

Technical description

ApitamoPKI interface

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1 TECHNICAL DESCRIPTION OF APITAMOPKI

1.1 General description

This document describes the technical implementation of the ApitamoPKI Web Services interface of the Ilmoitin.fi service. The purpose of this document is to aid parties utilising it to implement the functionalities required by the submitting party.

ApitamoPKI of the Ilmoitin.fi service provides a Web Services interface for applications, through which they can check the formal correctness of electronic annual information returns, control notifications, applications and income tax returns, and forward the data to the Finnish Tax Administration. Additionally, ApitamoPKI allows you to check and send request records (direct transfers, tax number requests, prepayment and VAT enquiries) and download response records for them.

The image below depicts the Ilmoitin.fi service as a whole, comprising a browser-used component (WebTaMo), a tunnel service and a Web Services interface (ApitamoPKI). The ApitamoPKI interface discussed in this document can be seen on a grey background in the image.

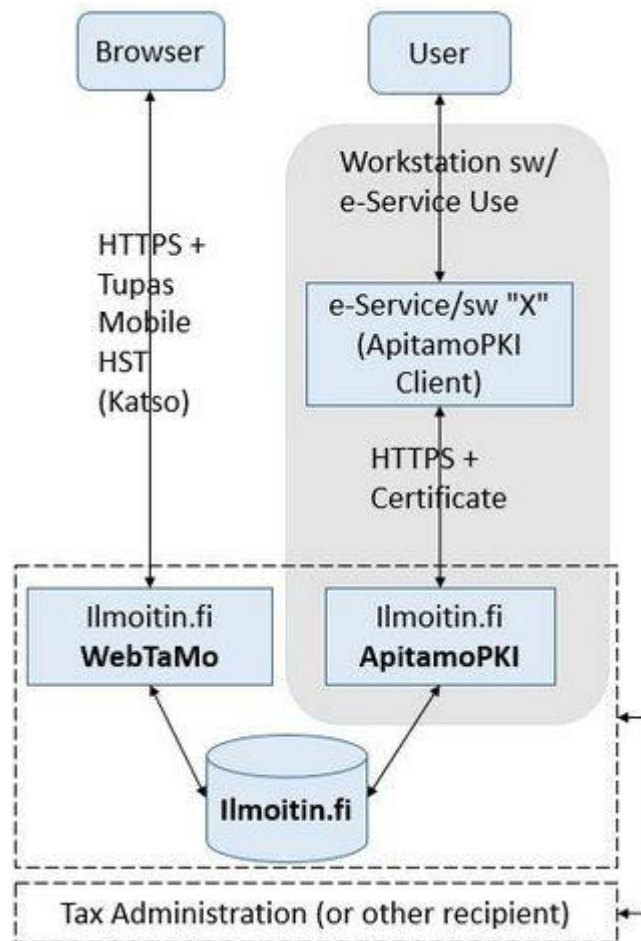


Figure 1. The Ilmoitin.fi service as a whole and ApitamoPKI

ApitamoPKI as a whole is composed of three components:

- The Incomes Register's certificate service;
- The submitting service/software generating the reports; and
- ApitamoPKI of the Ilmoitin.fi service

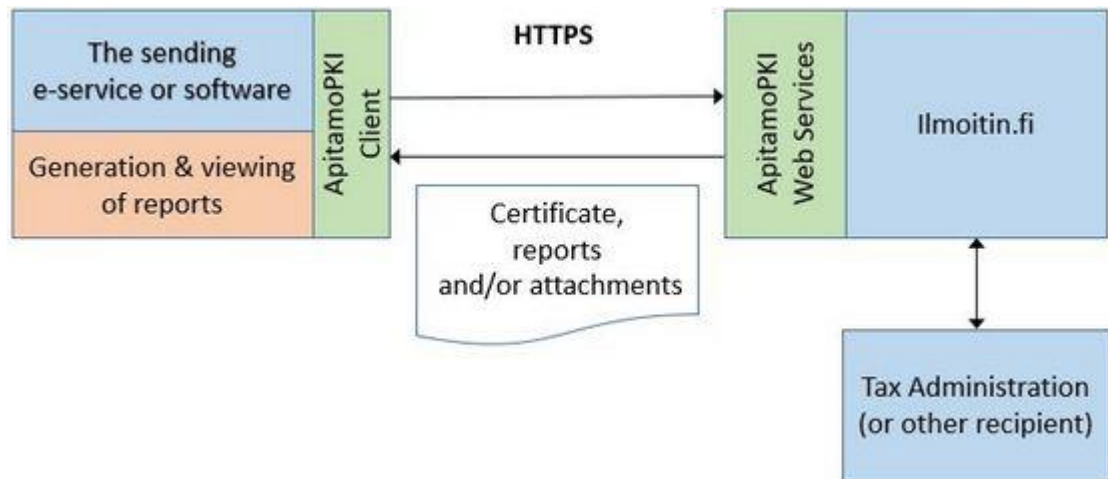


Figure 2. The general principle of ApitamoPKI

The connection addresses required in the use of ApitamoPKI and support is available from the Finnish Tax Administration at the address tamo.tk@vero.fi.

1.2 The operating process on a general level

Before using ApitamoPKI, thoroughly familiarise yourself with the specifications of data format and test the reports generated by your software with the Web interface of testi.ilmoitin.fi. Once your software generates records conforming to the specifications, you can move on to implementation of the ApitamoPKI interface. First test that your testing certificate works, using apitesti.ilmoitin.fi.

On a general level, reports are submitted as follows:

1. The end user identifies him/herself with the software/service (hereinafter referred to as the 'system') with the identification method used by the system.
2. The end user selects the system's reporting functionality.
3. The system sends a call to ApitamoPKI, in connection of which the certificate is sent to ApitamoPKI.
4. Once ApitamoPKI has checked the report and the report submitter's right to submit reports, the submitting system receives a receipt acknowledgement.
5. The submitting system displays the received response and the reception acknowledgement to the end user.
6. The record is transferred (not in real time) to the Finnish Tax Administration's operations system for processing.

1.3 Using a certificate for identification (client certificate authentication)

Reporting via ApitamoPKI largely takes place under the same principles as with the Incomes Register. The process can be summarised as follows:

1. Acquire a certificate, if you do not already have one;
2. Retrieve the certificate from the certificate service;
3. Install it in ApitamoPKIClient;
4. Use the certificate to identify the submitting system; and
5. Submit reports and/or download records.

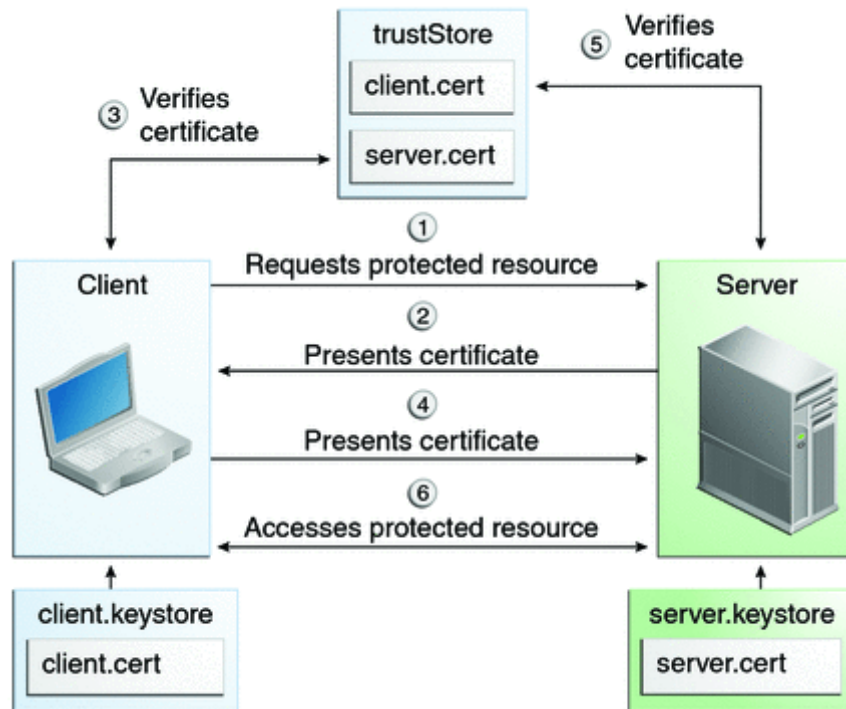


Figure 3. Client certificate authentication (source [Oracle](#))

The certificate is checked both when reports are submitted and records are downloaded. The certificate's validity is checked by comparing the current time and the validity period included in the certificate. If the certificate is no longer valid, the handshake ends in an error. The certificate chain is checked next. This is done by using the public key of the certificate service's root certificate to validate the signature of the submitting system's certificate. If the checking fails, the handshake ends in an error. If the certificate is blacklisted, the handshake ends in an error.

You can read RFC5246 for more details on how a TLS handshake works. At a more detailed level, client certificate authentication (TLS handshake) looks like this diagram:

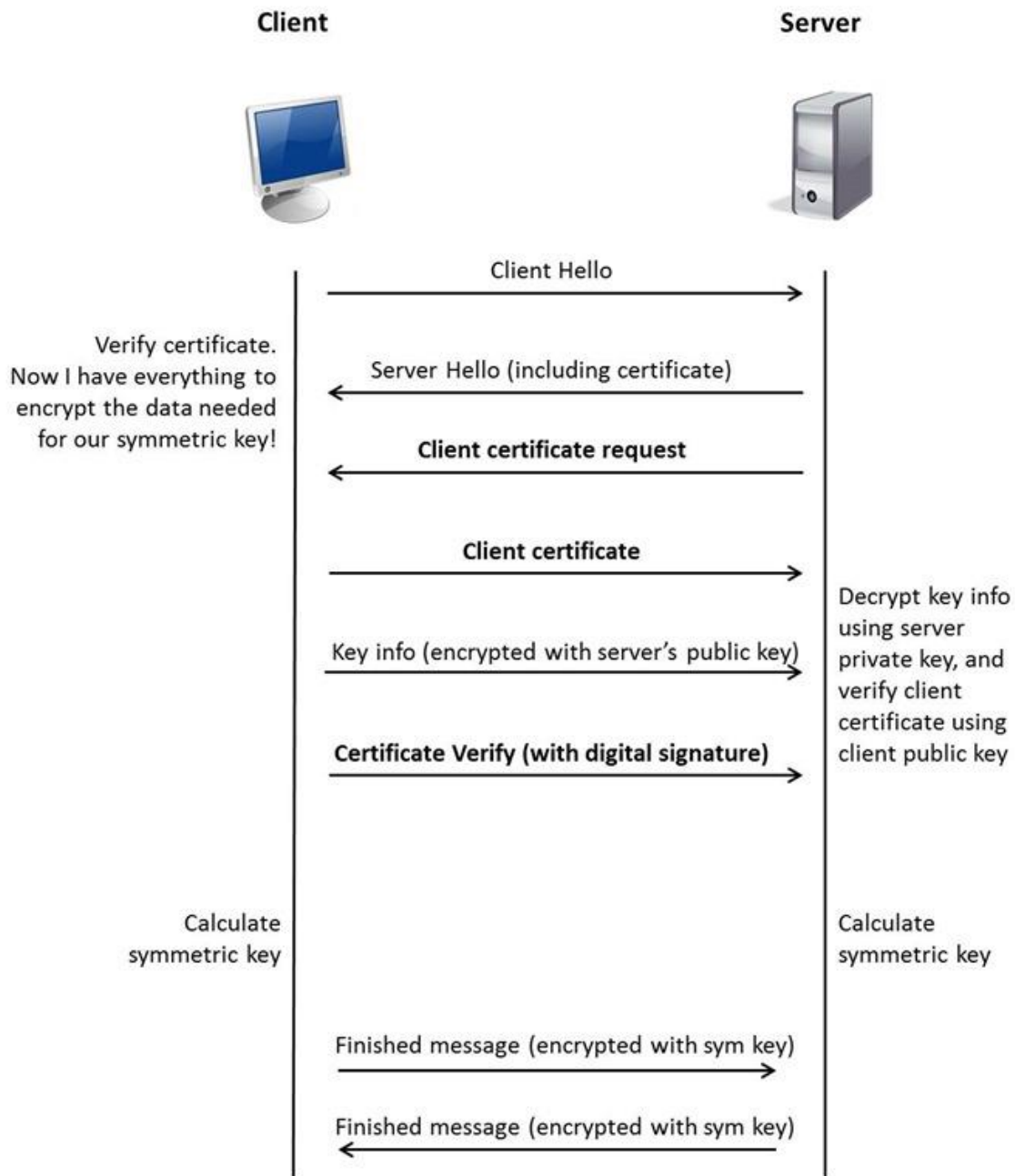


Figure 4. TLS handshake (source [F5](#))

2 APITAMOPKI'S MESSAGE TRAFFIC AND MESSAGE DESCRIPTIONS

2.1 General

See below for a description of the messages between ApitamopKI and the client application.

The character set used in the messages is that specified for the Finnish Tax Administration's data formats, ISO-8859-1. Records in the XML format use the UTF-8 character set.

SOAP message traffic uses the UTF-8 character set.

2.2 Service description

The service comprises two SOAP operations:

- SendOperation (SOAPAction: SendAction)

- RetrievalOperation (SOAPAction: RetrievalAction)

You can find the WSDL description of the service at the following address:

- Test environment: <https://apitesti.ilmoitin.fi/wsapp/apitamopki?wsdl>
- Production environment: After successful testing, the URL addresses for the production environment of ApitamopKI will be available at tamo.tk@vero.fi.

You can also find the WSDL description and the XSD schema of the result of the check from a sub-directory of the sample project.

\"src\\main\\resources\\wsdl\\TamoResult.xsd\".

You can find the schema of the result of the check from the ApitamopKIClient zip archive.

The report records and income tax attachments to be submitted must be sent as MTOM with XOP attachments (Message Transmission Optimization Mechanism and XML-binary Optimized Packaging) <https://www.w3.org/Submission/soap11mtom10/>. The files you send must contain the original filename. The returned records and results of checks are also sent as MTOM with XOP attachments. There is no fixed naming convention for files unless they are Enclosures to an income tax return. If you attach enclosures to an income-tax-return filing, follow the Naming Convention of attachment files (guidance issued by the Tax Administration "[Liitetiedostojen nimeäminen](#)").

2.3 SendOperation

The client application uses this operation to send report records and income tax attachments.

2.3.1 The message sent comprises the following elements:

<Language> - the contents of this element indicate the language in which the responses should be sent (fi = Finnish, sv = Swedish, en = English).

<BackgroundProcessing> - the contents of this element indicate whether the submitted record is checked in real time or in the background (false = in real time, true = in the background). In both cases, the authorisation checks for the record are carried out in real time. If the record is left for background processing, the response message returns a retrieval ID for the result of the check. If this element is not included, the processing takes place in real time. No attachments can be sent when background processing is used. This is an alternative method of submittal. It is intended for records that are very large (more than 1MB) and involve longer processes of checking. **If an answer file is expected, the system will not take account of the BackgroundProcessing element.**

<Emails> - in this element, you can provide an e-mail address or addresses, separated by a semi-colon (;), when sending records for which you are expecting answer files, e.g. direct transfers. When sending basic construction notification procedure reports, a report identifier generated by the Ilmoitin.fi service for the basic report is sent to the provided e-mail address as a response. This element is voluntary, which means that you can leave it out of a record that do not involve an answer file, or if you do not wish to report e-mail addresses.

When you leave the record for background processing, you must provide at least one e-mail address in this element. A notification is sent to the address once the record has been checked.

<ReportingMaterial> - this element contains the report record being sent as identifier:data pairs, fixed-length records or in XML format. The report record is sent in a message as an MTOM with XOP attachment. XML-format records use the UTF-8 character set, whereas the other records use the ISO-8859-1 character set.

<Attachments> - this element contains the income tax attachments being sent. Income tax attachments are sent in the message as MTOM attachments. The file attachments for the record are sent in PDF format.

2.3.2 The response message comprises the following elements:

<Filing> - this element contains the name of the sent record.

<Accepted> - this element indicates whether the reception of the reports was successful (true) or failed (false).

<Timestamp> - this element contains the receipt time of the submission.

<Information> - this element contains the reason for possible rejection of the reports. Such reasons may include "Record contains errors", which means that the report record contained errors, or "No reporting authorisation xxx for company xxx", which means that the submitter did not have an active authorisation to submit the record in question.

<Checksum> - this element contains the SHA1 checksum of the contents of the record element of the original ApitamoPKI call.

<DeliveryId> - this element has content only if basic reports related to the construction notification procedure (Raksi) were submitted. In such a case, the element contains a unique identifier for the basic report that must be used when you wish to correct or delete data on the basic report.

<RetrievalId> - this element has content only if an answer file, returned by the Finnish Tax Administration, is included in the data flow. In such a case, the element contains a retrieval ID for the answer file.

<ResultID> - this element has content only if the submitted record was left for background processing. In such a case, the element contains a retrieval ID for the results of the checking of the record that can be used to download the results of the check.

<Attachments> - this element contains information on each income tax file attachment submitted within individual <Attachment> elements.

- <FileName> - this element contains the name of the submitted attachment.
- <Accepted> - this element indicates whether the file was accepted (true) or rejected (false). NOTE! If errors were found during the check of the submitted reports, the file attachments are not accepted even if they are correct.
- The <Information> element specifies the reason why the attachment was rejected. The reasons may include an incorrectly named file, a missing authorisation or errors in the report data itself.

<CheckupResult> - this element contains the results of the check of the report record as an MTOM with XOP file attachment. The results of the check of XML-format records are in the UTF-8 character set, whereas the results of the checks of other records are in the ISO-8859-1 character set.

2.3.3 Client application sends report records and income tax attachments

2.3.3.1 Client application → ApitamoPKI

The Body element of the message contains the data related to the checking and submitting of the actual report, as described above.

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <DeliveryDataSendRequest xmlns="http://www.vero.fi/xmlschema/ApiTaMo">
      <Language>fi</Language>
      <BackgroundProcessing>false</BackgroundProcessing>
      <Emails>
        <Email>reci.pient1@netti.com</Email>
        <Email>reci.pient2@netti.com</Email>
      </Emails>
      <ReportingMaterial>
        <xop:Include xmlns:xop="http://www.w3.org/2004/08/xop/include"
          href="cid:7067ae51-ffc0-4d99-921e-8c916505aad5-1@www.vero.fi"/>
      </ReportingMaterial>
      <Attachments>
        <Attachment>
          <xop:Include xmlns:xop="http://www.w3.org/2004/08/xop/include"
            href="cid:d5a462b8-ef10-4ab2-b06f-bf2159dd295d-2@www.vero.fi"/>
        </Attachment>
        <Attachment>
          <xop:Include xmlns:xop="http://www.w3.org/2004/08/xop/include"
            href="cid:d5a462b8-ef10-4ab2-b06f-bf2159dd295d-3@www.vero.fi"/>
        </Attachment>
      </Attachments>
    </DeliveryDataSendRequest>
  </soap:Body>
</soap:Envelope>
```



```
</DeliveryDataSendRequest>
</soap:Body>
</soap:Envelope>
```

2.3.3.2 ApitamoPKI → client application

ApitamoPKI returns the results of the record check. In this case, the record contained errors.

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <DeliveryDataSendResponse xmlns="http://www.vero.fi/xmlschema/ApiTaMo">
      <Result>
        <Filing>VERONUME_testi.txt</Filing>
        <Accepted>false</Accepted>
        <Timestamp>2019-04-17T14:45:12.287+03:00</Timestamp>
        <Information>An error was found during the processing of the record!</Information>
        <Checksum>AC036FEED554F74629C8478A5CDE946671CD423C</Checksum>
        <Attachments>
          <Attachment>
            <FileName>Muu_liite_1.pdf</FileName>
            <Accepted>false</Accepted>
            <Information>An error was found during the processing of the record!</Information>
          </Attachment>
          <Attachment>
            <FileName>Energy_product_excise_duty_return_application.pdf</FileName>
            <Accepted>false</Accepted>
            <Information>An error was found during the processing of the record!</Information>
          </Attachment>
        </Attachments>
      </Result>
      <CheckupResult>
        <xop:Include xmlns:xop="http://www.w3.org/2004/08/xop/include"
          href="cid:9bb8f36d-be2f-4c80-92a2-00071c163b10-1@www.vero.fi"/>
      </CheckupResult>
    </DeliveryDataSendResponse>
  </soap:Body>
</soap:Envelope>
```

2.3.4 Client application sends a query message (Not in use during testing)

Data flows for which answer files from the Finnish Tax Administration are expected include direct transfer requests of tax cards and tax number queries.

Turnaround times for answer files from the Finnish Tax Administration can be found in the data format specifications, as appropriate.

When queries are sent, the message is the same as in other situations. The response message includes a retrieval ID as additional information, based on which the answer file can be retrieved from ApitamoPKI. It can be retrieved using the RetrievalOperation.

2.3.4.1 Client application → ApitamoPKI

```
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <DeliveryDataSendRequest xmlns="http://www.vero.fi/xmlschema/ApiTaMo">
      <Language>fi</Language>
      <BackgroundProcessing>false</BackgroundProcessing>
      <Emails>
        <Email>Test.Tester@testi.net</Email>
      </Emails>
      <ReportingMaterial>
        <xop:Include xmlns:xop="http://www.w3.org/2004/08/xop/include" href="cid:c82ed4a4-95fa-4a96-8c67-bf4c43807738-2@www.vero.fi"/>
      </ReportingMaterial>
    </DeliveryDataSendRequest>
  </soap:Body>
</SOAP-ENV:Envelope>
```

2.3.4.2 ApitamoPKI → Client application

```
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/">
  <SOAP-ENV:Body>
    <DeliveryDataSendResponse xmlns="http://www.vero.fi/xmlschema/ApitaMo">
      <Result>
        <Filing>TAXNO_test.txt</Filing>
        <Accepted>true</Accepted>
        <Timestamp>2019-05-08T13:27:05.850+03:00</Timestamp>
        <Information>Transferred to processing under the name TEST_TAXNO_1905081327060509_190508.txt</Information>
        <Checksum>AC036FEED554F74629C8478A5CDE946671CD423C</Checksum>
        <RetrievalId>b430369d-6679-42b7-95be-2573ca099fbd</RetrievalId>
      </Result>
      <CheckupResult>
        <xop:Include xmlns:xop="http://www.w3.org/2004/08/xop/include" href="cid:a9c3c6d4-54fc-4631-af72-a175a91abadf-3@www.vero.fi"/>
      </CheckupResult>
    </DeliveryDataSendResponse>
  </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

2.3.5 Client application leaves the record for background processing

When a message is left for background processing, the message is the same as in other situations. The response message includes a retrieval ID as additional information, based on which the results of the check can be retrieved from ApitamoPKI. The results of the record check can be retrieved using the RetrievalOperation.

2.3.5.1 Client application → ApitamoPKI

```
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <DeliveryDataSendRequest xmlns="http://www.vero.fi/xmlschema/ApitaMo">
      <Language>fi</Language>
      <BackgroundProcessing>true</BackgroundProcessing>
      <Emails>
        <Email>Test.Tester@testi.net,Another.Tester@testi.net </Email>
      </Emails>
      <ReportingMaterial>
        <xop:Include xmlns:xop="http://www.w3.org/2004/08/xop/include" href="cid:78b1a42c-49c9-4796-b18f-3646b6a07c6c-1@www.vero.fi"/>
      </ReportingMaterial>
    </DeliveryDataSendRequest>
  </soap:Body>
</SOAP-ENV:Envelope>
```

2.3.5.2 ApitamoPKI → Client application

```
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <DeliveryDataSendResponse xmlns="http://www.vero.fi/xmlschema/ApitaMo">
      <Result>
        <Filing>RVKSSELE_2019_test.txt</Filing>
        <Accepted>true</Accepted>
        <Timestamp>2019-05-09T10:59:15.244+03:00</Timestamp>
        <Information>Record left to background processing.</Information>
        <Checksum>790A77C18943679D70612BE3340C7D7409CE626D</Checksum>
        <ResultId>eff96d5d-2fc7-4272-bb1b-28389be794b9</ResultId>
      </Result>
    </DeliveryDataSendResponse>
  </soap:Body>
</SOAP-ENV:Envelope>
```

2.4 RetrievalOperation

This operation can be used for two purposes:

- Retrieval of a response record returned by the Finnish Tax Administration; and
- Retrieval of the results of the check of a record left for background processing.

The test environment does not contain the necessary database for generating any data content for a real answer file. As a result, you only receive an answer file containing random information for test purposes. Answer files are generated and sent back to you for the following flows:

VEROKYSE, VERONUME, RVKSSELE, VKESSPAE, VKESSELE, VSALVTAR and VSENPERE.
No flows other than those are processed.

The message sent comprises the following elements:

<Language> - the contents of this element indicate the language in which the responses should be sent (fi = Finnish, sv = Swedish, en = English).

<RetrievalId> - send the retrieval ID received when sending the query in this element.

<ResultId> - send the result ID of the results of the record check left for background processing received when sending the query in this element.

2.4.1 The response message comprises the following elements:

<Filing> - this element contains the name of the sent record.

<Timestamp> - this element contains the time of the query.

<Status> - this element indicates whether the retrieval request was successful (Ok), whether the record cannot be retrieved yet (Wait) or whether it failed (Error).

<Information> - this element is either blank or, for example, contains the information 'Record cannot be retrieved yet' or 'Unknown Retrieval ID'.

<RetrievalId> - this element indicates the retrieval ID of the report record if you are retrieving a record that is returned.

<ResultId> - this element contains the result ID of the results of the check of a report record left for background processing.

<Result> - this element contains a summary of the results of the check of a record left for background processing. The element contains the following data:

<Accepted> - this element indicates whether receipt of the reports was successful (true) or failed (false).

<Information> - this element contains the reason for possible rejection of the reports.

<DeliveryData> - this element contains the reports included in the submission batch, complemented with the Finnish Tax Administration's answer-file data or the results of the check of a record left for background processing as an MTOM with XOP file attachment. Answer files from the Finnish Tax Administration use the ISO-8859-1 character set.

2.4.2 Client application sends a retrieval message for an answer file (Not in use during production testing)

2.4.2.1 Client application → ApitamoPKI

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <DeliveryDataRetrievalRequest xmlns="http://www.vero.fi/xmlschema/ApiTaMo">
      <Language>fi</Language>
      <RetrievalId>b430369d-6679-42b7-95be-2573ca099fbd</RetrievalId>
    </DeliveryDataRetrievalRequest>
  </soap:Body>
</soap:Envelope>
```

2.4.2.2 ApitamoPKI → Client application, when the answer file is not yet ready

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <DeliveryDataRetrievalResponse xmlns="http://www.vero.fi/xmlschema/ApiTaMo">
      <Filing>TAXNO_test.txt</Filing>
      <Timestamp>2019-04-18T10:00:44.091+03:00</Timestamp>
      <Status>Wait</Status>
      <Information>Record cannot be retrieved yet</Information>
      <RetrievalId>b430369d-6679-42b7-95be-2573ca099fbd</RetrievalId>
    </DeliveryDataRetrievalResponse>
  </soap:Body>
</soap:Envelope>
```

```
</soap:Body>
</soap:Envelope>
```

2.4.2.3 ApitamoPKI → Client application, when the answer file is ready

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <DeliveryDataRetrievalResponse xmlns="http://www.vero.fi/xmlschema/ApiTaMo">
      <Filing>TAXNO_test.txt</Filing>
      <Timestamp>2019-04-18T09:50:55.360+03:00</Timestamp>
      <Status>Ok</Status>
      <RetrievalId>b430369d-6679-42b7-95be-2573ca099fbd</RetrievalId>
      <DeliveryData>
        <xop:Include xmlns:xop="http://www.w3.org/2004/08/xop/include"
          href="cid:c16c515b-0659-432e-a037-039dda78548e-2@www.vero.fi"/>
      </DeliveryData>
    </DeliveryDataRetrievalResponse>
  </soap:Body>
</soap:Envelope>
```

2.4.3 Client application sends a retrieval message for the results of a check

2.4.3.1 Client application → ApitamoPKI

```
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <DeliveryDataRetrievalRequest xmlns="http://www.vero.fi/xmlschema/ApiTaMo">
      <Language>fi</Language>
      <ResultId>4a82a14d-30ef-4d61-80cf-6d9ff81c9618</ResultId>
    </DeliveryDataRetrievalRequest>
  </soap:Body>
</soap:Envelope>
```

2.4.3.2 ApitamoPKI → Client application, when the results of the check are not ready yet

```
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <DeliveryDataRetrievalResponse xmlns="http://www.vero.fi/xmlschema/ApiTaMo">
      <Filing>RVKSSELE_2019_testi.txt </Filing>
      <Timestamp>2019-05-09T12:43:56.107+03:00</Timestamp>
      <Status>Wait</Status>
      <Information>Results of the check cannot be retrieved yet</Information>
      <ResultId>4a82a14d-30ef-4d61-80cf-6d9ff81c9618</ResultId>
    </DeliveryDataRetrievalResponse>
  </soap:Body>
</SOAP-ENV:Envelope>
```

2.4.3.3 ApitamoPKI → Client application, when the results of the check are ready In this case, the record contained errors.

```
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <DeliveryDataRetrievalResponse xmlns="http://www.vero.fi/xmlschema/ApiTaMo">
      <Filing>RVKSSELE_2019_testi.txt </Filing>
      <Timestamp>2019-05-09T12:47:43.801+03:00</Timestamp>
      <Status>Ok</Status>
      <Information>Record contains errors</Information>
      <ResultId>5ddcad45-318c-4949-a036-57ea3781adc2</ResultId>
      <Result>
        <Accepted>false</Accepted>
      </Result>
      <DeliveryData>
        <xop:Include xmlns:xop="http://www.w3.org/2004/08/xop/include" href="cid:d8e5834c-c638-4641-a938-d7b26d976410-2@www.vero.fi"/>
      </DeliveryData>
    </DeliveryDataRetrievalResponse>
  </soap:Body>
</SOAP-ENV:Envelope>
```

3 APITAMOPKIClient APPLICATION

In order to make deployment of the ApitamoPKI interface easier, a client application was created using the Java language. The application can be used as a template for your own implementation or used as such. The solutions used in the application are not the only way of implementing an ApitamoPKIClient application; it only offers one possible implementation solution. ApitamoPKI features the submitting of reports and queries and the retrieval of answer files and results of checks.

If you are unwilling or unable to use ApitamoPKIClient, you can also create your own implementation; you can find the documentation on the Vero website.

4 LINKS AND FURTHER INFORMATION

The test environment for the Ilmoitin.fi service: testi.ilmoitin.fi

The Ilmoitin.fi developer website: www.ilmoitin.fi/kehittajat

Data format specifications for the Finnish Tax Administration's data flows: https://www.vero.fi/tietoa-verohallinnosta/tietoa_verotuksest/kehittaja/tietuekuvaukse/

A general description of online submitting: https://www.vero.fi/tietoa-verohallinnosta/tietoa_verotuksest/kehittaja/tietuekuvaukse/tietuekuvaukset_tuloveroilmoitu/

Questions concerning ApitamoPKI: tamo.tk@vero.fi