**What is SOAP?**

SOAP is the Simple Object Access Protocol, a messaging standard defined by the World Wide Web Consortium and its member editors. SOAP uses an XML data format to declare its request and response messages, relying on XML Schema and other technologies to enforce the structure of its payloads.

Both public and private Application Programming Interfaces (APIs) use SOAP as an interface. While more popular in large enterprises, organizations of all sizes produce and consume SOAP APIs.

SOAP is uses the Remote Procedure Call (RPC) pattern, where functions or methods are passed parameters and return a result. Many RPC solutions prior to SOAP were dependent on specific programming languages or technology stacks.

In order to call a SOAP API, you’ll most likely need to include a SOAP library with your programming language. Although it’s possible to make SOAP API calls without SOAP libraries, it’s more efficient to work with an abstraction rather than crafting the messages yourself. The SOAP messages are verbose, mainly due to reliance on XML.

from zeep import Client

client = Client('https://www.example.com/exampleapi')

result = client.service.GetUser(123) # request user with ID 123

name = result['Username']

Let’s look at how this SOAP call might be structured:

<?xml version="1.0"?>

<soap:Envelope xmlns:soap="https://www.w3.org/2003/05/soap-envelope">

<soap:Header>

</soap:Header>

<soap:Body>

<m:GetUser>

<m:UserId>123</m:UserId>

</m:GetUser>

</soap:Body>

</soap:Envelope>

And the response might look something like this:

<?xml version="1.0"?>

<soap:Envelope

xmlns:soap="https://www.w3.org/2003/05/soap-envelope/"

soap:encodingStyle="https://www.w3.org/2003/05/soap-encoding">

<soap:Body>

<m:GetUserResponse>

<m:Username>Tony Stark</m:Username>

</m:GetUserResponse>

</soap:Body>

</soap:Envelope>