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Document Organisation

i Notation

None of the notations used in this document need extra explanation.

ii Official Documents and Standards

No superior, related valid documents or standards were used when creating this document.

iii Revision History

|  |  |  |  |
| --- | --- | --- | --- |
| Version | Date | Type of change | Author / team |
| X1.00.1 | 2012-05-04 | Added section ‘Admin Agent Session Parameters’. | Marco Weißenborn |
| X1.00.2 | 2012-05-09 | Updated section ‘Admin Agent Session Parameters’ and added section ‘HTTP Messages and Allocation of Transient Memory’. | Marco Weißenborn |
| X1.00.3 | 2012-05-09 | Updated section ‘Admin Agent Session Parameters’ | Marco Weißenborn |
| X1.004 | 2012-05-10 | Updated section ‘Admin Agent Session Parameters’ | Marco Weißenborn |
| X1.00.5 | 2012-05-11 | Added section ‘Proof of Receipt of Administration Session Triggering SMS’. Updated section ‘Admin Agent Session Parameters’ | Marco Weißenborn |
| X1.00.6 | 2012-05-11 | Updated section ‘Proof of Receipt of Administration Session Triggering SMS’. | Marco Weißenborn |
| X1.00.7 | 2012-05-21 | Updated section ‘Proof of Receipt of Administration Session Triggering SMS’. | Marco Weißenborn |
| X1.00.8 | 2012-05-24 | Overall update. | Marco Weißenborn |
| X1.00.9 | 2012-05-30 | Added section ‘Administration Session processing and Retry management’. | Marco Weißenborn |
| X1.00.10 | 2012-06-14 | Updated sections ‘Admin Agent Session Parameters’, ‘HTTP Messages and Allocation of Transient Memory’, ‘Administration Session processing and Retry management’. | Marco Weißenborn |
| X1.00.11 | 2012-06-21 | Update of section ‘Administration Failure Report SMS-MO’. | Marco Weißenborn |
| X1.0012 | 2012-06-25 | Added limitation of BIP Connection buffer size. | Marco Weißenborn |
| X1.00.13 | 2012-07-02 | Updated sessions ‘Admin Agent Owner Application Installation’ and ‘Administration Session processing and Retry management’. | Marco Weißenborn |
| X1.00.14 | 2012-07-06 | Updated session ‘Administration Session processing and Retry management’. | Marco Weißenborn |
| V1.00 | 2012-07-18 | Release version V1.00 | Marco Weißenborn |
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| X1.02.01 | 2013-01-21 | Added section ‘Connection Parameters for Bearer Independent Protocol’. Updated section ‘Admin Agent Owner Application Installation’. | Marco Weißenborn |
| X1.02.02 | 2013-01-22 | Updated sections ‘Admin Agent Session Parameters’ and ‘Connection Parameters for Bearer Independent Protocol’. | Marco Weißenborn |
| X1.02.03 | 2013-01-23 | Updated section ‘Connection Parameters for Bearer Independent Protocol’. | Marco Weißenborn |
| V1.02 | 2013-01-25 | Release version V1.02 | Marco Weißenborn |
| X1.03.01 | 2013-04-30 | Added section ‘Admin Agent HTTP Protocol’. | Marco Weißenborn |
| V1.03 | 2013-04-30 | Release version V1.03 | Marco Weißenborn |
| X1.04.01 | 2013-05-07 | Updated section ‘Administration Session processing and Retry management’ for Timer Allocation and Terminal Profile Timer support failed behaviour. | Marco Weißenborn |
| V1.04 | 2013-05-08 | Release version V1.04 | Marco Weißenborn |
| V1.05 | 2013-06-10 | Removed section ‘Admin Agent HTTP Protocol’ to separate document. | Marco Weißenborn |

Table of Contents

Document Organisation 3

i Notation 3

ii Official Documents and Standards 3

iii Revision History 3

Table of Contents 5

1 Summary 6

2 Admin Agent Owner Application Installation 6

3 Admin Agent Session Parameters 7

3.1 Connection Parameters for Bearer Independent Protocol 10

3.2 Administration Failure Report SMS-MO 12

3.3 Proof of Receipt of Administration Session Triggering SMS 13

3.4 Administration Session Triggering SMS validation 14

4 Administration Session processing and Retry management 15

5 HTTP Messages and Allocation of Transient Memory 27

Reference 31

# Summary

This document describes the details and limitation of the Morpho Cards GmbH basic Admin Agent Component. The basic Admin Agent Component will be extended by the RAM over HTTP Admin Agent and the SCWS Admin Agent components. All common features are implemented in the basic Admin Agent Component.

# Admin Agent Owner Application Installation

The following parameters will be handed over during Admin Agent Owner Application installation within the Application Specific Parameters ‘C9’ Tag.

Table 2.1: Admin Agent Owner Application Specific Parameters

|  |  |
| --- | --- |
| **Length** | **Description** |
| 1 | BIP Connection Open Channel - Command Qualifier |
| 1 | Administration Failure Report SMS-MO - TP-MTI |
| 1 | Administration Failure Report SMS-MO - TP-MR |
| 1 | Administration Failure Report SMS-MO - TP-PID |
| 1 | Administration Failure Report SMS-MO - TP-DCS |
| 1 | Administration Failure Report SMS-MO - TP-VP |

There are some limitations of an Admin Agent which are defined during build (see table 2.2). These values are defined in the header file *adminAgentConstants.h* of the component. Additionally there are some limitations defined for RAM over HTTP Admin Agents (see table 2.3). These values are defined in the header file r*amOverHttpConstants.h* of the component.

Table 2.2: Admin Agent Limitations Configuration

|  |  |  |
| --- | --- | --- |
| **Name** | **Data type** | **Description** |
| MAXIMUM\_REQUEST\_URI\_LENGTH | short | Maximum length of Request-URI supported; The OMA-SCWS requires a maximum Request-URI length of at lease 1024. |
| MAXIMUM\_BIP\_CONNECTION\_ BUFFER\_SIZE | short | Maximum supported Buffer Size for BIP Connection. |
| MAXIMUM\_PUSH\_SMS\_LENGTH | short | Maximum length of concatenated Trigger SMS supported. The minimum length of such SMS for OMA-SCWS and GP v2.2 Amendment B can be taken from tables 3.1 and 3.2. |
| MAXIMUM\_NUMBER\_OF\_ STACKED\_ADMIN\_SESSIONS | byte | Number of Admin Sessions that should be stacked. At least one session should be stacked |

Table 2.3: RAM over HTTP Admin Agent Limitations Configuration

|  |  |  |
| --- | --- | --- |
| **Name** | **Data type** | **Description** |
| tls\_maxFragmentSize | short | Fragment size of TLS buffer. The minimum fragment size supported has to be 512. |
| maximumRemoteAdminInputBufferSize | short | Maximum size input buffer of RAM over HTTP provider |
| maximumRemoteAdminResponseBufferSize | short | Maximum size output buffer of RAM over HTTP provider |
| isRemoteAdminInputBufferTransient | boolean | Flag to configure the type of memory for the RAM over HTTP provider input buffer |
| isRemoteAdminResponseBufferTransient | boolean | Flag to configure the type of memory for the RAM over HTTP provider output buffer |

# Admin Agent Session Parameters

The Administration Session Triggering Parameters are provided via RAM SMS (also called PUSH SMS or Trigger SMS). Based on the Administration Session Triggering Parameters the Administration Session Parameters will be created by use of Admin Agent Applet Default Parameters. Therefore the Administration Session Triggering Parameters will be merged with the Admin Agent Applet Default Parameters. The Merging process differ form Admin Agent to Admin Agent (SCWS, see figure 3.1; RAM over HTTP, see figure 3.2).

SCWS Admin Session Parameters

Port1

Port2

**Trigger SMS**

**parameters**

Port1

Port2

**Configuration Resource**

**URL parameters**

**scws-admin-agent/**

**default-resource**

Delivered to Applet

identified by TAR of

OTA message

used: If Configuration

Resource TLV is present

used: If Configuration

Resource TLV is NOT

present

- Parameters set during SCWS

personalization

- stored in the SCWS Content

Container

add missing

parameters

add missing

parameters

Figure 3.1: Process of SCWS Administration Session Parameters creation

**RAM over HTTP Admin Session Parameters**

**Trigger SMS**

**parameters**

**Triggered Security**

**Domain parameters**

**Issuer Security Domain**

**parameters**

Delivered to Applet

identified by TAR of

OTA message

Default parameters of Triggered

Security Domain handed over

during installation within the

'C9' Tag

Parameters of Issuer

Security Domain handed

over during installation

within the 'C9' Tag

add missing

parameters

add missing

parameters

Figure 3.2: Process of RAM over HTTP Administration Session Parameters creation

Also the length of the Administration Session Parameters differ form Admin Agent to Admin Agent (SCWS, see Table 3.1: SCWS Administration Triggering Parameters; RAM over HTTP, see Table 3.2: Ram over HTTP Administration Triggering Parameters).

Table 3.1: SCWS Administration Session Triggering Parameters

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Tag** | **Length** | **Name** | | | | | | | **Presence** |
| ‘81’ | 0 – N  N <= 2889 | Remote Administration Request | | | | | | | M |
| **Tag** | **Length** | **Name** | | | | |  |
| ‘82’ | 1 – N  N>=1024 | Configuration Resource URL | | | | | O |
| ‘83’ | 2 – N  N <= 1862 | Admin Agent Configuration Parameters | | | | | C |
| **Tag** | **Length** | **Name** | | |  |
| ‘84’ | 1 – 253 | Connection Parameters | | | C |
| ‘85’ | 4 – 256 | Security Parameters | | | C |
| ‘86’ | 7 – 127 | Retry Policy Parameters | | | C |
| ‘89’ | 2 – N  N <= 1286 | Agent HTTP POST Parameters | | | C |
| **Tag** | **Length** | **Name** |  |
| ‘8A’ | 1 – N  N <=127 | Administration  Host Parameter | C |
| ‘8B’ | 1 – N  N <= 127 | Agent ID  Parameter | C |
| ‘8C’ | 1 – N  N <= 1024 | Administration  URI Parameter | C |

Table 3.2: RAM over HTTP Administration Session Triggering Parameters, provided via SMS and GP 2.2 Amendment B

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Tag** | **Length** | **Name** | | | | | | | **Presence** |
| ‘81’ | 0 – N  N <= 1813 | Administration Session Triggering Parameters | | | | | | | M |
| **Tag** | **Length** | **Name** | | | | |  |
| ‘83’ | 2 – N  N <= 1809 | Security Domain Parameters | | | | | C |
| **Tag** | **Length** | **Name** | | |  |
| ‘84’ | 1 – 253 | Connection Parameters | | | C |
| ‘85’ | 5 – 131 | Security Parameters | | | C |
| ‘86’ | 7 – 127 | Retry Policy Parameters | | | C |
| ‘89’ | 2 – N  N <= 1286 | HTTP POST Parameters | | | C |
| **Tag** | **Length** | **Name** |  |
| ‘8A’ | 1 – N  N <=127 | Administration  Host Parameter | C |
| ‘8B’ | 1 – N  N <= 127 | Agent ID  Parameter | C |
| ‘8C’ | 1 – N  N <= 1024 | Administration  URI Parameter | C |

Table 3.3: SCWS Admin Agent Default Resource and Configuration Resource Parameters

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Tag** | **Length** | **Name** | | | | | **Presence** |
| ‘83’ | 2 – N  N <= 1863 | Admin Agent Configuration Parameters | | | | | C |
| **Tag** | **Length** | **Name** | | |  |
| ‘84’ | 1 – 253 | Connection Parameters | | | C |
| ‘85’ | 4 – 256 | Security Parameters | | | C |
| ‘86’ | 7 – 127 | Retry Policy Parameters | | | C |
| ‘89’ | 2 – N  N <= 1286 | Agent HTTP POST Parameters | | | C |
| **Tag** | **Length** | **Name** |  |
| ‘8A’ | 1 – N  N <=127 | Administration Host  Parameter | C |
| ‘8B’ | 1 – N  N <= 127 | Agent ID Parameter | C |
| ‘8C’ | 1 – N  N <= 1024 | Administration URI Parameter | C |

Table 3.4: RAM over HTTP Security Domain and Issuer Security Domain Administration Session Parameters

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Tag** | **Length** | **Name** | | | | | **Presence** |
| ‘85’ | 2 – N  N <= 1809 | Security Domain Administration Session Parameters | | | | | C |
| **Tag** | **Length** | **Name** | | |  |
| ‘84’ | 1 – 253 | Connection Parameters | | | C |
| ‘85’ | 5 – 131 | Security Parameters | | | C |
| ‘86’ | 7 – 127 | Retry Policy Parameters | | | C |
| ‘89’ | 2 – N  N <= 1286 | HTTP POST Parameters | | | C |
| **Tag** | **Length** | **Name** |  |
| ‘8A’ | 1 – N  N <=127 | Administration Host  Parameter | C |
| ‘8B’ | 1 – N  N <= 127 | Agent ID Parameter | C |
| ‘8C’ | 1 – N  N <= 1024 | Administration URI Parameter | C |

Table 3.5: Configuration Resource URL

|  |  |  |  |
| --- | --- | --- | --- |
| **Tag** | **Length** | **Name** | **Presence** |
| ‘82’ | 1 – N  N>= 1024 | Configuration Resource URL | O |
|  |  |  |  |

Table 3.6: Connection Parameters

|  |  |  |  |
| --- | --- | --- | --- |
| **Tag** | **Length** | **Name** | **Presence** |
| ‘84’ | 1 – 253 | Connection Parameters | C |
|  |  |  |  |

Table 3.7: SCWS Security Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Tag** | **Length** | **Name** | | **Presence** |
| ‘85’ | 1 – 256 | Security Parameters | | M |
|  |  | **Length** | **Value** |  |
|  |  | 1 | PSK Identity Length | M |
|  |  | 1 – 127 | PSK Identity | M |
|  |  | 1 | Card Key Identifier Length | M |
|  |  | 1 – 127 | Card Key Identifier | M |

Table 3.8: RAM over HTTP Security Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Tag** | **Length** | **Name** | | **Presence** |
| ‘85’ | 1 – 131 | Security Parameters | | M |
|  |  | **Length** | **Value** |  |
|  |  | 1 | PSK Identity Length | M |
|  |  | 1 – 127 | PSK Identity | M |
|  |  | 1 | Key version/ Key Identifier Length | M |
|  |  | 2 | Key version/ Key Identifier | M |

Table 3.9: Retry Policy Parameters

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Tag** | **Length** | **Name** | | **Presence** |
| ‘86’ | 1 – 127 | Retry Policy Parameters | | M |
| **Length** | **Value** |  |
| 2 | Retry Counter | M |
| 5 | Retry Waiting Delay | M |
| 2 – 120 | Retry Report Failure | O |

Table 3.10: Retry Waiting Delay

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Tag** | **Length** | **Name** | | **Presence** |
| ‘25’ or ‘A5’ | 3 | Retry Waiting Delay | | M |
|  |  | **Length** | **Value** |  |
|  |  | 1 | Waiting Delay Value Hour  - coded exactly in the same way as the hour field of the TP-Service-Centre-Time-Stamp TS 23.040 | M |
|  |  | 1 | Waiting Delay Value Minutes  - coded exactly in the same way as the minute field of the TP-Service-Centre-Time-Stamp TS 23.040 | M |
|  |  | 1 | Waiting Delay Value Seconds  - coded exactly in the same way as the second field of the TP-Service-Centre-Time-Stamp TS 23.040 | M |

Table 3.11: Retry Report Failure

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Tag** | **Length** | **Name** | | **Presence** |
| ‘87’ | A + B + C | Retry Report Failure | | M |
|  |  | **Length** | **Value** |  |
|  |  | A | TP-Destination Address Parameter | O |
|  |  | B | Service Center Address | O |
|  |  | C | Alpha Identifier | O |

Table 3.12: TP-Destination Address Parameter

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Tag** | **Length** | **Name** | | **Presence** |
| ‘8D’ | 3 – 17 | TP-Destination Address Parameter | | M |
|  |  | **Length** | **Value** |  |
|  |  | 1 | Number of Digits of Destination Address | M |
|  |  | 1 | TON and NPI | M |
|  |  | 1 – 15 | Destination Address | M |

Table 3.13: Service Center Address

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Tag** | **Length** | **Name** | | **Presence** |
| ‘06’ or ‘86’ | 2 – 16 | Service Center Address | | M |
|  |  | **Length** | **Value** |  |
|  |  | 1 | TON and NPI | M |
|  |  | 1 – 15 | Dialling Number String | M |

Table 3.14: Alpha Identifier

|  |  |  |  |
| --- | --- | --- | --- |
| **Tag** | **Length** | **Name** | **Presence** |
| ‘05’ or ‘85’ | 0 – 116 | Alpha Identifier | M |
|  |  |  |  |

## Connection Parameters for Bearer Independent Protocol

The BIP Connection Parameters has to be encoded according to OPEN CHANNEL related to packet data service bearer defined in ETSI TS 102 223 Release 10 (see ETSI TS 102 223 Release 10, section ‘OPEN CHANNEL related to packet data service bearer’).

BIP Connection Parameters are limited to 253 bytes. This limitation is based on the limitation for Proactive Toolkit commands (e.g. OPEN CHANNEL; see ETSI TS 102 223 Release 10, section ‘OPEN CHANNEL related to packet data service bearer’).

The following rules will be used to validate the BIP Connection Parameters. This validation takes place during remote security domain installation, Trigger SMS pre-processing and start of Administrative Session via Application Programming Interface (e.g. for RAM over HTTP; GP v2.2 Amendment B API).

**BIP Connection Parameters validation rules:**

* All TLVs contained in the BIP Connection Parameters has to be allowed in the Open Channel command (see ETSI TS 102 223 Release 10, section ‘OPEN CHANNEL related to packet data service bearer’).
* The sequence of the BIP Connection Parameters TLVs has to be according to the Open Channel command structure (see ETSI TS 102 223 Release 10, section ‘OPEN CHANNEL related to packet data service bearer’).
* The overall length of the BIP Connection Parameters less of the length of the mandatory Open Channel command TLVs present is limited to 253 bytes.
* During validation the presents of a TLV is optional.
* The CR-Bit of the TLV TAG will be ignored.
* TLV Command Details:
  + The TLV length has to be 0x03.
  + The command number value will be ignored.
* TLV Device Identities:
  + The TLV length has to be 0x02.
  + The Source device identity has to be 0x81.
  + The Destination device identity has to be 0x82.
* TLV Icon Identifier: The TLV length has to be 0x02.
* TLV Bearer Description: The TLV length has to be at least 0x01.
* TLV Buffer Size:
  + The TLV length has to be 0x02.
  + The TLV value part will be interpreted as number encoded in hexadecimal value. The encoded number has to be at least 1.
* TLV UICC/Terminal Interface Transport Level:
  + The TLV ‘Data Destination Address’ has to be the next TLV.

The Admin Agent uses default values for all mandatory Open Channel TLVs and the optional TLV ‘Alpha Identifier’ if it is not present in the Connection Parameters.

**Open Channel default values:**

* TLV Command Details: 81 03 01 40 XX; XX:= Command Qualifier value, will be taken from the Admin Agent install parameters within the ‘Application Specific Parameters‘.
* TLV Device Identities: 82 02 81 82
* TLV Alpha Identifier: 05 00
* TLV Bearer Description: B5 01 03
* TLV Buffer Size: B9 02 XXXX; XXXX:= hexadecimal value of MAXIMUM\_BIP\_CONNECTION\_BUFFER\_SIZE

During creation of a Open Channel command the CR-Bit will be set for all mandatory Open Channel TLVs and for its optional TLVs the CR-Bit will not be set. This rule ignores the presents of the CR-Bit in the Connection Parameters TLV. For the conditional TLV ‘Data Destination Address’ the CR-Bit will also be set, because the TLV is requested (means mandatory), if TLV ‘UICC/Terminal Interface Transport Level’ is present (see ETSI TS 102 223 Release 10, section ‘OPEN CHANNEL related to packet data service bearer’). For the conditional TLV ‘Text Attribute’ the CR-Bit will not be set, because the TLV is may be present (means optional), if TLV ‘Alpha Identifier’ is present (see ETSI TS 102 223 Release 10, section ‘OPEN CHANNEL related to packet data service bearer’).

Is the mandatory Open Channel TLV ‘Command Details’ present in the Connection Parameters, than only the Command Qualifier value will be used in the resulting Open Channel command.

The maximum supported BIP Connection Parameters buffer size is limited to the value of constant MAXIMUM\_BIP\_CONNECTION\_BUFFER\_SIZE. If the BIP Connection Parameters contain a lager value then supported, then the Connection will be closed by the Admin Agent after the Terminal has opened the BIP Channel with a larger value then supported.

## Administration Failure Report SMS-MO

An Administration Failure Report SMS-MO (see table: 3.14: Administration Failure Report SMS-MO structure) will be send, if the ‘Retry Report Failure’ TLV was present in the Admin Agent Configuration Resource Session Parameters. The Command Qualifier of the Administration Failure Report SMS-MO is fixed to 0x00 ‘packing not required’.

Table: 3.14: Administration Failure Report SMS-MO structure

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Tag** | **Length** | **Name** | | | | | **Presence** |
| ‘D0’ | 23 – 252 | Provide UICC Command | | | | |  |
|  |  | **Tag** | **Length** | **Name** | | |  |
|  |  | ‘81’ | 3 | Command Details | | | M |
|  |  |  |  | **Length** | **Value** | **Name** |  |
|  |  |  |  | 1 | ‘01’ | Command Number | M |
|  |  |  |  | 1 | ‘13’ | Type of Command  - Send Short Message | M |
|  |  |  |  | 1 | ‘00’ | Command Qualifier  - packing not required | M |
|  |  | ‘82’ | 2 | Device Identities | | | M |
|  |  |  |  | **Length** | **Value** | **Name** |  |
|  |  |  |  | 1 | ‘81’ | Source Device Identity  - UICC | M |
|  |  |  |  | 1 | ‘83’ | Destination Device Identity  - Network | M |
|  |  | ‘05’ or ‘85’ | 0 – 79 | Alpha Identifier  - Value taken from ‘Retry Failure Report’ of Admin Agent Configuration Resource Parameters | | | O |
|  |  | ‘06’ or ‘86’ | 2 – 16 | Service Center Address  - Value taken from ‘Retry Failure Report’ of Admin Agent Configuration Resource Parameters | | | O |
|  |  | ‘8B’ | 14 – 141 | Administration Failure Report SMS TPDU | | | M |

Table 3.15: Administration Failure Report SMS TPDU

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Tag** | **Length** | **Name** | | **Presence** |
| ‘8B’ | 14 – 141 | Administration Failure Report SMS TPDU | | M |
|  |  | **Length** | **Name** |  |
|  |  | 1 | TP-MTI  - Value taken from Admin Agent install parameters within the ‘Application Specific Parameters’ | M |
|  |  | 1 | TP-MR  - Value taken from Admin Agent install parameters within the ‘Application Specific Parameters’ | M |
|  |  | 3 – 17 | TP-DA  - Value taken from ‘Retry Failure Report’ of Admin Agent Configuration Resource Parameters or extracted from the TP-Originating Address of the Administration Session Triggering SMS | M |
|  |  | 1 | TP-PID  - Value taken from Admin Agent install parameters within the ‘Application Specific Parameters’ | M |
|  |  | 1 | TP-DCS  - Value taken from Admin Agent install parameters within the ‘Application Specific Parameters’ | M |
|  |  | 1 | TP-VP  - Value taken from Admin Agent install parameters within the ‘Application Specific Parameters’ | M |
|  |  | 1 | Length of TP-UD | M |
|  |  | 8 - 118 | TP-UD  - Admin Agent Failure Report | M |

Table 3.16: Admin Agent Failure Report

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tag** | **Length** | **Name** | | | **Presence** |
| ‘88’ | A + B + C | Admin Agent Failure Report | | | M |
|  |  | **Length** | **Value** | **Name** |  |
|  |  | A := 1 | - ‘00’: Technical Problem  - ‘01’: Connection Establishment Failed  - ‘02’: TLS Error  - ‘03’: Connection Lost  - ‘04’: Remote Administration Server Error | Error Code | M |
|  |  | B >= 2  B <= 37 | Failure Report Contextual Message | | M |
|  |  | C >= 3  C <= 113 | Administration URI Parameter | | M |

Table 3.17: Failure Report Contextual Message

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Tag** | **Length** | **Name** | | **Presence** |
| ‘8E’ | N | Failure Report Contextual Message | | M |
|  |  | **Length** | **Value** |  |
|  |  | N >= 25  N <= 26 | - If Error Code’01’: Terminal Response of the Open Channel command |  |
|  |  | N:= 0 | - If Error Code ‘00’ or ‘02’: None |  |
|  |  | N:= 2 | - If Error Code ‘03’: Channel Status |  |
|  |  | N >= 8  N <= 35 | - If Error Code ‘04’: Status Code of HTTP Response that indicates Client Error (4xx ) inclusive reason phase |  |

Table 3.18: Administration URI Parameters

|  |  |  |  |
| --- | --- | --- | --- |
| **Tag** | **Length** | **Name** | **Presence** |
| ‘8C’ | 1 – N  N >= 0  N <= 111 | Administration URI Parameter  - Truncated value of the ‘Administration URI Parameter’ when the retry limit was reached. | M |
|  |  |  |  |

## Proof of Receipt of Administration Session Triggering SMS

The Proof of Receipt of the Morpho Cards GmbH Administration Session Triggering SMS is defined in tables 3.19 – 3.25.

Please note, that the Proof of Receipt of Administration Session Triggering is not standardized. It provides additional information for the customer that will be helpful to analysis if an Administrative Session could be started or not. An Administration Session will only be started in case of success (see table 3.19).

Table 3.19: Proof of Receipt ‘Success’

|  |  |  |
| --- | --- | --- |
| **Length** | **Value** | **Description** |
| 3 | 01 90 00 | Success  - Administration Session Triggering Parameters valid  - Administration Session Parameters valid |

Table 3.20: Proof of Receipt ‘Success with delay’

|  |  |  |
| --- | --- | --- |
| **Length** | **Value** | **Description** |
| 3 | 01 91 00 | Success with delay  - Administration Session Triggering Parameters valid  - Administration Session Parameters valid  - Administrative Session putted to stack |

Table 3.21: Proof of Receipt ‘Admin Agent busy’

|  |  |  |
| --- | --- | --- |
| **Length** | **Value** | **Description** |
| 3 | 01 93 00 | Admin Agent busy  - Administration Session active  - Administration Session stack full |

Table 3.22: Proof of Receipt ‘Administration Session Triggering Parameters not valid’

|  |  |  |
| --- | --- | --- |
| **Length** | **Value** | **Description** |
| 4 | 01 6F01 XX | Administration Session Triggering Parameters not valid  - Error in TLV with Tag 'XX' (see tables 3.24 and 3.25), If Tag ‘XX’ is not in tables 3.24 and 3.25, than the TLV with Tag ‘XX’ is not supported or the data is malformed. |

Table 3.23: Proof of Receipt ‘Administration Session Parameters not valid’

|  |  |  |
| --- | --- | --- |
| **Length** | **Value** | **Description** |
| 4 | 01 6F02 XX | Administration Session Parameters not valid  - Administration Session Triggering Parameters valid  - TLV with Tag 'XX' missing (see tables 3.24 and 3.25) |

Table 3.24: Proof of Receipt TLV Tags (GP v2.2 Amendment B)

|  |  |
| --- | --- |
| **Tag** | **Description** |
| ‘84’ | Connection Parameters |
| ‘85’ | Security Parameters |
| ‘86’ | Retry Policy Parameters |
| ‘89’ | Admin HTTP POST Parameters |

Table 3.25: Proof of Receipt TLV Tags (OMA-SCWS)

|  |  |
| --- | --- |
| **Tag** | **Description** |
| ‘82’ | Configuration Resource URL Parameter |
| ‘84’ | Connection Parameters |
| ‘85’ | Security Parameters |
| ‘86’ | Retry Policy Parameters |
| ‘89’ | Admin HTTP POST Parameters |

## Administration Session Triggering SMS validation

During validation the TLV Tag values and the length of the TLV is checked. The TLV is valid, if the TLV Tag is allowed and the length of the TLV is supported. The allowed TLVs and its supported lengths are shown in table 3.1 and table 3.2.

# Administration Session processing and Retry management

The OMA-SCWS and the GP v2.2 Amendment B Admin Agents define that a Card Issuer specific Retry Policy should be used, if some communication error occurs during processing of an Administration Session. Such Retry Policy should try to reconnect to continue the Administration Session. Both specifications define optional and mandatory features of a Retry Policy that could, respectively have to be fulfilled (see [OMA-SCWS] section 13.3.2.8 Retry management and [GP v2.2 Amendment B] section 3.5 Retry Policy).

Both Retry Policies define usual Errors, where a re-establishment of the interrupted connection should be processed as long as retries are left and fatal Errors, where the Administration Session has immediately be discarded. The Morpho Cards Admin Agents behaviour on Errors is defined in Table 4.1 Error handling during Retry management.

Table 4.1: Error handling during Retry management

|  |  |  |  |
| --- | --- | --- | --- |
| **Error Type Name** | **Process Retry**  **Policy** | **Fatal**  **Error** | **Send Failure**  **Report** |
| Technical Problem | C | C | x |
| Connection Establishment Failed | x | x | x |
| TLS Error | - | x | x |
| Connection Lost | x | x | x |
| Remote Administration Server Error | x | x | x |

C: Error is Fatal in the following cases. Otherwise it is a usual Error, where the Retry Policy will be processed:

* If HTTP POST Response validation failed (see figure 4.11 HTTP POST Response processing)
* If unexpected Error occurs (see figure 4.3 Timer Management and 4.9 Start Next Admin Session)

An Administration Session is based on Proactive Toolkit commands. Proactive Toolkit commands can also be used by other Toolkit application on card then the Admin Agent. The usage of Proactive Toolkit commands from more then one Toolkit applications at the same time is called Concurrency. Therefore the Admin Agent implements a Concurrency management.

In the Concurrency management the Admin Agent checks the Proactive Handler availability. If the Proactive Handler is not available, then a trigger of the next availability of the Proactive Handler is requested by the card operating system. The Concurrency management for the Admin Agent is implemented for all Proactive Toolkit commands listed in table 4.2.

Please note that other Toolkit applications that run in parallel to the Admin Agent should implement a Concurrency management for used Proactive Toolkit commands to manage the unavailability of the Proactive Handler.

Table 4.2: Proactive Toolkit commands Concurrency management

|  |  |
| --- | --- |
| **Proactive Toolkit Command Name** | **Concurrency handling** |
| Open Channel | x |
| Close Channel | x |
| Receive Data | x |
| Send Data | x |
| Timer Management (Retry Protocol) | - |
| Send Short Message (Administration Failure Report) | - |

The Admin Agent processes the requested Admin session one by one. During start of each session all events listed in table 4.3 will be registered for the Toolkit Registry of the owner application. These events will also be deregistered at the end of the Admin session.

All events listed in table 4.4 have to be registered by the owner application of the Admin session. This registration of these events will not be check by the Admin Agent and should be permanent.

Table 4.3: Temporary Toolkit Events used during Admin Session

|  |
| --- |
| **Toolkit Event Name** |
| EVENT\_FIRST\_COMMAND\_AFTER\_ATR |
| CFG\_EVENT\_PROFILE\_DOWNLOAD\_FINISHED |

Table 4.4: Permanent Toolkit Events used during Admin Session

|  |
| --- |
| **Toolkit Event Name** |
| EVENT\_FORMATTED\_SMS\_PP\_ENV |
| EVENT\_FORMATTED\_SMS\_PP\_UPD |
| EVENT\_EVENT\_DOWNLOAD\_CHANNEL\_STATUS |
| EVENT\_EVENT\_DOWNLOAD\_DATA\_AVAILABLE |

Based on that features the behaviour of the Morpho Cards Admin Agents is defined in the following figures.



Figure 4.1: Card Reset

After each Card Reset all allocated Timer will be released.



Figure 4.2: Profile Download

The Profile Download will only be processed in combination with a Card Reset. Additional Profile Downloads will be ignored by the Morpho Cards Admin Agents. If an Administration Session was active on Card Reset, then the state of the connection will be reset and the Retry Management will be started and the re-establishment of the Administration Session according to the Retry Policy will be processed.

For the Retry Management a timer will be used. If the Terminal does not support the Proactive Toolkit command Timer Management (start, stop) or the allocation of the timer failed (e.g. all available timers already allocated by other applications), then the Retry Policy cannot be processed and the session ends with fatal error, based on technical problems. If configured an Admin Failure Report with reason code ‘Technical Problem’ will be send.



Figure 4.3: Timer Management

As long as retries left the Retry Management will be processed on Timer Expiration.



Figure 4.4: Channel Status

During Channel Status it will be checked, if the Connection active. If the Connection is dropped, then the Retry Management will be processed.



Figure 4.5: Data Available



Figure 4.6: Administration Session Triggering SMS processing

If an Administration Triggering SMS is received, then the Triggering parameters and the Session Parameters will be validated. After validation with ‘Success’ the Administration Session will be started, or added to the Administration Session queue, if Session Resources are available. For the Morpho Cards [GP v2.2 Amendment B] Admin Agent only one Administration Session can be added to the Session Resource queue, if an Administration Session is active. For the Morpho Cards [OMA-SCWS] Admin Agent, it has to be defined.



Figure 4.7: Administration Session Triggering API processing



Figure 4.8: Retry Management



Figure 4.9: Start Next Admin Session



Figure 4.10: Open Connection

Figure 4.11: HTTP POST Response processing

# HTTP Messages and Allocation of Transient Memory

The HTTP is very dynamic. That means the number of Header Fields and its length can differ from Remote Server to Remote Server. The only way to approximate the size of transient memory needed on Card for the Header Fields is to filter all received Response Header Fields and store only the necessary Header Fields defined in the GP v2.2 Amendment B and OMA-SCWS. Additionally an assumption of the maximum values that has at leased be supported has to be done. Such an approximation base on an assumption is given in table 5.1 and 5.2.

An additional optimization that stores a short constant instead of the string representation of the Header Field Name is given in table 5.3 and 5.4.

Please note that the memory required for the HTTP Messages Header Fields will be allocated during processing of an Administration Session.

Table 5.1: Admin Agent Request Header transient memory approximation with filter (GP v2.2 Amendment B)

|  |  |  |  |
| --- | --- | --- | --- |
| **Bytes** | | **Header Field Name** | **Header Field Value** |
| 4 + N; N <= 127 | | Host | <Administration Host> |
| 16 + 31 | | X-Admin-Protocol | globalplatform-remote-admin/1.0 |
| 12 + N; N <= 127 | | X-Admin-From | <Agent ID> |
| 12 + 68 | | Content-Type | application/vnd.globalplatform.card-content-mgt-response;version=1.0 |
| 21 | 14 + 10 | Content-Length | xxxxxxxxxx |
| 17 + 7 | Transfer-Encoding | chunked |
| 21 + N;  N>=2 AND N <= 21 | | X-Admin-Script-Status | <script-status>   * ok * unknown-application * not-a-security-domain * security-error |
| 14 + 4 | | X-Admin-Resume | true |
| 208 + N; N <= 275 | | N:= 275; 🡺 483 | |

Table 5.2: Admin Agent Request Header transient memory approximation with filter (OMA-SCWS)

|  |  |  |  |
| --- | --- | --- | --- |
| **Bytes** | | **Header Field Name** | **Header Field Value** |
| 4 + N; N <= 127 | | Host | <Administration Host> |
| 16 + 26 | | X-Admin-Protocol | oma-scws-admin-agent/1.1.1 |
| 12 + N; N <= 127 | | X-Admin-From | <Agent ID> |
| 12 + 38 | | Content-Type | application/vnd.oma-scws-http-response |
| 21 | 14 + 10 | Content-Length | xxxxxxxxxx |
| 17 + 7 | Transfer-Encoding | chunked |
| 14 + 4 | | X-Admin-Resume | true |
| 147 + N; N <= 254 | | N:= 254; 🡺 401 | |

Table 5.3: Admin Agent Response Header transient memory approximation with filter (GP v2.2 Amendment B)

|  |  |  |  |
| --- | --- | --- | --- |
| **Bytes** | | **Header Field Name** | **Header Field Value** |
| 16 + 31 | | X-Admin-Protocol | globalplatform-remote-admin/1.0 |
| 16 + N; N <= 1024 | | X-Admin-Next-URI | <next-URI> |
| 12 + 59 | | Content-Type | application/vnd.globalplatform.card-content-mgt;version=1.0 |
| 28 + N;  N>=17 AND N <= 39 | | X-Admin-Targeted-Application | <security-domain-AID>  //aid/<RID>/<PIX> |
| 21 | 14 + 10 | Content-Length | xxxxxxxxxx |
| 17 + 7 | Transfer-Encoding | chunked |
| 183 + N; N <= 1063 | | N:= 1063; 🡺 1246 | |

Table 5.4: Admin Agent Response Header transient memory approximation with filter (OMA-SCWS)

|  |  |  |  |
| --- | --- | --- | --- |
| **Bytes** | | **Header Field Name** | **Header Field Value** |
| 16 + 27 | | X-Admin-Protocol | oma-scws-remote-admin/1.1.1 |
| 16 + N; N <= 1024 | | X-Admin-Next-URI | <next-URI> |
| 12 + 37 | | Content-Type | application/vnd.oma-scws-http-request |
| 21 | 14 + 10 | Content-Length | xxxxxxxxxx |
| 17 + 7 | Transfer-Encoding | chunked |
| 129 + N; N <= 1024 | | N:= 1024; 🡺 1153 | |

Table 5.5: Result of transient memory approximation with filter (GP v2.2 Amendment B)

|  |  |
| --- | --- |
| **Bytes** | **Description** |
| 483 | Admin Agent Request Header transient memory approximation |
| 1246 | Admin Agent Response Header transient memory approximation |
| 515 | Header internal transient memory buffer |
| 2244 | Approximation result |

Table 5.6: Result of transient memory approximation with filter (OMA-SCWS)

|  |  |
| --- | --- |
| **Bytes** | **Description** |
| 401 | Admin Agent Request Header transient memory approximation |
| 1153 | Admin Agent Response Header transient memory approximation |
| 515 | Header internal transient memory buffer |
| 2069 | Approximation result |

Please note, that the approximation does not include the required memory for object references for the Header Fields Linked List.

Table 5.6: Admin Agent Request Header transient memory approximation with filter and additional Header Field Name optimization (GP v2.2 Amendment B)

|  |  |  |  |
| --- | --- | --- | --- |
| **Bytes** | | **Header Field Name** | **Header Field Value** |
| 2 + N; N <= 127 | | Host | <Administration Host> |
| 2 + 31 | | X-Admin-Protocol | globalplatform-remote-admin/1.0 |
| 2 + N; N <= 127 | | X-Admin-From | <Agent ID> |
| 2 + 68 | | Content-Type | application/vnd.globalplatform.card-content-mgt-response;version=1.0 |
| 12 | 2 + 10 | Content-Length | xxxxxxxxxx |
| 2 + 7 | Transfer-Encoding | chunked |
| 2 + N;  N>=2 AND N <= 21 | | X-Admin-Script-Status | <script-status>   * ok * unknown-application * not-a-security-domain * security-error |
| 2 + 4 | | X-Admin-Resume | true |
| 127 + N; N <= 275 | | N:= 275; 🡺 402 | |

Table 5.7: Admin Agent Request Header transient memory approximation with filter and additional Header Field Name optimization (OMA-SCWS)

|  |  |  |  |
| --- | --- | --- | --- |
| **Bytes** | | **Header Field Name** | **Header Field Value** |
| 2 + N; N <= 127 | | Host | <Administration Host> |
| 2 + 26 | | X-Admin-Protocol | oma-scws-admin-agent/1.1.1 |
| 2 + N; N <= 127 | | X-Admin-From | <Agent ID> |
| 2 + 38 | | Content-Type | application/vnd.oma-scws-http-response |
| 12 | 2 + 10 | Content-Length | xxxxxxxxxx |
| 2 + 7 | Transfer-Encoding | chunked |
| 2 + 4 | | X-Admin-Resume | true |
| 90 + N; N <= 254 | | N:= 254; 🡺 344 | |

Table 5.8: Admin Agent Response Header transient memory approximation with filter and additional Header Field Name optimization (GP v2.2 Amendment B)

|  |  |  |  |
| --- | --- | --- | --- |
| **Bytes** | | **Header Field Name** | **Header Field Value** |
| 2 + 31 | | X-Admin-Protocol | globalplatform-remote-admin/1.0 |
| 2 + N; N <= 1024 | | X-Admin-Next-URI | <next-URI> |
| 2 + 59 | | Content-Type | application/vnd.globalplatform.card-content-mgt;version=1.0 |
| 2 + N;  N>=17 AND N <= 39 | | X-Admin-Targeted-Application | <security-domain-AID>  //aid/<RID>/<PIX> |
| 12 | 2 + 10 | Content-Length | xxxxxxxxxx |
| 2 + 7 | Transfer-Encoding | chunked |
| 110 + N; N <= 1063 | | N:= 1063; 🡺 1173 | |

Table 5.9: Admin Agent Response Header transient memory approximation with filter and additional Header Field Name optimization (OMA-SCWS)

|  |  |  |  |
| --- | --- | --- | --- |
| **Bytes** | | **Header Field Name** | **Header Field Value** |
| 2 + 27 | | X-Admin-Protocol | oma-scws-remote-admin/1.1.1 |
| 2 + N; N <= 1024 | | X-Admin-Next-URI | <next-URI> |
| 2 + 37 | | Content-Type | application/vnd.oma-scws-http-request |
| 12 | 2 + 10 | Content-Length | xxxxxxxxxx |
| 2 + 7 | Transfer-Encoding | chunked |
| 82 + N; N <= 1024 | | N:= 1024; 🡺 1106 | |

Table 5.10: Result of transient memory approximation with filter (GP v2.2 Amendment B)

|  |  |
| --- | --- |
| **Bytes** | **Description** |
| 402 | Admin Agent Request Header transient memory approximation |
| 1173 | Admin Agent Response Header transient memory approximation |
| 515 | Header internal transient memory buffer |
| 2090 | Approximation result |

Table 5.11: Result of transient memory approximation with filter (OMA-SCWS)

|  |  |
| --- | --- |
| **Bytes** | **Description** |
| 344 | Admin Agent Request Header transient memory approximation |
| 1106 | Admin Agent Response Header transient memory approximation |
| 515 | Header internal transient memory buffer |
| 1965 | Approximation result |

Please note, that the approximation does not include the required memory for object references for the Header Fields Linked List.

Reference

/GP v 2.2 Amendment B/

Title: GlobalPlatform Card, Remote Application Management over HTTP Card Specification v2.2 – Amendment B

Identification: GPC\_SPE\_011

Version: 1.1.1

Date: March 2012

Publisher: GlobalPlatform

/OMA-SCWS/

Title: Open Mobile Alliance, Smartcard-Web-Server**,** OMA-TS-Smartcard\_Web\_Server-V1.\_1\_1-20100910-A

Version: 1.1.1

Date: 10 September 2010

Publisher: Open Mobile Alliance

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Date: June 1999

Publisher: Network Working Group

/ETSI TS 102 223/

Title: Smart Cards; Card Application Toolkit (CAT), Release 10

Version: 10.1.0

Date: 01-2011

Publisher: ETSI

/Admin HTTP Component/

Title: Admin HTTP Component

Version: V1.05

Date: 10 June 2013

Publisher: Morpho Cards GmbH