Governikus OCSP/CRL-Relay

bremen online services GmbH & Co. KG

ISIS-MTT Assessment Report

Version 1.0
January 15, 2008

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Secorvo herewith confirms, that for the product

Governikus OCSP/CRL-Relay

provided by

bremen online services GmbH & Co. KG

Am Fallturm 9, D-28359 Bremen, Germany

an ISIS-MTT-compliance assessment has been completed between November 27th 2007 and January 14th, 2008

The product is ISIS-MTT-compliant with respect to the Component Conformance Statement ref. no Secorvo-00010 provided

We recommend to award the

ISIS-MTT-conformance label ("ISIS-MTT Siegel")

for the functionality classes

- **Processing of public key certificates (PKC)**
- **Processing of SigG-conforming PKC**
- **Processing of CRLs**
- **Processing of a valid, 3-step certificate path**
- **Processing of an invalid certificate path**
- **Transport of an OCSP request**
- **Retrieval of OCSP responses**
- **Processing of an OCSP Response of a SigG-conforming OCSP-server**

Reference-Number: *Secorvo-00010*

ISIS-MTT Specification Version: 1.1
ISIS-MTT Test Specification Version: 1.1
ISIS-MTT Compliance Criteria Version 1.1
ISIS-MTT Testbed Version: Release 2.1.1[1]

Karlsruhe, January 15, 2008

Petra Barzin

[1] with updated test data.

Content

Acronyms

ASN.1	Abstract Syntax Notation no. 1
CA	Certification Authority
CRL	Certificate Revocation List
DER	Distinguished Encoding Rules
FC	Functionality Class
LDAP	Lightweight Directory Access Protocol
OCSP	Online Certificate Status Protocol
PKC	Public Key Certificate
PKCS	Public Key Cryptography Standard
PKI	Public Key Infrastructure
QC	Qualified Certificate
RFC	Request for Comment
SigG	Signaturgesetz
SP	Service Pack
URI	Uniform Resource Identifier

1 Technical Data

For the ISIS-MTT assessment test

- the OCSP/CRL Relay of Governikus version 3.1.1.0 and
- the ISIS-MTT Testbed Prototype Release Release 2.1.1[2]

have been used.

[2] with updated test data.

2 Test Procedure

2.1 Installation

As test component the Governikus Server was installed using VMware Version 6. The following components were installed and configured in the following order:

- Operating system: Microsoft Windows Server 2003 (W2K3EE Server), SP2
- Java 5 JDK (JDK: 1.5.0.10)
- Data base: MySQL 5.0.45
- Application Server JBoss: JBoss 4.2.0.GA
- Governikus 3.1.1.0

After installing Governikus 3.1.1.0 an additional patch had to be added in order to extend a data base field. Therefore the following comand was executed in the „MySQL Command Line Client“:

```
ALTER TABLE `ocsprelay`.`Certificate` MODIFY COLUMN `subjectDN`
VARCHAR(2000) CHARACTER SET latin1 COLLATE latin1_bin DEFAULT NULL;
```

2.2 Configuration

The following environment variables were defined:

`JAVA_HOME: C:\Programme\Java\jdk1.5.0_10`

`JBOSS_HOME: C:\Programme\jboss-4.2.0.GA`

`PATH: supplemented by C:\Programme\Java\jdk1.5.0_10\bin`

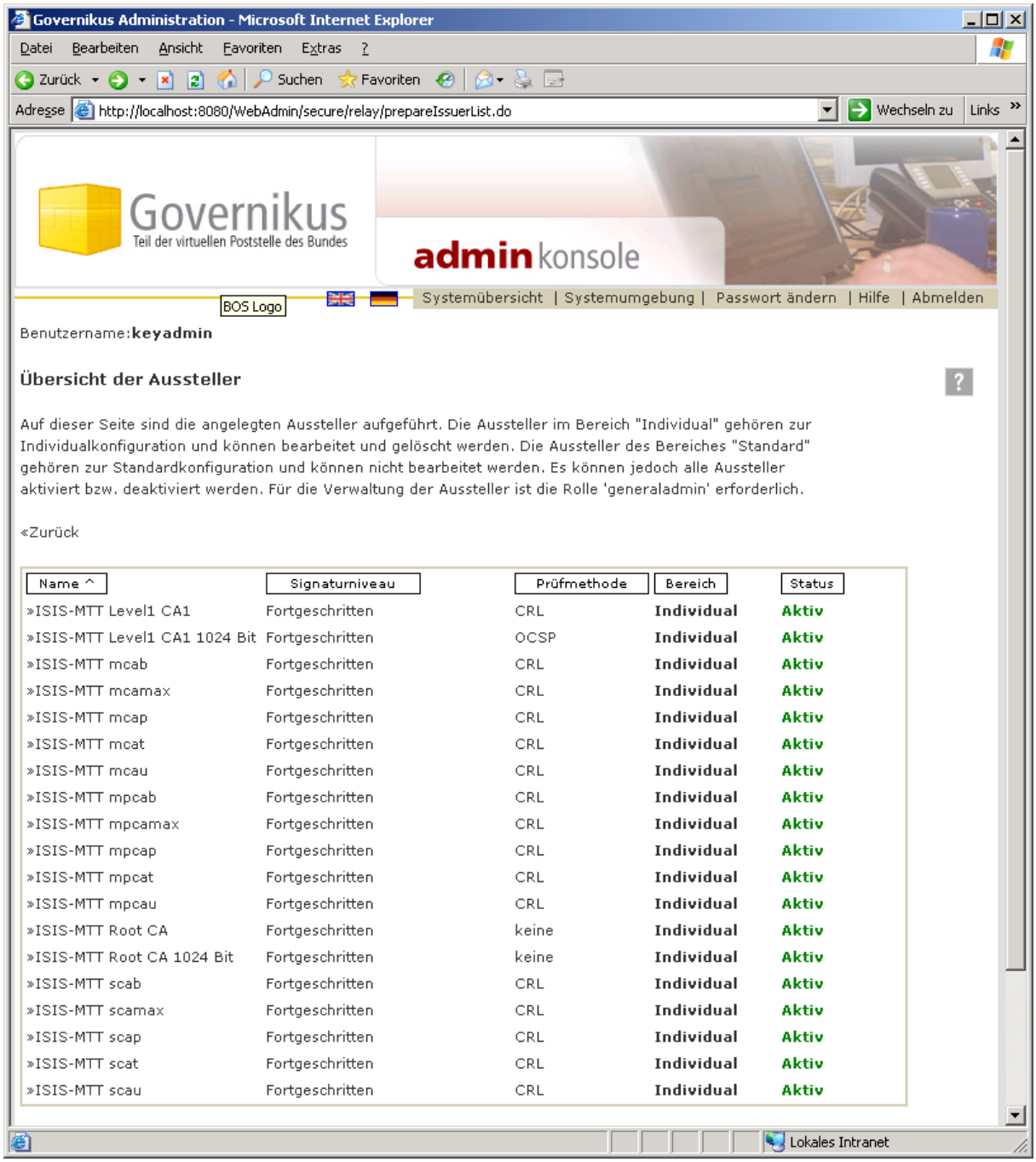
2.3 Preparation of the tests

The application server JBoss and Tomcat are not started automatically unless they are installed as a service. For the ISIS-MTT-compliance assessment they were not installed as a service but started manually: `run –b 0.0.0.0`

Next, the web based Governikus administration application was opened:

`http://localhost:8080/WebAdmin/`

and the user `keyadmin` logged in. First, all CAs from the ISIS-MTT Testbed were added and their certificates uploaded (see figure 1). Next, the URLs of the CRLs, which are required for the test cases of the functionality classes „Processing of CRLs“, were configured per CA (see figure 2). Before performing the OCSP test cases „Transport of an OCSP request“ and „Retrieval of OCSP responses“ the CA in question was configured to use OCSP (instead of CRLs) and the URL of the ISIS-MTT Testbed OCSP Responder was added (see figure 3). The URL of the ISIS-MTT Testbed OCSP Responder was set to http://192.168.189.11:8000.



Name ^	Signaturniveau	Prüfmethode	Bereich	Status
»ISIS-MTT Level1 CA1	Fortgeschritten	CRL	Individual	Aktiv
»ISIS-MTT Level1 CA1 1024 Bit	Fortgeschritten	OCSP	Individual	Aktiv
»ISIS-MTT mcab	Fortgeschritten	CRL	Individual	Aktiv
»ISIS-MTT mcamax	Fortgeschritten	CRL	Individual	Aktiv
»ISIS-MTT mcap	Fortgeschritten	CRL	Individual	Aktiv
»ISIS-MTT mcat	Fortgeschritten	CRL	Individual	Aktiv
»ISIS-MTT mcau	Fortgeschritten	CRL	Individual	Aktiv
»ISIS-MTT mpcab	Fortgeschritten	CRL	Individual	Aktiv
»ISIS-MTT mpcamax	Fortgeschritten	CRL	Individual	Aktiv
»ISIS-MTT mpcap	Fortgeschritten	CRL	Individual	Aktiv
»ISIS-MTT mpcat	Fortgeschritten	CRL	Individual	Aktiv
»ISIS-MTT mpcau	Fortgeschritten	CRL	Individual	Aktiv
»ISIS-MTT Root CA	Fortgeschritten	keine	Individual	Aktiv
»ISIS-MTT Root CA 1024 Bit	Fortgeschritten	keine	Individual	Aktiv
»ISIS-MTT scab	Fortgeschritten	CRL	Individual	Aktiv
»ISIS-MTT scamax	Fortgeschritten	CRL	Individual	Aktiv
»ISIS-MTT scap	Fortgeschritten	CRL	Individual	Aktiv
»ISIS-MTT scat	Fortgeschritten	CRL	Individual	Aktiv
»ISIS-MTT scau	Fortgeschritten	CRL	Individual	Aktiv

Figure 1: Configuration of all CAs from the ISIS-MTT Testbed

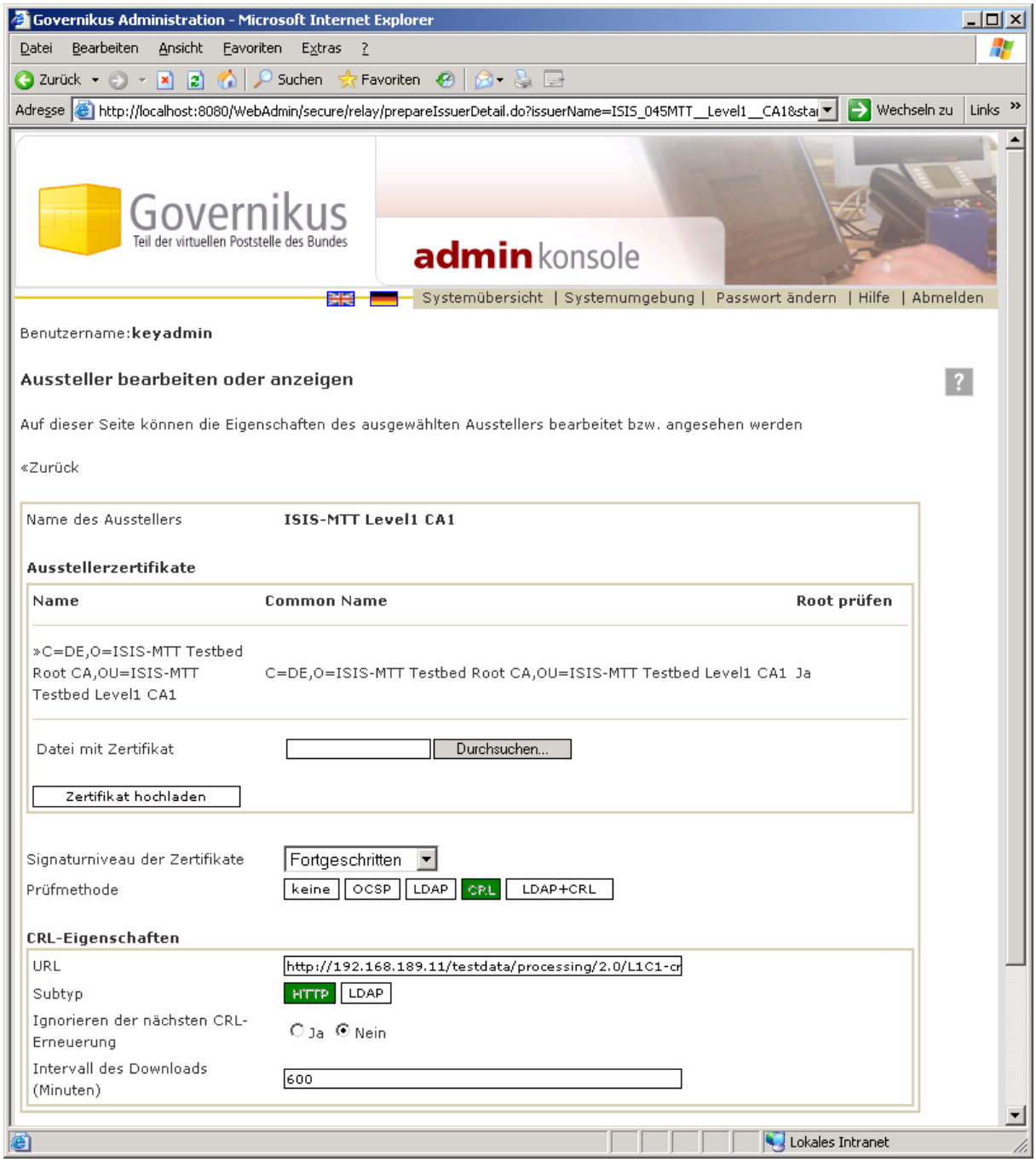


Figure 2: Configuration of the CRL in question

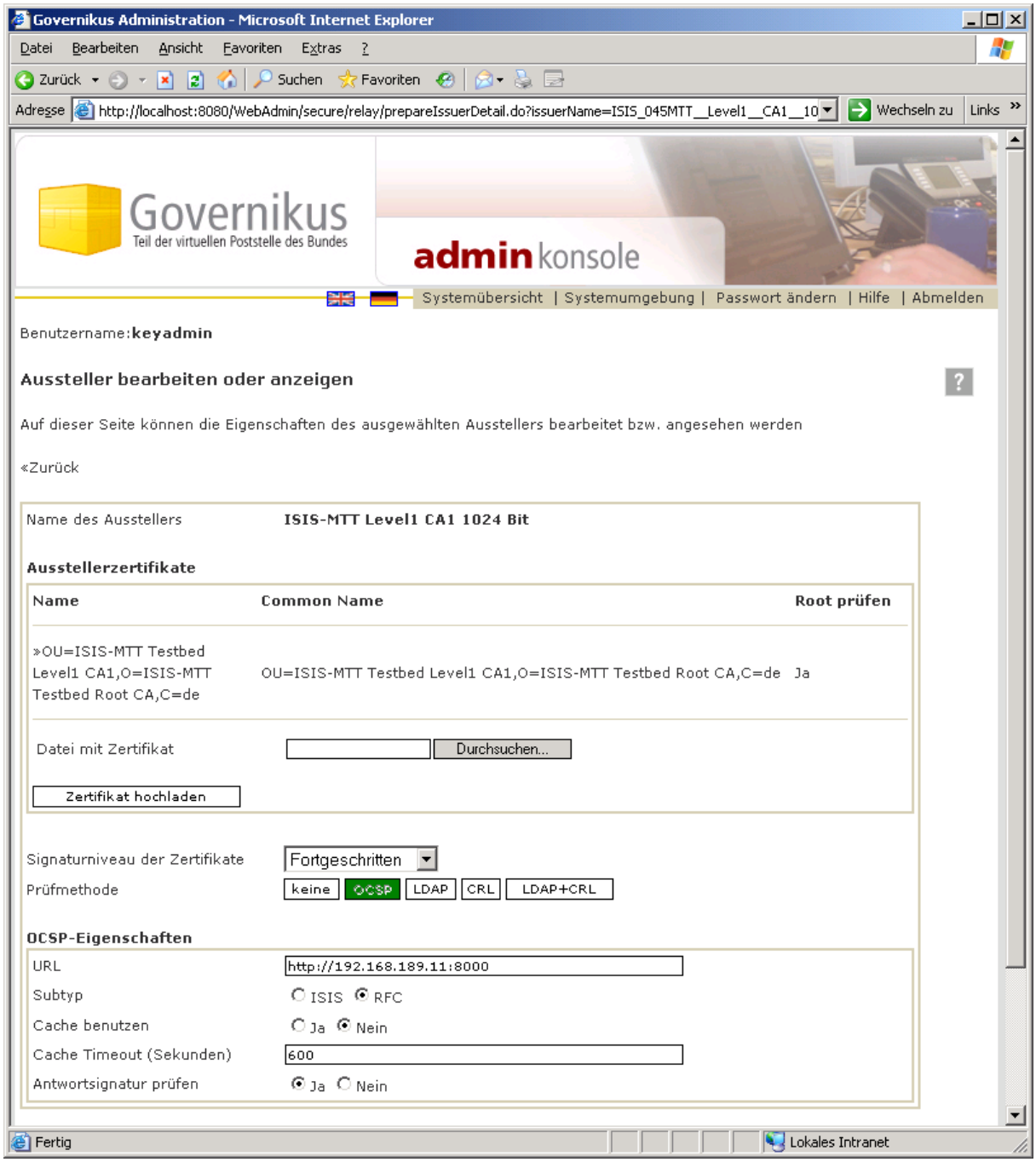


Figure 3: Configuration of the ISIS-MTT Testbed OCSP Responder

2.3.1 Governikus certificate tester

In order to perform the ISIS-MTT tests, a client component is needed which sends requests to the Governikus OCSP/CRL-Relay. Therefore bos provided a Governikus certificate tester application. The Governikus certificate tester is not part of the Governikus OCSP/CRL-Relay.

The Governikus certificate tester was installed using VMware Version 6. The following components were installed and configured in the following order:

- Operating system: Microsoft Windows XP SP2
- Java 6 JDK (Java version 6 Update 3)

- Governikus certificate tester version 3.1.1.0

The following environment variables were defined:

```
JAVA_HOME: C:\Programme\Java\jre1.6.0_03
PATH: supplemented by c:\Programme\Java\jre1.6.0_03\bin
```

Finally, the URL of the Governikus OCSP/CRL-Relay service was configured in the Governikus certificate tester:
http://192.168.189.150:8080/RelayHTTPEntry/services/OCSPRelayService

In order to perform the test cases TCPPKC-1, TCPCRL-1, SIGG-PKC and OCSP-CLIENT the certificates in question were copied from the ISIS-MTT Testbed to a local directory of the test system where the Governikus certificate tester was run.

2.4 Performing the tests

Depending on the test case the URL of the test specific CRL or of the OCSP Responder was configured in the web based Governikus administration application.

Using the Governikus certificate tester a validation request was sent to the Governikus OCSP/CRL-Relay for each certificate used by the test cases and the result was displayed (see figues 4 and 5).

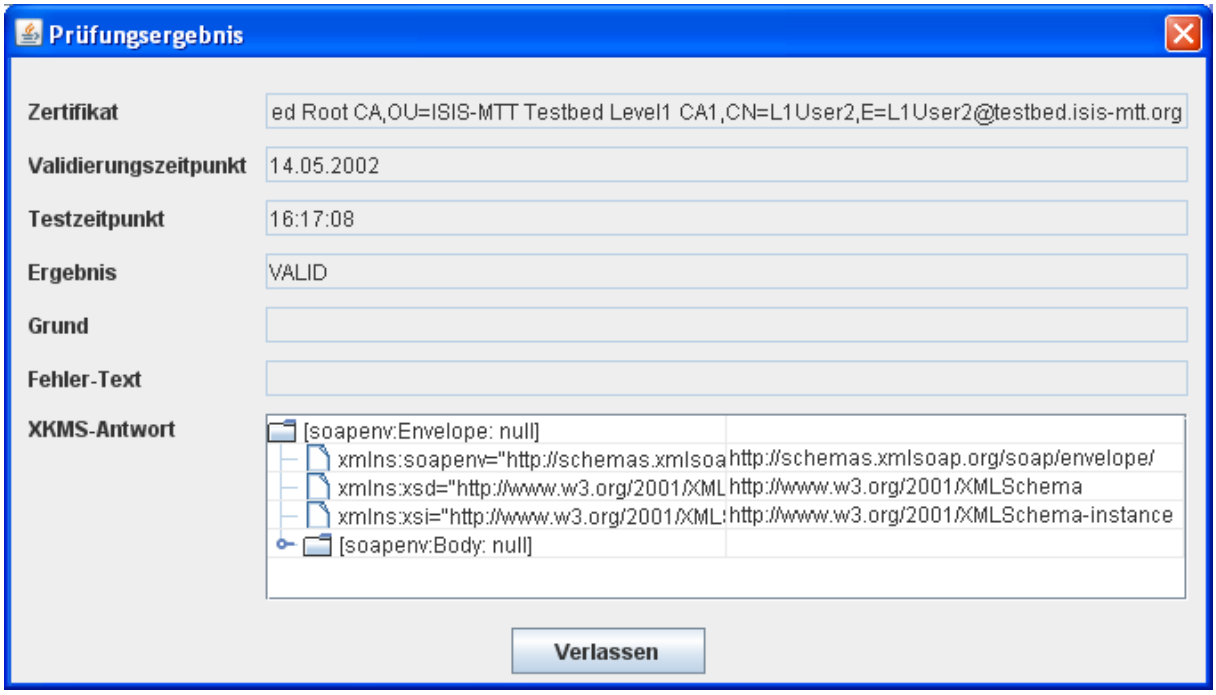


Figure 4: Result of a single certificate request

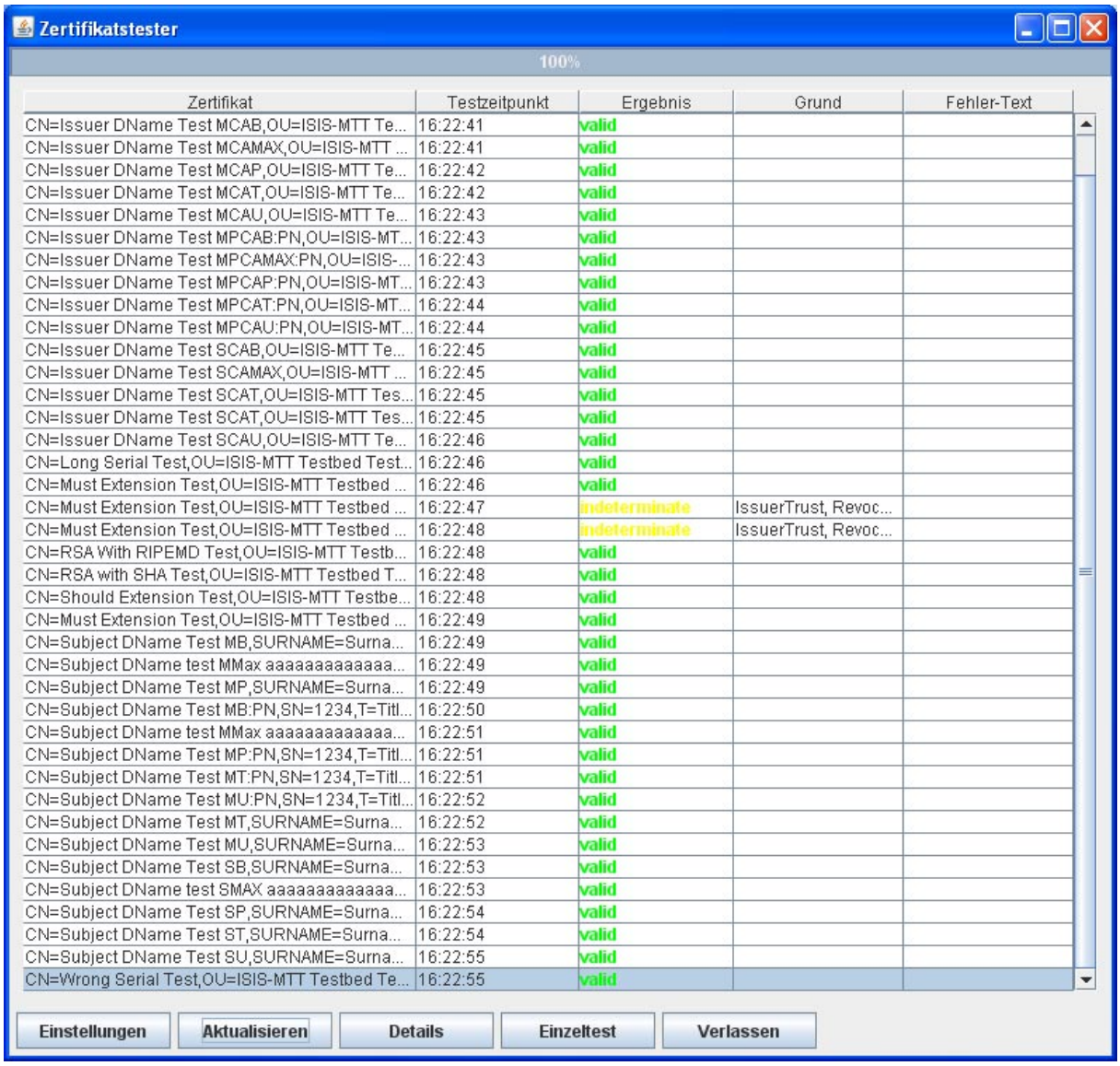


Abbildung 5: Result of summarized certificate requests

The results „indeterminate“ printed in yellow are correct validation results in the sense of the ISIS-MTT tests because the validity period of both test certificates starts in the future.

3 Summarized Assessment Results

The product falls into the functionality classes

- Processing of public key certificates (PKC)
- Processing of SigG-conforming PKC
- Processing of CRLs
- Processing of a valid, 3-step certificate path
- Processing of an invalid certificate path
- Transport of an OCSP request
- Retrieval of OCSP responses
- Processing of an OCSP Response of a SigG-conforming OCSP-server

Thus, the product functionality according to the ISIS-MTT functionality classes 5, 8, 23, 24, 29, 30, 33 and 36 are declared to be conformant to ISIS-MTT and were tested during the compliance assessment.

All tests were passed. The overall result of the assessment is "**passed**".

These are the summarized results:

FC	Description	Result
5	Processing of public key certificates	passed
8	Processing of CRLs	passed
23	Transport of an OCSP Request	passed
24	Retrieval of OCSP responses	passed
29	Processing of a valid, 3-step certificate path	passed
30	Processing of an invalid certificate path	passed
33	Processing of SigG-conforming PKC	passed
36	Processing of an OCSP Response of a SigG-conforming OCSP-server	passed

4 Overview of the Assessment Results

In the following an overview of the tests results per test group is given. For more details, see Annex I: Test Log.

4.1 Test Group PROC-CERT

4.1.1 TCPPKC-1

Test step 1 (Certificate)	passed
Test step 2 (signatureAlgorithm)	passed
Test step 3 (signature)	passed
Test step 4 (version)	passed
Test step 5 (serialNumber)	passed
Test step 6 (issuer)	passed
Test step 7 (validity)	passed
Test step 8 (subject)	passed
Test step 9 (subjectPublicKeyInfo)	passed
Test step 10 (issuerUniqueID)	passed
Test step 11 (subjectUniqueID)	passed
Test step 12 (extensions)	passed

Test case passed

4.1.2 TCPCRL -1

Test step 1 (CertificateList)	passed
Test step 2 (signatureAlgorithm)	passed
Test step 3 (signatureValue)	passed
Test step 3a (version)	passed
Test step 4 (issuer)	passed
Test step 5 (thisUpdate)	passed
Test step 6 (nextUpdate)	passed
Test step 7 (revokedCertificates)	passed
Test step 7a (userCertificate)	passed
Test step 7b (revocationDate)	passed
Test step 7c (crlEntryExtensions)	passed
Test step 8 (crlExtensions)	passed

Test case passed

4.1.3 SIGG-PKC

Test step 1 (OIDs for CertificatePolicies)	passed
Test step 2 (SubjectDirectoryAttributes)	passed
Test step 3 (QCStatements)	passed
Test step 4 (LiabilityLimitationFlag)	passed
Test step 4a (DateOfCertCen)	passed
Test step 5 (Procuration)	passed
Test step 6 (Admission)	passed
Test step 7 (MonetaryLimit)	passed
Test step 8 (DeclarationOfMajority)	passed
Test step 9 (Restriction)	passed
Test step 10 (AdditionalInformation)	passed

Test case passed

4.2 Testgroup OCSP-CLIENT

4.2.1 Test Case TCOCRESPHTTP-1

Test step 1 (HTTP-encoding)	passed

Test case passed

4.2.2 Test Case TCOCRESPASN1-1

Test step 1 (OCSPResponse)	passed
Test step 2 (responseStatus)	passed
Test step 3 (responseBytes)	passed
Test step 4 (signatureAlgorithm)	passed
Test step 5 (signature)	passed
Test step 6 (certs)	passed
Test step 7 (version)	passed
Test step 8 (responderID)	passed
Test step 9 (producedAt)	passed
Test step 10a (certID)	passed
Test step 10b (certStatus)	passed
Test step 10c (thisUpdate)	passed
Test step 10d (nextUpdate)	passed
Test step 10e (singleExtensions)	passed

Test step 11 (responseExtensions)	passed

Test case passed

4.2.3 Test Case SIGG

Test step 1 (ArchiveCutoff)	passed

Test case passed

4.3 Testgroup PATHVALID

4.3.1 Test Case TCPVVALID-1

Test step 1 (BuildAndValidateCertPath)	passed

Test case passed

4.3.2 Test Case TCPVSIGINVALID-1

Test step 1 (ValidateCertPath)	passed
Test step 2 (BuildAndValidateCertPath)	passed

Test case passed

4.3.3 Test Case TCPVSIGINVALID-2

Test step 1 (ValidateCertPath)	passed
Test step 2 (BuildAndValidateCertPath)	passed

Test case passed

4.3.4 Test Case TCPVCERTREVO-1

Test step 1 (CheckStatusUsingCRL)	passed
Test step 2 (CheckRevocationStatus)	passed
Test step 3 (ValidateCertPath)	passed
Test step 4 (BuildAndValidateCertPath)	passed

Test case passed

4.3.5 Test Case TCPVEXPIRED-1

Test step 1 (ValidateCertPath)	passed
Test step 2 (BuildAndValidateCertPath)	passed

Test case passed

4.3.6 Test Case TCPVINVALIDCA-1

Test step 1 (ValidateCertPath)	passed

Test step 2 (BuildAndValidateCertPath)	passed

Test case passed

5 Component Conformance Statement

CONFORMANCE CLAIMS OF COMPONENTS UNDER TEST (MANUFACTURERS) REGARDING THE FUNCTIONALITY CLASSES OF PRODUCTS				
PRODUCT AND MANUFACTURER: SIGNTRUST, DEUTSCHE POST COM GMBH				
REFERENCE NUMBER: SECORVO-00009				
FUNCTIONALITY CLASSES		CLAIMED SUPPORT		
#	NAME	YES	NO	REMARKS
	Generation and processing of certificates and CRLS			
1	Generation of public key certificates	☐	☒	
2	Generation of attribute certificates	☐	☒	
3	Generation of cross certificates	☐	☒	
4	Generation of CRLs	☐	☒	
5	Processing of public key certificates	☒	☐	
6	Processing of attribute certificates	☐	☒	
7	Processing of cross certificates	☐	☒	
8	Processing of CRLs	☒	☐	
	CMC			
9	“Simple CMC” in EEs	☐	☒	
10	“Simple CMC” in CAs	☐	☒	
	Generation and processing of S/MIME messages			
11	Generation of an S/MIME Message for Enveloped Data	☐	☒	
12	Generation of an S/MIME Message for Signed Data	☐	☒	
13	Generation of an S/MIME Message for Transporting Certificates in Certification Responses	☐	☒	
14	Generation of a Multipart/Signed S/MIME Message	☐	☒	
15	Processing of a S/MIME message for enveloped-data	☐	☒	
16	Processing of S/MIME messages with signed data	☐	☒	
17	Processing of a valid S/MIME message for transporting certificates in certification responses (certs-only)	☐	☒	
18	Processing of a Multipart/Signed S/MIME message	☐	☒	
19	File signature and encryption	☐	☒	
20	**LDAP**			
21	LDAP client	☐	☒	
22	LDAP server	☐	☒	

CONFORMANCE CLAIMS OF COMPONENTS UNDER TEST (MANUFACTURERS) REGARDING THE FUNCTIONALITY CLASSES OF PRODUCTS				
PRODUCT AND MANUFACTURER: SIGNTRUST, DEUTSCHE POST COM GMBH				
REFERENCE NUMBER: SECORVO-00009				
FUNCTIONALITY CLASSES		CLAIMED SUPPORT		
#	NAME	YES	NO	REMARKS
	OCSP-Clients and Servers			
23	Transport of an OCSP Request	☒	☐	
24	Retrieval of OCSP responses	☒	☐	
25	Retrieval of an OCSP request	☐	☒	
26	Transport of an OCSP response	☐	☒	
	TSP			
27	TSP client	☐	☒	
28	TSP server	☐	☒	
	Certificate path validation			
29	Processing of a valid, 3-step certificate path	☒	☐	
30	Processing of an invalid certificate path	☒	☐	
	ISIS-MTT SigG-Profile			
31	Generation of SigG-conforming PKCs	☐	☒	
32	Generation of SigG-conforming ACs	☐	☒	
33	Processing of SigG-conforming PKC	☒	☐	
34	Processing of SigG-conforming ACs	☐	☒	
35	Generation of an OCSP Response of SigG-conforming client	☐	☒	
36	Processing of an OCSP Response of a SigG-conforming OCSP-server	☒	☐	
	PKCS#11			
37	PKCS#11 general functions	☐	☒	
38	PKCS#11 functions for slot- and token management	☐	☒	
39	PKCS#11 functions for session management	☐	☒	
40	PKCS#11 functions for session management – optional functions	☐	☒	
41	PKCS#11 functions for object management	☐	☒	
42	PKCS#11 functions for encryption	☐	☒	
43	PKCS#11 functions for decryption	☐	☒	
44	PKCS#11 functions for message digesting	☐	☒	

CONFORMANCE CLAIMS OF COMPONENTS UNDER TEST (MANUFACTURERS) REGARDING THE FUNCTIONALITY CLASSES OF PRODUCTS				
PRODUCT AND MANUFACTURER: SIGNTRUST, DEUTSCHE POST COM GMBH				
REFERENCE NUMBER: SECORVO-00009				
FUNCTIONALITY CLASSES		CLAIMED SUPPORT		
#	NAME	YES	NO	REMARKS
45	PKCS#11 functions for signing	☐	☒	
46	PKCS#11 functions for signing – optional functions	☐	☒	
47	PKCS#11 functions for verification	☐	☒	
48	PKCS#11 functions for verification – optional functions	☐	☒	
49	PKCS#11 functions for combined cryptographic operations	☐	☒	
50	PKCS#11 functions for combined cryptographic operations – optional functions	☐	☒	
51	PKCS#11 functions for key management	☐	☒	
52	PKCS#11 functions for generation of random numbers	☐	☒	
53	PKCS#11 functions for parallel functions management	☐	☒	
54	PKCS#11 functions for stubs	☐	☒	

6 Annex I: Test Log

All tests which produced the result „Failed“ are colored in the following manner:

- red for test results which clearly indicate a „Failed“.
- green for test results which produced a „Failed“ by the ISIS-MTT Testbed Release 2.1.0 but have been reevaluated by the tester and must be considered as „Passed“.

```
Starting Test Session for: Petra Barzin

Component Under Test
Manufacturer: bos
Product Name: Governikus CRL/OCSP Relay
Version: 3.1.1.0
```

6.1 Test Group PROC-CERT

6.1.1 Test Case TCPPKC-1

```
Starting test case TCPPKC-1
Date: Sun Jan  13 18:28:30 CET 2008
Test step 1 (Certificate) -- passed
Test step 2 (signatureAlgorithm) -- passed
Test step 3 (signature) -- passed
Test step 4 (version) -- passed
Test step 5 (serialNumber) -- passed
Test step 6 (issuer) -- passed
Test step 7 (validity) -- passed
Test step 8 (subject) -- passed
Test step 9 (subjectPublicKeyInfo) -- passed
Test step 10 (issuerUniqueID) -- passed
Test step 11 (subjectUniqueID) -- passed
Test step 12 (extensions) -- passed
End of test case TCPPKC-1
Test case passed
Date: Sun Jan  13 18:28:30 CET 2008
```

6.1.2 Test Case TCPCRL-1

```
Starting test case TCPCRL-1
Date: Sun Jan  13 18:47:23 CET 2008
Test step 1 (CertificateList) -- passed
Test step 2 (signatureAlgorithm) -- passed
Test step 3 (signatureValue) -- passed
Test step 3a (version) -- passed
Test step 4 (issuer) -- passed
Test step 5 (thisUpdate) -- passed
Test step 6 (nextUpdate) -- passed
Test step 7 (revokedCertificates) -- passed
Test step 7 a) (userCertificate) -- passed
Test step 7 b) (revocationDate) -- passed
Test step 7 c) (crlEntryExtensions) -- passed
Test step 8 (crlExtensions) -- passed
End of test case TCPCRL-1
Test case passed
Date: Sun Jan  13 18:47:23 CET 2008
```

6.1.3 Test Case SIGG-PKC

```
Starting test case SIGG-PKC
Date: Sun Jan  13 18:55:31 CET 2008
Test step 1 (OIDs for CertificatePolicies) -- passed
Test step 2 (SubjectDirectoryAttributes) -- passed
Test step 3 (QCStatements) -- passed
Test step 4 (LiabilityLimitationFlag) -- passed
Test step 4a (DateOfCertCen) -- passed
Test step 5 (Procuration) -- passed
Test step 6 (Admission) -- passed
Test step 7 (MonetaryLimit) -- passed
Test step 8 (DeclarationOfMajority) -- passed
Test step 9 (Restriction) -- passed
Test step 10 (AdditionalInformation) -- passed
End of test case SIGG-PKC
Test case passed
Date: Sun Jan  13 18:55:31 CET 2008
```

6.2 Test Group OCSP-CLIENT

6.2.1 Test Case TCOCRESPHTTP-1

```
Starting test case TCOCRESPHTTP-1
Date: Sun Jan  13 18:59:56 CET 2008
Test step 1 (HTTP-encoding) -- passed
End of test case TCOCRESPHTTP-1
Test case passed
Date: Sun Jan  13 18:59:56 CET 2008
```

6.2.2 Test Case TCOCRESPASN1-1

```
Starting test case TCOCRESPASN1-1
Date: Sun Jan  13 19:09:58 CET 2008
Test step 1 (OCSPResponse) -- passed
Test step 2 (responseStatus) -- passed
Test step 3 (responseBytes) -- passed
Test step 4 (signatureAlgorithm) -- passed
Test step 5 (signature) -- passed
Test step 6 (certs) -- passed
Test step 7 (version) -- passed
Test step 8 (responderID) -- passed
Test step 9 (producedAt) -- passed
Test step 10 a) (certID) -- passed
Test step 10 b) (certStatus) -- passed
Test step 10 c) (thisUpdate) -- passed
Test step 10 d) (nextUpdate) -- passed
Test step 10 e) (singleExtensions) -- passed
Test step 11 (responseExtensions) -- passed
End of test case TCOCRESPASN1-1
Test case passed
Date: Sun Jan  13 19:09:59 CET 2008
```

6.2.3 Test Case SIGG

```
Starting test case SIGG
Date: Sun Jan  13 19:15:23 CET 2008
Test step 1 (ArchiveCutoff) -- passed
End of test case SIGG
```

```
Test case passed
Date: Sun Jan  13 19:15:23 CET 2008
```

6.3 Test Group PATHVALID

6.3.1 Test Case TCPVVALID-1

```
Starting test case TCPVVALID-1
Date: Sun Jan  13 19:36:40 CET 2008
Test step 1 (BuildAndValidateCertPath()) -- passed
End of test case TCPVVALID-1
Test case passed
Date: Sun Jan  13 19:36:40 CET 2008
```

6.3.2 Test Case TCPVSIGINVALID-1

```
Starting test case TCPVSIGINVALID-1
Date: Sun Jan  13 19:38:45 CET 2008
Test step 1 (ValidateCertPath()) -- passed
Test step 2 (BuildAndValidateCertPath()) -- passed
End of test case TCPVSIGINVALID-1
Test case passed
Date: Sun Jan  13 19:38:45 CET 2008
```

6.3.3 Test Case TCPVSIGINVALID-2

```
Starting test case TCPVSIGINVALID-2
Date: Sun Jan  13 19:39:56 CET 2008
Test step 1 (ValidateCertPath()) -- passed
Test step 2 (BuildAndValidateCertPath()) -- passed
End of test case TCPVSIGINVALID-2
Test case passed
Date: Sun Jan  13 19:39:56 CET 2008
```

6.3.4 Test Case TCPVCERTREVO-1

```
Starting test case TCPVCERTREVO-1
Date: Sun Jan  13 19:42:14 CET 2008
Test step 1 (CheckStatusUsingCRL()) -- passed
Test step 2 (CheckRevocationStatus()) -- passed
Test step 3 (ValidateCertPath()) -- passed
Test step 4 (BuildAndValidateCertPath()) -- passed
```

```
End of test case TCPVCERTREVO-1
Test case passed
Date: Sun Jan  13 19:42:14 CET 2008
```

6.3.5 Test Case TCPVEXPIRED-1

```
Starting test case TCPVEXPIRED-1
Date: Sun Jan  13 19:44:05 CET 2008
Test step 1 (ValidateCertPath()) -- passed
Test step 2 (BuildAndValidateCertPath()) -- passed
End of test case TCPVEXPIRED-1
Test case passed
Date: Sun Jan  13 19:44:05 CET 2008
```

6.3.6 Test Case TCPVINVALIDCA-1

```
Starting test case TCPVINVALIDCA-1
Date: Sun Jan  13 19:47:24 CET 2008
Test step 1 (ValidateCertPath()) -- passed
Test step 2 (BuildAndValidateCertPath()) -- passed
End of test case TCPVINVALIDCA-1
Test case passed
Date: Sun Jan  13 19:47:24 CET 2008
```