AP-2.4

Test description of interface with AutoPASS HUB

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DOCUMENT STATUS

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Document Version log

The purpose of the document version log is to describe the development of the document including the changes.

Version	Date	Author	Comments/amendments
1.0	02.10.2019	NPRA	New document: "6.4 Requirements for access to and test of interface with AutoPASS HUB"
1.9	15.06.2020	NPRA	Based on 6.4-document, but description of connection moved to AP-1.7 document. Test-description remains unchanged from ver. 1.0.
2.0	24.11.2020	NPRA	Minor modifications
2.01	13.04.2021	NPRA	Version for publishing

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1 INTRODUCTION

1.1 Scope of document

This document describes how to test and approve the data connection between AutoPASS HUB and an AutoPASS Toll Service Provider solution, in order to ensure that the communication takes place as described in ref.[3] and ref.[4]. The concept is similar when an AutoPASS Toll Charger connects to AutoPASS HUB with its central system.

Testing and approval of the data connection between AutoPASS HUB and an AutoPASS Toll Service Provider solution are parts of an overall test strategy which is described in ref.]5].

1.2 Referenced specification

The table below shows other valid AutoPASS specifications which are referenced in this document.

Ref.	Document name	Description
1.	AP-1.0 AutoPASS_Definisjoner, Standarder og Direktiver	Lists all terms, definitions, standars and directives relevant for the specifications
2.	AP-1.1 AutoPASS Teknisk infrastruktur	Description of the AutoPASS infrastructure and data flow
3.	AP-1.2 AutoPASS Data formats	All data formats used in the interfaces to AutoPASS HUB
4.	AP-1.7 Tilkobling til AutoPASS Samvirke	Technical description of how to connect to AutoPASS HUB
5.	AP-2.2 AutoPASS TSP Suitability for Use – Test Strategy	Overall test strategy for a TSP in AutoPASS Samvirke

2 GENERAL SYSTEM OVERVIEW

The figure below shows a slightly simplified conceptual view of the AutoPASS architecture.

The TSP Solution will connect to AutoPASS HUB either by Virtual Private Network or by use of SFTP. Furthermore, the TSP Solution will provide a (s)ftp server which the AutoPASS HUB by a TSP connector (s)ftp client can reach and download/upload files from/to.

In Chapter 3 the term “National Kjerne” (National Core Systems) is used for the common systems AutoPASS IP and AutoPASS HUB.

See ref.[2] for a more detailed description of the infrastructure and ref.[4] for a description of how to connect to AutoPASS HUB.

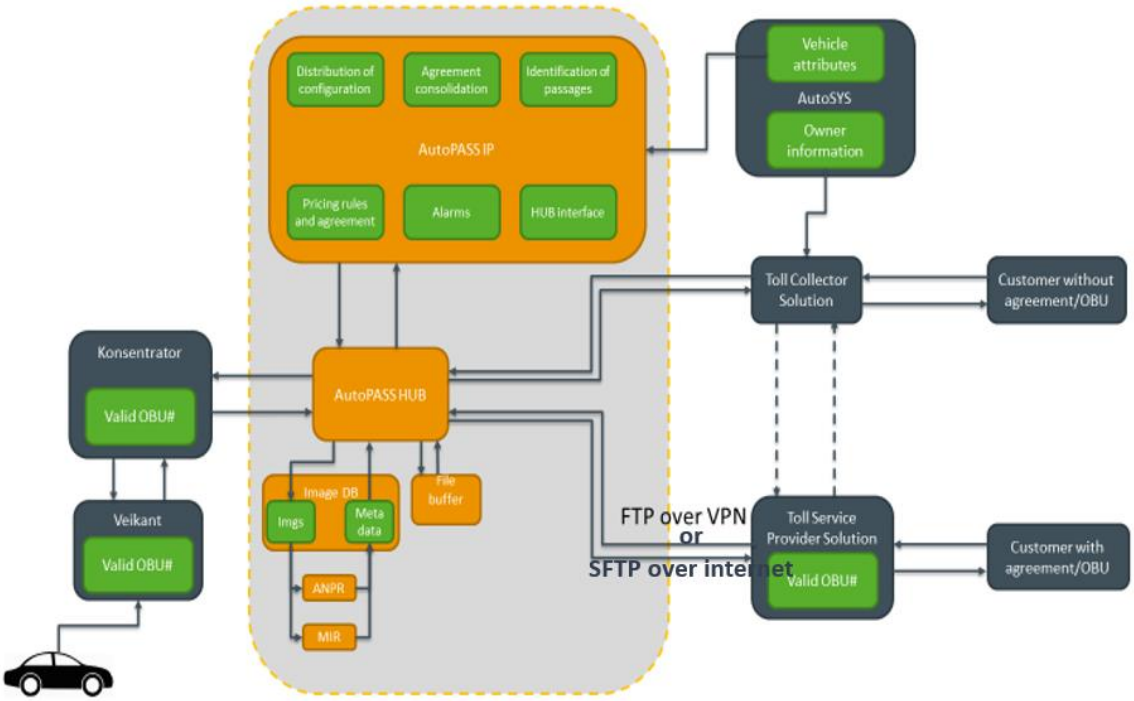

Figure 1 - AutoPASS actors/systems and data exchange interfaces subject to testing

3 TESTING OF THE AUTOPASS HUB INTERFACE

All components that receive, transmit or exchange information with Nasjonal Kjerne in any of the defined roles are within scope.

Prerequisites

- The content of the AutoPASS specification must be implemented and maintained by the individual Toll Service Providers (TSP) whose system or equipment is to be added or changed.
- Analysis of the provided AutoPASS specification and decision to implement required changes is supervised by AutoPASS test management to allow for integration with Nasjonal Kjerne, with subsequent test or regression test as a result of the change.
- The necessary preparation of the TSPs test organization is followed up by the AutoPASS test management. The local testing is followed up by the Actor whose system or equipment is to be tested.
- The TSP is responsible for highlighting progress and results from own approval tests for the individual component to AutoPASS test management.
- The TSP's approval tests shall confirm the functionality of the affected AutoPASS component.
- Approval tests shall also be carried out when introducing new equipment (OBE).
- Integration tests should verify AutoPASS functionality in a defined test environment.
- New equipment (OBE) shall comply with contractual specifications.
- Final approval report (Acceptance) shall provide evidence that the AutoPASS specification has been implemented and that TSP approval tests have been fulfilled in accordance with the agreed / contractual test level (identify and document the tests performed).
- When a final approval report is available, it provides a basis for starting integration tests.

Integration Tests

Integration tests shall include components that will be affected by the change. Tests are described on a general level and should be performed according to local conditions. The tests must be organized, performed, documented and approved by the individual TSP and Nasjonal Kjerne.

Integration tests should be performed in a test environment to verify that all file format and interface updates are correct and include:

- Testing the interface from the TSP's central system to Nasjonal Kjerne. Transaction testing can be done using simulated transactions if no physical test environment is available.
- Testing of the interface from the central provider's central system to Nasjonal Kjerne and to the central system at the receiving operator.
- If new equipment is introduced, this should be included in the integration test.

End-to-End Tests (E2E)

- E2E tests should include the functionality that is new or changed and requires regression testing of existing functionality.
- The E2E tests must be organized, performed, documented and approved by the TSP and Nasjonal Kjerne.
- Testing of transactions can be done using simulated transactions if no physical test environment is available.
- The E2E tests should not involve real customers.

- The E2E test should cover scenarios based on the maintenance of contractual interoperability.
- When introducing new equipment, E2E tests in conjunction with affected components should be carried out.
- When the E2E test is performed and approved in a test environment, the same test should be performed in the production environment.

Toll Service Provider (TSP):

The TSP testing process depends on the type of new or changed functionality to be introduced. The test plan must distinguish between the following test scenarios:

- Add a new type of data exchange: If a new type of data exchange is to be tested, it can only be limited to testing this new type if the design of the change ensures that there are no side effects on other parts of the data exchange. If this cannot be guaranteed, all affected parts of the system must also be tested.
- Change of an existing type of data exchange: If a change of an existing type of data exchange is to be tested, it will involve a complete re-test of this type and possibly all other types that depend on the processed data.
- Adding a new entrant: All relevant types of data exchange must be tested with the new entrant. The following rules for testing the TSP central system apply regardless of the test scenarios described above:
- Data exchange testing is conducted against Nasjonal Kjerne in accordance with specifications.
- Data exchange testing is conducted against a representative selection of other Operator solutions in accordance with specifications.
- Data exchange testing is carried out against a representative selection of other Operator solutions in the production environment in accordance with specifications.
- Any modification to all types of data exchange after approved integration tests, requires integration testing and any subsequent test steps.