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A32.de ECR Interface for OPI

Ingenico Terminal

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Document history

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0.1	2015-03-10	First draft	A. Piatier
0.2	2015-04-29	Fix in the initialization description Remove a deviation in the chapter Print (merchant) Add the SEPA-ELV fields	A. Piatier
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0.5	2015-06-23	Add fields (CardPan, ApprovalCode) supported into the payment response	A. Piatier
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0.7	2015-11-02	Add new data (EMV, expiry date, ...) in CardServiceResponse	A. Piatier
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1. Introduction

This document describes the interface between the Ingenico payment terminals (PT) and the external retailer units (ECRs) using the protocol OPI (Open Payment Initiative).

All information contained is destined to customer.

2. Interface

2.1. General

The OPI protocol is used between the ECR and the terminal. Its implementation largely corresponds to the specification issued by Wincor-Nixdorf [OPI-1]. Not all of the commands listed there are realised at present. The Ingenico implementation therefore corresponds to a subset of the commands listed in the PT Protocol Specification. In addition, there are slight restrictions and expansions concerning the Ingenico ECR interface. All realised commands with properties that deviate from the standard are described in the following. This means that commands not listed here are also currently not supported.

2.2. Transport protocol

The protocol OPI supports only TCP/IP.

2.2.1. TCP/IP

Only the channels 0 and 1 have been implemented.

2.3. Notices

- OPI being a protocol based on XML, we use the notation <Field> to refer to an element coming from the specification.
- OPI is currently limited to the transactions in euros.
- The width of the receipt is limited to 32 characters.

2.4. ECR → Terminal

2.4.1. Login

A login has to be performed before the terminal can perform any operation.

The request can contain some optional configuration parameters:

- Printing on ECR:
 - “PrinterReceipt”: for customer receipts
 - “Printer”: for merchant and administration receipts:
- Printing on terminal:
 - “EFT-TerminalPrinter”: for all
- Signature confirmation by ECR

Each receipt type must be explicitly set else the default behaviour is used (printing on the ECR).

The PrivateData field into the request should be (ex: for iPP480 without printer):

```
<PrivateData>
  <PrinterParam Type="Printer">
    <Receipt Type="Merchant">yes</Receipt> <!-- only in case of transaction (debit, reversal, ...) -->
    <Receipt Type="Administration">yes</Receipt>
  </PrinterParam>
  <PrinterParam Type="PrinterReceipt">
    <Receipt Type="Customer">yes</Receipt>
  </PrinterParam>
</PrivateData>
```

In case of printing on the terminal, the field should be (ex: for iCT250):

```
<PrivateData>
  <PrinterParam Type=" EFT-TerminalPrinter ">
    <Receipt Type="Customer">yes</Receipt>
    <Receipt Type="Merchant">yes</Receipt> <!-- only in case of transaction (debit, reversal, ...) -->
    <Receipt Type="Administration">yes</Receipt>
  </PrinterParam>
</PrivateData>
```

In case of activation of the signature confirmation screen, the field should be:

```
<PrivateData>
  <SignatureParam>
    <GetConfirmation TimeOut="240">yes</GetConfirmation>
  </SignatureParam>
</PrivateData>
```

<SignatureParam><GetConfirmation>-Parameters:

- Timeout: optional. Default value: 180 seconds. Terminals may limit the maximum timeout, but shall allow at least 240 seconds. This value will be sent to the ECR in the DeviceRequest with the signature image.
- Value: yes

As for the remainder, the behaviour corresponds to the details in [OPI1].

2.4.2. Logoff

As for the remainder, the behaviour corresponds to the details in [OPI1].

2.4.3. Initialization

This operation needs in the request:

- RequestType = “Administration”
- PrivateData = “type=initialise”

As for the remainder, the behaviour corresponds to the details in [OPI1].

2.4.4. Extended diagnosis

This operation needs in the request:

- RequestType = "Diagnosis"
- DiagnosisMethod = "OnLine"
- PrivateData = "subtype=extend"

As for the remainder, the behaviour corresponds to the details in [OPI1].

2.4.5. Configuration diagnosis

This operation needs in the request:

- RequestType = "Diagnosis"
- DiagnosisMethod = "OnLine"
- PrivateData = "subtype=config"

As for the remainder, the behaviour corresponds to the details in [OPI1].

2.4.6. EMV diagnosis

This operation needs in the request:

- RequestType = "Diagnosis"
- DiagnosisMethod = "OnLine"
- PrivateData = "subtype=emv"

As for the remainder, the behaviour corresponds to the details in [OPI1].

2.4.7. Payment

In addition of the mandatory fields, those following are supported in the request:

- CardValue
 - CardPan
- CardCircuitCollection
 - CardCircuit
 - CardCircuitState= "Accepted" or "Denied"
- PrivateData
 - CardValue
 - PANEntryMode=
"ReadMagStripe" or
"ReadChip" or
"ReadBarcode" or
"ReadChipNFC"

In addition of the mandatory fields, those following are supported in the response:

- CardCircuit
- CardPan
- ExpiryDate
- ApprovalCode
- TraceNumber
- ReceiptNumber
- AuthorizationType
- Merchant
- CaptureReference
- PrivateData
 - SepaELV

- CreditorID
 - MandateID
 - PreNotificationText
 - SepaAccount
 - IBAN
 - BIC
- EMV
- Signature
 - InResult
- AdditionalHostData

The SepaAccount information (IBAN, BIC) is only available if the host answered with them into the BMP55.

The different values of Signature InResult can be the following:

- Success
- Aborted (in case of refusal by the customer)
- Failure (in other error cases)

As for the remainder, the behaviour corresponds to the details in [OPI1].

2.4.8. Reversal

In addition of the mandatory fields, those following are supported in the request:

- CardValue
 - CardPan
- PrivateData
 - CardValue
 - PANEntryMode=
 - “ReadMagStripe” or
 - “ReadChip” or
 - “ReadBarcode” or
 - “ReadChipNFC”
 - AdditionalHostData

In addition of the mandatory fields, those following are supported in the response:

- CardCircuit
- CardPan
- ExpiryDate
- ApprovalCode
- TraceNumber
- ReceiptNumber
- AuthorizationType
- Merchant
- CaptureReference
- PrivateData
 - SepaELV
 - SepaAccount
 - IBAN
 - BIC
 - EMV
 - AdditionalHostData

The SepaAccount information (IBAN, BIC) is only available if the host answered with them into the BMP55.

As for the remainder, the behaviour corresponds to the details in [OPI1].

2.4.9. Refund

In addition of the mandatory fields, those following are supported in the request:

- CardValue
 - CardPan
- CardCircuitCollection
 - CardCircuit
 - CardCircuitState= "Accepted" or "Denied"
- PrivateData
 - CardValue
 - PANEntryMode=
"ReadMagStripe" or
"ReadChip" or
"ReadBarcode" or
"ReadChipNFC"
 - AdditionalHostData

In addition of the mandatory fields, those following are supported in the response:

- CardCircuit
- CardPan
- ExpiryDate
- ApprovalCode
- TraceNumber
- ReceiptNumber
- AuthorizationType
- Merchant
- CaptureReference
- PrivateData
 - SepaELV
 - SepaAccount
 - IBAN
 - BIC
 - EMV
 - AdditionalHostData

The SepaAccount information (IBAN, BIC) is only available if the host answered with them into the BMP55.

The AdditionalHostData information (Alipay-Trade-ID) is only available if the host answered with it into the BMP58.

As for the remainder, the behaviour corresponds to the details in [OPI1].

2.4.10. RepeatLastMessage

If the RequestID sent is different of the last one stored by the terminal, a new transaction is automatically started instead of to resend the last answer.

As for the remainder, the behaviour corresponds to the details in [OPI1].

2.4.11. TicketReprint

The <OriginalTransaction> is so far not taken into account and only the reprinting of the customer and merchant receipts of the last transaction is possible (successful or not according to the EMV configuration).

As for the remainder, the behaviour corresponds to the details in [OPI1].

2.4.12. Display text with numerical input (deprecated due to PCI-DSS)

This function is not explicitly defined in [OPI1] and takes advantage of the free field <PrivateData>.

The ECR sends the following message to the terminal:

```
<ServiceRequest RequestType="Administration" WorkstationID="00445001" RequestID="5">
  <POSdata LanguageCode="de">
    <POSTimeStamp>2014-03-30T08:34:40</POSTimeStamp>
    <ClerkID>1</ClerkID>
  </POSdata>
  <PrivateData>
    <DeviceRequest RequestType="Output">
      <Output OutDeviceTarget=""EFT-TerminalDisplay">
        <DisplayDuration>15</DisplayDuration>
        <T1Line1>Bitte Nummer: </T1Line1>
        <Beeps>1</Beeps>
        <MinLength>4</MinLength>
        <MaxLength>13</MaxLength>
        <MAC>1234567890123456</MAC>
      </Output>
    </DeviceRequest>
  </PrivateData>
</ServiceRequest>
```

On the terminal side, the message „Bitte nummer:“ is displayed and an input is purposed. In this example, the input should contain at least 4 characters and no more than 13 characters. The terminal is able to manage inputs between 2 and 16 characters.

The ECR expects a response for a successful input like that:

```
<ServiceResponse OverallResult="Success" RequestID="5" RequestType="Administration"
WorkstationID="00445001">
  <PrivateData>
    <DeviceResponse OverallResult="Success">
      <Input InDeviceTarget=""EFT-TerminalDisplay" InResult="Success">
        <InputValue>
          <InString>6307</InString>
        </InputValue>
      </Input>
    </DeviceResponse>
  </PrivateData>
</ServiceResponse>
```

In case of the input is not possible or aborted, the following message is expected by the ECR:

```
<ServiceResponse OverallResult="Failure" RequestID="5" RequestType="Administration"
WorkstationID="00445001">
</ServiceResponse>
```

or

```
<ServiceResponse OverallResult="Aborted" RequestID="5" RequestType="Administration"
WorkstationID="00445001">
</ServiceResponse>
```

The parameter "DisplayDuration" defines a timeout (here 15 seconds). If there is no input before this time, the terminal should answer to the ECR with the following message:

```
<ServiceResponse OverallResult="TimedOut" RequestID="5" RequestType="Administration"
WorkstationID="00445001">
</ServiceResponse>
```

2.4.13. AbortRequest

This command is available in case of waiting for a card onto the terminal. It allows to stop the current action on the terminal and gives back the hand to the ECR.

2.4.14. ReconciliationWithClosure

As for the remainder, the behaviour corresponds to the details in [OPI1].

2.5. Terminal → ECR

2.5.1. Display

The fields and attributes supported are:

- TextLine:
 - Erase

As for the remainder, the behaviour corresponds to the details in [OPI1].

2.5.2. Print (merchant)

The fields and attributes supported are:

- TextLine:
 - PaperCut

As for the remainder, the behaviour corresponds to the details in [OPI1].

2.5.3. Print (customer)

The fields and attributes supported are:

- TextLine:
 - PaperCut

As for the remainder, the behaviour corresponds to the details in [OPI1].

2.5.4. Signature confirmation by the ECR

3. Configuration

The OPI itself or only parts of it can be enable/disable by profiles. The aim of this chapter is to concentrate all this parameter regarding OPI.

3.1. OPI activation/deactivation

It is possible to enable/disable completely OPI and do not display the menu thanks to the following parameter in the profile `sys_conf_in.xml`:

```
<ControlModeEcrOpi>
  <enabled Type="BOOL">yes</enabled>
</ControlModeEcrOpi>
```

3.2. Card name activation/deactivation

It is possible to enable/disable the sending of the card name in the transactions response to the ECR thanks to the following parameter in the profile `zvt700_in.xml`:

```
<!-- transmitted to the ECR -->
<sendBmp8bInAuthStatusReq>
  <value Type="BOOLEAN">FALSE</value>
</sendBmp8bInAuthStatusReq>
```

When this functionality is deactivated, `<CardCircuit>` is no more present in the response from the terminal.

4. Annex

4.1.1. Annex 1 - CardCircuit list

The list below is the default one supported by the Ingenico terminals:

CardCircuit
EuroCard
Amex
VISA
VISAElektron
Diners
Visa Pay
JCB
Maestro
BSW
XTRA
Praesentcard
Callya
LOOP
FREE_EASY
PAYBACKPC
PAYBACK
LunchCard
IKEA
IKEA_FAMPLUS_PIN
AUSTRIA
Douglas
BAUMAX
FIATLA
NISSAN
OEBBCD
OETICK
SHOPCD
TLAPCD
DISCOVER
COMFORT
AFC
Europapark
AMEX Membership Reward
PONTOS
Geldkarte
EuroELV
CUP
HB-Proficard
ProjektWeltkarte
Gutschein Karte
EPAY Gutschein Karte
MONCA

Kartsatadt Bonus Card Rewe
AliPay Model 1
RMC
Ikano Shopping
PAYBACK PAY
AliPay Model 2

Glossary and abbreviations

Abbreviation	Explanation
OPI	Open Payment Initiative
ECR	Electronic Cash Register
PT	Payment Terminal

Table 1: Glossary and abbreviations

Bibliography

Reference	Document title, version number, date, etc.
[A32 OPI]	THIS document
[OPI1]	O.P.I. Interface Specification V1.3_e.pdf

Table 2: Bibliography

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