OneHealthPort | HIE

HIE API Connectivity for Newborn Screening Laboratory Order and Result Transactions with the Washington Department of Health

Purpose

This document presents the OneHealthPort HIE's API connectivity supporting the Washington Department of Health's Newborn Screening (NBS) program laboratory order (LOI) and result (LRI) exchange for provider organizations. It is intended for use by provider organization technical teams or their vendors responsible for setting up connectivity for these data transactions.

The Department of Health Newborn Screening program team will provide the specifications for the HL7 LOI and LRI messages and manage the message validation process with the provider organization.

Connectivity - APIs over HTTPS

The diagram below provides an overview of the API connectivity and data submission flow for NBS LOI and LRI transactions.

OneHealthPort HIE NBS Data Transactions
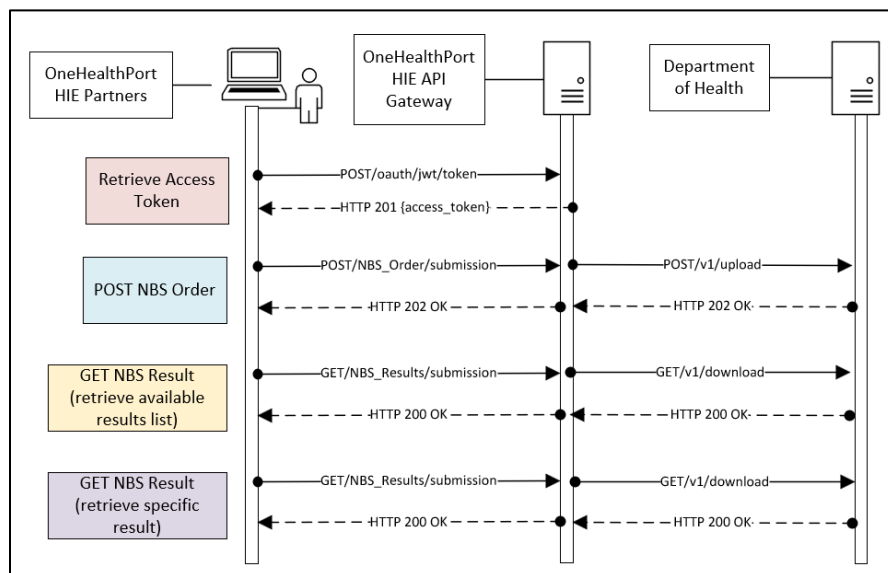
NBS - LOI (lab order) Data Transaction Description:

1. OneHealthPort HIE onboarding team provides an OAuth 2.0 JWT token to submitting organization. OAuth 2.0 JWT tokens are valid for 6 months.
2. Submitting organization uses the OAuth 2.0 JWT token (to be included in the request header) to call the authorization endpoint and receives an access token upon successful authentication.
3. When the authorization endpoint is called, OneHealthPort HIE API Gateway performs verification of the OAuth 2.0 JWT token at the API Gateway. Upon verification, a unique access token is generated by the API Gateway and is valid for 3600 seconds (1 hour).
4. The partner calls the data submission API with the access token included in the request header.
5. The OneHealthPort HIE partner or their vendor will be required to include a file name or identifier for tracking the NBS LOI data transaction through its lifecycle. Please see HTTPS header requirements below.
6. OneHealthPort HIE API Gateway verifies access token and forwards the message to DOH.
7. The OneHealthPort HIE returns a synchronous HTTP response to the submitting system. The response will include the order-specific URL to use for result lookup and should be captured for later use.

NBS - LRI (retrieve list of available lab results, including the result identifiers) Data Transaction Description:

1. OneHealthPort HIE onboarding team provides an OAuth 2.0 JWT token to submitting organization. OAuth 2.0 JWT tokens are valid for 6 months.
2. Submitting organization uses the OAuth 2.0 JWT token (to be included in the request header) to call the authorization endpoint and receives an access token upon successful authentication.
3. When the authorization endpoint is called, OneHealthPort HIE API Gateway performs verification of the OAuth 2.0 JWT token at the API Gateway. Upon verification, a unique access token is generated by the API Gateway and is valid for 3600 seconds (1 hour).
4. The partner calls (using a GET) the available lab results lookup API with the access token included in the request header.
5. OneHealthPort HIE API Gateway verifies access token and forwards the GET request to DOH.
6. The OneHealthPort HIE Gateway returns a synchronous HTTP response to the submitting system (from the DOH system) that includes a list of the available lab result identifiers.

NBS - LRI (retrieve lab result)Data Transaction Description:

1. OneHealthPort HIE onboarding team provides an OAuth 2.0 JWT token to submitting organization. OAuth 2.0 JWT tokens are valid for 6 months.
2. Submitting organization uses the OAuth 2.0 JWT token (to be included in the request header) to call the authorization endpoint and receives an access token upon successful authentication.
3. When the authorization endpoint is called, OneHealthPort HIE API Gateway performs verification of the OAuth 2.0 JWT token at the API Gateway. Upon verification, a unique access token is generated by the API Gateway and is valid for 3600 seconds (1 hour).
4. The partner calls (using a GET) the result lookup API with the access token included in the request header. The result specific identifier provided from the available results list is included at the end of the GET URL (see example below) to retrieve that specific lab result.
5. OneHealthPort HIE API Gateway verifies access token and forwards the request to DOH.
6. The OneHealthPort HIE returns a synchronous HTTP response to the submitting system (from the DOH system) that includes the specific lab result.

Getting Connected to the OneHealthPort HIE API Gateway

Step 1 – Request OAuth 2.0 JWT token

OneHealthPort HIE provides OAuth 2.0 JWT token to the partner or their vendor via secure mail.

Different OAuth 2.0 JWT tokens will be provided for each OneHealthPort technical environment – UAT and Production.

To request a OAuth 2.0 JWT token, submit a OneHealthPort HIE Support Request [form](#).

- In the section of the form called, *Issue or Question area,* select the option called **HIE connectivity set-up**.

- In the section of the form called, *Detail description of issue or question being reported*, please request an OAuth 2.0 JWT token for NBS connectivity set up.

When the support request is received, the OneHealthPort HIE team will set up the vendor or partner at the API gateway for authentication and send the OAuth 2.0 JWT token to the vendor or partner via secure mail.

Step 2 – Set up APIs to retrieve access token, submit NBS order and retrieve NBS results

OneHealthPort HIE API Endpoints

OneHealthPort HIE vendor or partner will use the endpoints in the table below to retrieve access tokens and submit NBS data.

Endpoint Description	Endpoint
Authorization API User Acceptance Testing (UAT) – used with OAuth 2.0 JWT to receive access token.	https://uat-v2-onehealthport-api.axwaycloud.com/ohp/oauth/jwt/token
NBS API UAT – used with unique access token to post NBS message for data submission to DOH.	https://uat-v2-onehealthport-api.axwaycloud.com/doh/phchub/PHC-Hub/nbs
NBS API UAT – used with unique access token to get NBS available result identifiers from DOH.	https://uat-v2-onehealthport-api.axwaycloud.com/doh/phchub/PHC-Hub/nbs-results
NBS API UAT – used with unique access token to get NBS result (using result identifier) from DOH.	https://uat-v2-onehealthport-api.axwaycloud.com/doh/phchub/PHC-Hub/nbs-results/{resultId}
Authorization API Production – used with Oauth 2.0 JWT to receive access token.	https://prd-v2-onehealthport-api.axwaycloud.com/ohp/oauth/jwt/token
NBS API Production – used with unique access token to post NBS message for data submission to DOH.	https://prd-v2-onehealthport-api.axwaycloud.com/doh/phchub/PHC-Hub/nbs
NBS API Production – used with unique access token to get NBS available result identifiers from DOH.	https://prd-v2-onehealthport-api.axwaycloud.com/doh/phchub/PHC-Hub/nbs-results
NBS API Production – used with unique access token to get NBS result (using result identifier) from DOH.	https://prd-v2-onehealthport-api.axwaycloud.com/doh/phchub/PHC-Hub/nbs-results/{resultId}

- OneHealthPort HIE onboarding team sets up partner or their vendor for authentication at the API gateway.
- Partner or their vendor calls the authorization endpoint with the OAuth 2.0 JWT token and upon authorization, retrieves a unique access token.
- Partner or their vendor will use the following HTTPS header along with the unique access token to call the API and send NBS LOI and LRI submissions to the API gateway. Listed below are the header requirements.

NBS_Order	NBS_Result	HTTPS Header	Definition
X	X	x-doc-type	OneHealthPort HIE document type: • NBS_Order, NBS_Result
X	X	x-org-facility-id	OneHealthPort HIE organization identifier provided by the HIE onboarding team.
X	X	x-ref-id	Note – The reference identifier can be a file name or identifier that can be used by partner or vendor to manage message through its life cycle. **The file name or identifier used is limited to 61 characters.**
	X	x-pickup-code	Code assigned and provided to customer by the Department of Health Newborn Screening team. Used in the GET messages for retrieving the available lab results list and the lab results.

Important note: Use of the HTTPs header <u>does not</u> change the structure of the MSH or the content of the HL7 2.5.1 LOI or LRI messages per specifications set forth by the Washington Department of Health. API submissions also do not require any special encoding such as Base64.

HTTPS Header Example for NBS Messages

Retrieve access token from OneHealthPort API gateway to use in the NBS message submission

POST /ohp/oauth/jwt/token HTTP/1.1
Accept-Encoding: gzip, deflate, br
Content-Type: application/x-www-form-urlencoded
Content-Length: 632
Host: uat-v2-onehealthport-api.axwaycloud.com
Connection: Keep-Alive
User-Agent: Apache-HttpClient/4.5.6 (Java/1.8.0_222)

grant_type=urn:ietf:params:oauth:grant-type:jwt-bearer&assertion=eyJhbGciOiJFUzUxMiIsImtpZCI6ImU3NGYzNmMzNjU2ZTRhMGFhM2RmYmQ3OTYzZDE4MGEzIiwidHlwIjoiSldUIn0.eyJzdWJfb3JnX25hbWUiOiJPSFAgUmVncmVzc2lvbiAmIFRlc3QgQ2xpbmljJIDEiLCJzdWIiOiI3dXljc280MSIsImp0aSI6ImYyNWRlMzI2YWFkODRmMjNiZjllMWZmNmU5MTIxMTA1IiwiZXhwIjoxNjY4NjAzNzIwLCJpc3MiOiJodHRwczovL3VhdC1hcGkub25laGVhbHRocG9ydC5jb20vc2VydmljZW9wZXJhdGlvbnMvandrcyIsImlhdCI6MTY1MjczMTQzMywibmJmIjoxNjUyNzA2MTIwfQ.AeLSsgN4xt823yAmUwlkH6SUPisuAcIFN3coHmWANhGxS-oR29taEbg3WY0TyjLzbWFXlR3lXlkKwcMbCE5hg6EhAJl-urPoIP_fNyv9qMUMHZ3_hHtcs47el4ewTyzNCgsna0O1xvAq2CHuFr3ujw2pXBIcumjyoY4ehHjx0x0

OneHealthPort API Gateway response to retrieval of access token

HTTP/1.1 201 Created
Max-Forwards: 20
Via: 1.0 axwc-api-11-v2 ()
Connection: close
X-CorrelationID: Id-b3408562ee7d3edc9a71760d 0
Date: Wed, 18 May 2022 18:53:40 GMT
Request-Context: appId=cid-v1:2fb10c65-a180-4921-8c35-c497fb775c0c
X-Azure-Ref:
0tECFYgAAAAD2O3mXTAjVQrifN9mTvwAzQVRMMzMxMDAwMTEwMDM3ADIxYTBhMzIxLTc5ZmEtNDQ3OS1iYTExLWY1ZGFiZTVjMjx0x0
X-Cache: CONFIG_NOCACHE
X-Powered-By: ASP.NET
Content-Type: application/json

> **This is an example of an access token that will be used in the Authorization HTTP header of the NBS message**

```
{
"access_token": "d2932b2e1eb740c19885e35ff42e80c692251194b35b4e7895f0a36630c71cc6",
"token_type": "Bearer",
"expires_in": "3600"
}
```

HTTP status code for access token retrieval: If you <u>do not</u> use a valid OAuth 2.0 JWT token to retrieve the access token you will receive a **401 Unauthorized** response. Please follow the instructions below to receive a valid OAuth 2.0 JWT token from the OneHealthPort HIE.

- Submit a OneHealthPort HIE Support Request [form](#).
- In the section of the form called, *Issue or Question area,* select the option called **HIE connectivity set-up**.
- In the section of the form called, *Detail description of issue or question being reported*, please request a new OAuth 2.0 JWT token for ELR connectivity set up.

When the support request is received, the OneHealthPort HIE team will send the new OAuth 2.0 JWT token to the vendor or partner via secure mail.

POST submission of an NBS_Order (LOI) message

POST /doh/phchub/PHC-Hub/nbs HTTP/1.1
Authorization: **Bearer** b84d5e02c1604a98ba173030153918bb2d807a43e9434a5f9ef50d8df2cbxoxo
x-ref-id: ac53cc6b-7ddd-47cc-a341-6ef7ec80xoxo
x-doc-type: NBS_Order
x-org-facility-id: 7uycso22
Content-Type: application/json
Content-Length: 2043
Host: uat-v2-onehealthport-api.axwaycloud.com
Connection: Keep-Alive
User-Agent: Apache-HttpClient/4.5.6 (Java/1.8.0_222)
Accept-Encoding: gzip,deflate

> **The HTTP headers highlighted in blue in the example are <u>required</u> for the NBS_Order (LOI) message POST.**
>
> **<u>Do not</u> use the x-org-facility-id 7uycso22. Use the identifier provided for your organization by OneHealthPort.**
>
> **Note, in Content-Type indicate application/json**

{   "body":"MSH|^~\\&#|NIST^2.16.840.1.113883.3.72.5.20^ISO|NIST^2.16.840.1.113883.3.72.5.21^ISO|WADOHPHRED^2.16.840.1.113883.3.237.4.2^ISO|dn1fro00^1.3.6.1.4.1.38630.2.1.1.19^ISO|20120821140551-0500||ORU^R01^ORU_R01|OHP_TEST_11111|T|2.5.1|||NE|NE|||||PHLabReport-NoAck^HL7^2.16.840.1.113883.9.11^ISO\rSFT|NIST Lab, Inc.^L^^^^NIST&2.16.840.1.113883.3.987.1&ISO^XX^^^123544|3.6.23|A-1 Lab System|6742873-12||20100617\rPID|1||PATID9999^^^&2.16.840.1.113883.3.72.5.24&ISO^MR^Any Cnty Hlth C&2.16.840.1.113883.3.0&ISO||LastName^FirstName^X^^^^L||99999999|M||9999-9^Pink^CDCREC|101 Any Road^^AnyCity^XX^99999^USA^H||^PRN^PH^^1^407^2351234|||||||||N^Not Hispanic or Latino^HL79999^NL^not latino^L^2.5.1\rORC|RE|ORD999999-9^^2.16.840.1.113883.3.72.5.24^ISO|R-783274-4^LIS^2.16.840.1.113883.3.72.5.25^ISO|||||||||57422^LastName^Any Doctor^^^Dr.^^^NPI&2.16.840.1.999999.4.6&ISO^L^^^NPI||^PRN^PH^^^407^2341212|||||||Any County Health Clinic|999 Any Ave^^AnyCITY^XX^33333^^B|^WPN^PH^^^813^8847284|999 Any Ave^^AnyCITY^XX^33333^^B\rOBR|1|ORD999999-9^^2.16.840.1.113883.3.72.5.24^ISO|R-783274-4^LIS^2.16.840.1.113883.3.72.5.25^ISO|625-4^Bacteria identified in Stool by Culture^LN^3456543^CULTURE STOOL^99USI^2.40|||20110528|||||||||57422^LastName^AnyDoctor^^^Dr.^^^NPI&2.16.840.1.999999.4.6&ISO^L^^^NPI|^PRN^PH^^^407^2341212|||||201106010900-0500|||F\rOBX|1|CWE|625-4^Bacteria identified in Stool by Culture^LN^Bacteria identified^Bacteria identified^99USI^2.40||3092008^Staphylococcus aureus (organism)^SCT^SAUR^Staphylococcus aureus^L^S aureus||||||F|||20110528|||||20110531130655-0500||||Any County Health Department Laboratory^^^^^&2.16.840.1.113883.3.72.5.30.1&ISO^XX^^^987|6756 Any Avenue^^AnyCITY^XX^33333^^B|10092^LastName^AnyName^^^^^^&2.16.840.1.113883.3.72.5.30.1&ISO^L^^^NPI\rSPM|1|^ORD999999-9&&2.16.840.1.113883.3.72.5.24&ISO||119339001^Stool specimen^SCT^^^^07/31/2012||||||||||||20110528|20110529"
}

GET call to pick up NBS_Result (LRI) available results list

GET /doh/phchub/PHC-Hub/nbs-results
Authorization: **Bearer** b84d5e02c1604a98ba173030153918bb2d807a43e9434a5f9ef50d8df2cbxoxo
x-ref-id: ac53cc6b-7ddd-47cc-a341-6ef7ec80xoxo
x-doc-type: NBS_Result
x-org-facility-id: 7uycso22
x-pickup-code: {code provided by DOH}
Host: uat-v2-onehealthport-api.axwaycloud.com
Connection: Keep-Alive

User-Agent: Apache-HttpClient/4.5.6 (Java/1.8.0_222)
Accept-Encoding: gzip,deflate

> **The HTTP headers highlighted in blue in the example are _required_ for the NBS_Result (LRI) message GET to retrieve the available results list.**
>
> **Do not use the x-org-facility-id 7uycso22. Use the identifier provided for your organization by OneHealthPort.**
>
> **Note, no content-type or body**

GET call to pick up NBS_Result (LRI)

GET /doh/phchub/PHC-Hub/nbs-results/7892xoxo
Authorization: **Bearer** b84d5e02c1604a98ba173030153918bb2d807a43e9434a5f9ef50d8df2cbxoxo
x-ref-id: ac53cc6b-7ddd-47cc-a341-6ef7ec80xoxo
x-doc-type: NBS_Result
x-org-facility-id: 7uycso22
x-pickup-code: {code provided by DOH}
Host: uat-v2-onehealthport-api.axwaycloud.com
Connection: Keep-Alive

User-Agent: Apache-HttpClient/4.5.6 (Java/1.8.0_222)
Accept-Encoding: gzip,deflate

> **The result identifier shown in red is obtained from the available results list for use in executing a GET to retrieve a specific lab result.**
>
> **The HTTP headers highlighted in blue in the example are _required_ for the NBS_Result (LRI) message GET.**
>
> **Do not use the x-org-facility-id 7uycso22. Use the identifier provided for your organization by OneHealthPort.**
>
> **Note, no content-type or body**

HTTP status code for access token expiration: If you do not use the retrieved access token in the NBS submission before it expires (access tokens expire in 3600 seconds), you will receive a **401 Unauthorized** response. You will then need to repeat the process to retrieve a new access token and resubmit the NBS message.

Step 3 – Receiving synchronous responses

Responses are returned **synchronously**, *meaning they are returned in the same connectivity thread opened during the submission*.

HTTP Responses

HTTP Response Code	Definition
200 OK	Success Successful NBS_Result (LRI) GET
201	Created - OneHealthPort HIE API Gateway successful response for retrieval of access token
202	Accepted NBS_Order (LOI) POST: submission accepted by DOH
400	Bad Request **Action:** Review response for additional detail for conformance errors. Make corrections and resubmit. Typical conformance errors occur because special characters are not properly escaped and fail JSON body formatting conformance requirements. Please verify payload special characters are properly escaped before submission.
401	Unauthorized **Action:** Verify that the correct OAuth 2.0 JWT token is being used correctly to obtain access token. If not, submit a OneHealthPort HIE Support Request form to request a new OAuth 2.0 JWT token. If the 401 is related to the access token in the NBS submission, the access token may be expired or compromised. Please retrieve a new access token and resubmit.

403	Forbidden
	The OAuth 2.0 JWT token is not configured for the document type included in the submission.
	Action for vendor or partner when receiving a 403 response:
	Submit a OneHealthPort HIE Support Request form.
	In the section of the form called, *Issue or Question area,* select the option called **HIE connectivity set-up**.
	In the section of the form called, *Detail description of issue or question being reported*, please indicate you have received a 403 forbidden error and provide the content of the error message.
500	Internal Server Error
	Action: Resubmit messages that receive this response.
503	Service Unavailable. This response is sent from the OneHealthPort HIE gateway when the OneHealthPort or DOH systems are taken offline for maintenance.
	Action: The submitter needs to hold submissions until notified systems are online and operational.
504	Timeout generated by the DOH system if processing is delayed.
	Action: Resubmit messages that received this response.

Revocation of OAuth 2.0 JWT Token

If a OneHealthPort HIE partner's OAuth 2.0 JWT token becomes compromised, **immediately notify** the OneHealthPort HIE so the token can be revoked (rendered invalid) and a new one can be issued. Follow the process below for notification and to obtain a new OAuth 2.0 JWT token.

Notification Process for Compromised and Request for New OAuth 2.0 JWT Token

- Submit a OneHealthPort HIE Support Request [form](#).
- In the section of the form called, *Issue or Question area,* select the option called **HIE connectivity set-up**.
- In the section of the form called, *Detail description of issue or question being reported*, please indicate your OAuth 2.0 JWT token has been compromised and you would like the OneHealthPort team to provide a new OAuth 2.0 JWT token for NBS LOI and LRI data submission.

Operations

The API connectivity at the OneHealthPort HIE API gateway will involve the following for operational consideration and management.
- OneHealthPort HIE systems are online and operational for NBS data submissions unless DOH takes down their systems for scheduled maintenance or systems are down for emergency maintenance.
- Partners will be responsible for reprocessing any messages that do not receive an acknowledgement or successful HTTP response code.
- Maintenance schedules are posted on the OneHealthPort HIE [web page](#) under Maintenance Schedule.