


S@T 01.22 v4.0.0 (Release 2009)

S@T Operational Commands

Published by  **simalliance** now Trusted Connectivity Alliance

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2 TERMINOLOGY

2.1 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.

2.2 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

2.3 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

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

Pull protocol: based on SSP and used for transmitting operational commands

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.

3 LIST OF DOCUMENTS

/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
/Push/	S@T 01.23: S@T Push Commands

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



4 OVERVIEW

This document describes S@T pull protocol that is used for transmitting operational 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 pull protocol to perform operational commands.

5 DEFINITION OF NEEDS

The Operational Commands are used to request an URL from the gateway (browsing) and to manage bookmarks.

This document specifies the following operations concerning the communication between browser and gateway.

Information the browser can send to the gateway:

- Request a deck to browse (browsing)
- Bookmark management (bookmarks)

Information the gateway can send to the browser:

- Requested deck
- Stored bookmark index

6 GENERIC SIMPLE-TL[A]V FORMAT

Refer to paragraph 6 of /SBC/



7 PULL PROTOCOL

7.1 SSP Packet for Pull Protocol

Pull session establishment can be requested only from the S@T browser.

SSP packet for browser request shall contain:

- CONNECT_REQ command with the pull protocol Id (0x01 as defined in /SSP/) (only if the browser is disconnected);
- EXPRESS_DATA_REQ with the browser info (as defined in /SSP/) (only if the browser is disconnected);
- data request (GET_REQ, POST_REQ or DATA_REQ) with operational command as defined in 8.

SSP packet for the gateway response shall contain:

- CONNECT_RSP (only if the browser request contained CONNECT_REQ);
- data response (REPLY_RSP or DATA_RSP) with the gateway response as defined in 8 (only if the session is valid).

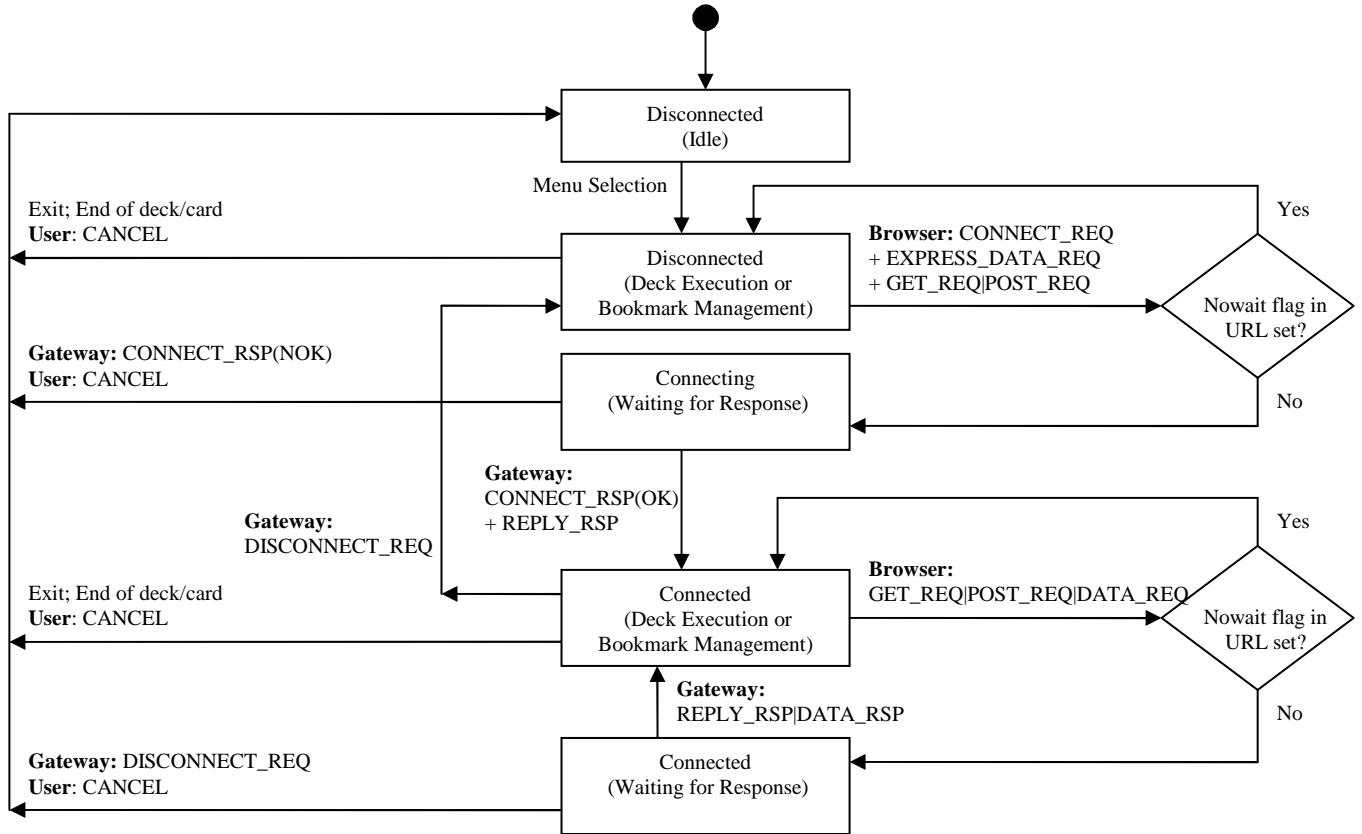
If the gateway gets a data request from the browser but the session Id is not valid (e.g. due to timeout), the gateway shall send DISCONNECT_REQ with the session Id from the browser request.

SSP packet for pull protocol shall be formatted as described above in this section.



Usage of pull protocol can be presented with the following state diagram for the S@T browser:

- This diagram is high level and shows which SSP packages shall be sent in which states.
- There are two different states. One state for SSP and one for Deck Execution (in diagram illustrated in brackets)





8 OPERATIONAL COMMANDS

8.1 BROWSING

Browsing operational commands are used to request online deck from the gateway. The browser request can contain URL reference or bookmark index of the online deck.

8.1.1 Browser Request (Get URL)

When the browser requests a deck from the gateway, it shall use a GET_REQ or POST_REQ command (see /SSP/) depending on the URL attribute flag (see “URL Reference” in /SBC/)

The information needed for request shall be encapsulated into the data of the GET_REQ/POST_REQ command as a TL[A]V:

<i>LENGTH</i>	<i>VALUE</i>	<i>DESCRIPTION</i>	<i>M/O</i>
1	0x40	Browser Request tag	M
1-3	A + B	Length of subsequent data (length coded in BER-TLV)	M
A	URL Reference TL[A]V (see /SBC/)	URL Reference element (see /SBC/).	M
B	URL Reference TL[A]V (see /SBC/)	URL Reference element (see /SBC/) containing Deck Id of the deck which browser request has been sent from. This field is present if SendReferer attribute in the previous URL (the URL Reference one line above) is set.	O



8.1.2 Browser Request (Get Bookmark)

When the browser requests a bookmarked deck, the following TL[A]V shall be encapsulated into the data of GET_REQ command:

LENGTH	VALUE	DESCRIPTION	M/O
1	0xC0	Browser Request tag	M
1-3	2	Length of subsequent data (length coded in BER-TLV)	M
1	0x40	Attribute byte: <p style="text-align: center;"> b6 -GetBookmarkedDeck: 0: Execute a Get/Post request using the specified URL reference. 1: Execute a Get request using the bookmark index (see section 8.2). </p>	M
1	0x00 – 0xFE	Bookmark Index element (see section 8.2). This field is present if and only if GetBookmarkedDeck is set. If GetBookmarkedDeck is not set, the command structure is as described in 8.1.1	M

8.1.3 Gateway Response

The gateway response to the browser request is the deck to execute. A REPLY_RSP message contains in its data the Deck TL[A]V described in /SBC/.



8.2 BOOKMARKS

The support of bookmarks is optional.

The browser asks the gateway for “deck URL – bookmark index” association storage on the gateway. When the current online deck has to be bookmarked, the browser sends a request to the gateway with the deck Id of the current deck and the index in the bookmark list. The gateway then stores the association. When the user wants to go to a previously bookmarked deck, the browser sends a Get request with the bookmark index (see 8.1.2).

8.2.1 Browser Request (Store Bookmark)

The bookmark request is encapsulated into the data of a DATA_REQ command:

<i>LENGTH</i>	<i>VALUE</i>	<i>DESCRIPTION</i>	<i>M/O</i>
1	0x41	Bookmark tag	M
1-3	A + 1	Length of subsequent data (length coded in BER-TLV)	M
A	URL Reference TL[A]V (see /SBC/)	URL Reference element with deck Id of the current deck	M
1	0x00 – 0xFE	Index in the browser bookmark list	M

8.2.2 Gateway Response

The bookmark response is encapsulated in the data of a DATA_RSP command:

<i>LENGTH</i>	<i>VALUE</i>	<i>DESCRIPTION</i>	<i>M/O</i>
1	0x41	Bookmark tag	M
1	3	Length of subsequent data (length coded in BER-TLV)	M
3	Inline Value TL[A]V (see /SBC/)	Inline Value TL[A]V containing in its value index equal to the index sent by the browser.	M

NOTE: The 0xFF index value is reserved for gateway error management.



9 PULL SESSION FLOWCHARTS

The aim of these charts is to give simple examples of pull protocol use:

FC 1:	Use of GET_REQ/POST_REQ and REPLY_RSP
FC 2:	Cancelling connection
FC 3:	Cancelling connection with reconnection
FC 4:	Gateway refusing connection
FC 5:	Browser initiating disconnection
FC 6:	Gateway initiating disconnection

Following notation is used in these charts:

C: Connection Id

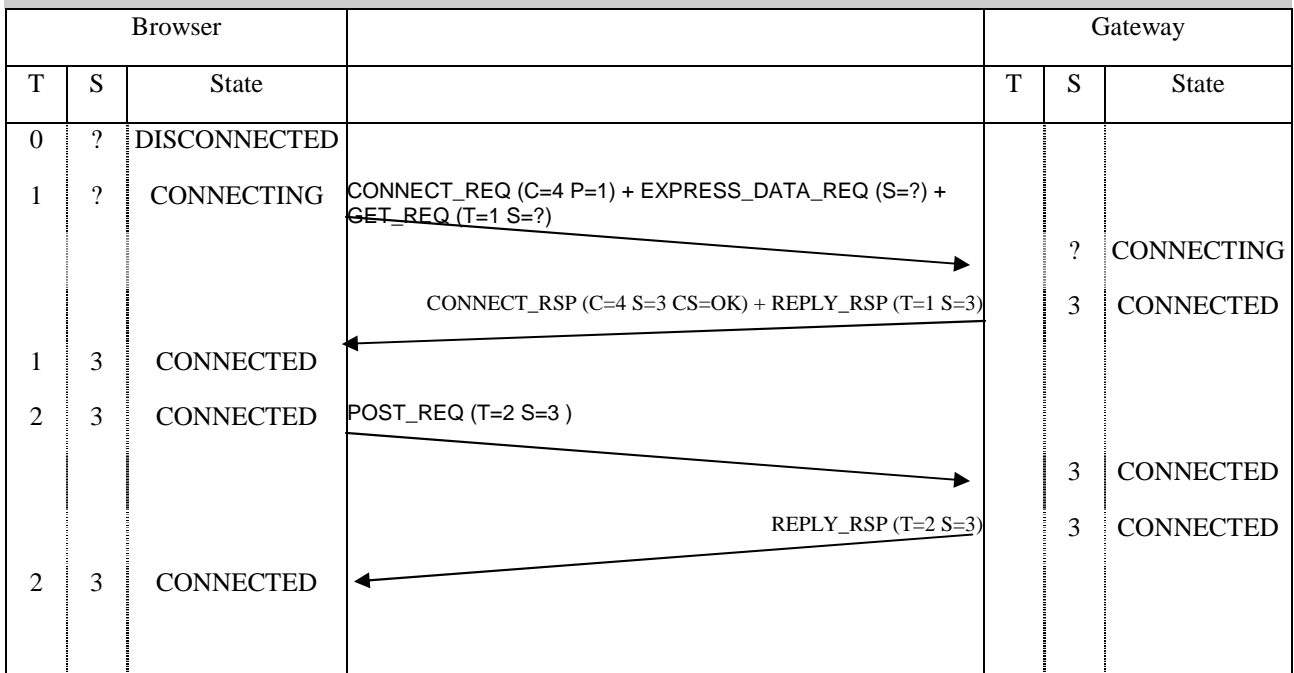
CS: Connection Status

P: Protocol Id

S: Session Id

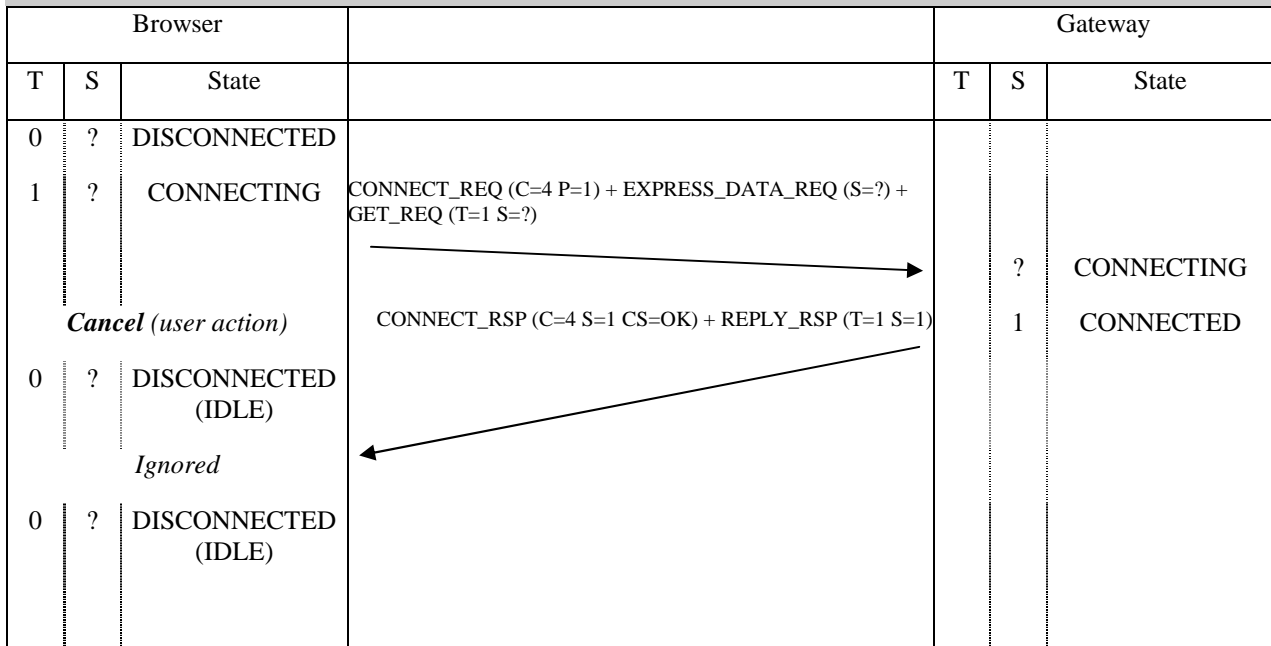
T: Transaction Id

FC 1: Use of GET_REQ/POST_REQ and REPLY_RSP

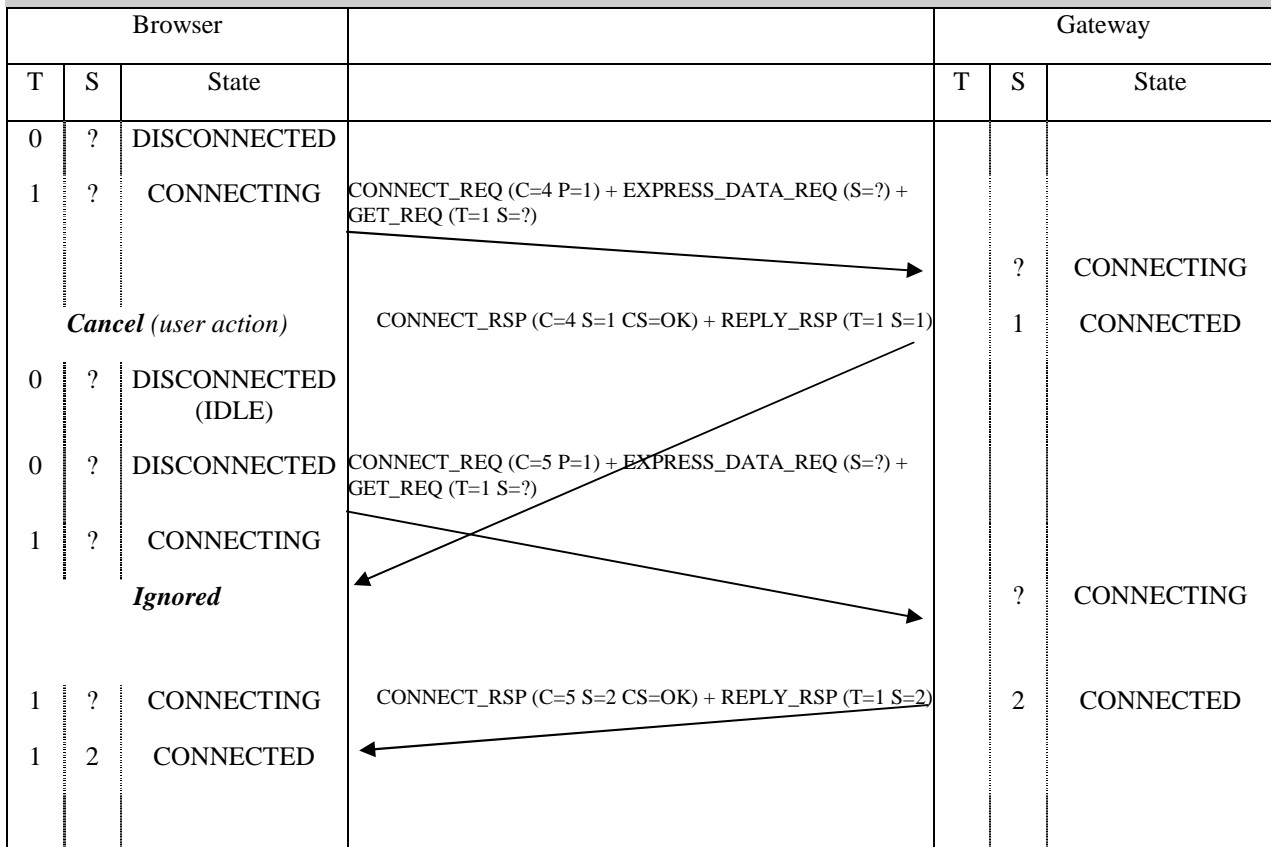




FC 2: Cancelling connection

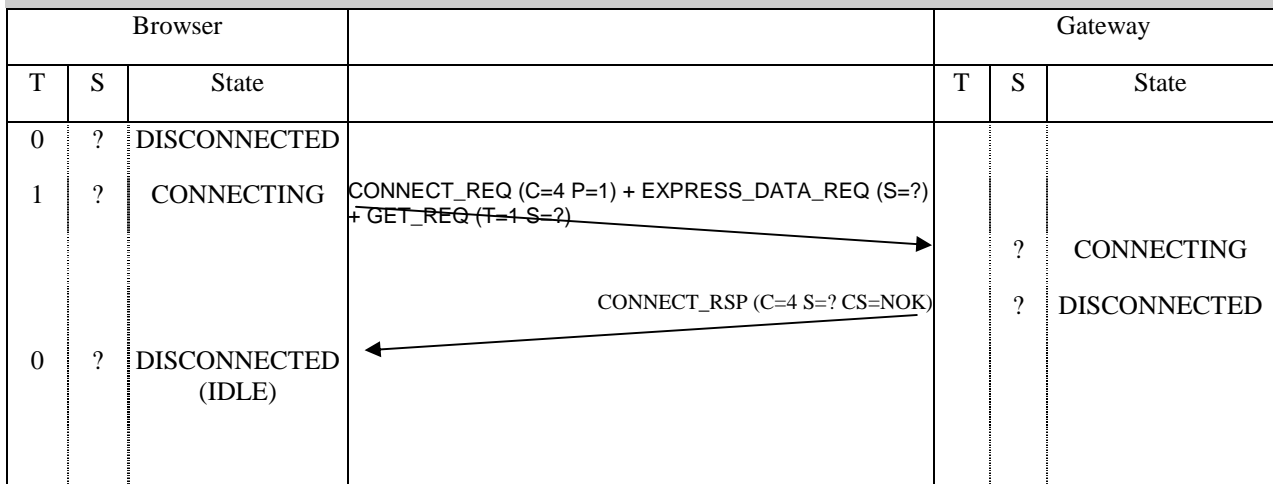


FC 3: Cancelling connection with reconnection

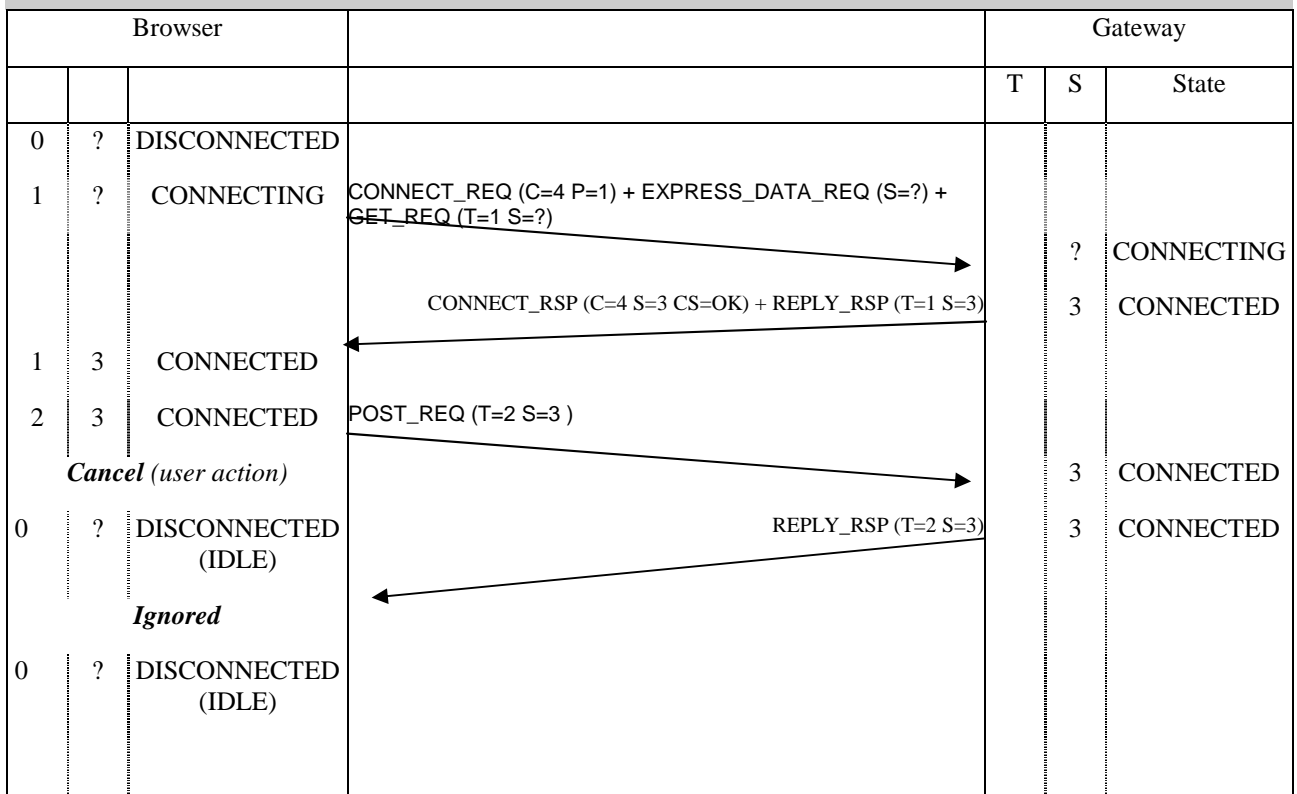




FC 4: Gateway refusing connection

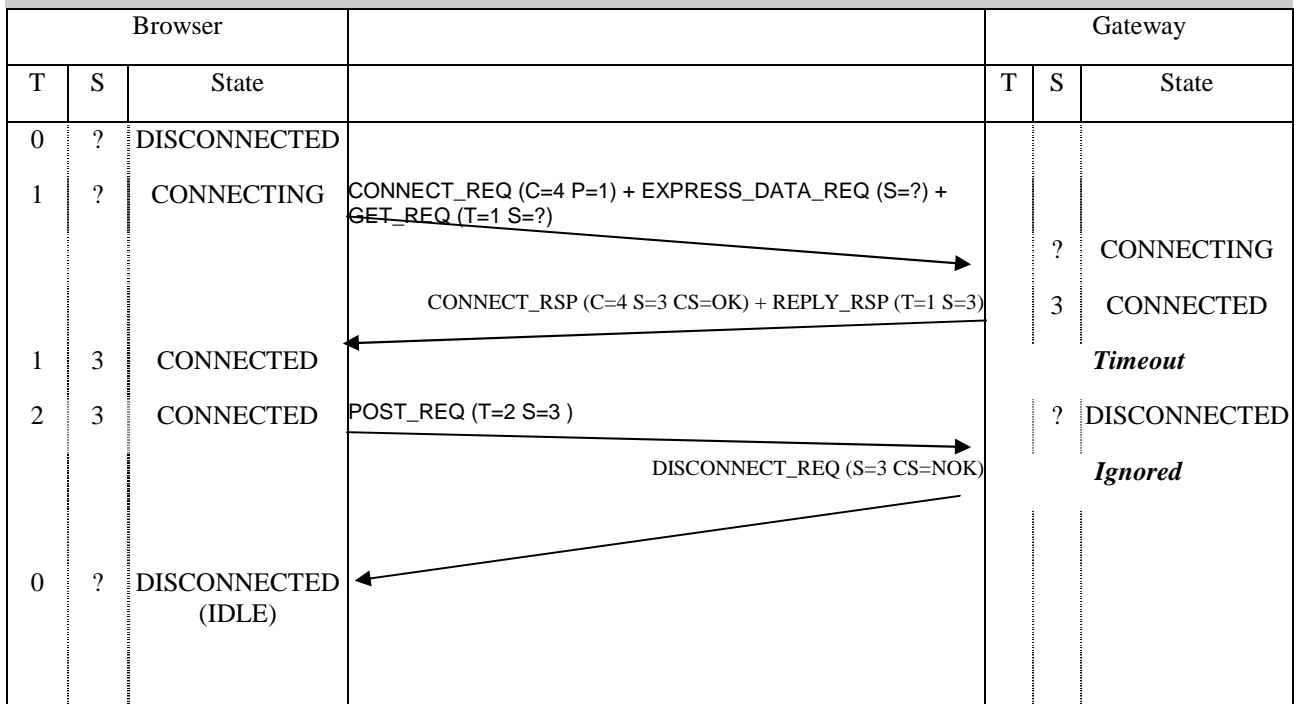


FC 5: Browser initiating disconnection





FC 6: Gateway initiating disconnection





10 LIST OF COMMAND TAGS

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

Command	Value
Browser Request tag	0x40
Bookmark tag	0x41

Unsupported tags must be ignored.



11 Annex : OPTIONAL FEATURES

The following features are optional for the S@T browser:

- bookmarks.



12 HISTORY

Document history		
Release	Approved by	Comment
1.0.0	SIM Alliance TDG	Document S@T 01.70 renamed to 01.22
1.0.1	SIM Alliance TDG	Changes after meeting 18 CRs : 10017, 10042
1.0.2	SIM Alliance TDG	Changes after meeting 18 ad hoc CRs: 10051 and 10031
1.0.3	SIM Alliance TDG	Editorial changes for Release 2000-6
1.0.4	SIM Alliance TDG	Add CRs: 10070, 10074, 10075
1.0.5	SIM Alliance TDG	Add CR 10120
1.0.6	SIM Alliance TDG	Editorial changes at meeting #30 for publication
2.0.0	SIM Alliance TDG	Editorial changes and clarifications (CR 2004-028) for publication
3.0.0	SIM Alliance TDG	Editorial modifications Release 2007 publications
4.0.0	SIM Alliance TDG	S@T Task Force: Review of Spec: Major editorial modifications for clarification <ul style="list-style-type: none">- Selected one implementation for bookmark management (S@T browser must store the index and the S@T gateway must keep the index/URL association)- Defined "SendReferer" attribute usage- Removed multi session management



12.1 Annex: LIST OF CHANGE REQUESTS [informative]

CR Number	CR Identifier	Subject	Document Reference	Status / Meeting No.
10017	GEMPLUS-WG1-MAY-2000#3	PRECISE DEFINITION TO “TEMPORARY DECK BUFFER SIZE”	S@T 1.21 V1.00	Accepted #17
10031	GEMPLUS-WG1-MAY-2000#18.3	RFU INDICATION AFTER FOLLOW BIT IN ATTRIBUTE FIELD	S@T 1.22 V1.0.1	Accepted #18
10042	GEMPLUS-WG1-MAY-2000#18.7	OPTIONAL / MANDATORY FEATURES	S@T 1.22 V1.0.1	Accepted #18
10051	SLB-WG1-JUNE-2000#19.1	MANDATORY MESSAGE RESPONSE FOR BOOKMARK	S@T 1.22 V1.0.1	Accepted #18a
10070	SCHLUMBERGE R-WG1 – AUGUST-2000#14	BOOKMARKS: management of the two modes	S@T 01.22 V1.0.3	Accepted #20
10074	SCHLUMBERGE R –WG1 – AUGUST 2000#12	PULL: Browser Request (Same as 10068 which has been accepted with editorial changes. Changes appear in 10074)	S@T 01.22 V1.0.3	Accepted #25
10075	SCHLUMBERGE R –WG1 – AUGUST 2000#15	BOOKMARKS: Gateway response (Same as 10071 but now with impact to WG2. No content changes)	S@T 01.22 V1.0.3	Accepted #25
10120	GEMPLUS-WG1-MAY-2001#28-3	Proposal for state diagrams in 1.21/1.22/1.23	S@T 01.22 V1.0.4	Accepted #29
2004-028	CRG&D06_01.22_Browse_7.1.1-S@T_Specs2003	A POST_REQUEST cannot request a deck from gateway	S@T 1.21 V2.0.0	Accepted (email vote 9 th March 2004)