient": "428946492",

"encounter": "123456",

"need_patient_banner": "false",

"smart_style_url": " https://fhir.meditouchehr.com/electronic/json/api/ehrSmartStyleConfig.json ",

"client_type": "EHR"
}
```


Note:
Please refer to the SMART App Launch Implementation Guide v2 for more details on authorization flows, scopes, and token exchange enhancements.
Please refer to the .well-known/smart-configuration of server for supported capabilities and metadata.

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5. **Request FHIR Resource: {FHIRurl}/Patient/{id}**

Using the "Reference Value" URL from the prior request, obtain FHIR resource data from the {FHIRurl}/Patient/{id} endpoint.

a. **Method**: GET
b. **Endpoint**: https://fhir.meditouchehr.com/api/fhir/r4/Patient/428946492
c. **Authorization: Bearer Token:** {Token generated in previous step}
d. **Header**: An OAuth2 Authorization header with a value of Bearer {access_token}
e. **Example Request to {FHIRurl}/Patient/{id}:**
```
curl --location --request GET 'https://fhir.meditouchehr.com/api/fhir/r4/Patient/428946492' \
--header 'Authorization: Bearer {access_token_value}' \
```
f. **Response from {FHIRurl}/Patient/{id}:**


```
{
  "resourceType": "Patient",
  "id": "428946492",
  "extension": [
    {
      "url": "http://hl7.org/fhir/us/core/StructureDefinition/us-core-race",
      "extension": [
        {
          "url": "ombCategory",
          "valueCoding": {
            "system": "urn:oid:2.16.840.1.113883.6.238",
            "code": "1002-5",
            "display": "American Indian or Alaska Native"
          }
        },
        {
          "url": "text",
          "valueString": "American Indian or Alaska Native"
        }
      ]
    },
    {
      "url": "http://hl7.org/fhir/us/core/StructureDefinition/us-coreethnicity",
      "extension": [
        {
          "url": "ombCategory",
```

```
                "valueCoding": {
                "system": "urn:oid:2.16.840.1.113883.6.238",
                "code": "2135-2",
                "display": "Hispanic or Latino"
                }
            },
            {
                "url": "detailed",
                "valueCoding": {
                    "system": "urn:oid:2.16.840.1.113883.6.238",
                    "code": "2138-6",
                    "display": "Andalusian"
                }
            },
            {
                "url": "text",
                "valueString": "Hispanic or Latino"
            }
        ]
    },
    {
        "url": "http://hl7.org/fhir/us/core/StructureDefinition/us-corebirthsex",
        "valueCode": "M"
    }
],
"identifier": [
    {
        "use": "official",
        "type": {
            "coding": [
                {
                    "system": "http://terminology.hl7.org/CodeSystem/v2-0203",
                    "version": "1.0",
                    "code": "MR",
                    "display": "Medical record number"
                }
            ],
            "text": "Unique Id for EHR"
        },
        "system": "http://terminology.hl7.org/CodeSystem/v2-0203",
        "value": "428946492",
        "assigner": {
            "reference": "Organization/1673497"
        }
    }
],
"active": true,
"name": [
    {
        "use": "usual",
```

```
        "family": "SMITH",
        "given": [

            "DAVID"
          ]
      }
    ],
    "telecom": [
      {
        "system": "phone",
        "value": "(621)654-6545",
        "use": "home"
      }
    ],
    "gender": "male",
    "birthDate": "1996-11-02",
    "address": [
      {
        "line": [
          "PUNE"
        ],
        "city": "SOLANA BEACH",
        "state": "TX",
        "postalCode": "73301",
        "period": {
          "start": "2023-04-18T22:48:58-07:00",
          "end": "2023-04-20T00:54:21-07:00"
        }
      }
    ],
    "communication": [
      {
        "language": {
          "coding": [
            {
              "system": "urn:ietf:bcp:47",
              "code": "en",
              "display": "English"
            }
          ]
        },
        "preferred": true
      }
    ]
  }
```

6. **Request Additional FHIR Resources**
   Please consult the full documentation at (For Reference only)
   https://petstore.swagger.io/?url=https://hfstatic.s3.amazonaws.com/swagger/swaggerR4.yaml
   (Try it out function available for Standalone Patient APIs only) to obtain the full set of available endpoints and details for calling those additional NextGen® Office Patient Access API routes using the obtained Patient {id}.

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