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T2S EXTERNAL NETWORKS

PROOF OF CONCEPT TEST

- Attachment 5 to the Licence Agreement -

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1 Introduction

The Proof of Concept ("**PoC**") is a project phase which follows the signing of the Licence Agreement. The PoC phase covers a six month period.

The PoC Test aims at detecting any potential technical or security problems at an early stage in the process of developing and realising the Network by the NSP. The PoC Test will be conducted at the end of the Development Phase (Article 4.1 of the Licence Agreement), more than nine months before the Eurosystem Network Acceptance Test. The PoC Test includes a set of significant and relevant tests which also form part of the Eurosystem Network Acceptance Test.

2 Scope of the document

This Attachment to the Licence Agreement describes the content and the order of the steps to be taken in the PoC Test phase. It specifies the test cases which necessarily have to be completed successfully before proceeding to the Implementation Phase.

3 Competent personnel

Eurosystem's technical staff and the NSP's technical staff, under the coordination of Eurosystem, perform the PoC Test cases. The PoC Test should be completed by the same staff members who will be involved in and responsible for the completion of the Eurosystem Network Acceptance Test.

4 PoC Steps

The PoC Tests will be carried out in three steps. The NSP and Eurosystem will cooperate to complete the PoC Tests.

4.1 Technical Dialogue Workshop

The NSP shall submit a detailed technical documentation presenting its Solution as set out in Art. 4.1 of the Licence Agreement. The NSP will then present the envisaged Solution theoretically during a two day workshop. In this presentation, the NSP will show how the Technical Requirements as set out in the Technical Requirements (Attachment 1 to the Licence Agreement) will be met. The NSP and the Eurosystem will agree on a plan of the PoC Test execution, in particular on a deadline for minimal equipments installation and the start date of the PoC Test execution).

4.2 Installation of the minimal equipment

The NSP will install the minimal equipment which is needed in order to run the actual PoC Test. The PoC Test does not involve any stress test. It is performed on a minimal infrastructure. The Network connections are the same as in the production environment and network performance is not tested.

4.3 PoC Test

In the third phase of the PoC Test the actual testing of the Solution is performed.

5 Execution of the PoC Test

5.1 General Guidelines

During the PoC phase regular meetings between the Eurosystem and the NSP are held to jointly measure the testing progress and, if necessary, agree on corrective measures to be taken by the NSP. Corrective measures have to be agreed on if a test identifies gaps. The agreed measures have to be implemented by the NSP before the completion of the Eurosystem Network Acceptance Test.

PoC involves the two regions to which the NSP shall connect its Network, but only one site in each of them. The Directly Connected T2S Actors will not be involved in the testing. For the purpose of testing, a T2S Site in one Region will act as a Directly Connected T2S Actor during the testing of the Solution in the T2S Sites in the other Region. The PoC Test is not repeated with a reversed role of the two regions.

5.2 PoC Test Criteria

Three types of criteria govern the PoC Test. The entrance criteria have to be met before the PoC Test is started. The acceptance criteria determine the successful completion of the PoC Test. If the termination criteria are fulfilled, the PoC Tests have to be suspended due to major technical issues or solution immaturity.

5.2.1 PoC entrance criteria

As an entrance criterion, the first PoC Step must have been successfully completed (section 4.1). The NSP must have provided to Eurosystem the documentation of its Solution and successfully presented his Solution at the workshop. To support the A2A tests, the NSP has further provided to the Eurosystem client generating messages and files, on AIX or on Linux, to simulate the Directly Connected T2S Actor.

5.2.2 PoC acceptance criteria

Eurosystem accepts the PoC and the completion of the PoC testing phase, if

- all PoC related tests have been successfully completed;
- except otherwise agreed, the NSP has resolved all reported defects and taken all necessary corrective measures , or has agreed with Eurosystem on technical or procedural workarounds for

each individual problem, which only leaves an acceptable remaining risk to the Solution and a timetable to implement the workarounds of the remaining defects;

- Eurosystem has confirmed the sufficient compliance of the Solution with the PoC relevant specifications; and
- a meeting has been held and all involved parties have agreed that the PoC testing has been successfully completed.

5.2.3 PoC termination criteria

If more than ten tests have failed, the PoC Test is suspended and corrective measures will be identified by Eurosystem and the NSP.

A status meeting is scheduled when the NSP declares that all corrective measures have been taken. In this meeting, the NSP will demonstrate to Eurosystem that he has taken the agreed corrective measures and the Eurosystem and the NSP will agree whether and when the PoC Test will be resumed.

5.3 Scope of the PoC Test

The PoC network is very lightweight compared with the Eurosystem Network Acceptance Test. Only minimal network features are available and in general the PoC focuses on the application perspective. The PoC tests do not include

- Network stress tests ,
- redundancy tests between the two sites in the same region,
- rotation features tests, or
- load balancing features tests.

Some tests are run in *negative mode*. In consequence, not only the functionality of the given test condition must be shown. , but also additional tests are run to show that in the case that the test condition is not fulfilled, the test result is either a reject or drop.

Every test case is split into the six following sections:

1. The *Description* defines which functionality or environment is tested;
2. The *Expected result* describes test's expected outcome;
3. The *Detailed test procedure* describes the performance the test;
4. The *Outcome* provides a field to not the results of the test on site;
5. The *Result* will either be a fail or a pass. If a test fails, a corrective measure will be agreed. If a test passes, no further action is needed;
6. The *Formal acceptance* contains the signatures of Eurosystem's and the NSP's representatives who have performed the test. The signature documents the formal acceptance of the test result.

5.4 Deadlines

The PoC Test shall be completed in accordance with the following schedule:

No	Date	Network requirements
1	PoC start date as indicated in the License Agreement	POC starts
2	5 business days after date #1	POC - Provide documentation about the network solution
3	100 business days after date #1	POC – Connectivity availability on Eurosystem sites
4	Starting from date #3 for a duration of 20 business days	POC – Tests Execution

6 Proof of Concept (PoC) - Test cases

Layer 3 requirement - IP addressing scheme

Reference ID	T2S.UC.TC.20160	
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<i>Description:</i>	IP addressing scheme
<i>Expected result:</i>	The NSP has to use an IP address range which is "public" in terms of RFC1918.
<i>Detailed test procedure:</i>	Verify on the documentation shared between Eurosystem and the NSP that only addresses for Private Internets are allocated, i.e. 10.0.0.0 - 10.255.255.255 (10/8 prefix), 172.16.0.0 - 172.31.255.255 (172.16/12 prefix), 192.168.0.0 - 192.168.255.255 (192.168/16 prefix).
<i>Outcome:</i>	No IPv4 public addresses are used.
<i>Result:</i>	Is the outcome matching the expected result? <input type="checkbox"/> PASSED <input type="checkbox"/> FAILED If failed, then description of the follow up action: _____ _____
<i>Formal acceptance:</i>	Eurosystem testing team _____ date ____/____/____ NSP testing team _____ date ____/____/____

Layer 3 requirement – Static Routing

Reference ID	T2S.UC.TC. 20175	Exclusion
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<i>Description:</i>	Verify the routing between the T2S Platform and the NSP is static.
<i>Expected result:</i>	Between the NSP and the T2S Platform only static routes are used.
<i>Detailed test procedure:</i>	Check Network equipment configuration and verify there is no dynamic routing protocol between the NSP and the T2S Platform and vice versa.
<i>Outcome:</i>	Between the NSP and the T2S Platform routing is static.
<i>Result:</i>	<p>Is the outcome matching the expected result?</p> <p><input type="checkbox"/> PASSED</p> <p><input type="checkbox"/> FAILED</p> <p>If failed, then description of the follow up action:</p> <p>_____</p> <p>_____</p>
<i>Formal acceptance:</i>	<p>Eurosystem testing team _____ date ____/____/____</p> <p>NSP testing team _____ date ____/____/____</p>

A2A message and file size limitations

Reference ID	T2S.UC.TC. 30070	Exclusion
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<i>Description:</i>	Verify A2A message and file size limitations
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<i>Expected result:</i>	The NSP offers A2A services in compliance with the size limitations described in the Technical Requirements document.
<i>Detailed test procedure:</i>	Send messages equal or less than 32 KB. Send messages greater than 32 KB. Send files less than 32KB. Send files between 32KB and 32MB. Send files greater than 32 MB.
<i>Outcome:</i>	It is possible to send messages up to 32 KB. It is possible to send files up to 32MB.
<i>Result:</i>	Is the outcome matching the expected result? <input type="checkbox"/> PASSED <input type="checkbox"/> FAILED If failed, then description of the follow up action: <hr/> <hr/>
<i>Formal acceptance:</i>	Eurosystem testing team _____ date ____/____/____ NSP testing team _____ date ____/____/____

A2A message and file size management

Reference ID	T2S.UC.TC. 30080	Exclusion
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<i>Description:</i>	Verify the A2A message and file size management
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<i>Expected result:</i>	The NSP rejects any message or file that is not in the allowed size range. The originator receives a negative acknowledgement message.
<i>Detailed test procedure:</i>	<p>1a) Generate from the site simulating the Directly Connected T2S Actor an undersized file, file is dropped and does not reach the T2S Platform.</p> <p>1b) Generate from the site simulating the Directly Connected T2S Actor an oversized file, file is dropped and does not reach the T2S Platform.</p> <p>2) Generate from the site simulating the Directly Connected T2S Actor an oversized message, message is dropped and does not reach the T2S Platform.</p>
<i>Outcome:</i>	Please refer to "detailed test procedure" above. The originator receives a negative Tech-Ack.
<i>Result:</i>	<p>Is the outcome matching the expected result?</p> <p><input type="checkbox"/> PASSED</p> <p><input type="checkbox"/> FAILED</p> <p>If failed, then description of the follow up action:</p> <p>_____</p> <p>_____</p>
<i>Formal acceptance:</i>	<p>Eurosystem testing team _____ date ____/____/____</p> <p>NSP testing team _____ date ____/____/____</p>

WebSphere MQ channels

Reference ID	T2S.UC.TC.30100	
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<i>Description:</i>	Verify the MQ Series channels.
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<i>Expected result:</i>	Each kind of flow (1. Messages real-time, 2. Files real-time, 3. Messages store-and-forward mode, 4. Files store-and-forward mode) has at least a MQ Series channel.
<i>Detailed test procedure:</i>	<ol style="list-style-type: none"> 1. Count the number of MQ Series channels available for messages real-time; 2. count the number of MQ Series channels available for files real-time; 3. count the number of MQ Series channels available for messages store-and-forward mode; 4. count the number of MQ Series channels available for files store-and-forward mode.
<i>Outcome:</i>	At least an MQ Series channel is available for the above mentioned categories.
<i>Result:</i>	<p>Is the outcome matching the expected result?</p> <p><input type="checkbox"/> PASSED</p> <p><input type="checkbox"/> FAILED</p> <p>If failed, then description of the follow up action:</p> <p>_____</p> <p>_____</p>
<i>Formal acceptance:</i>	<p>Eurosystem testing team _____ date ____/____/____</p> <p>NSP testing team _____ date ____/____/____</p>

WebSphere MQ channels SSL connection

Reference ID	T2S.UC.TC.30105	
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<i>Description:</i>	Verify the MQ Series channels SSL connection.
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<i>Expected result:</i>	MQ Series channel connections are secured using SSL certificates. SSL certificates are distributed by the T2S Platform.
<i>Detailed test procedure:</i>	Check that MQ Series channels are secured with SSL certificates. Read which CA signed the certificates.
<i>Outcome:</i>	All MQ Series channels are secured with SSL certificates. Certificates are signed by the T2S CA.
<i>Result:</i>	Is the outcome matching the expected result? <input type="checkbox"/> PASSED <input type="checkbox"/> FAILED If failed, then description of the follow up action: _____ _____
<i>Formal acceptance:</i>	Eurosystem testing team _____ date ____/____/____ NSP testing team _____ date ____/____/____

WebSphere MQ message queues

Reference ID	T2S.UC.TC.30115	
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<i>Description:</i>	Verify the MQ Series queues.
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<i>Expected result:</i>	Up to four queues are set up for incoming and outgoing traffic for each specific traffic flow. Queue names follow the T2S naming convention.
<i>Detailed test procedure:</i>	Count the number of queues set up for incoming and outgoing traffic for each specific traffic flow. Check queue names.
<i>Outcome:</i>	Each traffic flow has up to four queues. Queue names are in line with T2S naming convention.
<i>Result:</i>	Is the outcome matching the expected result? <input type="checkbox"/> PASSED <input type="checkbox"/> FAILED If failed, then description of the follow up action: _____ _____
<i>Formal acceptance:</i>	Eurosystem testing team _____ date ____/____/____ NSP testing team _____ date ____/____/____

Real-time outgoing management

Reference ID	T2S.UC.TC. 30205	Exclusion
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<i>Description:</i>	Verify the NSP's real-time outgoing management
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<i>Expected result:</i>	The NSP manages the real-time outgoing message pattern as described in the Technical Requirements.
<i>Detailed test procedure:</i>	Send a message from the T2S Platform to the Directly Connected T2S Actor in real-time mode. Follow the seven steps sequence described in the Technical Requirements. Inspect the message sent by the T2S Platform to the NSP gateway at the step #2. Inspect the Technical Acknowledgment sent by the NSP to the T2S Platform at the step #3. Inspect the response sent by NSP to the T2S Platform at the step #6. Repeat the test in negative mode. Repeat the same test for a file.
<i>Outcome:</i>	Step #2, step #3 and step #6 for file and message sent from the T2S Platform to the Directly Connected T2S Actor in real-time mode comply with the description in the Technical Requirements.
<i>Result:</i>	<p>Is the outcome matching the expected result?</p> <p><input type="checkbox"/> PASSED</p> <p><input type="checkbox"/> FAILED</p> <p>If failed, then description of the follow up action:</p> <p>_____</p> <p>_____</p>
<i>Formal acceptance:</i>	<p>Eurosystem testing team _____ date ____/____/____</p> <p>NSP testing team _____ date ____/____/____</p>

Real-time incoming management

Reference ID	T2S.UC.TC. 30210	Exclusion
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<i>Description:</i>	Verify the real-time incoming management.
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<i>Expected result:</i>	The NSP manages the real-time incoming message pattern as detailed in the Technical Requirements.
<i>Detailed test procedure:</i>	<p>The T2S Platform receives a message in real-time mode from a Directly Connected T2S Actor; it goes through the eight steps sequence described in the Technical Requirements document.</p> <p>Inspect message at step #2.</p> <p>Repeat the test in negative mode.</p> <p>Repeat same test for a file.</p>
<i>Outcome:</i>	Step #2 for file and message sent from the Directly Connected T2S Actor to the T2S Platform in real-time mode match the description in the Technical Requirements.
<i>Result:</i>	<p>Is the outcome matching the expected result?</p> <p><input type="checkbox"/> PASSED</p> <p><input type="checkbox"/> FAILED</p> <p>If failed, then description of the follow up action:</p> <p>_____</p> <p>_____</p>
<i>Formal acceptance:</i>	<p>Eurosystem testing team _____ date ____/____/____</p> <p>NSP testing team _____ date ____/____/____</p>

Store-and-forward outgoing management

Reference ID	T2S.UC.TC. 30215	Exclusion
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<i>Description:</i>	Verify the Store-and-Forward outgoing management.
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<i>Expected result:</i>	the T2S Platform sends a message in Store-and-forward mode to Directly Connected T2S Actor; message sequence conforms to the six steps in the Technical Requirements.
<i>Detailed test procedure:</i>	<p>In guaranteed delivery (Store-and-Forward) mode send a message from the T2S Platform to a Directly Connected T2S Actor. Inspect message at step #2, and at step #3.</p> <p>Repeat the test in negative mode.</p> <p>Repeat same test for a file.</p>
<i>Outcome:</i>	Step #2 and step #3 both match the expectation described in the Technical Requirements document.
<i>Result:</i>	<p>Is the outcome matching the expected result?</p> <p><input type="checkbox"/> PASSED</p> <p><input type="checkbox"/> FAILED</p> <p>If failed, then description of the follow up action:</p> <p>_____</p> <p>_____</p>
<i>Formal acceptance:</i>	<p>Eurosystem testing team _____ date ____/____/____</p> <p>NSP testing team _____ date ____/____/____</p>

Store-and-forward incoming management

Reference ID	T2S.UC.TC. 30220	Exclusion
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<i>Description:</i>	Verify the Store-and-forward incoming management.
<i>Expected result:</i>	The NSP manages the Store-and-forward incoming message pattern as detailed in the Technical Requirements document.

<i>Detailed test procedure:</i>	<p>The T2S Platform receives a message in guaranteed delivery (Store-and-Forward) mode from a Directly Connected T2S Actor. Message goes through a six steps sequence. Verify all six steps are in line with the description in the Technical Requirements document.</p> <p>Repeat the test in negative mode.</p> <p>Repeat the same test for a file.</p>
<i>Outcome:</i>	When the T2S Platform receives a message in guaranteed delivery (store-and-forward) mode from a Directly Connected T2S Actor, the message goes through the six steps sequence described in the Technical Requirements.
<i>Result:</i>	<p>Is the outcome matching the expected result?</p> <p><input type="checkbox"/> PASSED</p> <p><input type="checkbox"/> FAILED</p> <p>If failed, then description of the follow up action:</p> <p>_____</p> <p>_____</p>
<i>Formal acceptance:</i>	<p>Eurosystem testing team _____ date ____/____/____</p> <p>NSP testing team _____ date ____/____/____</p>

Enable/Disable Store-and-forward) traffic

Reference ID	T2S.UC.TC. 30225	Exclusion
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<i>Description:</i>	Verify the enable/disable Store-and-forward.
<i>Expected result:</i>	The NSP manages the Store-and-forward "service traffic" as detailed in the Technical Requirements document.

<i>Detailed test procedure:</i>	<p>The T2S Platform sends an "EnableSnfTraffic" to the NSP. Inspect the message, and then inspect the response to the message.</p> <p>Repeat the test in negative mode.</p>
<i>Outcome:</i>	<p>The T2S Platform enables/disables the exchanging of Store-and-forward traffic, via the "EnableSnfTraffic".</p>
<i>Result:</i>	<p>Is the outcome matching the expected result?</p> <p><input type="checkbox"/> PASSED</p> <p><input type="checkbox"/> FAILED</p> <p>If failed, then description of the follow up action:</p> <p>_____</p> <p>_____</p>
<i>Formal acceptance:</i>	<p>Eurosystem testing team _____ date ____/____/____</p> <p>NSP testing team _____ date ____/____/____</p>