**Cardholder Verification**

Cardholder verification ensures that no third-parties using the card.

The card has a Cardholder Verification Method List (CVM List) to inform the terminal wether and which verification methods have to be executed.

If a CVM failed or was not executed the corresponding bit in the [TVR](https://www.openscdp.org/scripts/tutorial/emv/Terminal%20Action%20Analysis.html#TVR) has to be set to 1.

**Structure of CVM List**

The CVM List has an anmount and a second amount field of each 4 bytes. Both amount fields have an implicit decimal pointer which is determined in the Application Currency Code.

Following there is a variable length list of Cardholder Verification Rules (CV Rules). Each CV Rule is consisting of two bytes.

**CV Rule Byte 1**

Source: [EMV Book 3](http://www.emvco.com/specifications.aspx?id=155)

| **b8** | **b7** | **b6** | **b5** | **b4** | **b3** | **b2** | **b1** | **Meaning** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 |  |  |  |  |  |  |  | RFU |
|  | 0 |  |  |  |  |  |  | Fail cardholder verification if this CVM is unsuccessful |
|  | 1 |  |  |  |  |  |  | Apply succeeding CV Rule if this CVM is unsuccessful |
|  |  | 0 | 0 | 0 | 0 | 0 | 0 | Fail CVM processing |
|  |  | 0 | 0 | 0 | 0 | 0 | 1 | Plaintext PIN verification performed by ICC |
|  |  | 0 | 0 | 0 | 0 | 1 | 0 | Enciphered PIN verified online |
|  |  | 0 | 0 | 0 | 0 | 1 | 1 | Plaintext PIN verification performed by ICC and signature (paper) |
|  |  | 0 | 0 | 0 | 1 | 0 | 0 | Enciphered PIN verification performed by ICC |
|  |  | 0 | 0 | 0 | 1 | 0 | 1 | Encpihered PIN verification performed by ICC and signature (paper) |
|  |  | 0 | x | x | x | x | x | Values in the range 000110-011101 reserved for future use by this specification |
|  |  | 0 | 1 | 1 | 1 | 1 | 0 | Signature (paper) |
|  |  | 0 | 1 | 1 | 1 | 1 | 1 | No CVM required |
|  |  | 1 | 0 | x | x | x | x | Values in the range 100000-101111 reserved for use by the individual payment systems |
|  |  | 1 | 1 | x | x | x | x | Values in the range 110000-111110 reserved for use by the issuer |
|  |  | 1 | 1 | 1 | 1 | 1 | 1 | This value is not available for use |

**CV Rule Byte 2**

Source: [EMV Book 3](http://www.emvco.com/specifications.aspx?id=155)

|  |  |
| --- | --- |
| **Value** | **Meaning** |
| '00' | Always |
| '01' | If unattended cash |
| '02' | If not unattended cash and not manual cash and not purchase with cashback |
| '03' | If terminal supports the CVM |
| '04' | If manual cash |
| '05' | If purchase with cashback |
| '06' | If transaction is in the application currency and is under X value |
| '07' | If transaction is in the application currency and is over X value |
| '08' | If transaciton is in the application currency and is under Y value |
| '09' | If transaciton is in the application currency and is over Y value |
| '0A'-'7F' | RFU |
| '80'-'FF' | Reserved for use by individual payment systems |

X is referred to the amount field  
Y is referred to the second amount field

**Example for a CVM List**

Cardholder Verification Method (CVM) List: 00000000000000005E031F03

Apply succeeding CV Rule if this CVM is unsucccessful

Signature (paper)

If terminal supports the CVM

Fail cardholder verification if this CVM is unsuccessful

No CVM required

If terminal supports the CVM