Portability Check
Asynchronous SOAP

Interface information

tyntec's Global Number Portability (GNP) resolves number portability by obtaining data directly from local number portability databases and live network information from across the globe.

Global Number Portability is available with the Asynchronous SOAP API. SOAP is a protocol used for exchanging messages over a computer network. The messages that are sent do not rely on the underlying transport protocol, which is in most cases HTTP (and in the specific case of the tyntec infrastructure).

The messages themselves are structured as XML documents and are defined in two parts:

- **SOAP standard**
  The SOAP standard describes elements necessary for communication, such as the "SOAP Envelope," which encloses the actual content to be sent. This content is application-specific and is in this case defined by the WSDL file provided by tyntec. A simple XML parser can be used for extracting the data from the soap response.

- **WSDL file**
  The WSDL file can be accessed on one of the URLs below, depending if HTTP or HTTPS is used:
  http://78.110.226.74:8080/soap/services/SuperQueryService?wsdl
  https://78.110.226.74:8080/soap/services/SuperQueryService?wsd

To implement and use Global Number Portability, you should have the following resources available:

- The call of a Web Service as defined by the SOAP specification (http://www.w3.org/TR/soap12-part1/) with the help of the provided WSDL file.
- A receiving Web Service on the server side to accept requests to deliver the results (CheckDeliverRequest, defined in the WSDL file).

Furthermore, you need a computer system with a fixed IP address from where the SOAP call is initiated, where the Web Service runs and which accepts the results if using the asynchronous API (Check Delivery Requests). This computer system must be reachable from the tyntec IP. For the fastest implementation and expert support from tyntec, we recommend implementing the GNP using:

- The call of a Web Service as defined by the SOAP specification: (http://www.w3.org/TR/soap12-part1/) with the help of the provided WSDL file.
- Java Axis2 1.3 Web Services framework: http://ws.apache.org/axis2/
- http://java.sun.com/webservices/docs/1.6/tutorial/doc/ Tomcat 5.5 or higher for hosting the axis framework: http://tomcat.apache.org/

The following links to documents are useful in implementing the Global Number Portability service with the above components:

- http://ws.apache.org/axis2/1_3/userguide.html
- http://ws.apache.org/axis2/1_3/installationguide.html
- http://www.onjava.com/pub/a/onjava/2001/10/24/xmldatabind.html

This is the overview of the workflow for querying portability information:
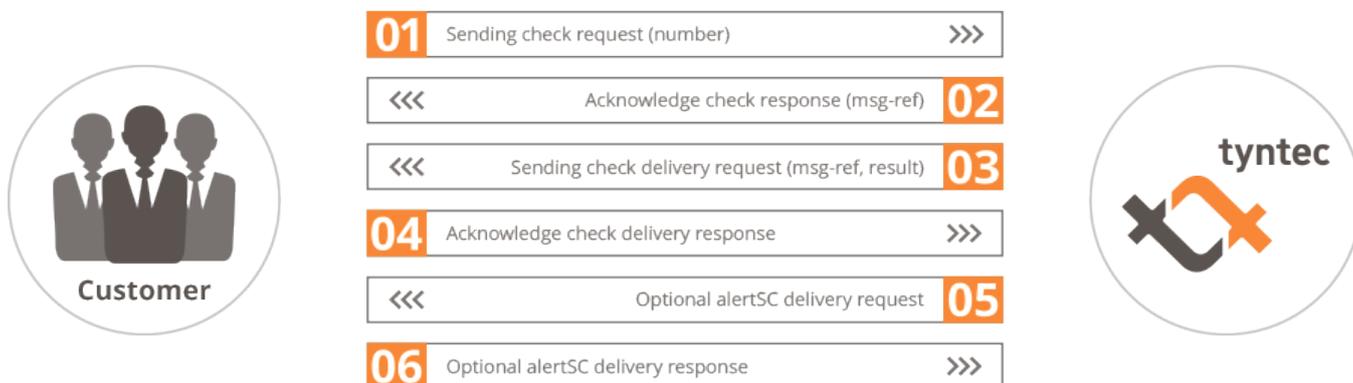
As previously mentioned, tyntec's SOAP implementation uses HTTP as its transport layer. The initial request consists of the number to be queried, in international format. The result will contain subscription network information:

- IMSI network information (MCC/MNC)
- IMSI country
- IMSI time zone
- HLR network information (MCC/MNC)
- HLR country
- HLR time zone

Connection steps

Step 1 - Sending check request (number)

The communication protocol is HTTP, whereby a request is submitted to a URL that tyntec specifies. A sample request is shown below.

```
<tyn:checkrequest xmlns:tyn=""http://www.tyntec.biz/"">
<tyn:allnetworkquery>
<tyn:destination>
<tyn:number tyn:ton=""Unknown"" tyn:npi=""Unknown"">+491239876543
</tyn:number></tyn:destination></tyn:allnetworkquery>
</tyn:checkrequest>
```

Please note that the XML request must be surrounded by a proper SOAP body in proper SOAP envelope.

Step 2 - Acknowledge check response

tyntec will acknowledge the receipt of a Check Request. Please note that this response will be delivered via the HTTP response to the previous HTTP request. If the Check Request has been received successfully, tyntec will acknowledge the Check Request with a MessageRef, which you should store for future reference in the following format:

```
<tyn:checkresponse xmlns:tyn=""http://www.tyntec.biz/"">
<tyn:messageref>15-21088981464922+491239876543</tyn:messageref>
</tyn:checkresponse>
```

If the Check Request has been received but contains an error, tyntec will acknowledge the Check Request with an error code. One of the possible return codes is shown here:

```
<tyn:checkresponse xmlns:tyn=""http://www.tyntec.biz/"">
<tyn:errorcode>InvalidData</tyn:errorcode>
</tyn:checkresponse>
```

The full list of return codes can be seen in the following table:

Error Code	Description
HTTP 401 (unauthorized)	This error is returned when the number of queries exceeds the previously agreed amount of queries, or the username and password are wrong or do not match. This effort is not transmitted in a SOAP envelope but as a direct response to the HTTP request.
Invalid Data	This error is returned if the number transmitted is wrong (e.g. there are spaces or letters in the number).
RespondBackURL invalid	This error is returned if (1) The Respond-Back-URL given is not a valid one (2) The IP that is used is a local one (if it starts with "192.168", "10" or "127"). (3) The host part is "localhost" or empty (4) Any other error occurs when handling the URL.
Internal Error	This error should be reported to tyntec Support together with the message ID.

Step 3 - Sending check delivery request

tyntec uses 3 response codes to determine the outcome of a Global Number Portability query. The table below shows the Response Codes and their associated Check State values:

Check State	Response Code	Description
Success	0 - Success	The requested MSISDN information is returned.
Failure	1 – No Response	Temporarily not connected to the network or the network is not covered by tyntec.
Failure	2 - Error	Network has confirmed that MSISDN does not exist.

A response code is returned only when the Check State value = 'Failure'.

Response Code 0 – Success

A successful Check Delivery Request will return all data regarding the subscription network, e.g.:

```
<tyn:checkdeliverrequest xmlns:tyn=""http://www.tyntec.biz/"">
<tyn:messageref>15-21088981464922+491239876543</tyn:messageref>
<tyn:checkstate value=""Success""></tyn:checkstate>
<tyn:allnetworkinfo>
<tyn:subscriptionnetwork>
<tyn:imsiinformation>
<tyn:networkinfo>
<tyn:mcc>262</tyn:mcc>
<tyn:mnc>07</tyn:mnc>
<tyn:tyntecid>1099</tyn:tyntecid>
<tyn:operatorname>O2 (Germany) GmbH & Co. OHG</tyn:operatorname>
<tyn:country>
<tyn:countryname isoalpha3code=""DEU"">Germany</tyn:countryname>
<tyn:timezone>
<tyn:daylightsavingtime>
<tyn:hasdst>true</tyn:hasdst>
<tyn:dstcurrentlyactive>false</tyn:dstcurrentlyactive>
<tyn:dstoffset>3600000 ms</tyn:dstoffset>
</tyn:daylightsavingtime>
<tyn:name>Europe/Berlin</tyn:name>
<tyn:gmtoffset>3600000 ms</tyn:gmtoffset>
</tyn:timezone>
</tyn:country>
</tyn:networkinfo>
</tyn:imsiinformation>
<tyn:hlrinformation>
<tyn:networkinfo>
<tyn:mcc>262</tyn:mcc>
<tyn:mnc>07</tyn:mnc>
<tyn:tyntecid>1099</tyn:tyntecid>
<tyn:operatorname>O2 (Germany) GmbH & Co. OHG</tyn:operatorname>
<tyn:country>
<tyn:countryname isoalpha3code=""DEU"">Germany</tyn:countryname>
<tyn:timezone>
<tyn:daylightsavingtime>
<tyn:hasdst>true</tyn:hasdst>
<tyn:dstcurrentlyactive>false</tyn:dstcurrentlyactive>
<tyn:dstoffset>3600000 ms</tyn:dstoffset>
</tyn:daylightsavingtime>
<tyn:name>Europe/Berlin</tyn:name>
<tyn:gmtoffset>3600000 ms</tyn:gmtoffset>
</tyn:timezone>
</tyn:country>
</tyn:networkinfo>
</tyn:hlrinformation>
</tyn:subscriptionnetwork></tyn:allnetworkinfo>
</tyn:checkdeliverrequest>
```

Although the response code '0' is not explicitly returned, success is implied when the network operator information is returned. With the delivery of MCC + MNC and TynTecID, we ensure uniqueness in the transmission of the network operator information, regardless of any changes that may have taken place regarding the name of the operator.

Response Code 1 – No Response

Response code '1' indicates that the network did not return a response, e.g.:

```
<tyn:checkdeliverrequest xmlns:tyn=""http://www.tyntec.biz/"">
<tyn:messageref>15-21088981464922+491239876543</tyn:messageref>
<tyn:checkstate tyn:value=""Failure""></tyn:checkstate>
<tyn:networkerrorcode tyn:networktype=""GSM"" tyn:value=""1""></tyn:networkerrorcode>
</tyn:checkdeliverrequest>
```

There are a number of reasons why a network may not return a response. Often, poor number quality results in the network being unable to respond. Check the quality of the number to ensure that it consists only of the '+' sign and decimal digits; no other characters or spaces are permitted. If number quality is good, there may be a problem with the network; we recommend that you query again at a later time. Another possibility is that the number belongs to an operator that tyntec cannot reach.

Response Code 2 – Error

Response code '2' indicates that the network has confirmed that the MSISDN does not exist, e.g.:

```
<tyn:checkdeliverrequest xmlns:tyn=""http://www.tyntec.biz/"">
<tyn:messageref>15-21088981464922+491239876543</tyn:messageref>
<tyn:checkstate tyn:value=""Failure""></tyn:checkstate>
<tyn:networkerrorcode tyn:networktype=""GSM"" tyn:value=""2"/"></tyn:networkerrorcode>
</tyn:checkdeliverrequest>
```

Example request

This example shows a Check Request enclosed in a SOAP Envelope with a full HTTP POST Header. Authorization information for „use:testpassword" is encoded in the Authorization header (found in RFC 2617, chapter 2; http://www.ietf.org/rfc/rfc2616.txt). Please note that the login "user" with password "testpassword" is not valid on the tyntec system and the host given in the example may differ from the host that is valid for you. Please refer to the Products section in my tyntec for the correct host.

HTTP-Post-Header and SOAP-Envelope:
============= begin ===============
POST /soap/services/EnhancedCheckService HTTP/1.0
Content-Type: text/xml; charset=utf-8
Accept: application/soap+xml, application/dime, multipart/related, text/*
User-Agent: Axis/1.2alpha
Host: 78.110.226.164:8972
Cache-Control: no-cache
Pragma: no-cache
SOAPAction: „"
Content-Length: 583

Authorization: Basic dXNlcjp0ZXN0cGFzc3dvcmQ=
<!--?xml version="1.0" encoding="UTF-8"?-->
<soapenv:envelope xmlns:soapenv=""http://schemas.xmlsoap.org/soap/envelope/"" xmlns:xsd=""http://www.w3.org/2001/XMLSchema""
xmlns:xsi=""http://www.w3.org/2001/XMLSchema-instance"" xmlns:tyn=""http://www.tyntec.biz/"">
<soapenv:body>
<tyn:checkrequest>
<tyn:allnetworkquery>
<tyn:destination>
<tyn:number tyn:ton=""Unknown"" tyn:npi=""Unknown"">+491239876543</tyn:number>
</tyn:destination>
</tyn:allnetworkquery>
</tyn:checkrequest>
</soapenv:body>
</soapenv:envelope>
============= end ===============

Features

Feature	Activation	Functionality
Flexible respond-back-URL	Default	You can use this to change the address that is used for delivering the results of each request. tyntec uses the given URL only for the accompanying request, and will not replace the general URL transmitted with the account setup. **Here is an example:**

```
<tyn:checkrequest xmlns:tyn=""http://www.tyntec.biz/">
<tyn:allnetworkquery>
<tyn:destination>
<tyn:number>+491239876543</tyn:number>
</tyn:destination>
</tyn:allnetworkquery>
<tyn:respondbackurl>http://www.yourserver.com/yourservice</tyn:respondbackurl>
</tyn:checkrequest>
```

Feature	Activation	Functionality
AlertSC notification	On request	With this feature, you will be notified when a handset that is originally turned off gets turned back on. Here is how it works: 1. You query a phone number and receive a "phone turned off" response. 2. tyntec instructs the mobile operator to provide a notification when the phone number becomes available. 3. When tyntec receives the information that the phone number is available, we will notify you. This functionality depends on the capabilities of each mobile operator's infrastructure and is not guaranteed, so you might not receive AlertSC notifications from some mobile operators.

FAQs

Q - The URL provided by tyntec for Global Number Portability doesn't work. What can be done?

A - Check the firewall settings to ensure that requests to URLs with a port number other than 80 are indeed permitted. If in doubt, please connect to the following URL (http://support.tyntec.biz:8968) and report to tyntec's Customer Support the date and time of the attempted connection.

Q - I am able to send the request, but I do not receive a response. What's happening?

A - The IP address from which the request originates must be the same as the IP address you have provided to tyntec, otherwise you won't receive a response from tyntec. If you're using the Flexible respond-back-URL feature, verify that the IP address of the respond-back-URL has been registered with tyntec. If the IP address has not been registered with tyntec, your firewall may have intercepted the request as an unrecognized IP address. The IP addresses of all respond-back-URLs must be registered with tyntec's Support Team. tyntec Support must also be notified of all changes to IP addresses.

Q - Why do I receive multiple Check Delivery Requests with the same ID?

A - In the event that your server is unable to process a request, e.g. an error generating the XML document, the Check Delivery Request will be resent. Please check your processes for receiving Check Delivery Requests.

Q - I can send a request and receive back a message ID, but why don't I get any results?

A - The URL to which results are to be directed must be registered at tyntec. Please check that the URL has the same IP address as the originating request (see also the second question in this FAQ section). Also, please ensure that your SOAP service that accepts the results is running. The service must be kept running even if you have sent all requests, since there is a time delay between request and receipt of result. If you use a firewall, please ensure that tyntec's IP address (i.e., the IP address you sent the requests to) is accepted.

Q - Why do I receive an authorization failure?

A - An authorization failure can be caused by an incorrect username and/or password. Please contact tyntec Support to verify your user details. If you have a test account and have previously been able to send requests successfully you may have reached your test message limit.

Q - How do I know when my test message limit has been reached?

A - If you attempt to send messages beyond your test account limit, you will receive an HTTP 401 Error (Unauthorized).

Q - I receive the same Check Delivery Request repeatedly, or results come in very slowly. What can I do?

A - There are two possibilities for receiving multiple Check Delivery Requests:

1)   tyntec received a Check Delivery Response with an error message included, or

2)   There was a problem in the communication process

In the case of an error message in a Check Delivery Response, the Check Delivery Request will be resent, regardless of the content of the error message. If for some reason you no longer wish to receive a certain Check Delivery Request, please return a Check Delivery Response without an error message. A communication problem is most frequently caused by an improperly structured Check Delivery Response. The Check Delivery Response may have incorrect syntax that the XML compiler could not be parse. Alternatively, a CheckDelivery Response may never have been successfully sent. In either case, the Check Delivery Request will be resent, since it cannot be determined whether the Check Delivery Request has been successfully received.

Please make sure that your receiving service returns a proper SOAP Envelope with a proper Check Delivery Response included in the SOAP Body.

Q - I send Check Requests but why do I always get an error back?

A - This can be caused by a number of reasons:

1)   You have not supplied a username and/or password. Please make sure that you supply both in the HTTP Header in the Basic Authorization Scheme (Refer to RFC 2616)

2)   The supplied username and/or password are invalid. Please check if you have mistyped the username and/or password provided to you

3)   The supplied number is not a valid phone number; the number must consist only of digits (except a leading +). Any other characters including spaces will not be accepted

4)   Our service cannot parse the Check Request. Please verify that the Check Request is equivalent to the example request given in this API guide (refer to Connection steps, Step 1). If you have created your program/service with an automatic tool and the WSDL file supplied by tyntec, this should not happen.