



# **POS C-TAP Terminal Integration Process in the Netherlands**

**February 2010**

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# 1 Introduction

This chapter provides an introduction to the acquirer environment(s) in the Netherlands that feature(s) POS or integrated POS (IPOS) terminals supporting the C-TAP protocol, and introduces a variant of the Terminal Integration Process (TIP) specifically customized for such environments.

## Purpose of this Document

This guide details a specific way for Dutch Terminal Suppliers, Member Service Providers, Acquirers and Test Laboratories to use (parts of) the standard TIP process as currently described in the *TIP Process Guide*. This is done by describing the requirements to be met by the various actors and the high-level process, referred to below as NL-TIP.

This guide also details the NL-TIP objectives and the requirements applicable to each of the main actors involved, i.e. the Terminal Suppliers, the Member Service Providers (MSPs) and the Acquirers and introduces the pricing principles for NL-TIP.

The NL-TIP process is only applicable to terminals and acquiring environments implementing the C-TAP specifications. It will be extended to include IFSF environments at a later stage. ATMs are out of scope of NL-TIP.

The NL-TIP process described in this guide applies to both contact and contactless POS terminals; however it will be initially implemented for contact terminals only. Implementation of contactless terminal support will take place in a second stage and will be conditioned to future market demand.

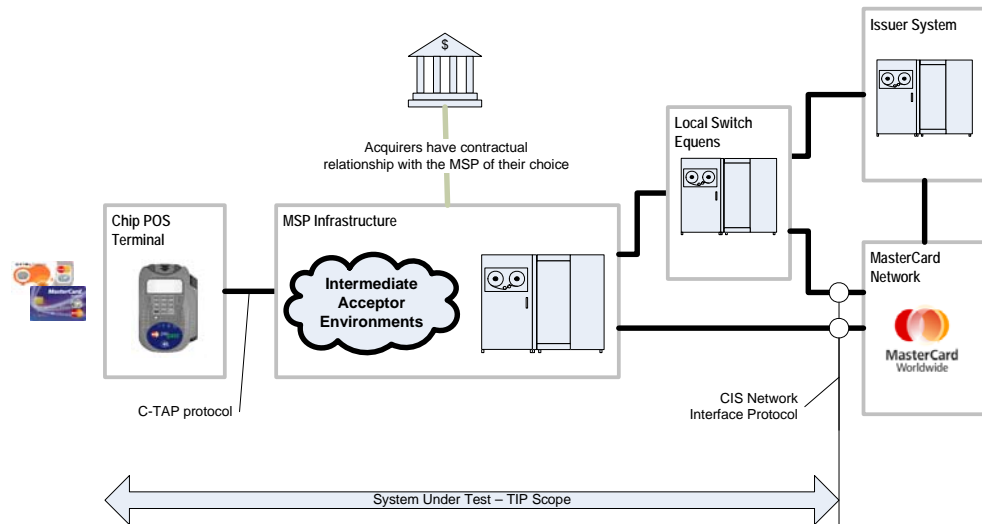
## Audience

MasterCard provides this guide for Acquirers, Member Service Providers, Terminal Suppliers and Test Laboratories operating in the Netherlands. Specifically, the following personnel should find this guide useful:

- Program Managers and Project Managers managing acquirers chip migration projects in the Netherlands (either for contact, for contactless, or for both)
- MSPs willing to offer their services to acquirers migrating to chip in the Netherlands (either for contact, for contactless, or for both)
- Terminal Suppliers who develop contact (EMV-compliant) or contactless (*PayPass*<sup>™</sup> compliant) terminals that are customized to meet requirements specific to the Dutch market
- Members of staff from MSPs, Terminal Suppliers or Test Laboratories who will be involved in the NL-TIP testing.

## Overview of the C-TAP Acquirer Environment in the Netherlands

Figure 1.1 presents a high-level overview of the acquirer environment used in the Netherlands.



**Figure 1.1—High Level Overview of the Acquirer Environment in the Netherlands**

The chip transaction infrastructure operated in the Netherlands has the following main characteristics:

- Acquirers have a contractual relationship with one or more Member Service Providers (MSP) for operating both authorization and clearing for their chip transactions
- MSPs operate the acquiring infrastructure on behalf of Acquirers. The MSP infrastructure comprises any intermediate acceptor environment and any system interfacing with either the MasterCard network (for some domestic and international transactions) or Equens acting as local switch (for some domestic transactions). The MSP infrastructure connects to chip POS terminals using the C-TAP protocol and connects to the MasterCard network using the MasterCard CIS interface message format.
- In the majority of cases, POS terminals are owned by merchants. For the other cases, terminals are owned by the acquirer. Terminal Suppliers therefore sell their chip POS terminals to either merchants or Acquirers. At the exception of some specific sectors, such as Petrol, chip POS terminals that are intended to be used in the Netherlands must support the C-TAP specifications and be certified for these specifications by Test Laboratories.

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## NL-TIP Strategy and Objectives

### TIP Goal

TIP ensures the correct operation of the terminal, of the intermediate connections, and of the interface with the MSP infrastructure, in conditions that are as close as possible to its final production environment.

TIP must be performed before the acquirer chip infrastructure, (including the chip POS terminal and the MSP acquirer infrastructure) is deployed and used in the production environment.

### Strategy in the Netherlands

In the Netherlands, MasterCard accepts that terminals and MSP infrastructures implementing the C-TAP specifications are certified as discrete components rather than as an entire acquiring chain, because of the following local specificities/prerequisites:

- Chip POS debit terminals in the Netherlands use the C-TAP protocol, an industry-wide protocol to communicate with the acquirer host
- All chip POS terminals supporting the C-TAP specifications are certified by Test Laboratories for these specifications
- All MSP infrastructures in the Netherlands support the C-TAP protocol to connect to chip POS terminals
- All MSP infrastructures in the Netherlands support the MasterCard CIS interface format to connect to the MasterCard Banknet network, possibly via Equens interface to MasterCard.

With this strategy, the NL-TIP process works as follows:

- Chip POS Terminal Suppliers need to obtain MasterCard NL-TIP approval for their chip POS terminal products supporting the C-TAP protocol before they are proposed to acquirers or merchants in the Netherlands.
- MSP operating in the Netherlands need to obtain MasterCard NL-TIP approval for their infrastructures supporting the C-TAP protocol and connecting to the MasterCard Banknet network before they can be used by acquirers.
- Acquirers selecting only MasterCard-NL-TIP certified terminals and MasterCard-NL-TIP certified MSP infrastructures are not required to perform any further TIP testing. They only need to register their choices (or combinations) of terminals and MSPs with MasterCard.

### NL-TIP Objectives

#### Terminal Suppliers

From a Terminal Supplier perspective, the NL-TIP objectives are to:

- Ensure that the chip POS terminal meets the MasterCard brand requirements as described in *M/Chip Requirements* and, as applicable, in *PayPass-M/Chip Acquirer Implementation Requirements* and *Maestro PayPass – Acquirer Implementation Requirements*.
- Test the capability of the chip POS terminal to send and receive chip-related data transparently over its C-TAP and EMV interfaces.
- Detect any deficiency of the chip POS terminal in terms of chip interoperability and therefore to detect issues at an early stage, before the POS terminal is actually used in the field

#### MSPs

From an MSP perspective, the NL-TIP objective is to test, for each specific MasterCard product, the capability of the MSP infrastructure to send and receive chip related data transparently across its entire connection path, i.e. from the C-TAP compliant POS terminal to the MasterCard Banknet network and the Global Clearing Management System (GCMS).

#### Acquirers

From an acquirer perspective, the NL-TIP objective is to validate that both the MSPs and the chip terminals they plan to use are actually certified by MasterCard. Having that information registered with MasterCard information is critical when addressing chip interoperability issues as they occur in the field.

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## NL-TIP Requirements

### Terminal Suppliers

MasterCard grants a TIP Terminal Approval of Supplier (TAoS) to a particular chip POS terminal supporting a particular combination of related set of terminal capabilities and MasterCard product(s), provided that

- It has been approved for C-TAP
- It has successfully passed TIP testing in a MasterCard-defined environment.

Terminal Suppliers may only propose to Acquirers and merchants in the Netherlands chip POS terminals that have received a TAoS.

TAoS are listed on the [www.maestro.nl](http://www.maestro.nl) website.

Every TAoS has an expiration date, and needs to be renewed if, further to its expiration, the Terminal Supplier is willing to continue offering their terminal product on the Dutch market. Renewal testing, if any, includes the testing of new TIP interoperability test cases.

Existing chip POS terminals products that already have the C-TAP approval status and that are part of an acquirer infrastructure that has a TIP LoA will be granted a TAoS without further testing.

Existing chip POS terminal products that have valid TAoS and that are upgraded must also be submitted for NL-TIP in case of major upgrades. In case of doubt as to whether an upgrade is minor or major, the terminal supplier should contact the TIP Service Provider of their choice. The TIP Service Provider will advise on whether a full TIP or some regression tests must be performed based on the reported modifications.

Examples of major changes are:

- An existing and approved terminal is upgraded to support another MasterCard product (e.g. MasterCard Credit, Maestro, Cirrus)
- An existing and approved EMV terminal is upgraded with a new EMV kernel version
- An existing EMV terminal with TIP approval is upgraded to support *PayPass M/Chip*
- An existing *PayPass M/Chip* terminal with TIP approval is upgraded to support EMV contact
- An existing and approved *PayPass–Mag Stripe* terminal is upgraded to support EMV contact and/or *PayPass–M/Chip*

EMVCo Type Approval Bulletins #11 and #31 as available on [www.emvco.com](http://www.emvco.com) provide additional information regarding major and minor changes.

## Introduction

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NL-TIP terminal supplier requirements can be summarized as follows:

		TIP Approval Status	
		Not Approved	Approved
CTAP Certification status	Not Certified	CTAP and TIP testing required	N/A
	Certified	TIP Testing required	No additional test required TAoS will automatically be granted

## MSPs

MasterCard grants a TIP MSP Approval of Supplier (MAoS) to a particular MSP acquirer infrastructure for a particular MasterCard product, provided that it has successfully passed TIP testing in a MasterCard-defined environment.

MSPs may only propose to Acquirers in the Netherlands MSP infrastructures that have received a MAoS.

MAoS are listed on the [www.maestro.nl](http://www.maestro.nl) website

MAoS do not have an expiration date. However, they may expire when MSP infrastructure that have been granted a MAoS go through a major upgrade. In case of doubt as to whether an upgrade is minor or major, MSPs should contact the TIP Service Provider of their choice. The TIP Service Provider will advise on whether a full TIP or only some regression tests must be performed, based on the reported modifications.

Examples of major changes are:

- An approved MSP infrastructure is upgraded to support another MasterCard product for which that MSP infrastructure was not yet approved.
- An approved MSP infrastructure is upgraded with a new operating system or with new hardware.
- An approved MSP infrastructure is upgraded with new connection paths between the chip POS terminal and the MasterCard network.
- An MSP infrastructure having TIP approval for EMV contact is upgraded to support *PayPass M/Chip*
- An MSP infrastructure having TIP approval for *PayPass M/Chip* is upgraded to support EMV contact

MSP must provide acquirers with whom they have a contractual relationship for the purpose discussed in this document with the reference of the new MAoS, if any.

### Acquirers

MasterCard grants a TIP LoA without any further TIP testing to a Dutch Acquirer, provided that they have selected, based on the MasterCard product they are willing to accept, MSP(s) and chip terminals owning valid MAoS and TAoS respectively.

MAoS and TAoS are listed on [www.maestro.nl](http://www.maestro.nl). MAoS and TAoS are provided by the relevant MSP and Terminal Suppliers respectively.

Acquirers must register with MasterCard their selection of approved MSP(s) and chip POS terminal(s) along with the references of the corresponding TAoS and MAoS.

Acquirers must refer to Global Bulletin 11, November 2009 for related EMV Terminal Application Kernel Compliance Principles and Policies.

# NL-TIP Pricing Principles

The following pricing principles are current and may be subject to change. MasterCard reserves the right to review and modify these principles from time to time.

MasterCard implementation and accreditation pricing principles and related fees are out of scope of this document

## Terminal Suppliers

Terminal suppliers outsourcing their NL-TIP testing to Test Laboratories should contact them to obtain the pricing for NL-TIP as charged by these laboratories. MasterCard currently does not charge any specific fee for NL-TIP over what is charged by the laboratory or what is charged by the TIP Service Providers such as FIME.

## MSPs

MSPs shall refer to Global Operation Bulletin No. 12, 3 December 2007, article 'New Chip Service Prices and Billing Changes' in which the pricing for TIP is documented.

## Acquirers

The registration to MasterCard by Acquirers of their selection of approved MSP(s) and chip POS terminal(s) and the subsequent granting of the TIP LoA is currently free of charge for Acquirers.

## Related Information

The following documents and resources provide information related to the subjects discussed in this document

- *Maestro PayPass – Acquirer Implementation Requirements*
- *M/Chip Qualified Test Tools*
- *M/Chip Requirements*
- *PayPass–M/Chip Acquirer Implementation Requirements*
- *Terminal Integration Process Guide*

Definitions of specific terms used in this document are available in Appendix A. Other terms are explained in the MasterCard Dictionary.

## 2 NL-TIP Description

This chapter provides terminal suppliers, MSPS and acquirers with a high-level description and the specific characteristics of the NL-TIP process. Whenever applicable, this high-level description refers to subprocesses from the standard TIP process, as detailed in the *TIP Process Guide*. Please refer to that guide for additional details on subprocesses and exception process flows

### NL-TIP Terminal Approval Process

The NL-TIP process for terminals is a collaborative process involving the Terminal Supplier, a TIP Test Laboratory performing the TIP testing and a TIP Service Provider.

Terminals submitted to NL-TIP should:

- Own EMVCo approvals for L1 and L2
- Have a TQM Label or a TQM action plan in place with that Terminal Supplier
- Be certified for the support of the C-TAP protocol

Assuming the above three mentioned prerequisites, MasterCard accepts that Terminal Suppliers perform the TIP testing.

In that case, Terminal Vendors must start the NL-TIP process with step 3 as mentioned below and liaise directly with a TIP Service Provider to obtain the TAoS.

**Note:**

**Because the same Test Laboratory may perform both C-TAP approval and NL-TIP terminal approval, both approval test processes may be performed as one single process.**

Step	Description
1	The Terminal Supplier shall select a TIP Test Laboratory for obtaining the TAoS for a given POS terminal. The list of TIP Test Laboratories is available on <a href="http://www.maestro.nl">www.maestro.nl</a>
2	After setting up the contractual arrangements (as applicable) with the TIP Test Laboratory, the Terminal Supplier sends the following documents, corresponding to the POS terminal under test, to the TIP Test Laboratory: <ul style="list-style-type: none"> <li>- EMVCo L1 and L2 LoA for that terminal</li> <li>- TQM Label or statement that TQM action plan is available</li> <li>- C-TAP approval statement (as applicable – see note above)</li> </ul>

## NL-TIP Description

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Step	Description
3	<p>The TIP Test Laboratory selects a TIP Service Provider (which list can be obtained by sending an e-mail to <a href="mailto:tip@mastercard.com">tip@mastercard.com</a>) and initiates the TIP subprocess 'Establish order with TIP Service Provider' by sending the following forms , corresponding to the POS terminal under test:</p> <ul style="list-style-type: none"><li>- EMVCo L1 and L2 LoAs</li><li>- C-TAP approval statement</li><li>- TQM label or statement that TQM action plan is available</li><li>- PCI-PED compliance statement</li><li>- <i>Acquirer Implementation Conformance Statement (ICS)</i></li><li>- TIP Information Form</li></ul> <p>A Terminal and Network Configuration Form is not required for NL-TIP Terminal Approval</p> <p>From then on, the standard TIP subprocess 'Establish order with TIP Service Provider' applies</p>
4	<p>The TIP Service Provider performs the TIP 'ICS validation' subprocess and the TIP Test Laboratory receives the TIP Test procedure and the TIP Test Report template</p>
5	<p>The TIP Test Laboratory performs TIP testing using the TIP testing infrastructure described in chapter 3 of this guide, completing the TIP Test Report, capturing the corresponding card-terminal logs, and simulator logs.</p>
6	<p>Once all TIP testing is performed, the TIP Test Laboratory initiates the TIP 'Approval Review' subprocess by submitting the TIP test report and the corresponding TIP test logs (see step 5) to the TIP Service Provider.</p> <p>As a result of a successful TIP 'Approval Review' subprocess, MasterCard signs a TAoS for that chip POS terminal and sends it to the Terminal Supplier with a copy to the TIP Service Provider.</p>
7	<p>Upon request from the Terminal Supplier, MasterCard lists this terminal on <a href="http://www.maestro.nl">www.maestro.nl</a> together with the corresponding Acquirer ICS.</p>

## NL-TIP MSP Approval Process

The NL- TIP process for MSPs is a collaborative process involving the MSP and a TIP Service Provider.

Step	Description
1	The MSP selects a TIP Service Provider for obtaining the MAoS. That list of TIP Service providers can be obtained by sending an e-mail to <a href="mailto:nl-tip@mastercard.com">nl-tip@mastercard.com</a>
2	MSP selects a terminal owning a valid TAoS and which supports the required MasterCard product the MSP is willing to certify. The list of approved terminals, corresponding ICS and TAoS references are available on <a href="http://www.maestro.nl">www.maestro.nl</a> . The MSP liaises with the corresponding Terminal Supplier to order and obtain the selected terminal (which the MSP will include in their own testing infrastructure) and a copy of the TAoS.
3	The MSP initiates the TIP subprocess 'Establish order with TIP Service Provider' by sending the following information and forms: - TAoS reference for that terminal they have selected for the TIP (step 2 above). - TIP Information Form - Terminal and Network Configuration form  From then on, the standard TIP subprocess 'Establish order with TIP Service Provider' applies
4	Using the TAoS as a key, the TIP Service Provider retrieves the corresponding Acquirer ICS and generates the TIP test procedure and the TIP Test Report template for the MSP. The TIP Service Provider sends the TIP Test procedure and the TIP Test Report template to the MSP.
5	The MSP performs TIP testing using the TIP testing infrastructure described in chapter 3 of this guide, completing the TIP Test report, capturing the corresponding Card-Terminal logs and simulator logs and IPM (clearing) files.
6	Once all TIP testing is performed, the MSP initiates the TIP 'Approval Review' subprocess by submitting the TIP test report and the corresponding TIP test logs (see step 5) to the TIP Service Provider.  As a result of a successful TIP 'Approval Review' subprocess, MasterCard signs a MAoS for that MSP and sends it to the MSP with a copy to the TIP Service Provider.
7	Upon request of the MSP, MasterCard lists this MSP on <a href="http://www.maestro.nl">www.maestro.nl</a> together with the corresponding Acquirer ICS.

### NL-TIP Acquirer Approval Process

The NL-TIP process for Acquirers is a collaborative process involving the Acquirer and MasterCard. As mentioned previously, this process does not involve any actual testing.

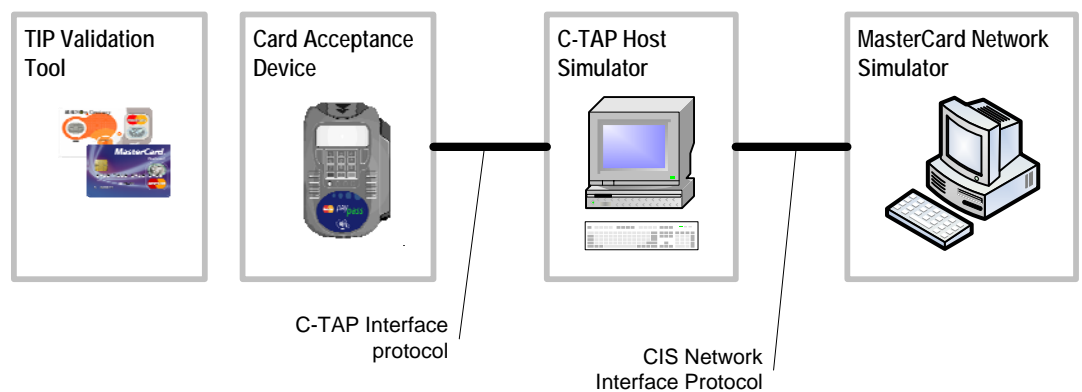
Step	Description
1	Acquirer selects the MSP(s) and the terminal(s) they are willing to deploy in the field. A list of approved POS terminals and a list of approved MSPs are available on <a href="http://www.maestro.nl">www.maestro.nl</a> . Acquirers retrieve the corresponding TAoS and MAoS.
2	For every combination of terminal and MSP they have selected, the acquirer sends a TIP Information form to MasterCard.
3	MasterCard registers every Terminal/MSP combination and provides the corresponding TIP Acquirer LoA(s).

## 3 NL-TIP Testing Infrastructure

This chapter provides a high-level overview and the main characteristics of the TIP infrastructure for testing chip terminals and MSP infrastructures in the Netherlands.

### Terminal Testing Infrastructure

Figure 3.1 presents a high-level overview of the testing infrastructure required to be used by Test Laboratories performing NL-TIP terminal testing.



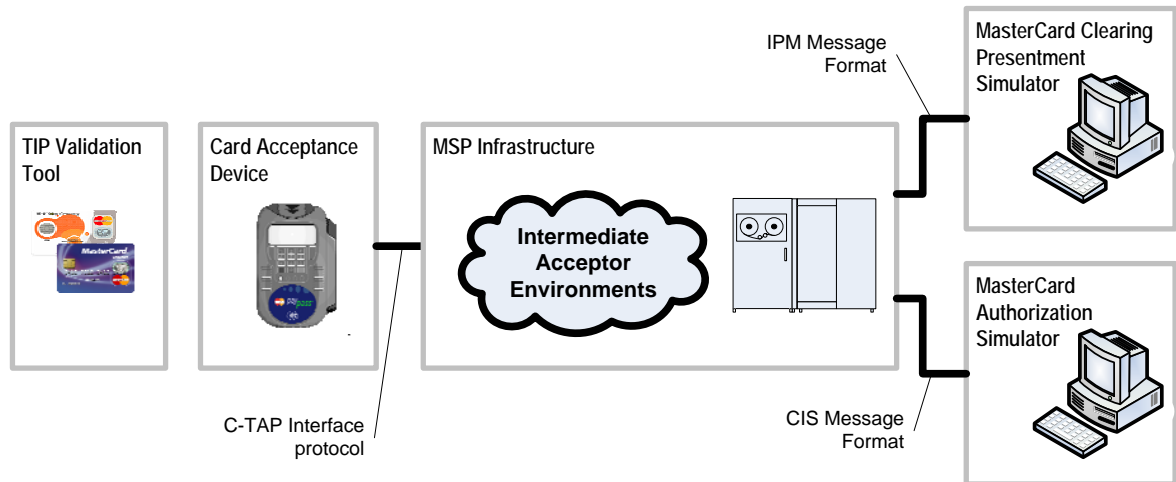
**Figure 3.1—High-Level overview of the TIP testing infrastructure for chip terminals in the Netherlands**

The main components of that infrastructure are as follows:

- The TIP Validation Tool must be used for TIP formal testing. TIP Validation Tools are listed in the *M/Chip Qualified Test Tools* document that is available on MasterCard OnLine<sup>®</sup> together with the contact information to order these.
- The Card Acceptance Device represents the chip POS terminal under test.
- The C-TAP Host Simulator is an application which maps the C-TAP protocol to the MasterCard CIS message format.
- The MasterCard Network Simulator is the MasterCard Authorization Simulator (MAS). MAS simulates the MasterCard network and the issuer host. MAS can be ordered from MasterCard OnLine.

# MSP Testing Infrastructure

Figure 3.2 presents a high-level overview of the testing infrastructure required to be used by Test Laboratories performing NL-TIP MSP testing.



**Figure 3.2—High-Level overview of the TIP testing infrastructure for MSPs in the Netherlands**

The main components of that infrastructure are as follows:

- The TIP Validation Tool must be used for TIP formal testing. TIP Validation Tools are listed in the *M/Chip Qualified Test Tools* document that is available on MasterCard OnLine together with the contact information to order these.
- The Card Acceptance Device represents the chip POS terminal the MSP has selected for performing the TIP of their own infrastructure (as mentioned in step 2 of TIP Process for MSPs).
- The MSP Infrastructure represents the MSP infrastructure under test.
- The MasterCard Authorization Simulator (MAS) simulates the MasterCard Banknet network and the issuer host answering to TIP test authorization requests for the purpose of NL-TIP testing.
- MasterCard Clearing Presentment Simulator (MCPS) simulates the MasterCard Global Clearing Management System (GCMS).

MAS and MCPS can be ordered from MasterCard OnLine.

## **Appendix A - Glossary**

This chapter defines various terms, concepts, acronyms and abbreviations used in this document. These definitions appear for convenience only and are not to be used or otherwise relied on for any legal or technical purpose. MasterCard specifically reserves the right to amend any definition appearing herein and to interpret and apply all such definitions in its sole discretion as MasterCard deems fit.

The following terms are specific for this document. Other terms are explained in the MasterCard Dictionary.

### ***Card Acceptance Device***

In the context of this document, a C-TAP compliant POS or Integrated POS (IPOS) terminal.

### ***Customer***

A MasterCard acquirer or any other company in charge of chip product deployment requiring the TIP Services before their terminal deployment.

### ***Acquirer Implementation Conformance Statement (ICS)***

Document listing acquirer business needs linked to a specific terminal. The Acquirer ICS is used for business rules validation, for comparison with EMVCo ICS and as input for TIP test cases extraction.

Standard Acquirer ICSs are defined for the purpose of NL-TIP. These ICS are available on [www.maestro.nl](http://www.maestro.nl)

### ***Member Service Provider (MSP)***

A non-member company that is registered by MasterCard to provide third party processor services to a member.

### ***TIP Service Provider***

A company that has received a Letter of Accreditation from MasterCard entitling it to deliver TIP Services to MasterCard Customers.

### ***Terminal Integration Process (TIP)***

The chip payment terminal validation service delivered by an Accredited Service Provider to an acquirer or a company that performs payment transaction acquiring on behalf of an acquirer or to a terminal Supplier.

### ***Test Laboratory***

A facility performing chip POS terminal TIP tests. Test Laboratories in the NL may also support C-TAP testing and approval.

### ***TIP Terminal Approval of Supplier (TAoS)***

An approval statement granted to a chip POS terminal further to successful NL-TIP terminal testing.

***TIP Member Service Provider Approval of Supplier (MAoS)***

An approval statement granted to a Member Service Provider further to successful NL-TIP MSP testing.