



S@T Push Commands

1. History

Document history		
Release	Approved by	Comment
1.0.0	SIMalliance TDG	First version
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1 TERMINOLOGY

1.1 Notation

Lexical and syntactical specifications are given in EBNF (extended Backus Naur Form), with literals enclosed in single quotes 'xyz' or given in a single character set like [0-9] for a digit, and using the operators (...) (precedence), ? (optional), * (zero or more times), + (one or more times), | (alternative), and "... ::=" for rules.

1.2 Abbreviations

FFS	For Further Study
HTTP	Hyper Text Transfer Protocol
S@T	SIM Alliance Toolbox
SBC	S@T Byte Code
SSP	S@T Session Protocol
TLV	Tag Length Value encoding
URL	Unified Resource Locator

2 LIST OF DOCUMENTS

/SBC/	S@T 01.00 : SBC – S@TML Byte Code
/SSP/	S@T 01.20 : SSP – S@T Session Protocol
/Admin/	S@T 01.21 : S@T Administrative Commands
/Oper/	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

The S@T Session Protocol (see /SSP/) specifies generic messages (Get_Req, Post_Req, Data_Req, Express_Data_Req, Reply, Connect, Disconnect, etc) and related parameters to be used by a S@T Gateway and Browser. This document proposes a way to specialise these generic messages to be used by a S@T gateway-browser couple to perform push commands.

4 DEFINITION OF NEEDS

This document specifies the communication between the S@T Browser and the S@T Gateway to transfer decks from the S@T Gateway to the S@T Browser. The communication consists either of the delivery of a generic push command (no session establishment) or a sequence of commands embedded in SSP commands (session establishment), i.e. the document shall specify a mechanism to transfer Internet content towards the S@T Browser without an explicit preceding S@T Browser request. The described transfer mechanism to push S@T byte code decks from the S@T Gateway to the S@T Browser is therefore S@T Gateway initiated.

Two types of push shall be defined regarding the priority on a possibly active browsing:

1. low priority push where the deck is transferred to the S@T Browser and where the push has no priority on a browsing or an administrative session. This type of push is typically used for low importance push messages.
2. high priority push where a transfer of the push deck has the priority on browsing. An acknowledgement is sent by the browser to the gateway at the reception of the push deck. This type of push is typically used for high importance push messages.

Properties of push types

Type of push	Priority on possibly active browsing	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 4 of /SBC/

6 GENERIC PUSH COMMAND

6.1 Generic Push Command Description

The following command 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	PushTag	Push tag (+ Attribute presence flag)	M
1-3	L	Length of subsequent data (length coded in BER-TLV)	M
		Push name Element	O
1	Push name Tag	Push name tag	
1-2	X	Length	
X	Value	Value	
		Deck element (see [SBC]).	M
1	DeckTag	Deck tag	
1-3	Y	Length	
Y	Value	Value	

The push name is used to describe the deck. If present, this name must be displayed by the browser to the user. The way it is presented to the user is out of the scope of this specification.

Use of long coded URL is recommended in the pushed deck.

6.2 Push Name

<i>LENGTH</i>	<i>VALUE</i>	<i>DESCRIPTION</i>	<i>M/O</i>																
		Push name																	
1	Push name Tag	Push name tag	M																
1-2	X	Push name length (length <256)	M																
		Optional attributes	O																
0+		<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">Bit#</div> <table border="1" style="border-collapse: collapse; text-align: center;"> <tr> <td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td><td>0</td> </tr> <tr> <td style="background-color: #cccccc;"></td><td style="background-color: #cccccc;"></td><td style="background-color: #cccccc;"></td><td style="background-color: #cccccc;"></td><td style="background-color: #cccccc;"></td><td style="background-color: #cccccc;"></td><td style="background-color: #cccccc;"></td><td style="background-color: #cccccc;"></td> </tr> </table> </div> <div style="display: flex; justify-content: space-around; text-align: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">Follow Bit</div> <div>UCS2</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">SMS default alphabet</div> <div>RFU</div> <div>RFU</div> <div>RFU</div> <div>RFU</div> <div>RFU</div> </div> <ul style="list-style-type: none"> ➤ UCS2: If this attribute is set, then the variable is coded in UCS2 coding. ➤ SMS default alphabet: If this attribute is set, then the variable is coded in SMS default alphabet. 	7	6	5	4	3	2	1	0									O
7	6	5	4	3	2	1	0												
X		Push name content	M																

Type information coding summary:

Type indicated in attribute	Bit 6 (UCS2)	Bit 5 (SMS)
SMS default	-	-
SMS default	0	0
UCS2	1	0
SMS default	0	1
SMS default	1	1

If the DCS is SMS default alphabet, the alphabet used is the SMS default 7-bit coded alphabet as defined in GSM 03.38 with bit 8 set to zero

7 LOW PRIORITY PUSH

A low priority push command is sent from the S@T Gateway to the S@T Browser without any SSP command, i.e. there is no session establishment for low priority push.

The browser does not send any reply to a low priority push.

In order to avoid too many low priority push commands disturbing the end user, the end user can activate or deactivate the low priority push feature using the corresponding system menu item as described in /SBC/.

The TAR to be used for the GSM 03.48 message header containing a low priority push is "PSH".

TAR Byte 1	TAR Byte 2	TAR Byte 3
0x50	0x53	0x48
'P'	'S'	'H'

It is recommended to use a SPI different than 0x00 for a low priority push and the SPI to support for interoperability is 0x12. The SPI used for a low priority push may be different than the one used for high priority push.

7.1 Gateway Low Priority Push Command

The message sent from the S@T Gateway to the S@T Browser is a generic push command as described in chapter 6.

The S@T Browser does not send any reply to a low priority push.

7.2 Browser Behavior on Reception of Low Priority Push Command

If the low priority push is deactivated, the S@T Browser must ignore any low priority push message.

Activation and S@T Browser states

A low priority push MUST be ignored by the browser if a browsing (see /Oper/) or an administrative (see /Admin/) or a high priority push session is active.

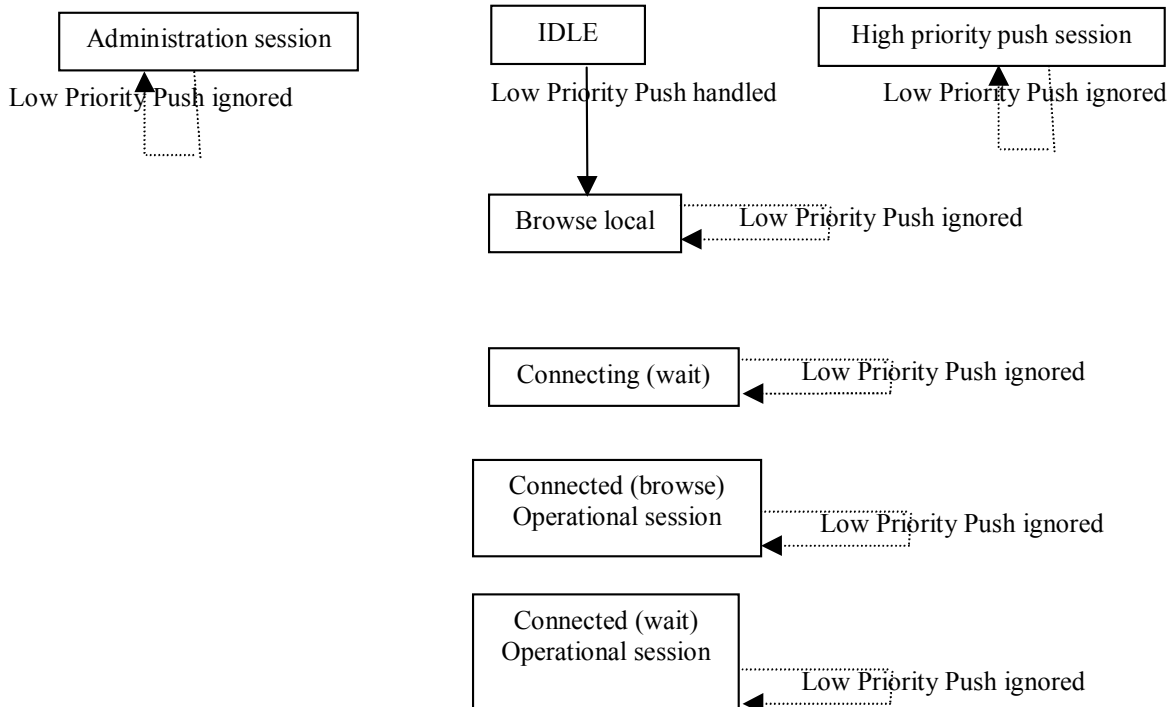
The browser behaviour is summarised in the following table:

State of the browser	Browser behaviour on reception of Low Priority Push
Browser is inactive	Start of browser with the push deck
Browser is active	Push message ignored

The diagram below recaps the browser behaviour:

Notes:

- Browse local state means that a deck is currently browsed without any session established with the gateway.
- Connecting (wait) state means that no session is established and a session establishment is requested.
- Connected (browse) state means that a session is established and a deck is currently browsed.
- Connected (wait) state means that a session is established and a deck is requested.
- This diagram is valid if multi session is not supported.



8 HIGH PRIORITY PUSH

A high priority push relies on an SSP session established by the Gateway

The Browser sends a response to the Gateway to acknowledge the Gateway push command.

In order to avoid high priority push command disturbing the end user, the end user can activate or deactivate the high priority push feature using the corresponding system menu item as described in /SBC/.

The TAR to be used for the GSM 03.48 message header containing a high priority push is the same used for Operational or Administrative session (see /SSP/).

It is recommended to use a SPI different than 0x00 for a high priority push and the SPI to support for interoperability is 0x12. The SPI used for a high priority push may be different than the one used for low priority push.

8.1 Gateway High Priority Push Command

The Gateway pushes a deck encapsulated into the value part of a DATA_REQ.

The message sent from the S@T Gateway to the S@T Browser is a generic push command described above.

Use of long coded URL is recommended in the pushed deck.

Only one deck can be pushed per session.

8.2 Browser High Priority Push Response

The response from the Browser is an acknowledgement of the pushed deck reception.

It is encapsulated into the value part of a DATA_RSP message with the following structure:

<i>LENGTH</i>	<i>VALUE</i>	<i>DESCRIPTION</i>	<i>M/O</i>
1	PushAckTag	Push Acknowledgement tag (+ Attribute presence flag)	M
1	1	Length of subsequent data (length coded in BER-TLV)	M
		Status Code Element	M
2	0-65535	Status code.	

The status code is used to indicate the results of the reception of the command and to indicate any additional information about the handling of the push command in the browser.

The most significant byte of the status code indicates if the Push command was correctly received by the browser or not. Its value is 0x00 if the push command is correctly received and 0x01 otherwise.

The least significant byte is optionally used to indicate additional information on the handling of the push command. In case no additional information is given, its value is 0x00.

The following status code are defined, the other values are reserved for future use:

- 0x0000 : Deck successfully received - No additional information
- 0x0001 : Deck successfully stored
- 0x0002 : Deck ready for execution

- 0x0100 : Unspecified Error
- 0x0101 : S@T browser busy
- 0x0102 : Push feature deactivated
- 0x0103 : Push ignored by user

8.3 Browser Behavior on Reception of High Priority Push Command

If the high priority push is deactivated, the S@T Browser must ignore any high priority push message.

To avoid insecure access to temporary variables set during a previous session, the browser must clear all temporary variables just before the push deck is executed.

8.3.1 Session Management

A high priority Push session is initiated by the S@T Gateway.

To do so, the S@T Gateway sends a CONNECT_REQ message to the S@T Browser.

The value of the Protocol ID to be sent in a CONNECT_REQ message is 03.

A high priority push session is active after the S@T Browser has received a high priority push message and before the S@T Browser has sent the DISCONNECT Request as specified in S@T 1.20 to the S@T Gateway.

If the browser does not support multiple sessions, a browsing session is killed by a high priority push session.

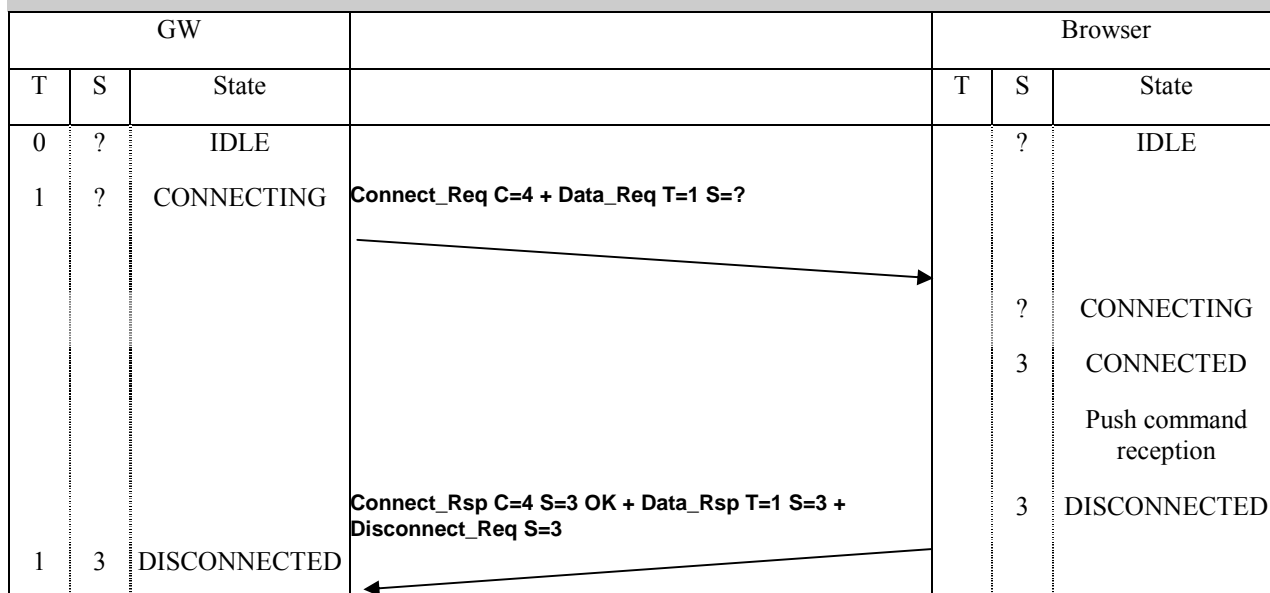
If the browser does not support multiple sessions, an administration session MUST NOT be interrupted by a high priority push session.

If the browser does not support multiple sessions, an established high priority push session CAN NOT be interrupted by any other type of session establishment.

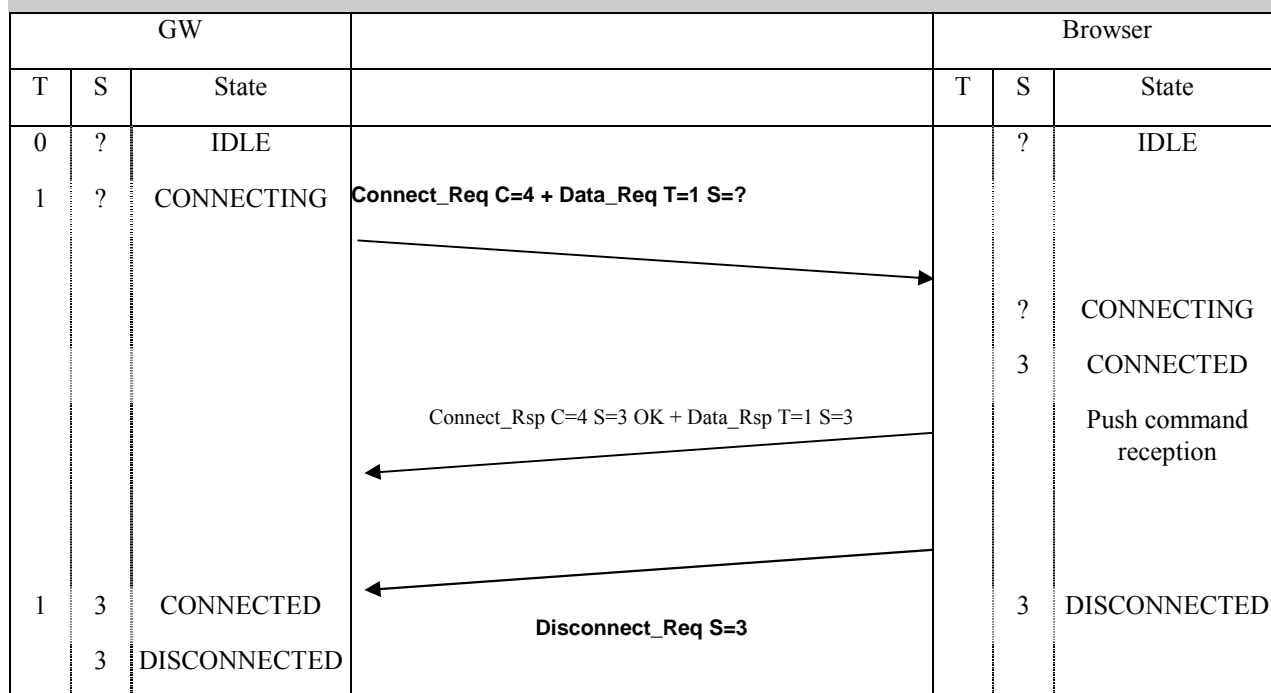
Additional information may be sent in EXPRESS_DATA just after the CONNECT_REQ message sent by the S@T gateway or after the CONNECT_RSP message sent by the S@T browser.

The gateway MUST send all the S@T 01.20 commands in a single S@T 1.20 message, transmitted in only one 03.48 packet. Commands can be answered in one or several S@T 1.20 messages, as illustrated below :

High priority push session exchanges (form 1)



High priority push session exchanges (form 2)



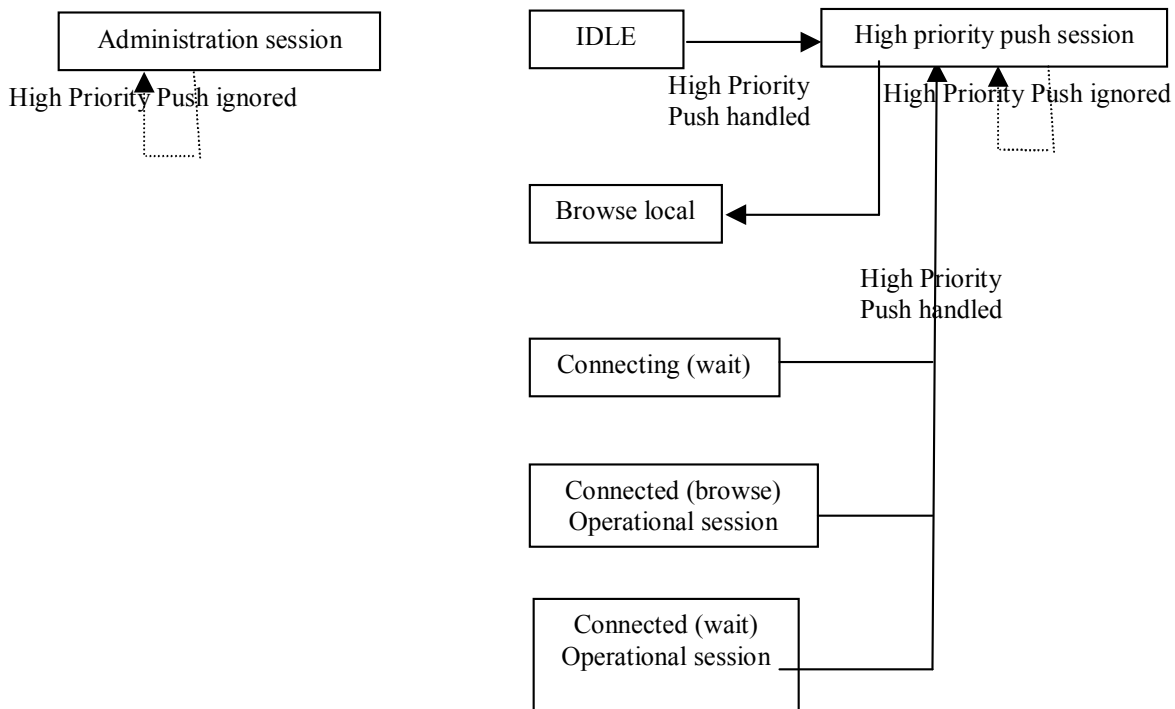
The browser MUST explicitly disconnect the gateway after the full “message” has been received.

8.3.2 Activation and S@T Browser States

The diagram below recaps the browser behavior:

Notes :

- Browse local state means that a deck is currently browsed without any session established with the gateway.
- Connecting (wait) state means that no session is established and a session establishment is requested.
- Connected (browse) state means that a session is established and a deck is currently browsed.
- Connected (wait) state means that a session is established and a deck is requested.
- This diagram is valid if multi session is not supported.



8.3.3 History Management

When the push session is established, the history stack in the browser is cleared if multiple session is not supported by the browser.

9 BROWSER CAPABILITIES MANAGEMENT ON THE GATEWAY

The S@T Gateway must be notified whether or not the browser supports low priority and/or high priority push and if these features are activated or deactivated by the end user.

The way this information is stored in the S@T Gateway is out of the specification.

If the S@T Gateway is notified that the low priority push feature (resp. high priority push feature) is not supported or not activated by the end user, then the S@T Gateway must not send any low priority push (resp. high priority push).

Each time the end user activates or deactivates the low or high priority push feature, the browser must update the browser profile. This browser profile will be sent in an EXPRESS_DATA message as defined in /Oper/ during:

- the next browsing session
- or optionally the current browsing session
- or optionally a newly established browsing session with the only purpose of sending the browser profile.

Other means to deactivate the push for a given user on the Gateway is out of scope of the specification.

When the S@T Gateway sending the push commands is not the same as the S@T Gateway receiving the browser profile, the transfer of the browser profile information between the Gateways is out of the scope of the specification.

10 LIST OF COMMAND TAGS

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

Tags defined in /SBC/ are in range [0x00..0x2F]

Command	Value
Push tag	0x42
Push Ack tag	0x43
Push Name tag	0x44

11 ANNEX: LIST OF CHANGE REQUESTS [informative]

CR Number	CR Identifier	Subject	Document Reference	Status / Meeting No.

Editor's note: he table above is left intentionally empty and no CR is applicable.

END OF DOCUMENT