


S@T 01.23 v4.0.0 (Release 2009)

S@T Push Commands

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1 TERMINOLOGY

1.1 Notation

Prefix '0x' indicates hexadecimal value. 'bn' indicates individual bit in a byte. Range from bit 0 (least significant), denoted b0, to bit 7 (most significant), denoted b7.

1.2 Abbreviations

S@T	SIM Alliance Toolbox
SBC	S@T Byte Code
SSP	S@T Session Protocol
TL[A]V	TLV with optional attribute bytes
TLV	Tag Length Value encoding
URL	Unified Resource Locator

1.3 Definitions

Connected state: state of the browser/gateway when a session has been established

Connecting state: state of the browser/gateway is waiting for the session establishment (i.e. it has sent CONNECT_REQ and is waiting for CONNECT_RSP)

Disconnected state: no SSP session is opened

High priority push protocol: based on SSP and used for transmitting push commands

Low priority push protocol: is used for transmitting push commands without session establishment

Idle state: state of the browser when no proactive session is running (no proactive command is pending).

S@T Session protocols: basic protocol for S@T browser/gateway communication based on the session establishment and data exchange within the established session.

Waiting for response state: state of the browser when it keeps the proactive session alive by issuing DISPLAY TEXT to notify the user that the browser is waiting for or receiving the gateway response.

2 LIST OF DOCUMENTS

/23.038/	3GPP TS 23.038: "Alphabets and language-specific information".
/23.048/	3GPP TS 23.048: "Security mechanisms for the (U)SIM application toolkit; Stage 2".
/SBC/	S@T 01.00: S@T Byte Code
/SSP/	S@T 01.20: S@T Session Protocol
/Admin/	S@T 01.21: S@T Administrative Commands
/Pull/	S@T 01.22: S@T Operational Commands

This document is part of a specification set, please refer to "S@T Release Note" for a comprehensive document list, including document versions.

3 OVERVIEW

This document describes S@T low priority and high priority push protocols that are used for transmitting push commands.

The S@T Session Protocol (see /SSP/) specifies generic commands (GET_REQ, POST_REQ, DATA_REQ, etc) and related parameters to be used by a S@T gateway and browser. This document specialises these generic commands to be used in high priority push protocol to perform push commands.

4 DEFINITION OF NEEDS

Push command is used to transfer online deck for execution from the S@T gateway to the S@T browser. Push commands can be delivered via S@T low priority or high priority push protocols.

Low priority push can be processed by the browser only if the browser is idle. This type of push is typically used for low importance push messages.

High priority push is processed by the browser even if the browser is busy by executing another deck or waiting for the gateway response. An acknowledgement is sent by the browser to the gateway at the reception of the high priority push message. This type of push is typically used for high importance push messages.

Properties of push types:

Type of push	Priority	Session establishment	Message delivery confirmation
Low priority push	Low	No	No
High priority push	High	Yes	Yes

5 GENERIC SIMPLE-TL[A]V FORMAT

Refer to paragraph 6 of /SBC/

6 PUSH COMMANDS

6.1 Push

The following command contains a deck to be executed and is sent by the gateway to the browser for any type of Push (i.e. low priority and high priority push):

<i>LENGTH</i>	<i>VALUE</i>	<i>DESCRIPTION</i>	<i>M/O</i>
1	0x42	Push tag	M
1-3	A	Length of subsequent data (length coded in BER-TLV)	M
A	Deck TL[A]V	Deck Element (see /SBC/).	M

7 LOW PRIORITY PUSH PROTOCOL

Low priority push does not use the session protocol. Push command (as define in 6.1) is sent by the gateway to the browser without wrapping into SSP packet. The browser does not send any reply to a low priority push.

The special TAR value '505348' ("PSH") shall be used for the 3GPP TS 23.048 message header containing a low priority push.

7.1 Gateway Request

Gateway request contains push command as described in chapter 6.1.

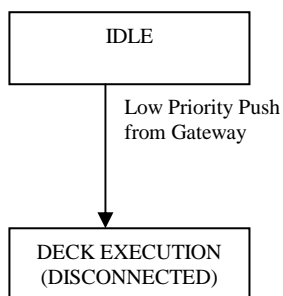
7.2 Browser Response

The S@T browser shall not send any reply to a gateway request with low priority push.

7.3 Browser Behaviour on Reception of Low Priority Push

Low priority push shall be processed by the browser only if the browser is in the idle state. Otherwise low priority push shall be silently ignored.

Browser behaviour on reception of Low Priority Push can be presented with the following diagram:



8 HIGH PRIORITY PUSH PROTOCOL

8.1 SSP Packet for High Priority Push Protocol

High priority push session establishment can be requested only from the S@T gateway. SSP packet for the gateway request shall contain:

- CONNECT_REQ command with the high priority push protocol Id (0x03 as defined in /SSP/);
- DATA_REQ command with push command as defined in 6.1.

The SSP packet for the browser response shall contain:

- CONNECT_RSP;
- DATA_RSP command with the push acknowledgment as defined in 8.3;
- DISCONNECT_REQ command.

8.2 Gateway Request

The gateway request contains push command as defined in 6.1 that is encapsulated into a DATA_REQ.

8.3 Browser Response

The response from the browser is an acknowledgement of the pushed deck reception that is encapsulated into a DATA_RSP command:

<i>LENGTH</i>	<i>VALUE</i>	<i>DESCRIPTION</i>	<i>M/O</i>
1	0x43	Push Acknowledgement tag	M
1	2	Length of subsequent data (length coded in BER-TLV)	M
2	0-65535	Status code: 0x0000 : Deck successfully received 0x0100 : Unspecified Error	M

8.4 Browser Behaviour on Reception of High Priority Push

The S@T browser shall always process high priority push if it is not currently processing administrative command (see /Admin/) or another high priority push. In this case the incoming high priority push shall be ignored. High priority push ignored means that the push is not executed and no acknowledgement is sent to the gateway.

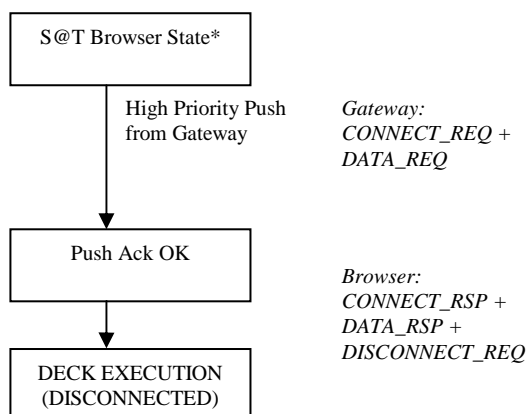
The following table shows the processing of high priority push in the following S@T browser states:

<i>S@T Browser State</i>	<i>High priority push processing</i>
Disconnected - Idle	Processed
Disconnected – Deck Execution	Processed
Connecting – Waiting for Response	Processed
Connected – Deck Execution	Processed
Connected – Waiting for Response	Processed
Administration session	Not processed
Another high priority push session	Not processed

If the S@T browser can process high priority push message, the browser shall:

- disconnect the current SSP session (if any) and open high priority push session;
- send a push acknowledgement with status ‘Deck successfully received’ to the gateway and close the high priority push session;
- clear all temporary variables before the pushed deck execution to avoid insecure access to temporary variables set during a previous session;
- clear the history stack before the pushed deck execution;
- start executing the pushed deck.

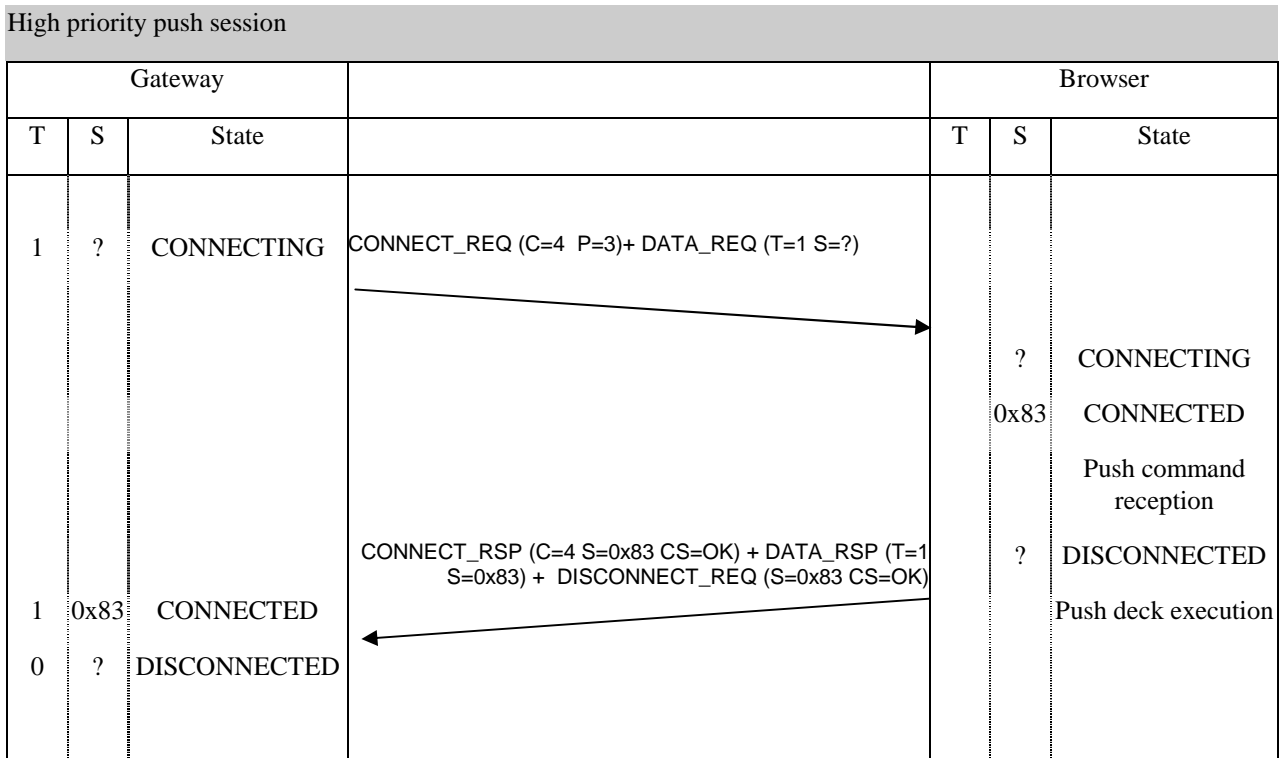
Browser behaviour on reception of High Priority Push can be presented with the following diagram:



* See the table above

9 HIGH PRIORITY PUSH SESSION FLOWCHART

The following flow chart demonstrates an example of the high priority push session establishment:



Legend:

- C: Connection Id
- CS: Connection Status
- P: Protocol Id
- S: Session Id
- T: Transaction Id

10 LIST OF COMMAND TAGS

Since bit 7 is reserved for attribute indication the tag values can be in range [0x00..0x7F]

Command	Value
Push tag	0x42
Push Acknowledgement tag	0x43

Deprecated Tags
0x44

Deprecated tag values must not be re-used in future.

11 Annex : OPTIONAL FEATURES

The following features are optional:

- High priority push: browser not supporting high priority push shall ignore high priority push from the gateway.

12 History

Document history		
Release	Approved by	Comment
1.0.0	SIMalliance TDG	First version
1.0.1	SIMalliance TDG	Changes during meeting #30 for publication
2.0.0	SIMalliance BDG	Editorial Change and Clarification on Push Name behaviour.
3.0.0	SIMalliance TDG	Editorial modifications Release 2007 publications
3.0.1	SIMalliance TDG	CR PRISM-Dec-2007 #005 integrated.
4.0.0	SIMalliance TDG	<p>S@T Task Force: Review of Spec: Major editorial modifications for clarification</p> <ul style="list-style-type: none"> - Removed push name usage - Clarified Browser behaviour on reception of a low/high priority push - Low priority push is now mandatory - Removed multi session management

12.1 ANNEX: LIST OF CHANGE REQUESTS [informative]

CR Number	CR Identifier	Subject	Document Reference	Status / Meeting No.
CR 2004-029	G&D 02.2004 #7	Chapter 7.2 add paragraph explaining the meaning of, browser is inactive	S@T 01.23 V2.0.0	Accepted by email voting Feb 2004
CR 2004-030	G&D 02.2004 #8	Chapter 8.3: Add clarification	S@T 01.23 V2.0.0	Accepted by email voting Feb 2004
	PRISM-Dec-2007 #005	Clarifications for certification	S@T 1.23 V3.0.1	Accepted at WG meeting Jan 2008