3GPP TSG-T (Terminals) Meeting #12
Stockholm, Sweden, 13 - 15 June 2001

Tdoc TP-010102

Source: T3

Title: Change Requests to GSM 03.19 "SIM API for Java Card™"

Document for: Approval

This document contains change requests to GSM 03.19 as agreed by T3.

T3 Doc	Spec	CR	Rv	Rel	Subject
T3-010366	03.19	A013		rel-5	Limitation of proactive command issued by an application
T3-010367	03.19	A014		rel-5	Clarification of the handler size to the applet
T3-010368	03.19	A015		rel-5	Integrate the Bearer Independent Protocol Feature defined release 99
T3-010408	03.19	A016		R99	Clarifiaction and corrections following creation of the test specification

CR-Form-v3

CHANGE REQUEST

⌘ **03.19** CR **A013** ⌘ rev **-** ⌘ Current version: **8.1.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM **X** ME/UE ☐ Radio Access Network ☐ Core Network ☐

Title: ⌘	Limitation of proactive command issued by an application	
Source: ⌘	T3	
Work item code: ⌘		***Date:*** ⌘ 10/05/2001
Category: ⌘ **B**		***Release:*** ⌘ REL-5

Use one of the following categories:
F (essential correction)
A (corresponds to a correction in an earlier release)
B (Addition of feature),
C (Functional modification of feature)
D (Editorial modification)
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
REL-4 (Release 4)
REL-5 (Release 5)

Reason for change: ⌘	A toolkit application may send a proactive command or call a SIM API service that may affect other applications or the system behaviour.
Summary of change: ⌘	Definition of the system proactive commands that an applet is not allowed to send, and of the exception thrown by the SIM API to indicate that the proactive command is not allowed.
Consequences if not approved: ⌘	

Clauses affected: ⌘	§6.4, Annex A,B
Other specs affected: ⌘	☐ Other core specifications ⌘ Linked with T3-010365, T3-010368, T3-010371 ☐ Test specifications ☐ O&M Specifications
Other comments: ⌘	

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at:
http://www.3gpp.org/3G_Specs/CRs.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

6.4　Proactive command handling

The SIM application toolkit protocol (i.e. 91xx, Fetch, Terminal Response) is handled by the GSM applet and the Toolkit Handler, the toolkit applet shall not handle those events.

The SIM Toolkit Framework shall provide a reference of the *sim.toolkit.ViewHandler.EditHandler.ProactiveHandler* to the toolkit applet so that when the toolkit applet is triggered it can :

- initialise the current proactive command with the *init()* method ;

- append several Simple TLV as defined in GSM 11.14 [3] to the current proactive command with the *appendTLV()* methods ;

- ask the SIM Toolkit Framework to send this proactive command to the ME and wait for the reply, with the *send()* method.

The GSM applet and the SIM Toolkit Framework shall handle the transmission of the proactive command to the ME, and the reception of the response. The SIM Toolkit Framework will then return in the toolkit applet just after the *send()* method. It shall then provide to the toolkit applet the *sim.toolkit.ViewHandler.ProactiveResponseHandler*, so that the toolkit applet can analyse the response.

The proactive command is sent to the ME as defined and constructed by the toolkit applet without any check of the SIM Toolkit Framework.

The toolkit applet shall not issue the following proactive commands : SET UP MENU, SET UP EVENT LIST, POLL INTERVAL, POLLING OFF ; as those are system proactive commands that will affect the services of the SIM Toolkit Framework.

The SIM Toolkit Framework shall prevent the toolkit applet to issue the following proactive commands: SET UP MENU, SET UP EVENT LIST, POLL INTERVAL, POLLING OFF. If an applet attempts to issue such a command, the SIM Toolkit Framework shall throw an exception.

The SIM Toolkit Framework shall prevent a toolkit applet to issue a TIMER MANAGEMENT proactive command using a timer identifier, which is not allocated to it. If an applet attempts to issue such a command, the SIM Toolkit Framework shall throw an exception.

The SIM Toolkit Framework cannot guarantee that if the SET UP IDLE MODE TEXT proactive command is used by a toolkit applet, another toolkit applet will not overwrite this text at a later stage.

API modification to be reported in Annex A and B

- sim.toolkit.ToolkitException :
  Add the ToolkitException reason: COMMAND_NOT_ALLOWED

  public static final short COMMAND_NOT_ALLOWED

     This reason code (=15) is used to indicate that the proactive command being sent is not allowed by the SIM Toolkit Framework.

- sim.toolkit.ProactiveHandler
  Add the exception above to the exception thrown by the send() method

send

send

public byte **send**()

> throws ToolkitException
>
>> Sends the current Proactive command.
>>
>> **Returns:**
>>
>> general result of the command (first byte of Result TLV in Terminal Response)
>>
>> **Throws:**
>>
>> ToolkitException - with the following reason codes:

- UNAVAILABLE_ELEMENT if the Result Simple TLV is missing.

- OUT_OF_TLV_BOUNDARIES if the general result byte is missing in the Result Simple TLV.

- COMMAND_NOT_ALLOWED if the Proactive command to be sent or one of its parameter is not allowed by the SIM Toolkit Framework.

CR-Form-v3

CHANGE REQUEST

| | ⌘ | **03.19** CR **A014** | ⌘ rev | **-** | ⌘ Current version: | **8.1.0** | ⌘ |

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM **X** ME/UE ☐ Radio Access Network ☐ Core Network ☐

Title:	⌘	Indication of the handler size to the applet
Source:	⌘	T3
Work item code: ⌘		*Date:* ⌘ 08/05/2001
Category:	⌘ **B**	*Release:* ⌘ REL-5

Use *one* of the following categories: **F** *(essential correction)* **A** *(corresponds to a correction in an earlier release)* **B** *(Addition of feature),* **C** *(Functional modification of feature)* **D** *(Editorial modification)* Detailed explanations of the above categories can be found in 3GPP TR 21.900.	Use *one* of the following releases: *2 (GSM Phase 2)* *R96 (Release 1996)* *R97 (Release 1997)* *R98 (Release 1998)* *R99 (Release 1999)* *REL-4 (Release 4)* *REL-5 (Release 5)*

Reason for change:	⌘	The applet writer cannot know the size of the system handler, this is required for the usage of some features like Bearer independent protocol
Summary of change:	⌘	Addition of a method to get the size of the system handlers
Consequences if not approved:	⌘	

Clauses affected:	⌘	Annex A,B
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

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List of changes to the API html and java source files Annex A and B

Class sim.toolkit.ViewHandler

   + getCapacity()

public short getCapacity()
        throws ToolkitException

   Returns the maximum size of the Simple TLV list managed by the handler.
   Returns:
      size in bytes
   Throws:
      ToolkitException - with the following reason codes:
         HANDLER_NOT_AVAILABLE if the handler is busy

CR-Form-v3

CHANGE REQUEST

⌘ **03.19** CR **A015** ⌘ rev **-** ⌘ Current version: **8.1.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM **X** ME/UE ☐ Radio Access Network ☐ Core Network ☐

Title:	⌘	Integrate the Bearer Independent Protocol Feature defined release 99	
Source:	⌘	T3	
Work item code:	⌘ API	*Date:* ⌘	08/05/2001
Category:	⌘ **B**	*Release:* ⌘	REL-5

Use one of the following categories:
F (essential correction)
A (corresponds to a correction in an earlier release)
B (Addition of feature),
C (Functional modification of feature)
D (Editorial modification)
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

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2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
REL-4 (Release 4)
REL-5 (Release 5)

Reason for change:	⌘	Integration of the Bearer independent Protocol feature in the API
Summary of change:	⌘	Addition of the proactive commands to the system proactive commands filtered by the system. Definition of the registration and deregistration mechanism. Definition of new methods and constant relevant to the Bearer Independent Protocol
Consequences if not approved:	⌘	

Clauses affected:	⌘	§6.2, §6.4, §6.6, Annex A,B

Other specs affected:	⌘ ☐	Other core specifications	⌘ Linked with T3-010366,T3-010365, T3-010371
	☐	Test specifications	
	☐	O&M Specifications	
Other comments:	⌘		

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6.2　Applet Triggering

[..]

EVENT_EVENT_DOWNLOAD_MT_CALL,　　　　　　　EVENT_EVENT_DOWNLOAD_CALL_CONNECTED,
EVENT_EVENT_DOWNLOAD_CALL_DISCONNECTED,　　EVENT_EVENT_DOWNLOAD_LOCATION_STATUS,
EVENT_EVENT_DOWNLOAD_USER_ACTIVITY,　　　EVENT_EVENT_DOWNLOAD_IDLE_SCREEN_AVAILABLE,
EVENT_EVENT_DOWNLOAD_CARD_READER_STATUS,
EVENT_EVENT_DOWNLOAD_LANGUAGE_SELECTION,
EVENT_EVENT_DOWNLOAD_BROWSER_TERMINATION, EVENT_EVENT_DOWNLOAD_DATA_AVAILABLE,
EVENT_EVENT_DOWNLOAD_CHANNEL_STATUS

The toolkit applet will be triggered by the registered event download trigger, upon reception of the corresponding Envelope command.

In order to allow the toolkit applet to be triggered by these events, the SIM Toolkit Framework shall have previously issued a SET UP EVENT LIST proactive command. When a toolkit applet changes one or more of these requested events of its registry object, the SIM Toolkit Framework shall automatically update the event list stored in the ME.

EVENT_EVENT_DOWNLOAD_DATA_AVAILABLE ,
EVENT_EVENT_DOWNLOAD_CHANNEL_STATUS

For EVENT_EVENT_DOWNLOAD_DATA_AVAILABLE and EVENT_EVENT_DOWNLOAD_CHANNEL_STATUS, the framework shall only trigger the applet registered to these events with the appropriate channel identifier.

The registration to the EVENT_EVENT_DOWNLOAD_DATA_AVAILABLE and EVENT_EVENT_DOWNLOAD_CHANNEL_STATUS is effective once the toolkit applet has issued a successful OPEN CHANNEL proactive command, and valid till the first successful CLOSE CHANNEL or a channel link is released by the ME or the card session.

When a Toolkit Applet has sent an OPEN CHANNEL proactive command and received a successful TERMINAL RESPONSE, the framework shall register the received channel identifier for the calling Toolkit Applet.

When a Toolkit Applet has sent a CLOSE CHANNEL proactive command and received a successful TERMINAL RESPONSE, the framework shall release the channel identifier contained in the command.

A successful TERMINAL RESPONSE means that the result of the proactive command execution belongs to command performed category (i.e. General Result ='0x').

[…]

6.4　Proactive command handling

[…]

The SIM Toolkit Framework shall prevent a toolkit applet to issue a SEND DATA, RECEIVE DATA and CLOSE CHANNEL proactive commands using a channel identifier, which is not allocated to it. If an applet attempts to issue such a command the SIM Toolkit Framework shall throw an exception.

The SIM Toolkit Framework shall prevent a toolkit applet to issue an OPEN CHANNEL proactive command if it exceeds the maximum number of channel allocated to this applet. If an applet attempts to issue such a command the SIM Toolkit Framework shall throw an exception.

[…]

6.6 Handler availability

The system handlers : ProactiveHandler, ProactiveResponseHandler, EnvelopeHandler and EnvelopeResponseHandler are Temporary JCRE Entry Point Object as defined in the Java Card Runtime Environment Specification [8].

The following table describes the minimum availability of the handlers for all the events at the invocation of the processToolkit method of the toolkit applet.

Table 1: Handler availability for each event

EVENT_	Reply busy	ProactiveHandler ProactiveResponseHandler	EnvelopeHandler	EnvelopeResponseHandler	Nb of triggered / registrered Applet
_FORMATTED_SMS_PP_ENV	Y	Y	Y	Y	1 / n (per TAR)
_FORMATTED_SMS_PP_UPD	N	Y	Y	N	1 / n (per TAR)
_UNFORMATTED_SMS_PP_ENV	Y	Y	Y	Y	n / n
_UNFORMATTED_SMS_PP_UPD	N	Y	Y	N	n / n
_FORMATTED_SMS_CB	Y	Y	Y	N	1 / n (per TAR)
_UNFORMATTED_SMS_CB	Y	Y	Y	N	n / n
_MENU_SELECTION	Y	Y	Y	N	1 / n (per Item Id)
_MENU_SELECTION_HELP_REQUEST	Y	Y	Y	N	1 / n (per Item Id)
_CALL_CONTROL	N	Y/N (see Note 2)	Y	Y	1 / 1
_SMS_MO_CONTROL	N	Y/N (see Note 2)	Y	Y	1 / 1
_TIMER_EXPIRATION	Y	Y	Y	N	1/ 8 (per timer) (see Note 1)
_EVENT_DOWNLOAD					
_MT_CALL	Y	Y	Y	N	n / n
_CALL_CONNECTED	Y	Y	Y	N	n / n
_CALL_DISCONNECTED	Y	Y	Y	N	n / n
_LOCATION_STATUS	Y	Y	Y	N	n / n
_USER_ACTIVITY	Y	Y	Y	N	n / n
_IDLE_SCREEN_AVAILABLE	Y	Y	Y	N	n / n
_LANGUAGE_SELECTION	Y	Y	Y	N	n / n
_BROWSER_TERMINATION	Y	Y	Y	N	n / n
_CARD_READER_STATUS	Y	Y	Y	N	n / n
_DATA_AVAILABLE	Y	Y	Y	N	1/ 7 (per channel) (see Note 1)
_CHANNEL_STATUS	Y	Y	Y	N	1/ 7 (per channel) (see Note 1)
_UNRECOGNISED_ENVELOPE	Y	Y	Y	Y	n / n
_STATUS_COMMAND	N	Y/N (see Note 2)	N	N	n / n
_PROFILE_DOWNLOAD	N	Y/N (see Note 2)	N	N	n / n

NOTE 1: One toolkit applet can register to several timers/channels, but a timer/channel can only be allocated to one toolkit applet.

NOTE 2: Y/N means that handlers may / may not be available depending whether a proactive session is ongoing.

List of changes to the API html and java source files

Interface sim.toolkit.ToolkitConstants

Add the new Event constant definitions:
public static final byte EVENT_EVENT_DOWNLOAD_DATA_AVAILABLE   22
public static final byte EVENT_EVENT_DOWNLOAD_BROWSER_TERMINATION   23

Add the new Simple-TLV tags constant definition :
public static final byte TAG_BEARER_DESCRIPTION   0x35
public static final byte TAG_CHANNEL_DATA   0x36
public static final byte TAG_CHANNEL_DATA_LENGTH   0x37
public static final byte TAG_BUFFER_SIZE   0x39
public static final byte TAG_CHANNEL_STATUS   0x38
public static final byte TAG_SIM_ME_INTERFACE_TRANSPORT_LEVEL   0x3C

Add the new Proactive commands constant definitions :
public static final byte PRO_CMD_OPEN_CHANNEL   0x40
public static final byte PRO_CMD_CLOSE_CHANNEL   0x41
public static final byte PRO_CMD_RECEIVE_DATA   0x42
public static final byte PRO_CMD_SEND_DATA   0x43
public static final byte PRO_CMD_GET_CHANNEL_STATUS   0x44

Add the new General result constant defintions:
public static final byte RES_ERROR_BEARER_INDEPENDENT_PROTOCOL_ERROR   0x3A

Add the new Destination Device Identity constant defintions:
public static final byte DEV_ID_CHANNEL_BASE   0x20
public static final byte DEV_ID_CHANNEL_1   0x21
public static final byte DEV_ID_CHANNEL_2   0x22
public static final byte DEV_ID_CHANNEL_3   0x23
public static final byte DEV_ID_CHANNEL_4   0x24
public static final byte DEV_ID_CHANNEL_5   0x25
public static final byte DEV_ID_CHANNEL_6   0x26
public static final byte DEV_ID_CHANNEL_7   0x27

Class sim.toolkit.MEProfile

Update of the profile download table in the class description

```
*   Event: Data available                              42
*   Event: Channel status                              43

*   Proactive SIM: Open Channel                        88
*   Proactive SIM: Close Channel                       89
*   Proactive SIM: Receive Data                        90
*   Proactive SIM: Send Data                           91
*   Proactive SIM: Get Channel Status                  92
*   RFU                                                93
*   RFU                                                94
*   RFU                                                95
*   CSD supported by ME                                96
*   GPRS supported by ME                               97
*   RFU                                                98
*   RFU                                                99
*   RFU                                                100
*   Number of channels supported by ME (b0)            101
*   Number of channels supported by ME (b1)            102
*   Number of channels supported by ME (b2)            103

*   TCP                                                128
*   UDP                                                129
```

Class sim.toolkit.EnvelopeHandler

+ getChannelIdentifier()

public byte getChannelIdentifier()
　　　　　throws ToolkitException

Returns the channel identifier value from the first Channel status TLV element in the current Envelope data field. If the element is available it becomes the currently selected TLV.

Returns:
　　channel identifier
Throws:
　　ToolkitException - with the following reason codes:
　　　　UNAVAILABLE_ELEMENT in case of unavailable TLV element

Class sim.toolkit. ProactiveResponseHandler

+ getChannelIdentifier()

public byte getChannelIdentifier()
　　　　　throws ToolkitException

Returns the channel identifier value from the first Channel status TLV element in the current response data field. If the element is available it becomes the currently selected TLV.

Returns:
　　channel identifier
Throws:
　　ToolkitException - with the following reason codes:
　　　　UNAVAILABLE_ELEMENT in case of unavailable TLV element

+ copyChannelData(…)

public short copyChannelData(byte[] dstBuffer, short dstOffset, short dstLength)
　　　　　　throws java.lang.NullPointerException,
　　　　　　　java.lang.ArrayIndexOutOfBoundsException,
　　　　　　　ToolkitException

Copies parts of the Channel data string field from the first Channel data TLV element of the current response data field. If the element is available it becomes the currently selected TLV.

Parameters:
　　dstBuffer - a reference to the destination buffer
　　dstOffset - the position in the destination buffer
　　dstLength - the data length to be copied
Returns:
　　dstOffset+dstLength
Throws:
　　java.lang.NullPointerException - if dstBuffer is null
　　java.lang.ArrayIndexOutOfBoundsException - if dstOffset or dstLength or both would cause access outside array bounds
　　ToolkitException - with the following reason codes:
　　　　UNAVAILABLE_ELEMENT in case of unavailable Result TLV element
　　　　OUT_OF_TLV_BOUNDARIES if dstLength is greater than the value field of the available TLV

Class sim.toolkit. ProactiveHandler

+ initCloseChannel(..)

public void initCloseChannel(byte bChannelId)

Builds a Close Channel Proactive command without sending the command. The Comprehension Required flags are all set to 1. After the method invocation no TLV is selected.

Parameters:
　　bChannelId – the channel identifier to be closed.

CR-Form-v3

CHANGE REQUEST

⌘ **03.19** CR **A016** ⌘ rev **1** ⌘ Current version: ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: ⌘ (U)SIM **X** ME/UE ☐ Radio Access Network ☐ Core Network ☐

Title: ⌘	Correction to 03.19	
Source: ⌘	T3	
Work item code: ⌘	SIM API	*Date:* ⌘ 12/01/2001
Category: ⌘	**F**	*Release:* ⌘ R99

Use <u>one</u> of the following categories:
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  R98   (Release 1998)
  R99   (Release 1999)
  REL-4 (Release 4)
  REL-5 (Release 5)

Reason for change: ⌘	Definition of a previously undefined behavior.
Summary of change: ⌘	Definition of the behaviour of MEProfile.check() method when the length parameter is 0.
Consequences if not approved: ⌘	The above behavior would remain not defined, which could lead to interoperability issues.

Clauses affected: ⌘	Annex A,B
Other specs affected: ⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments: ⌘	

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List of changes to the API

Class sim.toolkit.MEProfile

check

```
public static boolean check(byte[] mask,
                            short offset,
                            short length)
                throws java.lang.NullPointerException,
                       java.lang.ArrayIndexOutOfBoundsException,
                       ToolkitException
```

Checks a set of facilities in the handset profile. The method checks all the facilities corresponding to bits set to 1 in the mask buffer.

Parameters:

mask - a byte array containing the mask to compare with the profile

offset - the starting offset of the mask in the byte array

length - the length of the mask (at least 1)

Returns:

true if the set of facilities is supported, false otherwise. If length is equal to 0, true is returned.

Throws:

java.lang.NullPointerException - if mask is null

java.lang.ArrayIndexOutOfBoundsException - if offset or length or both would cause access outside array bounds

ToolkitException - with the following reason codes:

- ME_PROFILE_NOT_AVAILABLE if Terminal Profile data are not available