NemLog-in

NL3 Signature Validation Guide-lines

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1.0.1	Updated based on Digst review	4-2-2021
1.0.2	Updated based on Digst review	29-3-2021

References

eIDAS	Regulation (EU) No 910/2014 of the European Parliament and of the Council of 23 July 2014 on electronic identification and trust services for electronic transactions in the internal market and repealing Directive 1999/93/EC. Available here: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014R0910&from=EN
PAdES	EN 319 142-1: AdES digital signatures; Part 1: Building blocks and PAdES baseline signatures, ETSI ESI. Available here: https://www.etsi.org/deliver/etsi_en/319100_319199/31914201/01.01.01_60/en_31914201v010101p.pdf
XAdES	EN 319 132-1: XAdES digital signatures; Part 1: Building blocks and XAdES baseline signature, ETSI ESI. Available here: https://www.etsi.org/deliver/etsi_en/319100_319199/31913201/01.01.01_60/en_31913201v010101p.pdf
CAdES	EN 319 122-1: CAdES digital signatures; Part 1: Building blocks and CAdES baseline signature, ETSI ESI. Available here: https://www.etsi.org/deliver/etsi_en/319100_319199/31912201/01.01.01_60/en_31912201v010101p.pdf
ASiC	EN 319 162-1: ASiC digital signatures; Part 1: Building blocks and ASiC baseline signature, ETSI ESI. Available here: https://www.etsi.org/deliver/etsi_en/319100_319199/31916201/01.01.01_60/en_31916201v010101p.pdf
RFC-7578	Specification that defines the multipart/form-data media type. https://tools.ietf.org/html/rfc7578

SOAP Web Service	Simple Object Access Protocol – messaging protocol specification for exchanging messages via web services. https://en.wikipedia.org/wiki/SOAP
WSDL	Web Services Description Language – interface description language for web services. https://en.wikipedia.org/wiki/Web_Services_Description_Language
OASIS DSS-X	Digital Signature Service protocol for signing and signature verification. https://www.oasis-open.org/committees/tc_home.php?wg_abbrev=dss-x
ETSI TS 119 102-2 V1.2.1	AdES Signature Validation protocol. https://www.etsi.org/deliver/etsi_ts/119100_119199/11910202/01.02.01_60/ts_11910202v010201p.pdf

1 The Purpose and Target Audience of the Document

This document is part of the NemLog-in Service Provider Package. The purpose of this document is to serve as the technical documentation for integrating the NemLog-in Signature Validation API.

The document is aimed at developers and architects.

1.1 Document Conventions

Code examples and XML snippets are written using a fixed width font. References are marked in square-brackets, e.g. [XAdES].

1.2 Abbreviations

Abbreviation	Description
Signature Format	The target format (XAdES, PAdES, CAdES, ASiC) of the signed documents.
Signer	End user identity performing the actual document signing. This can be a person or an employee signing on behalf of an organization
Signature	Signatures is produced for an individual. E.g. a person or an employee
Seal	Seals is a signature produced for a legal identity, e.g. a business or organization.
OID	Object Identifier. Standardized identifier mechanism used for naming objects.

2 Introduction

NemLog-In includes a web service for validating signed documents. The signed documents may have been signed using the NemLog-In Signing Component, see [SP Implementation], but this is not a requirement as the component can verify signatures with trust in the EU Trusted List. That means any qualified and advanced signature based on a certificate issued by a trust service provider that has been notified to the EU Commission by the member state of the trust service provider.

Supported signed document types:

- PAdES – please refer to [PAdES].
- XAdES – please refer to [XAdES].
- CAdES – please refer to [CAdES].
- ASiC – please refer to [ASiC].

The Signature Validation web service can be accessed using multiple interfaces:

- A SOAP web service API.
- A REST API.
- A public website for uploading signed documents and inspecting and downloading the resulting validation report.

The subsequent chapters will detail the interfaces further.

2.1 Limitations

The validation service support signed documents as described above with the following limitations:

- X.509 certificates is the only supported certificate format.
- Signatures with Evidence Records are not supported
- The validation service always aims to validate a document in the signature classe LTA.

3 Signature Validation SOAP API

The Validation Component defines a SOAP Web service (WS) Validation API analogous to the REST/JSON based Validation API.

The WS Validation API is based on the following standards:

- OASIS DSS-X: Digital Signature Service Core Protocols, Elements, and Bindings Version 2.0.
- ETSI TS 119 102-2: Defines the format of a detailed AdES Signature Validation Report (ETSI Report, henceforth).

3.1 SOAP API Schemas

The URL to the WSDL-definition of the NemLog-In Signature Validation SOAP API is defined below:

Environment	Signature Validation SOAP API
Integrations test	https://validering.test-nemlog-in.dk/ws/SignatureValidation.wsdl
Production	https://validering.nemlog-in.dk/ws/SignatureValidation.wsdl

To test the Webservice, use e.g. SoapUI or save a request to a file, request.xml, and issue:

```
curl --header "content-type: text/xml" -d @request.xml
https://validering.test-nemlog-in.dk/ws
```

The underlying OASIS DSS-X schemas are available at:

- https://docs.oasis-open.org/dss-x/dss-core/v2.0/cs02/schema/

3.2 SOAP API Design Considerations

The OASIS DSS protocol is quite extensive, and the NemLog-In Validation Component only supports a small subset of the protocol.

The overall design of the SOAP API has been to facilitate upload of the signed document to validate using a VerifyRequest, and to return a VerifyResponse containing the result of the validation, primarily in the form of a signed ETSI validation report – see example ETSI report in Appendix D.

Example VerifyRequest:

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
                  xmlns:core="http://docs.oasis-open.org/dss-x/ns/core"
                  xmlns:base="http://docs.oasis-open.org/dss-x/ns/base">
    <soapenv:Header/>
    <soapenv:Body>
        <core:VerifyRequest RequestID="test">
            <core:InputDocuments>
                <core:Document>
                    <core:Base64Data MimeType="application/pdf">
                        <base:Value>
                            JVBERi0xLjEKJ...pzdGFydHhyZWYKODc5MzAKJSVFT0YK
                    </base:Value>
```

```
                    </core:Base64Data>
                </core:Document>
            </core:InputDocuments>
            <core:OptionalInputs>
                <core:ReturnSignerIdentity>true</core:ReturnSignerIdentity>
                <core:ReturnSigningTimeInfo>true</core:ReturnSigningTimeInfo>
                <core:ReturnProcessingDetails>true</core:ReturnProcessingDetails>
            </core:OptionalInputs>
        </core:VerifyRequest>
    </soapenv:Body>
</soapenv:Envelope>
```

Example VerifyResponse for a successful validation:

```
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/">
    <SOAP-ENV:Header/>
    <SOAP-ENV:Body>
        <core:VerifyResponse RequestID="test"
                             xmlns:base="http://docs.oasis-open.org/dss-x/ns/base"
                             xmlns:core="http://docs.oasis-open.org/dss-x/ns/core">
            <base:Result>
                <base:ResultMajor>
                     urn:oasis:names:tc:dss:1.0:resultmajor:Success
                </base:ResultMajor>
                <base:ProblemReference>8596d79cc950cfce</base:ProblemReference>
            </base:Result>
            <core:OptionalOutputs>
                <base:Other>
                    <base:Value>
                        PD94bWwgdmVyc2lvbj0iMS4wI...ZhbGlkYXRpb25SZXBvcnQ+Cg==
                    </base:Value>
                </base:Other>
                <core:SignerIdentity>B. Udsen</core:SignerIdentity>
                <core:ProcessingDetails/>
                <core:SigningTimeInfo>
                    <core:SigningTime>2020-10-05T08:25:09.000Z</core:SigningTime>
                </core:SigningTimeInfo>
            </core:OptionalOutputs>
        </core:VerifyResponse>
    </SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

Example VerifyResponse for a failed validation:

```
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/">
    <SOAP-ENV:Header/>
    <SOAP-ENV:Body>
        <core:VerifyResponse RequestID="test"
                             xmlns:base="http://docs.oasis-open.org/dss-x/ns/base"
                             xmlns:core="http://docs.oasis-open.org/dss-x/ns/core">
            <base:Result>
                <base:ResultMajor>
                   urn:oasis:names:tc:dss:1.0:resultmajor:InsufficientInformation
                </base:ResultMajor>
                <base:ResultMinor>urn:etsi:019102:subindication:TRY_LATER</base:ResultMinor>
                <base:ProblemReference>45726c3affb44935</base:ProblemReference>
            </base:Result>
            <core:OptionalOutputs>
                <base:Other>
                    <base:Value>PD94bWwgdmVyc2lvbj0i...wvVmFsaWRhdGlvblJlcG9ydD4K</base:Value>
                </base:Other>
                <core:SignerIdentity>B. Udsen</core:SignerIdentity>
                <core:ProcessingDetails>
                    <core:InvalidDetail>
                        <core:Message xml:lang="en">
                            The result of the LTV validation process is not acceptable
```

```
                        to continue the process!
                    </core:Message>
                </core:InvalidDetail>
                <core:InvalidDetail>
                    <core:Message xml:lang="en">
                        No acceptable revocation data for the certificate!
                    </core:Message>
                </core:InvalidDetail>
            </core:ProcessingDetails>
            <core:SigningTimeInfo>
                <core:SigningTime>2020-10-02T05:50:48.000Z</core:SigningTime>
            </core:SigningTimeInfo>
        </core:OptionalOutputs>
    </core:VerifyResponse>
</SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

3.3 SOAP API Profile

The SOAP API adheres to a *NemLog-In Validation Profile* layered on top of the [OASIS DSS-X] standard protocol. This section outlines the restrictions imposed by the NemLog-In profile.

General Restrictions:

- Only the XML protocol is supported. Not JSON.
- For the DSS Core Binding, only the SOAP 1.2 Transport Binding is supported.
- Only signature verification is supported, not signature creation.

VerifyRequest restrictions:

- *VerifyRequest* may contain a *RequestID* attribute with an identifier defined by the client. If defined, the response will return the same id.
- *VerifyRequest* must always include a single signed document with an embedded AdES signatures with one of the supported formats. Hence it must have an *InputDocuments* child element, containing a *Document* child element, which in turn must contain the signed document in a *Base64* child element.
- The signed document may be of type PAdES, XAdES, CAdES or ASiC. The type is flagged using the *MimeType* attribute of the *Base64Data* element, with the values:
    - PAdES: MimeType must be “application/pdf”.
    - XAdES: MimeType must be “application/xml” or “text/xml”.
    - CAdES: MimeType must be “application/x-pkcs7-mime”.
    - ASiC: MimeType must be either “application/vnd.etsi.asic-e+zip” for the ASiC-E container type or “application/vnd.etsi.asic-s+zip” for the ASiC-S container type.
- VerifyRequest may include an *OptionalInputs* child element, which in turn may contains any combination of the following Boolean-valued child elements:
    - *ReturnSignerIdentity*: If the value is true, the response will contain a *SignerIdentity* element with the identity of the signer, if this information is available.
    - *ReturnSigningTimeInfo*: If the value is true, the response will contain a *SigningTimeInfo* element with the signing time, if this information is available.
    - *ReturnProcessingDetails*: If the value is true, the response will contain a *ProcessingDetails* element with the textual processing details, if this information is available.
- All other elements and attributes specified for VerifyRequest in the OASIS DSS-X specification are invalid in the NemLog-In Validation Profile.

VerifyResponse restrictions:

- If *VerifyRequest* defined a *RequestID* attribute, *VerifyResponse* will contain a *RequestID* attribute with an identical value.
- *VerifyResponse* always contains a detailed signed validation report based on ETSI TS 119 102-2.
- The ETSI report is encoded in a *Base64* element, which must be the only child element of an *Other* element, which in turn is the child element of the *OptionalOutputs* element.
- If and only if the signed document being validated contained a single signature, VerifyResponse will contain a *Result* element with the following child elements:
    - *ResultMajor*: The values are as defined by OASIS DSS-X.
    - *ResultMinor*: Optional element containing a URI with a sub-indication, as defined by ETSI EN 319 102-1.
    - *ProblemReference*: Contains as its value a unique ID that correlates with the NemLog-In logging system.
- If and only if the signed document being validated contained a single signature, VerifyResponse may contain the following child elements of *OptionalOutputs* (in addition to the ETSI report already described):
    - *SignerIdentity*: May contain the identity of the signer, if this information is available, and if the *ReturnSignerIdentity* element was included in VerifyRequest with a value of true.
    - *SigningTimeInfo*: May contain a *SigningTime* child element with the signing time, if this information is available, and if the *ReturnSigningTimeInfo* element was included in VerifyRequest with a value of true.
    - *ProcessingDetails*: May contain a list of the child elements *ValidDetail, InvalidDetail* or *IndeterminateDetail* with textual processing details, if this information is available, and if the *ReturnProcessingDetails* element was included in VerifyRequest with a value of true.
- All other elements and attributes specified for VerifyResponse in the OASIS DSS-X specification are invalid in the NemLog-In Validation Profile

4 Signature Validation REST API

The NemLog-In Validation Component provides a simple REST API for validating a signed document. The API consists of a single REST endpoint for uploading the signed document and will return a *Validation Report*. The REST API is documented in Appendix A and the data models are documented in Appendix C.

The url to the NemLog-In Signature Validation REST API is defined below:

Environment	Signature Validation REST API
Customer Test Integration	https://validering.test-nemlog-in.dk/api/validate
Production	https://validering.nemlog-in.dk/api/validate

4.1 Usage

The API can be used by any number of REST client libraries. Example CURL command:

```
curl -X POST "https://<uri>/api/validate" \
     -H "accept: application/json" \
     -H "Content-Type: multipart/form-data" \
     -H "Expect:" -H "Transfer-Encoding: chunked" \
     -F "file=@signed-pades.pdf;type=application/pdf"
```

The result will have the following format:


```
{
  "result": {
    "documentName": "signed-pades.pdf",
    "signaturesCount": 1,
    "validSignaturesCount": 0,
    "signatures": [
      {
        "signatureFormat": "PAdES_BASELINE_LTA",
        "signatureLevel": "NA",
        "indication": "TOTAL_FAILED",
        "subIndication": "FORMAT_FAILURE",
        "signingTime": "2020-09-07T06:27:25.000+0000",
        "signedBy": "Bodil Udsen",
        "certificateChain": [
          {
            "subjectDN": "C=DK,...,CN=Bodil Udsen",
            "serialNumber": "7862DE5ECE0159C84F7E5B56E57D6A29A5CB45CE",
            "notBefore": "2020-09-07T06:17:31.000+0000",
            "notAfter": "2020-09-17T06:17:31.000+0000",
```

```
            "policies": [
              "1.2.208.169.1.1.2.1.1",
              "0.4.0.194112.1.2"
            ]
          },
          {
            "subjectDN": "C=DK,...,CN=Den Danske Stat kvalificeret udstedende-CA 1",
            "serialNumber": "2BF396D16BC5D3BC05D5BFADCF99A4DB298E95B0",
            "notBefore": "2020-09-04T10:30:42.000+0000",
            "notAfter": "2030-09-02T10:30:42.000+0000"
          },
          {
            "subjectDN": "C=DK,...,CN=Den Danske Stat kvalificeret rod-CA",
            "serialNumber": "23A0DA2C29579D9FE0FFD6D56758063E489961DD",
            "notBefore": "2020-09-04T10:30:09.000+0000",
            "notAfter": "2045-08-29T10:30:09.000+0000"
          }
        ],
        "errors": [
          "The result of the timestamps validation process is not conclusive!"
        ],
        "warnings": [
          "The signature/seal is not a valid AdES digital signature!"
        ]
      }
    ]
  },
  "etsiReport": "<?xml version=\"1.0\" encoding=\"UTF-8\" standalone=\"yes\"?>\n<ValidationReport>...</ValidationReport>\n"
}
```


The main success or failure of the signature validation can be gauged by looking at the “indication” field. As documented in Appendix C, the indication will flag the signature as being either “TOTAL_PASSED”, “TOTAL_FAILED” or “INDETERMINATE”.

The signed ETSI report, included in the Validation Report, is documented further in Appendix D.

4.2 Using SignSDK

As an alternative to writing the client code yourself, the SignSDK provides a simple client library for validating the signature of a signed document by calling the Validation REST API. See [SP Implementation] for information about the SignSDK.

Example usage:

```
// Can also be initialized from an InputStream, a Path, etc…
SignatureValidationContext ctx = SignatureValidationContext.builder()
```

```
        .setValidationServiceUrl("https://<uri>/api/validate")
        .setDocumentName("signed-pades.pdf")
        .setDocumentData(signedDocumentBytes)
        .build();

SignatureValidationService service = new SignatureValidationService();
ValidationReport report = service.validate(ctx);
```

5 Signature Validation Website

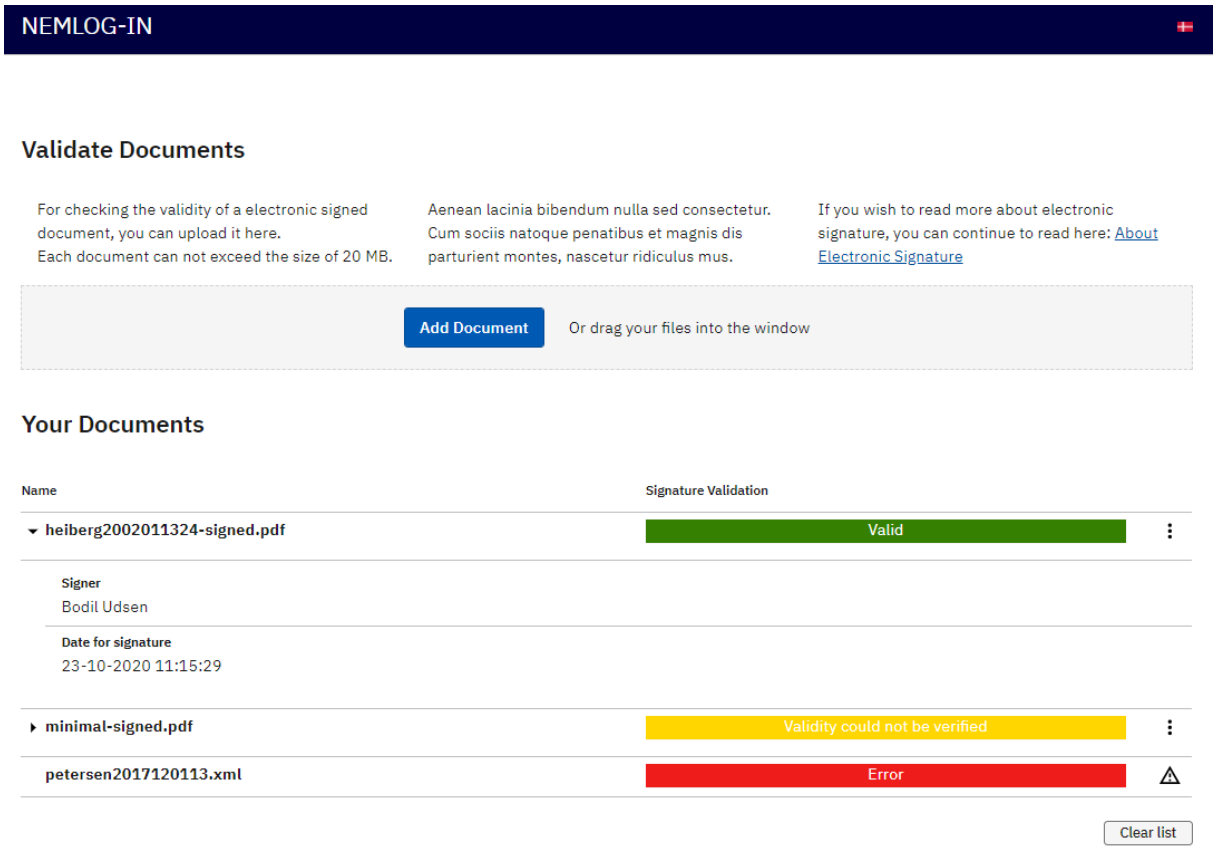
The NemLog-In Validation Component also provides a public website for uploading signed documents and viewing or downloading the resulting Validation Report. The website will call the Validation REST API detailed in Chapter 4, and the returned Validation Report thus follows the data models documented in Appendix C.

The url to the NemLog-In Signature Validation Website is defined below:

Environment	Signature Validation Website
Customer Test	https://validering.staging-nemlog-in.dk
Production	https://validering.nemlog-in.dk

The Signature Validation website is publicly accessible and does not require authentication.

Signed documents can be validated by clicking the "Add Document/Tilføj dokument" button, or by dragging the files into the window. The progress and result of the signature validation will be displayed in a list below:



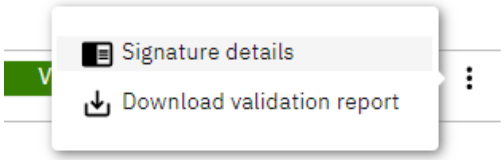
Clicking the document name will expand the UI to display a few additional signature details. See example above.

The document list thus makes the following information available for a validated document:

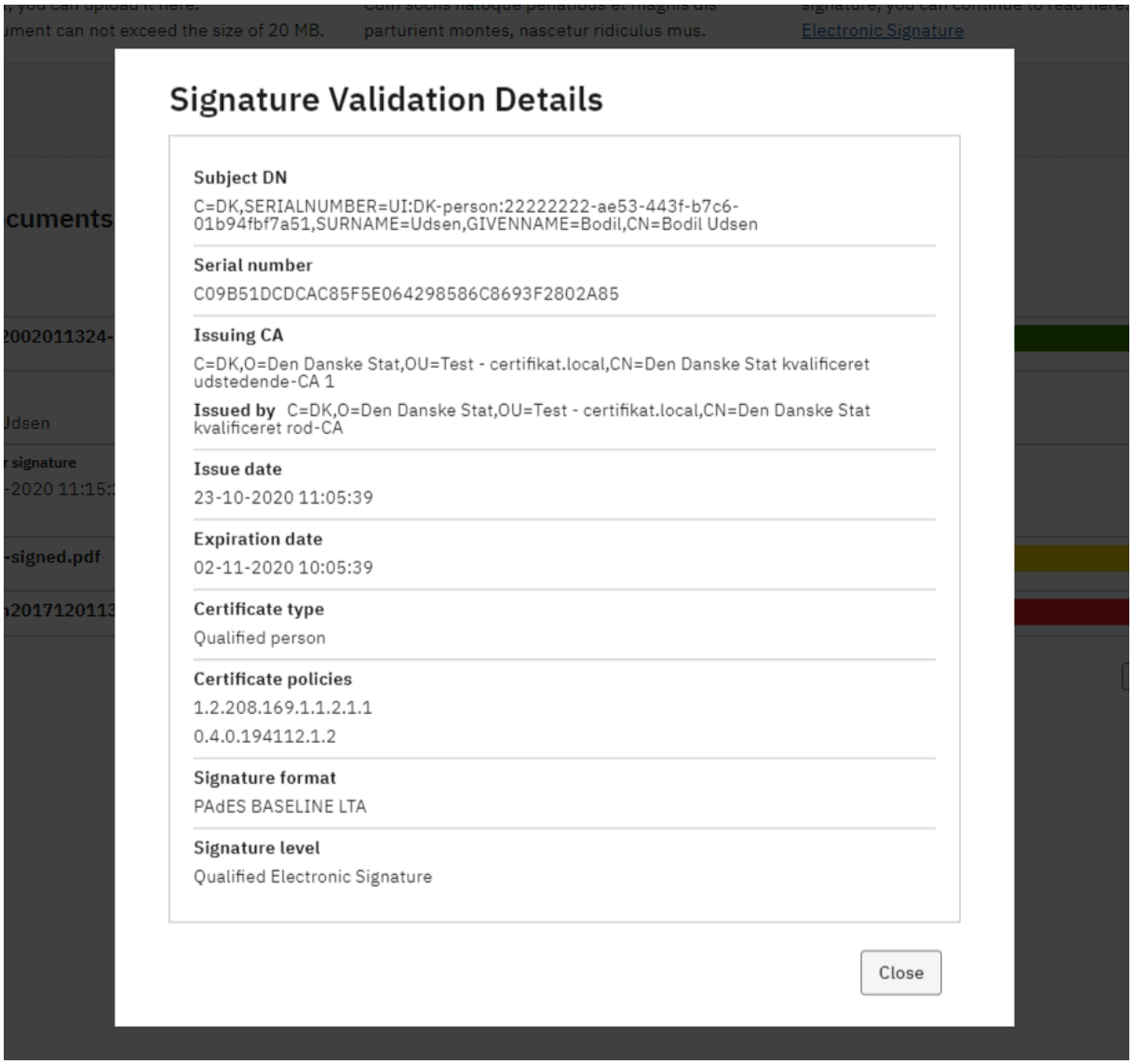
Field	Description
Signature Validation	The coloured bar signals the main outcome of the validation: • Valid (green): Signals that the validation completed with an indication of total-passed. • Validity could not be verified (yellow): Signals that the validation completed with an indication of indeterminate. • Error (red): Signals that the validation completed with an indication of total-failed.
Signer	The Signer associated with the signing certificate.
Date for signature	The best signature date.

The best signature date is the date in the past at which the validation process has evidence that the signature was created. For signatures without a valid time stamp, this value is the signature validation time. If the signature contains a valid signature time stamp, the best signature date is the date within the signature time stamp.

Clicking the three-vertical-dots widget next to the Signature Validation bar, provide two further functions:



Invoking “Download validation report” will download the signed ETSI Validation Report. Invoking “Signature details” will open a window with additional signature details:



The displayed fields are:

Field	Description
Subject DN	The signer certificate subject DN.
Serial number	The (Hex) serial number of the signer certificate.
Issuing CA	The DN of the signing certificate issuer.
Issued by	Will in turn list the chain of issuers.
Issue date	The valid-from date of the signer certificate.
Expiration date	The valid-to date of the signer certificate.
Certificate type	Determines the signature type based on the signer certificate policies:

	• MOCES • VOCES/FOCES • Qualified person • Qualified employee • Qualified organization • EU qualified natural person with key on QSCD • EU qualified organization with private key on QSCD • EU qualified natural person • EU qualified organization
Certificate policies	The signer certificate policy OIDs.
Signature format	The signature format – please refer to Appendix C.
Signature level	The signature level – please refer to Appendix C.

Appendix A. Signature Validation REST API

The Signature Validation REST API defines a single REST endpoint for validating the signature of a signed AdES document.

Required parameters are tagged with *.

Authentication

The REST API is a public interface with no requirements for authentication.

Validation REST API – validate endpoint

REST endpoint that returns a validation report for the submitted signed document.

POST **https://<uri>/api/validate**

Request Parameters

Name	In	Type	Description
file*	body	File	Signed Document to validate. Encoded as multipart/form-data using the "file" parameter name. See RFC-7578.
Content-Type*	header	string	"multipart/form-data"
Accept*	header	string	"application/json"
CorrelationIdManager .CorrelationId	header	string	The Correlation ID is defined by the caller and will be logged in the NemLog-In validation backend.

Response

Code	Content-Type Type	Description
200 OK	application/json ValidationReport	A validation report containing a signed ETSI XML report and a ValidationResult data model. The ValidationReport and ValidationResult data models are defined in Appendix C.
400 Bad Request		Invalid request
500 Internal server error		Error validating signed document. NB: This is a server error, not an indication that the signature was invalid.
504 Gateway Timeout		Error calling the backend validation service.

Appendix B. Signature Validation SOAP API

The Signature Validation WS SOAP API defines a single webservice endpoint for validating the signature of a signed AdES document.

Required parameters are tagged with *.

Authentication

The SOAP API is a public interface with no requirements for authentication.

Validation WS API – validate endpoint

SOAP WS endpoint that returns a validation report for the submitted signed document.

POST **https://<uri>/ws**

Request Parameters

Name	In	Type	Description
*	body	SOAP Envelope	SOAP message containing VerifyRequest as defined by the OASIS DSS protocol, restricted to the profile detailed in section 3.3. The VerifyRequest must contain the base64-encoded signed document and mime type as defined in the profile.
Content-Type*	header	string	"text/xml"
Accept	header	string	"text/xml"
CorrelationIdManager .CorrelationId	header	string	The Correlation ID is defined by the caller and will be logged in the NemLog-In validation backend.

Response

Code	Content-Type Type	Description
200 OK	text/xml SOAP Envelope	SOPA message containing VerifyResponse as defined by the OASIS DSS protocol, restricted to the profile detailed in section 3.3. The VerifyResponse will contain the signed ETSI XML report and validation indication flags as specified in the profile.
400 Bad Request		Invalid request
500 Internal server error		Error validating signed document. NB: This is a server error, not an indication that the signature was invalid.

Appendix C. Signature Validation Data Models

The Signature Validation REST API returns a ValidationReport defined in this Appendix.

Required model fields are tagged with *.

ValidationReport

The ValidationReport model is returned from a successful validation.

Name	Type	Description
result*	ValidationResult	JSON-based validation result.
etsiReport*	string	Signed ETSI XML validation report.

ValidationResult

Encapsulates the validation result for the signed document.

Name	Type	Description
documentName*	ValidationResult	Name of validated document.
signaturesCount*	int	Number of signatures included in the validated document. There should always be exactly 1 signature for PAdES and XAdES signed by the NemLog-In Signing Service.
validSignaturesCount*	int	Number of valid signatures.
signatures	ValidationSignature[]	The validation result for each signature.

ValidationSignature

The validation result for each signature of the validated document.

Name	Type	Description
signatureFormat*	string	The signature format. One of: • XML_NOT_ETSI • XAdES_C • XAdES_X • XAdES_XL • XAdES_A • XAdES_BASELINE_LTA • XAdES_BASELINE_LT • XAdES_BASELINE_T • XAdES_BASELINE_B • CMS_NOT_ETSI • CAdES_BASELINE_LTA • CAdES_BASELINE_LT • CAdES_BASELINE_T

		• CAdES_BASELINE_B • CAdES_101733_C • CAdES_101733_X • CAdES_101733_A • PDF_NOT_ETSI • PAdES_BASELINE_LTA • PAdES_BASELINE_LT • PAdES_BASELINE_T • PAdES_BASELINE_B • PKCS7_B • PKCS7_T • PKCS7_LT • PKCS7_LTA • UNKNOWN
signatureLevel*	string	The signature level (qualification). One of: • QESIG • QESEAL • QES • ADESIG_QC • ADESeal_QC • ADES_QC • ADESig • ADESeal • ADES • INDETERMINATE_QESIG • INDETERMINATE_QESEAL • INDETERMINATE_QES • INDETERMINATE_ADESIG_QC • INDETERMINATE_ADESEAL_QC • INDETERMINATE_ADES_QC • INDETERMINATE_ADESIG • INDETERMINATE_ADESEAL • INDETERMINATE_ADES • NOT_ADES_ QC_QSCD • NOT_ADES_ QC • NOT_ADES • NA
indication*	string	The main result of the validation. One of: • TOTAL_PASSED • TOTAL_FAILED • INDETERMINATE
subIndication	string	A sub-indication of the validation. One of: • FORMAT_FAILURE • HASH_FAILURE • SIG_CRYPTO_FAILURE • REVOKED • SIG_CONSTRAINTS_FAILURE • CHAIN_CONSTRAINTS_FAILURE • CERTIFICATE_CHAIN_GENERAL_FAILURE • CRYPTO_CONSTRAINTS_FAILURE • EXPIRED • NOT_YET_VALID • POLICY_PROCESSING_ERROR • SIGNATURE_POLICY_NOT_AVAILABLE • TIMESTAMP_ORDER_FAILURE • NO_SIGNING_CERTIFICATE_FOUND • NO_CERTIFICATE_CHAIN_FOUND

		• REVOKED_NO_POE • REVOKED_CA_NO_POE • OUT_OF_BOUNDS_NO_POE • OUT_OF_BOUNDS_NOT_REVOKED • CRYPTO_CONSTRAINTS_FAILURE_NO_POE • NO_POE • TRY_LATER • SIGNED_DATA_NOT_FOUND
signingTime*	ISO-8601 Datetime	The signing time.
signedBy*	string	The Signer identity, as extracted from the signing certificate subject DN.
email	string	The Signer email, if present in the signing certificate subjectAlternativeName attribute.
certificateChain*	ValidationCertificate[]	The ordered certificate chain, with the signing certificate first, and issuing and root certificates next.
errors	string[]	List of textual validation error messages.
warnings	string[]	List of textual validation warning messages.
infos	string[]	List of textual validation information messages.

ValidationCertificate

Encapsulates the signing certificate and its issuing and root certificates.

Name	Type	Description
subjectDN*	string	The certificate subject DN.
serialNumber*	string	HEX-encoded certificate serial number.
notBefore*	ISO-8601 Datetime	Start date of certificate validity period.
notAfter	ISO-8601 Datetime	End date of certificate validity period.
policies	string[]	List of certificate policy OIDs. This will only be defined for the signing certificate, not the issuing and root certificates.

Appendix D. Signature Validation ETSI Report

The format of the detailed AdES Signature Validation Report, or ETSI Report for short, is defined by the ETSI TS 119 102-2 standard.

Example ETSI Report

An example ETSI report is reproduced on the following pages.

```
<?xml version="1.0" encoding="UTF-8"?>
<ns2:ValidationReport xmlns="http://www.w3.org/2000/09/xmldsig#" xmlns:ns2="http://uri.etsi.org/19102/v1.2.1#"
                      xmlns:ns3="http://uri.etsi.org/01903/v1.3.2#" xmlns:ns4="http://uri.etsi.org/02231/v2#">
    <ns2:SignatureValidationReport>
        <ns2:SignatureIdentifier id="S-876CF3EA0884D14DF9BD52396A8F1549A9AFD50E76B2297DE7686EC386B16A52">
            <ns2:DigestAlgAndValue>
                <DigestMethod Algorithm="http://www.w3.org/2001/04/xmlenc#sha256"/>
                <DigestValue>FSjXb9jshFRt46ik0tzNQAwHTBQTwklbiyh1mDmLOPQ=</DigestValue>
            </ns2:DigestAlgAndValue>
            <SignatureValue>
                MEYCIQDay8EIsbQKDHvyt0bhZCBEUdYgzjB3mF4p7myTlOxkdgIhAOMcmOR3Z3NTGlEQqjGaWk2V3DOI5Hq7OY3R0GuNokg/
            </SignatureValue>
            <ns2:HashOnly>false</ns2:HashOnly>
            <ns2:DocHashOnly>false</ns2:DocHashOnly>
        </ns2:SignatureIdentifier>
        <ns2:ValidationConstraintsEvaluationReport>
            <ns2:ValidationConstraint>
                <ns2:ValidationConstraintIdentifier>
                     urn:cef:dss:bbb:formatChecking
                </ns2:ValidationConstraintIdentifier>
                <ns2:ConstraintStatus>
                    <ns2:Status>urn:etsi:019102:constraintStatus:applied</ns2:Status>
                </ns2:ConstraintStatus>
                <ns2:ValidationStatus>
                    <ns2:MainIndication>urn:etsi:019102:mainindication:passed</ns2:MainIndication>
                </ns2:ValidationStatus>
            </ns2:ValidationConstraint>
            <ns2:ValidationConstraint>
                <ns2:ValidationConstraintIdentifier>urn:cef:dss:bbb:identificationOfTheSigningCertificate
                </ns2:ValidationConstraintIdentifier>
                <ns2:ConstraintStatus>
                    <ns2:Status>urn:etsi:019102:constraintStatus:applied</ns2:Status>
                </ns2:ConstraintStatus>
                <ns2:ValidationStatus>
                    <ns2:MainIndication>urn:etsi:019102:mainindication:passed</ns2:MainIndication>
                </ns2:ValidationStatus>
            </ns2:ValidationConstraint>
            <ns2:ValidationConstraint>
                <ns2:ValidationConstraintIdentifier>urn:cef:dss:bbb:validationContextInitialization
                </ns2:ValidationConstraintIdentifier>
                <ns2:ConstraintStatus>
                    <ns2:Status>urn:etsi:019102:constraintStatus:applied</ns2:Status>
                </ns2:ConstraintStatus>
                <ns2:ValidationStatus>
                    <ns2:MainIndication>urn:etsi:019102:mainindication:passed</ns2:MainIndication>
                </ns2:ValidationStatus>
            </ns2:ValidationConstraint>
            <ns2:ValidationConstraint>
                <ns2:ValidationConstraintIdentifier>urn:cef:dss:bbb:cryptographicVerification
                </ns2:ValidationConstraintIdentifier>
                <ns2:ConstraintStatus>
                    <ns2:Status>urn:etsi:019102:constraintStatus:applied</ns2:Status>
                </ns2:ConstraintStatus>
                <ns2:ValidationStatus>
                    <ns2:MainIndication>urn:etsi:019102:mainindication:passed</ns2:MainIndication>
                </ns2:ValidationStatus>
            </ns2:ValidationConstraint>
            <ns2:ValidationConstraint>
                <ns2:ValidationConstraintIdentifier>urn:cef:dss:bbb:signatureAcceptanceValidation
                </ns2:ValidationConstraintIdentifier>
                <ns2:ConstraintStatus>
                    <ns2:Status>urn:etsi:019102:constraintStatus:applied</ns2:Status>
                </ns2:ConstraintStatus>
                <ns2:ValidationStatus>
                    <ns2:MainIndication>urn:etsi:019102:mainindication:passed</ns2:MainIndication>
                </ns2:ValidationStatus>
            </ns2:ValidationConstraint>
            <ns2:ValidationConstraint>
                <ns2:ValidationConstraintIdentifier>urn:cef:dss:bbb:x509CertificateValidation
                </ns2:ValidationConstraintIdentifier>
                <ns2:ConstraintStatus>
                    <ns2:Status>urn:etsi:019102:constraintStatus:applied</ns2:Status>
                </ns2:ConstraintStatus>
                <ns2:ValidationStatus>
                    <ns2:MainIndication>urn:etsi:019102:mainindication:indeterminate</ns2:MainIndication>
                    <ns2:SubIndication>urn:etsi:019102:subindication:TRY_LATER</ns2:SubIndication>
                </ns2:ValidationStatus>
            </ns2:ValidationConstraint>
```

```
            <ns2:ValidationConstraint>
                <ns2:ValidationConstraintIdentifier>urn:cef:dss:bbb:pastSignatureValidation
                </ns2:ValidationConstraintIdentifier>
                <ns2:ConstraintStatus>
                    <ns2:Status>urn:etsi:019102:constraintStatus:disabled</ns2:Status>
                </ns2:ConstraintStatus>
            </ns2:ValidationConstraint>
            <ns2:ValidationConstraint>
                <ns2:ValidationConstraintIdentifier>urn:cef:dss:bbb:pastCertificateValidation
                </ns2:ValidationConstraintIdentifier>
                <ns2:ConstraintStatus>
                    <ns2:Status>urn:etsi:019102:constraintStatus:disabled</ns2:Status>
                </ns2:ConstraintStatus>
            </ns2:ValidationConstraint>
            <ns2:ValidationConstraint>
                <ns2:ValidationConstraintIdentifier>urn:cef:dss:bbb:validationTimeSliding
                </ns2:ValidationConstraintIdentifier>
                <ns2:ConstraintStatus>
                    <ns2:Status>urn:etsi:019102:constraintStatus:disabled</ns2:Status>
                </ns2:ConstraintStatus>
            </ns2:ValidationConstraint>
        </ns2:ValidationConstraintsEvaluationReport>
        <ns2:ValidationTimeInfo>
            <ns2:ValidationTime>2020-11-24T10:18:33Z</ns2:ValidationTime>
            <ns2:BestSignatureTime>
                <ns2:POETime>2020-09-30T05:01:00Z</ns2:POETime>
                <ns2:TypeOfProof>urn:etsi:019102:poetype:validation</ns2:TypeOfProof>
                <ns2:POEObject VOReference="T-DA3CB2BE3D2A464BF2CDF74DBDC54B621E9CECC78B913C17BFC60A75368CF6B3"/>
            </ns2:BestSignatureTime>
        </ns2:ValidationTimeInfo>
        <ns2:SignersDocument>
            <ns2:DigestAlgAndValue>
                <DigestMethod Algorithm="http://www.w3.org/2001/04/xmlenc#sha256"/>
                <DigestValue>t9JVkcGNo3NwnT2I3fXuqwtQiTWeWA8FExT9iTXfC3M=</DigestValue>
            </ns2:DigestAlgAndValue>
            <ns2:SignersDocumentRef
                 VOReference="D-DFFB90E890E22E435B2DC98C892518159B623CF6409C6D000D1C30A14CDC3114"/>
        </ns2:SignersDocument>
        <ns2:SignatureAttributes>
            <ns2:SigningTime Signed="true">
                <ns2:Time>2020-09-30T05:00:49Z</ns2:Time>
            </ns2:SigningTime>
            <ns2:SigningCertificate Signed="true">
                <ns2:AttributeObject
                     VOReference="C-93CC5BCED8D85E2B29E7E6BF472C8EE3964B6E95986D63EC5FDE26285222BD8B"/>
            </ns2:SigningCertificate>
            <ns2:DataObjectFormat Signed="true">
                <ns2:ContentType>1.2.840.113549.1.7.1</ns2:ContentType>
            </ns2:DataObjectFormat>
            <ns2:SignatureTimeStamp>
                <ns2:AttributeObject
                     VOReference="T-DA3CB2BE3D2A464BF2CDF74DBDC54B621E9CECC78B913C17BFC60A75368CF6B3"/>
                <ns2:TimeStampValue>2020-09-30T05:01:00Z</ns2:TimeStampValue>
            </ns2:SignatureTimeStamp>
            <ns2:CompleteCertificateRefs/>
            <ns2:CompleteRevocationRefs/>
            <ns2:AttributeCertificateRefs/>
            <ns2:AttributeRevocationRefs/>
            <ns2:MessageDigest Signed="true">
                <ns2:Digest>FSjXb9jshFRt46ik0tzNQAwHTBQTwklbiyh1mDmLOPQ=</ns2:Digest>
            </ns2:MessageDigest>
            <ns2:DSS>
                <ns2:Certs
                    VOReference="C-18CC5A2699CA5D8D91087753BE3D10BCEA28017C2031A5420E89B7AD1D3878D1
                    C-082BCA2E857E3DE17DF4252F883CEFEBA85436F6BA06761924C1A6B644DE636B
                    C-1C9D4365CF47657B4B6426EA30E2F2BDBC6129E8C716118AAAC398A1EC3C493B
                    C-F97601E98D1406017C9D243B0631770E478B106764C3AF961B0988687F9F8996
                    C-8AE9DA0615F229FA326C55370607AA669565AA9D2B9F7676E8F610FD9D034801
                    C-93CC5BCED8D85E2B29E7E6BF472C8EE3964B6E95986D63EC5FDE26285222BD8B"/>
                <ns2:OCSPs
                    VOReference="R-B11D94A425395C04AA6D184218AFB5ADDDCDD0A967418482E7A3A81CC24ECCE5
                    R-8D6D8B462645528F53AB4CED6BD7BE85CEAEA25A930DEDD34CC3F6EF65D2E803
                    R-B2F360F8DBFB176B579FACB996AFA7129C818AFC1DF3301CADA413B04953BDE4
                    R-C81B0182E617E7FADD1DEDD06F903D9DDA2866849E7D04BA7BE4B5112BBBFAF3"/>
            </ns2:DSS>
            <ns2:DocTimeStamp>
                <ns2:AttributeObject
                     VOReference="T-0BADE225FC394E7ABFC32F4503727BF7AAF6F3D9D85C130FEEC9F7BE327837EB"/>
                <ns2:TimeStampValue>2020-09-30T05:01:02Z</ns2:TimeStampValue>
            </ns2:DocTimeStamp>
```

```
            <ns2:Name>
                <ns2:NameElement>NemLog-In Signing SDK</ns2:NameElement>
            </ns2:Name>
            <ns2:SubFilter>
                <ns2:SubFilterElement>ETSI.CAdES.detached</ns2:SubFilterElement>
            </ns2:SubFilter>
            <ns2:ByteRange>0 1172 33942 495</ns2:ByteRange>
            <ns2:Filter>
                <ns2:Filter>Adobe.PPKLite</ns2:Filter>
            </ns2:Filter>
        </ns2:SignatureAttributes>
        <ns2:SignerInformation Pseudonym="false">
            <ns2:SignerCertificate
                 VOReference="C-93CC5BCED8D85E2B29E7E6BF472C8EE3964B6E95986D63EC5FDE26285222BD8B"/>
            <ns2:Signer>Bodil Udsen</ns2:Signer>
        </ns2:SignerInformation>
        <ns2:SignatureQuality>
            <ns2:SignatureQualityInformation>urn:cef:dss:signatureQualification:indeterminateQESig
            </ns2:SignatureQualityInformation>
        </ns2:SignatureQuality>
        <ns2:SignatureValidationProcess>
            <ns2:SignatureValidationProcessID>
                 urn:etsi:019102:validationprocess:LTA
            </ns2:SignatureValidationProcessID>
        </ns2:SignatureValidationProcess>
        <ns2:SignatureValidationStatus>
            <ns2:MainIndication>urn:etsi:019102:mainindication:indeterminate</ns2:MainIndication>
            <ns2:SubIndication>urn:etsi:019102:subindication:TRY_LATER</ns2:SubIndication>
            <ns2:AssociatedValidationReportData>
                <ns2:TrustAnchor
                     VOReference="C-8AE9DA0615F229FA326C55370607AA669565AA9D2B9F7676E8F610FD9D034801"/>
                <ns2:CertificateChain>
                    <ns2:SigningCertificate
                        VOReference="C-93CC5BCED8D85E2B29E7E6BF472C8EE3964B6E95986D63EC5FDE26285222BD8B"/>
                    <ns2:IntermediateCertificate
                        VOReference="C-082BCA2E857E3DE17DF4252F883CEFEBA85436F6BA06761924C1A6B644DE636B"/>
                    <ns2:TrustAnchor
                        VOReference="C-8AE9DA0615F229FA326C55370607AA669565AA9D2B9F7676E8F610FD9D034801"/>
                </ns2:CertificateChain>
                <ns2:CryptoInformation>
                    <ns2:ValidationObjectId
                        VOReference="S-876CF3EA0884D14DF9BD52396A8F1549A9AFD50E76B2297DE7686EC386B16A52"/>
                    <ns2:Algorithm>http://www.w3.org/2001/04/xmldsig-more#ecdsa-sha256</ns2:Algorithm>
                    <ns2:SecureAlgorithm>true</ns2:SecureAlgorithm>
                    <ns2:NotAfter>2025-12-31T23:00:00Z</ns2:NotAfter>
                </ns2:CryptoInformation>
            </ns2:AssociatedValidationReportData>
        </ns2:SignatureValidationStatus>
    </ns2:SignatureValidationReport>
    <ns2:SignatureValidationObjects>
        <ns2:ValidationObject id="T-DA3CB2BE3D2A464BF2CDF74DBDC54B621E9CECC78B913C17BFC60A75368CF6B3">
            <ns2:ObjectType>urn:etsi:019102:validationObject:timestamp</ns2:ObjectType>
            <ns2:ValidationObjectRepresentation>
                <ns2:DigestAlgAndValue>
                    <DigestMethod Algorithm="http://www.w3.org/2001/04/xmlenc#sha256"/>
                    <DigestValue>2jyyvj0qRkvyzfdNvcVLYh6c7MeLkTwXv8YKdTaM9rM=</DigestValue>
                </ns2:DigestAlgAndValue>
            </ns2:ValidationObjectRepresentation>
            <ns2:POEProvisioning>
                <ns2:POETime>2020-09-30T05:01:00Z</ns2:POETime>
                <ns2:ValidationObject
                     VOReference="C-93CC5BCED8D85E2B29E7E6BF472C8EE3964B6E95986D63EC5FDE26285222BD8B"/>
                <ns2:ValidationObject
                     VOReference="C-082BCA2E857E3DE17DF4252F883CEFEBA85436F6BA06761924C1A6B644DE636B"/>
                <ns2:ValidationObject
                     VOReference="D-DFFB90E890E22E435B2DC98C892518159B623CF6409C6D000D1C30A14CDC3114"/>
                <ns2:SignatureReference>
                    <ns2:DigestMethod>http://www.w3.org/2001/04/xmlenc#sha256</ns2:DigestMethod>
                    <ns2:DigestValue>K6KIojn6LsUEdx0YqQlWGaaa5yPlOHqzKVcXf/RN22Q=</ns2:DigestValue>
                </ns2:SignatureReference>
            </ns2:POEProvisioning>
            <ns2:ValidationReport>
                <ns2:ValidationConstraintsEvaluationReport>
                    <ns2:ValidationConstraint>
                        <ns2:ValidationConstraintIdentifier>urn:cef:dss:bbb:formatChecking
                        </ns2:ValidationConstraintIdentifier>
                        <ns2:ConstraintStatus>
                            <ns2:Status>urn:etsi:019102:constraintStatus:disabled</ns2:Status>
                        </ns2:ConstraintStatus>
                    </ns2:ValidationConstraint>
```

```
            <ns2:ValidationConstraint>
                <ns2:ValidationConstraintIdentifier>urn:cef:dss:bbb:identificationOfTheSigningCertificate
                </ns2:ValidationConstraintIdentifier>
                <ns2:ConstraintStatus>
                    <ns2:Status>urn:etsi:019102:constraintStatus:applied</ns2:Status>
                </ns2:ConstraintStatus>
                <ns2:ValidationStatus>
                    <ns2:MainIndication>urn:etsi:019102:mainindication:passed</ns2:MainIndication>
                </ns2:ValidationStatus>
            </ns2:ValidationConstraint>
            <ns2:ValidationConstraint>
                <ns2:ValidationConstraintIdentifier>urn:cef:dss:bbb:validationContextInitialization
                </ns2:ValidationConstraintIdentifier>
                <ns2:ConstraintStatus>
                    <ns2:Status>urn:etsi:019102:constraintStatus:disabled</ns2:Status>
                </ns2:ConstraintStatus>
            </ns2:ValidationConstraint>
            <ns2:ValidationConstraint>
                <ns2:ValidationConstraintIdentifier>urn:cef:dss:bbb:cryptographicVerification
                </ns2:ValidationConstraintIdentifier>
                <ns2:ConstraintStatus>
                    <ns2:Status>urn:etsi:019102:constraintStatus:applied</ns2:Status>
                </ns2:ConstraintStatus>
                <ns2:ValidationStatus>
                    <ns2:MainIndication>urn:etsi:019102:mainindication:passed</ns2:MainIndication>
                </ns2:ValidationStatus>
            </ns2:ValidationConstraint>
            <ns2:ValidationConstraint>
                <ns2:ValidationConstraintIdentifier>urn:cef:dss:bbb:signatureAcceptanceValidation
                </ns2:ValidationConstraintIdentifier>
                <ns2:ConstraintStatus>
                    <ns2:Status>urn:etsi:019102:constraintStatus:applied</ns2:Status>
                </ns2:ConstraintStatus>
                <ns2:ValidationStatus>
                    <ns2:MainIndication>urn:etsi:019102:mainindication:passed</ns2:MainIndication>
                </ns2:ValidationStatus>
            </ns2:ValidationConstraint>
            <ns2:ValidationConstraint>
                <ns2:ValidationConstraintIdentifier>urn:cef:dss:bbb:x509CertificateValidation
                </ns2:ValidationConstraintIdentifier>
                <ns2:ConstraintStatus>
                    <ns2:Status>urn:etsi:019102:constraintStatus:applied</ns2:Status>
                </ns2:ConstraintStatus>
                <ns2:ValidationStatus>
                    <ns2:MainIndication>urn:etsi:019102:mainindication:passed</ns2:MainIndication>
                </ns2:ValidationStatus>
            </ns2:ValidationConstraint>
            <ns2:ValidationConstraint>
                <ns2:ValidationConstraintIdentifier>urn:cef:dss:bbb:pastSignatureValidation
                </ns2:ValidationConstraintIdentifier>
                <ns2:ConstraintStatus>
                    <ns2:Status>urn:etsi:019102:constraintStatus:disabled</ns2:Status>
                </ns2:ConstraintStatus>
            </ns2:ValidationConstraint>
            <ns2:ValidationConstraint>
                <ns2:ValidationConstraintIdentifier>urn:cef:dss:bbb:pastCertificateValidation
                </ns2:ValidationConstraintIdentifier>
                <ns2:ConstraintStatus>
                    <ns2:Status>urn:etsi:019102:constraintStatus:disabled</ns2:Status>
                </ns2:ConstraintStatus>
            </ns2:ValidationConstraint>
            <ns2:ValidationConstraint>
                <ns2:ValidationConstraintIdentifier>urn:cef:dss:bbb:validationTimeSliding
                </ns2:ValidationConstraintIdentifier>
                <ns2:ConstraintStatus>
                    <ns2:Status>urn:etsi:019102:constraintStatus:disabled</ns2:Status>
                </ns2:ConstraintStatus>
            </ns2:ValidationConstraint>
        </ns2:ValidationConstraintsEvaluationReport>
        <ns2:SignerInformation>
            <ns2:SignerCertificate
                VOReference="C-F97601E98D1406017C9D243B0631770E478B106764C3AF961B0988687F9F8996"/>
            <ns2:Signer>Kvalificeret tidsstemplingsenhed 1</ns2:Signer>
        </ns2:SignerInformation>
        <ns2:SignatureQuality>
            <ns2:SignatureQualityInformation>urn:cef:dss:timestampQualification:QTSA
            </ns2:SignatureQualityInformation>
        </ns2:SignatureQuality>
        <ns2:SignatureValidationStatus>
            <ns2:MainIndication>urn:etsi:019102:mainindication:passed</ns2:MainIndication>
```

```
                <ns2:AssociatedValidationReportData>
                    <ns2:TrustAnchor
                        VOReference="C-8AE9DA0615F229FA326C55370607AA669565AA9D2B9F7676E8F610FD9D034801"/>
                    <ns2:CertificateChain>
                        <ns2:SigningCertificate
                            VOReference="C-F97601E98D1406017C9D243B0631770E478B106764C3AF961B0988687F9F8996"/>
                        <ns2:TrustAnchor
                            VOReference="C-8AE9DA0615F229FA326C55370607AA669565AA9D2B9F7676E8F610FD9D034801"/>
                    </ns2:CertificateChain>
                    <ns2:CryptoInformation>
                        <ns2:ValidationObjectId
                            VOReference="T-DA3CB2BE3D2A464BF2CDF74DBDC54B621E9CECC78B913C17BFC60A75368CF6B3"/>
                        <ns2:Algorithm>http://www.w3.org/2007/05/xmldsig-more#sha512-rsa-MGF1</ns2:Algorithm>
                        <ns2:SecureAlgorithm>true</ns2:SecureAlgorithm>
                        <ns2:NotAfter>2025-12-31T23:00:00Z</ns2:NotAfter>
                    </ns2:CryptoInformation>
                </ns2:AssociatedValidationReportData>
            </ns2:SignatureValidationStatus>
        </ns2:ValidationReport>
    </ns2:ValidationObject>
    <ns2:ValidationObject id="T-0BADE225FC394E7ABFC32F4503727BF7AAF6F3D9D85C130FEEC9F7BE327837EB">
        <ns2:ObjectType>urn:etsi:019102:validationObject:timestamp</ns2:ObjectType>
        <ns2:ValidationObjectRepresentation>
            <ns2:DigestAlgAndValue>
                <DigestMethod Algorithm="http://www.w3.org/2001/04/xmlenc#sha256"/>
                <DigestValue>C63iJfw5Tnq/wy9FA3J796r289nYXBMP7sn3vjJ4N+s=</DigestValue>
            </ns2:DigestAlgAndValue>
        </ns2:ValidationObjectRepresentation>
        <ns2:POEProvisioning>
            <ns2:POETime>2020-09-30T05:01:02Z</ns2:POETime>
            <ns2:ValidationObject
                 VOReference="C-F97601E98D1406017C9D243B0631770E478B106764C3AF961B0988687F9F8996"/>
            <ns2:ValidationObject
                 VOReference="C-8AE9DA0615F229FA326C55370607AA669565AA9D2B9F7676E8F610FD9D034801"/>
            <ns2:ValidationObject
                 VOReference="C-082BCA2E857E3DE17DF4252F883CEFEBA85436F6BA06761924C1A6B644DE636B"/>
            <ns2:ValidationObject
                 VOReference="C-18CC5A2699CA5D8D91087753BE3D10BCEA28017C2031A5420E89B7AD1D3878D1"/>
            <ns2:ValidationObject
                 VOReference="C-1C9D4365CF47657B4B6426EA30E2F2BDBC6129E8C716118AAAC398A1EC3C493B"/>
            <ns2:ValidationObject
                 VOReference="C-93CC5BCED8D85E2B29E7E6BF472C8EE3964B6E95986D63EC5FDE26285222BD8B"/>
            <ns2:ValidationObject
                 VOReference="R-8D6D8B462645528F53AB4CED6BD7BE85CEAEA25A930DEDD34CC3F6EF65D2E803"/>
            <ns2:ValidationObject
                 VOReference="R-B2F360F8DBFB176B579FACB996AFA7129C818AFC1DF3301CADA413B04953BDE4"/>
            <ns2:ValidationObject
                 VOReference="R-B11D94A425395C04AA6D184218AFB5ADDDCDD0A967418482E7A3A81CC24ECCE5"/>
            <ns2:ValidationObject
                 VOReference="R-C81B0182E617E7FADD1DEDD06F903D9DDA2866849E7D04BA7BE4B5112BBBFAF3"/>
            <ns2:ValidationObject
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                <ns2:DigestValue>K6KIojn6LsUEdx0YqQlWGaaa5yPlOHqzKVcXf/RN22Q=</ns2:DigestValue>
            </ns2:SignatureReference>
        </ns2:POEProvisioning>
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                    </ns2:ConstraintStatus>
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                </ns2:ConstraintStatus>
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                        <ns2:NotAfter>2025-12-31T23:00:00Z</ns2:NotAfter>
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            <ns2:DigestAlgAndValue>
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                <DigestValue>CCvKLoV+PeF99CUviDzv66hUNva6BnYZJMGmtkTeY2s=</DigestValue>
            </ns2:DigestAlgAndValue>
        </ns2:ValidationObjectRepresentation>
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        <ns2:ValidationObjectRepresentation>
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    </ns2:ValidationObject>
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        <ns2:ValidationObjectRepresentation>
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            </ns2:POE>
        </ns2:ValidationObject>
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            <ns2:ValidationObjectRepresentation>
                <ns2:DigestAlgAndValue>
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                <ns2:TypeOfProof>urn:etsi:019102:poetype:validation</ns2:TypeOfProof>
                <ns2:POEObject VOReference="T-0BADE225FC394E7ABFC32F4503727BF7AAF6F3D9D85C130FEEC9F7BE327837EB"/>
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                        </ns2:ConstraintStatus>
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                        <ns2:ConstraintStatus>
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                        <ns2:SecureAlgorithm>true</ns2:SecureAlgorithm>
                        <ns2:NotAfter>2025-12-31T23:00:00Z</ns2:NotAfter>
                    </ns2:CryptoInformation>
                </ns2:AssociatedValidationReportData>
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        <ns2:ValidationObjectRepresentation>
            <ns2:DigestAlgAndValue>
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            </ns2:DigestAlgAndValue>
        </ns2:ValidationObjectRepresentation>
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        </ns2:POE>
        <ns2:ValidationReport>
            <ns2:ValidationConstraintsEvaluationReport>
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                <ns2:SignerCertificate
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                    </ns2:CryptoInformation>
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                        <ns2:Status>urn:etsi:019102:constraintStatus:disabled</ns2:Status>
                    </ns2:ConstraintStatus>
                </ns2:ValidationConstraint>
                <ns2:ValidationConstraint>
                    <ns2:ValidationConstraintIdentifier>urn:cef:dss:bbb:identificationOfTheSigningCertificate
                    </ns2:ValidationConstraintIdentifier>
                    <ns2:ConstraintStatus>
                        <ns2:Status>urn:etsi:019102:constraintStatus:applied</ns2:Status>
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                    </ns2:ValidationStatus>
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                <ns2:ValidationConstraint>
                    <ns2:ValidationConstraintIdentifier>urn:cef:dss:bbb:validationContextInitialization
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                    <ns2:ConstraintStatus>
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                    </ns2:ConstraintStatus>
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                <ns2:ValidationConstraint>
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                    <ns2:ValidationConstraintIdentifier>urn:cef:dss:bbb:cryptographicVerification
                    </ns2:ValidationConstraintIdentifier>
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                    </ns2:ValidationStatus>
                </ns2:ValidationConstraint>
                <ns2:ValidationConstraint>
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                    </ns2:ValidationConstraintIdentifier>
                    <ns2:ConstraintStatus>
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                    </ns2:ConstraintStatus>
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                    </ns2:ValidationStatus>
                </ns2:ValidationConstraint>
                <ns2:ValidationConstraint>
                    <ns2:ValidationConstraintIdentifier>urn:cef:dss:bbb:x509CertificateValidation
                    </ns2:ValidationConstraintIdentifier>
                    <ns2:ConstraintStatus>
                        <ns2:Status>urn:etsi:019102:constraintStatus:applied</ns2:Status>
                    </ns2:ConstraintStatus>
                    <ns2:ValidationStatus>
                        <ns2:MainIndication>urn:etsi:019102:mainindication:passed</ns2:MainIndication>
                    </ns2:ValidationStatus>
                </ns2:ValidationConstraint>
            </ns2:ValidationConstraintsEvaluationReport>
            <ns2:SignerInformation>
                <ns2:SignerCertificate
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                <ns2:Signer>Den Danske Stat kvalificeret rod-CA OCSP</ns2:Signer>
            </ns2:SignerInformation>
            <ns2:SignatureValidationStatus>
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                <ns2:AssociatedValidationReportData>
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                    </ns2:CertificateChain>
                    <ns2:CryptoInformation>
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                        <ns2:Algorithm>http://www.w3.org/2007/05/xmldsig-more#sha256-rsa-MGF1</ns2:Algorithm>
                        <ns2:SecureAlgorithm>true</ns2:SecureAlgorithm>
                        <ns2:NotAfter>2025-12-31T23:00:00Z</ns2:NotAfter>
                    </ns2:CryptoInformation>
                </ns2:AssociatedValidationReportData>
            </ns2:SignatureValidationStatus>
        </ns2:ValidationReport>
    </ns2:ValidationObject>
    <ns2:ValidationObject id="R-4EAA7FBB6F6DB2DCF0ACDDA2F07B305DF3DBBB789841C40160AB3903A4749D66">
        <ns2:ObjectType>urn:etsi:019102:validationObject:CRL</ns2:ObjectType>
        <ns2:ValidationObjectRepresentation>
            <ns2:DigestAlgAndValue>
                <DigestMethod Algorithm="http://www.w3.org/2001/04/xmlenc#sha256"/>
                <DigestValue>Tqp/u29tstzwrN2i8HswXfPbu3iYQcQBYKs5A6R0nWY=</DigestValue>
            </ns2:DigestAlgAndValue>
        </ns2:ValidationObjectRepresentation>
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            <ns2:TypeOfProof>urn:etsi:019102:poetype:validation</ns2:TypeOfProof>
        </ns2:POE>
        <ns2:ValidationReport>
            <ns2:ValidationConstraintsEvaluationReport>
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                    </ns2:ValidationConstraintIdentifier>
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                    </ns2:ConstraintStatus>
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                <ns2:ValidationConstraint>
                    <ns2:ValidationConstraintIdentifier>urn:cef:dss:bbb:identificationOfTheSigningCertificate
                    </ns2:ValidationConstraintIdentifier>
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                <ns2:ValidationConstraint>
                    <ns2:ValidationConstraintIdentifier>urn:cef:dss:bbb:validationContextInitialization
                    </ns2:ValidationConstraintIdentifier>
                    <ns2:ConstraintStatus>
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                    </ns2:ConstraintStatus>
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                    <ns2:ValidationConstraintIdentifier>urn:cef:dss:bbb:cryptographicVerification
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                    <ns2:ConstraintStatus>
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                <ns2:Signer>Den Danske Stat kvalificeret rod-CA</ns2:Signer>
            </ns2:SignerInformation>
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                            VOReference="C-8AE9DA0615F229FA326C55370607AA669565AA9D2B9F7676E8F610FD9D034801"/>
                    </ns2:CertificateChain>
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                        <ns2:Algorithm>http://www.w3.org/2007/05/xmldsig-more#sha512-rsa-MGF1</ns2:Algorithm>
                        <ns2:SecureAlgorithm>true</ns2:SecureAlgorithm>
                        <ns2:NotAfter>2025-12-31T23:00:00Z</ns2:NotAfter>
                    </ns2:CryptoInformation>
                </ns2:AssociatedValidationReportData>
            </ns2:SignatureValidationStatus>
        </ns2:ValidationReport>
    </ns2:ValidationObject>
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        <ns2:ObjectType>urn:etsi:019102:validationObject:OCSPResponse</ns2:ObjectType>
        <ns2:ValidationObjectRepresentation>
            <ns2:DigestAlgAndValue>
                <DigestMethod Algorithm="http://www.w3.org/2001/04/xmlenc#sha256"/>
                <DigestValue>yBsBguYX5/rdHe3Qb5A9ndooZoSefQS6e+S1ESu7+vM=</DigestValue>
            </ns2:DigestAlgAndValue>
        </ns2:ValidationObjectRepresentation>
        <ns2:POE>
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            <ns2:TypeOfProof>urn:etsi:019102:poetype:validation</ns2:TypeOfProof>
```

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        </ns2:POE>
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    <ns2:ValidationObject id="D-DFFB90E890E22E435B2DC98C892518159B623CF6409C6D000D1C30A14CDC3114">
        <ns2:ObjectType>urn:etsi:019102:validationObject:signedData</ns2:ObjectType>
        <ns2:ValidationObjectRepresentation>
            <ns2:DigestAlgAndValue>
                <DigestMethod Algorithm="http://www.w3.org/2001/04/xmlenc#sha256"/>
                <DigestValue>t9JVkcGNo3NwnT2I3fXuqwtQiTWeWA8FExT9iTXfC3M=</DigestValue>
            </ns2:DigestAlgAndValue>
        </ns2:ValidationObjectRepresentation>
        <ns2:POE>
            <ns2:POETime>2020-09-30T05:01:00Z</ns2:POETime>
            <ns2:TypeOfProof>urn:etsi:019102:poetype:validation</ns2:TypeOfProof>
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        </ns2:POE>
    </ns2:ValidationObject>
</ns2:SignatureValidationObjects>
<ds:Signature xmlns:ds="http://www.w3.org/2000/09/xmldsig#" Id="id-32056ea51145ee6e43ef6b65b41a6cea">
    <ds:SignedInfo>
        <ds:CanonicalizationMethod Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#"/>
        <ds:SignatureMethod Algorithm="http://www.w3.org/2001/04/xmldsig-more#rsa-sha256"/>
        <ds:Reference Id="r-id-32056ea51145ee6e43ef6b65b41a6cea-1" URI="">
            <ds:Transforms>
                <ds:Transform Algorithm="http://www.w3.org/2002/06/xmldsig-filter2">
                    <dsig-filter2:XPath xmlns:dsig-filter2="http://www.w3.org/2002/06/xmldsig-filter2"
                                        Filter="subtract">/descendant::ds:Signature
                    </dsig-filter2:XPath>
                </ds:Transform>
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            </ds:Transforms>
            <ds:DigestMethod Algorithm="http://www.w3.org/2001/04/xmlenc#sha256"/>
            <ds:DigestValue>LrWz6VcAq7p8orQsF8FbcP1KVRpEyrJxU74wOkXgwcU=</ds:DigestValue>
        </ds:Reference>
        <ds:Reference Type="http://uri.etsi.org/01903#SignedProperties"
                      URI="#xades-id-32056ea51145ee6e43ef6b65b41a6cea">
            <ds:Transforms>
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            </ds:Transforms>
            <ds:DigestMethod Algorithm="http://www.w3.org/2001/04/xmlenc#sha256"/>
            <ds:DigestValue>j5nkQLT4FC7RjOJp/ojGHdZHrYJjtEexoAzzN1WZx4U=</ds:DigestValue>
        </ds:Reference>
    </ds:SignedInfo>
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    </ds:SignatureValue>
    <ds:KeyInfo>
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                MIIGyzCCBP+gAwIBAgIUVHM6+Rb7B8aeA8fApm31p0x...3dv690gkfUO8Qi9+KZDJ1HRbERaTwaDBXHuefTWmn6Uq
            </ds:X509Certificate>
            <ds:X509Certificate>
                MIIGxjCCBHqgAwIBAgIUOwUPi2ne9fLwCgJJaAznete...zEhu4a1qKykXerIKQwiu7swwn0urdrOPXV7sVwwS2A==
            </ds:X509Certificate>
            <ds:X509Certificate>
                MIIHGTCCBM2gAwIBAgIUPMzQkfT8Y4IRW6pKSct027A...C+/eXHP2sgp/YeAIQ7e86zoPNDQuJL0+Kp3zBEx+trNS
            </ds:X509Certificate>
        </ds:X509Data>
    </ds:KeyInfo>
    <ds:Object>
        <xades:QualifyingProperties xmlns:xades="http://uri.etsi.org/01903/v1.3.2#"
                                    Target="#id-32056ea51145ee6e43ef6b65b41a6cea">
            <xades:SignedProperties Id="xades-id-32056ea51145ee6e43ef6b65b41a6cea">
                <xades:SignedSignatureProperties>
                    <xades:SigningTime>2020-11-24T10:18:33Z</xades:SigningTime>
                    <xades:SigningCertificateV2>
                        <xades:Cert>
                            <xades:CertDigest>
                                <ds:DigestMethod Algorithm="http://www.w3.org/2001/04/xmlenc#sha512"/>
                                <ds:DigestValue>
                                    MBOfR+KBSUJNNbOZ9qS59T9QRBDt3kwH...mcTttHZmywxf+3yoFzQ==
                                </ds:DigestValue>
                            </xades:CertDigest>
                            <xades:IssuerSerialV2>
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                            </xades:IssuerSerialV2>
                        </xades:Cert>
                    </xades:SigningCertificateV2>
                </xades:SignedSignatureProperties>
                <xades:SignedDataObjectProperties>
```

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                        <xades:DataObjectFormat ObjectReference="#r-id-32056ea51145ee6e43ef6b65b41a6cea-1">
                            <xades:MimeType>text/xml</xades:MimeType>
                        </xades:DataObjectFormat>
                    </xades:SignedDataObjectProperties>
                </xades:SignedProperties>
            </xades:QualifyingProperties>
        </ds:Object>
    </ds:Signature>
</ns2:ValidationReport>
```