

III. Testing process accreditation

1. Testing process

Part 3 Accreditation of this EETS Domain Statement Blankenburgverbinding sets out the requirements for the accreditation of the candidate (E)ETS provider. Part of the accreditation process involves going through a number of tests. Article 44 of the EETS Domain Statement specifies the tests to be completed. This annex provides a description of the different stages of testing and includes the specific requirements for testing.

Pursuant to article 40.2 of the EETS Domain Statement, the candidate (E)ETS provider shall submit a draft service plan to the Toll charger when applying for accreditation. The content of the service plan is prescribed in article 43 of the EETS Domain Statement and is intended, inter alia, to allow the planning of the tests to be completed to suit the specific situation of the candidate (E)ETS provider concerned.

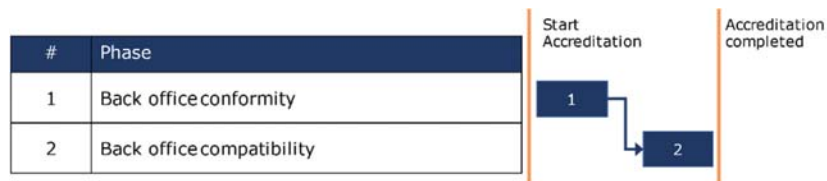
In accordance with Article 44.1 of the EETS Domain Statement, the candidate e(E)ETS provider shall submit a test plan to the Toll charger. The test plan shall describe the proposed test schedule, the test environments and any equipment or other facilities required. The test plan shall also indicate, for each component of the system to be used by the candidate (E)ETS provider, whether it has been previously tested in a similar application for the purpose of service provision in a similar toll system. The Toll charger may use that information when evaluating the test results.

The testing process can be divided into two phases.

Phase 1 concerns *conformity testing*. The purpose of the conformity tests is to give confidence to the candidate (E)ETS provider that all technical parts of the system proposed by the candidate (E)ETS provider conform to the requirements imposed on it and are in a suitable state of development to qualify for Stage 2 compatibility tests.

Phase 2 concerns *compatibility tests*. The purpose of these tests is to demonstrate that the candidate (E)ETS provider's system works properly with the Toll charger's systems.

The figure below provides an overview of the different tests to be completed as part of the accreditation referred to in Part 3 Accreditation of the EETS Domain Statement, as well as the relationship between the different test phases:



The purpose of the tests is to verify that the technical and process and system requirements pursuant to Article 31 of the EETS Domain Statement are met. In addition, the tests aim to verify that the (E)ETS provider's operational processes for the provision of services in EETS domain Blankenburgverbinding are in order. This involves verification of the following key operational processes:

- communicating data from the EETS provider's back office to the Toll charger's back office,

- communicating data from the Toll charger's back office to the EETS provider's back office,
- remitting amounts collected from the toll to the Toll charger,
- properly preparing the customer list,
- the functional business processes based on *use cases*.¹¹

Within the Blankenburgverbinding Toll System, no on-board equipment is used to record the passage of a motor vehicle.

Below, phase 1 (chapter 2) and phase 2 (chapter 3) are discussed in more detail.

2. Phase 1: Back office conformity

For the purpose of Phase 1, the candidate (E)ETS provider shall provide to the Toll Charger all documentation demonstrating that the interfaces to be established by the candidate (E)ETS provider are compliant with the data exchange requirements as stated in Article 31.5 of the EETS Domain Statement. If the candidate (E)ETS provider wishes any test results in the context of service provision in similar toll systems to be included in the accreditation process, the candidate (E)ETS provider shall submit all test reports and interface specifications and standards. The requirements of CEN/TS 16986:2016/C1:2017 shall be the framework within which the documentation submitted by the candidate (E)ETS provider shall be assessed.

The conformity check by the Toll charger shall only cover the interface from the back office of the candidate (E)ETS provider to the back office of the Toll charger and vice versa.

3. Phase 2: Back office compatibility

Phase 2 of the accreditation procedure concerns the compatibility of the back office for use and covers the back office interface tests of the candidate (E)ETS provider with a so-called "test-harness".¹² The execution of these interface tests takes place on the basis of the test plan and test scenarios approved by the Toll charger. The purpose of the interface tests is to demonstrate that the system of the candidate (E)ETS provider interacts properly with the Toll charger's systems. This is achieved when the technical components of the candidate (E)ETS provider's system actually function correctly and according to technical specifications set by the Toll charger in a test environment and then in actual use within the system.

In phase 2, the interfaces to be tested include the customer list ("ExceptionList"), passage records ("BillingDetails") and payment request ("PaymentClaim") interfaces between the Toll charger and candidate (E)ETS providers. The interfaces being tested in this test phase are:

- (i) sending the customer list ("ExceptionList - whitelist") to the Toll charger containing the contracted holders in respect of whom the (E)ETS provider is responsible for toll collection;
- (ii) sending the customer list ("ExceptionList - blacklist") to the Toll charger listing the contracted holders in respect of whom the (E)ETS provider is no longer responsible for toll collection;

¹¹ A *use case* refers to a specific case consisting of a sequence of events that an actor may encounter and which is used to test the functionality of a system and its processes.

¹² A test-harness, or test framework, refers to a test environment, consisting of software and test data that is set up to allow automated testing of systems or parts thereof under various conditions and to monitor their behaviour and output.

- (iii) receiving a passage record ("BillingDetails") from the Toll charger and acknowledging its receipt;
- (iv) receiving a payment request ("PaymentClaim") from the Toll charger and acknowledging its receipt;
- (v) sending a correction request for disputing an invoiced vehicle passage following a complaint from a (contracted) holder to the (E)ETS provider ("Correction Request");
- (vi) receiving a positive or negative response to the Correction Request ("Correction Request Response");
- (vii) requesting information on a specific vehicle passage at the request of and with the consent of the contracted holder ("Vehicle Passage Information");
- (viii) receiving information regarding the moment when the Blankenburgverbinding (E)ETS domain is exempted from the toll obligation and regarding the moment when tolls will be charged again ("Area exemption").

Finally, the integration between the above interfaces is tested to demonstrate that they function correctly and interact properly with the Toll chargers processes.

4. Test scenarios

For the purpose of performing the tests referred to in article 44 of the EETS Domain Statement, the Toll charger shall use the following test scenarios.

TI: Technical interface testing			
	Proof of technical interface connection from (E)ETS provider to Toll charger		
Id	Name	Description	Purpose
T.1	Sending an empty Exception list (Whitelist)	The (E)ETS provider sends an empty Whitelist to the Toll charger. The Toll charger acknowledges a technically successful receipt and sends a technical acknowledgement (Technical Acknowledgement) to the (E)ETS provider.	A successful transmission of a Whitelist including synchronisation and confirmation has been demonstrated.
T.2	Sending an empty Exception List (Blacklist)	The (E)ETS provider sends an empty Blacklist to the Toll charger. The Toll charger acknowledges a technically successful receipt and sends a technical acknowledgement (Technical Acknowledgement) to the (E)ETS provider.	A successful transmission of a Blacklist, including synchronisation and confirmation, has been demonstrated.
T.3	Sending an Information Request (Vehicle Passage Information)	The (E)ETS provider sends an empty information request to the Toll charger. The Toll charger acknowledges a technically successful receipt and sends a technical acknowledgement (Technical Acknowledgement) to the (E)ETS provider.	A successful transmission of an information request, including synchronisation and confirmation, has been demonstrated.
T.4	Sending a blank correction request (Adjustment Request)	The (E)ETS provider sends a blank correction request to the Toll charger. The Toll charger acknowledges a technically successful receipt and sends a Technical Acknowledgement (Technical Acknowledgement) to the (E)ETS provider.	A successful sending of a correction request, including synchronisation and confirmation, has been demonstrated.
FI: Functional interface testing			
	Proof of functional correctness of the interfaces from (E)ETS provider to Toll charger and from Toll charger to (E)ETS provider		
Id	Name	Description	Purpose
FI.1	Sending a new service agreement to the (E)ETS provider (Whitelist)	The (E)ETS provider sends 10 separate Whitelists, each with a different number plate, to the Toll charger. The Toll charger sends a functional confirmation to the (E)ETS provider.	Successful transmission of a Whitelist, including synchronisation and confirmation of functional correctness, has been demonstrated.
FI.2	Sending a terminated service agreement to the (E)ETS provider (blacklist)	The (E)ETS provider sends 2 separate blacklists each with a different number plate (randomly chosen from the list used in scenario FI.1) to the Toll charger. The Toll charger sends a functional confirmation to the (E)ETS provider.	A successful Blacklist transmission including synchronisation and confirmation of functional correctness has been demonstrated.

FI.3	Sending an Information request (vehicle Passage Information)	The (E)ETS provider sends a list of information requests to the Toll charger. The Toll charger confirms a technically successful receipt and sends a functional confirmation to the (E)ETS provider.	A successful transmission of an Information Request, including synchronisation and confirmation of functional correctness, has been demonstrated.
FI.4	Sending an adjustment request	The (E)ETS provider sends a correction request to the Toll charger. The Toll charger confirms a technically successful receipt and sends a functional confirmation to the (E)ETS provider.	It has been demonstrated that successful transmission of a correction request, including synchronisation and confirmation of functional correctness, has taken place.
FI.5	Receiving Billing Details	The Toll charger sends the billing details to the (E)ETS provider.	It has been demonstrated that successful transmission of billing details to the (E)ETS provider has taken place and a functional confirmation has been received by the Toll charger.
FI.6	Receiving an area exemption (Area Exemption)	The Toll charger will send an area exemption with a start date and time to the (E)ETS provider. After correct receipt, the Toll charger will send an area exemption with end date and time to the (E)ETS provider.	It was demonstrated that a successful transmission of start and end of an area exemption was sent to the (E)ETS provider and a functional confirmation was received by the Toll charger.
FI.7	Receipt of a payment request (Payment Claim)	The Toll charger sends a payment request to the (E)ETS provider.	A successful transmission of the payment request to the (E)ETS provider has been demonstrated and a functional confirmation has been received by the Toll charger.
EE: End-to-End testing			
Proof of functional correctness of the interfaces from (E)ETS provider to Toll charger			
Proof of overall functional correctness of the system between (E)ETS provider and Toll charger			
Id	Name	Description	Purpose
EE.1	Basic End-to-end test with service agreements with an (E)ETS provider.	The (E)ETS provider sends 10 separate whitelists, each with a different number plate, to the Toll charger. Upon successful receipt of these whitelists, the (E)ETS provider sends 2 different blacklists (randomly selected from the list provided earlier in this test) to the Toll charger. After this, the Toll charger adds passage information to the selected number plates and sends the passage data to the (E)ETS provider.	This scenario shows that by signing on and off different service agreements, passages can be properly assigned to the (E)ETS provider.

<p>EE.2</p>	<p>Testing correction request (Adjustment request) with correction of billing details (Billing details)</p>	<p>The (E)ETS provider starts retrieving the vehicle passage information from the Toll charger by using the Message Vehicle Passage Information for 2 of the number plates from the whitelist (randomly chosen from the list used in scenario EE.1). After this, the (E)ETS provider sends 2 correction requests for these 2 number plates to the Toll charger with 2 different reasons, 1 of which includes a requested attachment. After evaluation, the Toll charger sends 2 functional confirmations of the correction requests to the (E)ETS provider in which 1 is accepted and 1 is refused. The accepted correction request will be processed in the billing details which will be sent to the (E)ETS provider.</p>	<p>This scenario shows that after submitting an information request, 2 correction requests with the correct reason and an attachment can be submitted. After evaluation by the Toll charger, the (E)ETS provider can see with which reason a correction request has been rejected and that the accepted correction request results in an adjustment in the billing data.</p>
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