



MediaTek

Socket (SOC)

Message Sequence Chart (MSC) Specification

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Revision History

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1 Introduction

This document introduces the Message Sequence Chart (MSC) for Socket (SOC).

1.1 Overview

SOC provides a Socket API based on Berkley Socket API for applications. Applications can configure the socket to either blocking (default) or non-blocking mode. Moreover, applications can also configure the socket with Asynchronous mode which SOC will send messages to notify applications when certain event occurs.

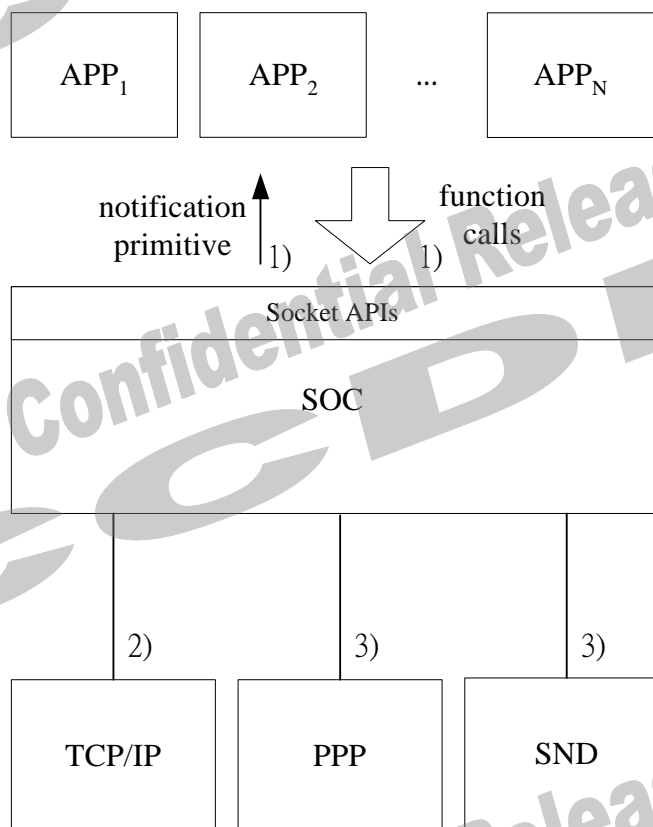


Figure 1 SOC Architecture

- Interface 1) is used by applications
- Interface 2) is used by TCP/IP
- Interface 3) is used by PPP/SND for FLC

1.2 References

The following documents are the references of the present documents.

■

1.3 Terms and Definitions

Abbreviation/Term	Expansion/Definition
SOC	Socket
ABM	Application Bearer Manager
APP	Application
SND	SNDTCP

2 Conventions

2.1 MSC numbering rule

Module + group(2 digits) + class(2 digits) + item(3 digits), e.g. LAPDM0102003, MM0000001

The category of class are listed as follows:

Value	Meanings	Comments
00	Successful	The case of receiving CNF response
01	Failed	The case of receiving REJ response
02	Collision	The collision case defined in spec.
03~09	User defined	

3 Message Sequence Chart

3.1 Bearer Activation

3.1.1 SOC0100001: Account Activation (account is closed)

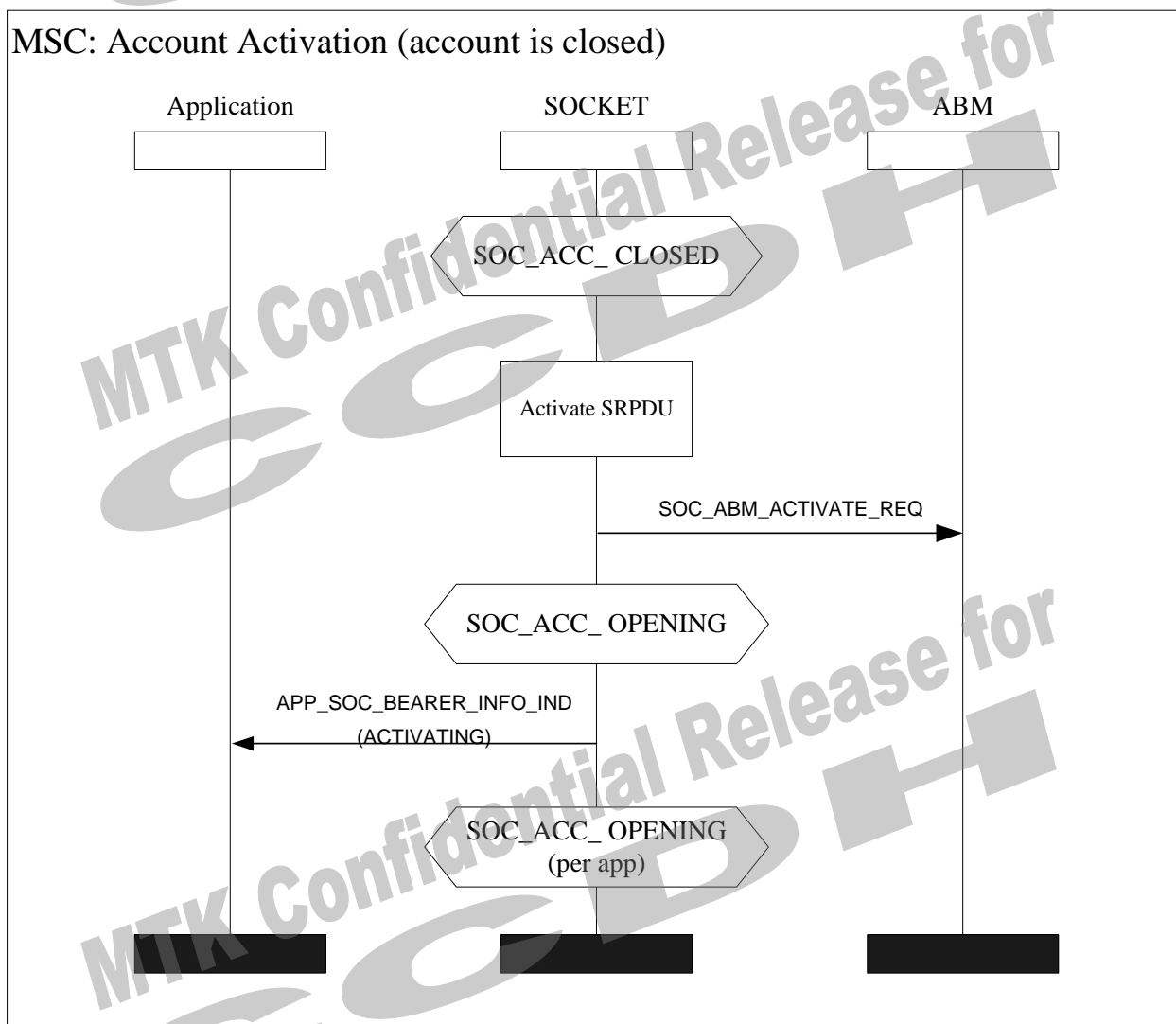
Description:

Send bearer activate request to ABM and send bearer info indication to application that bearer is activating now.

Reference:

Preamble:

MSC: Account Activation (account is closed)



3.1.2 SOC0100002: Receive ABM Activation Confirmation (successful case)

Description:

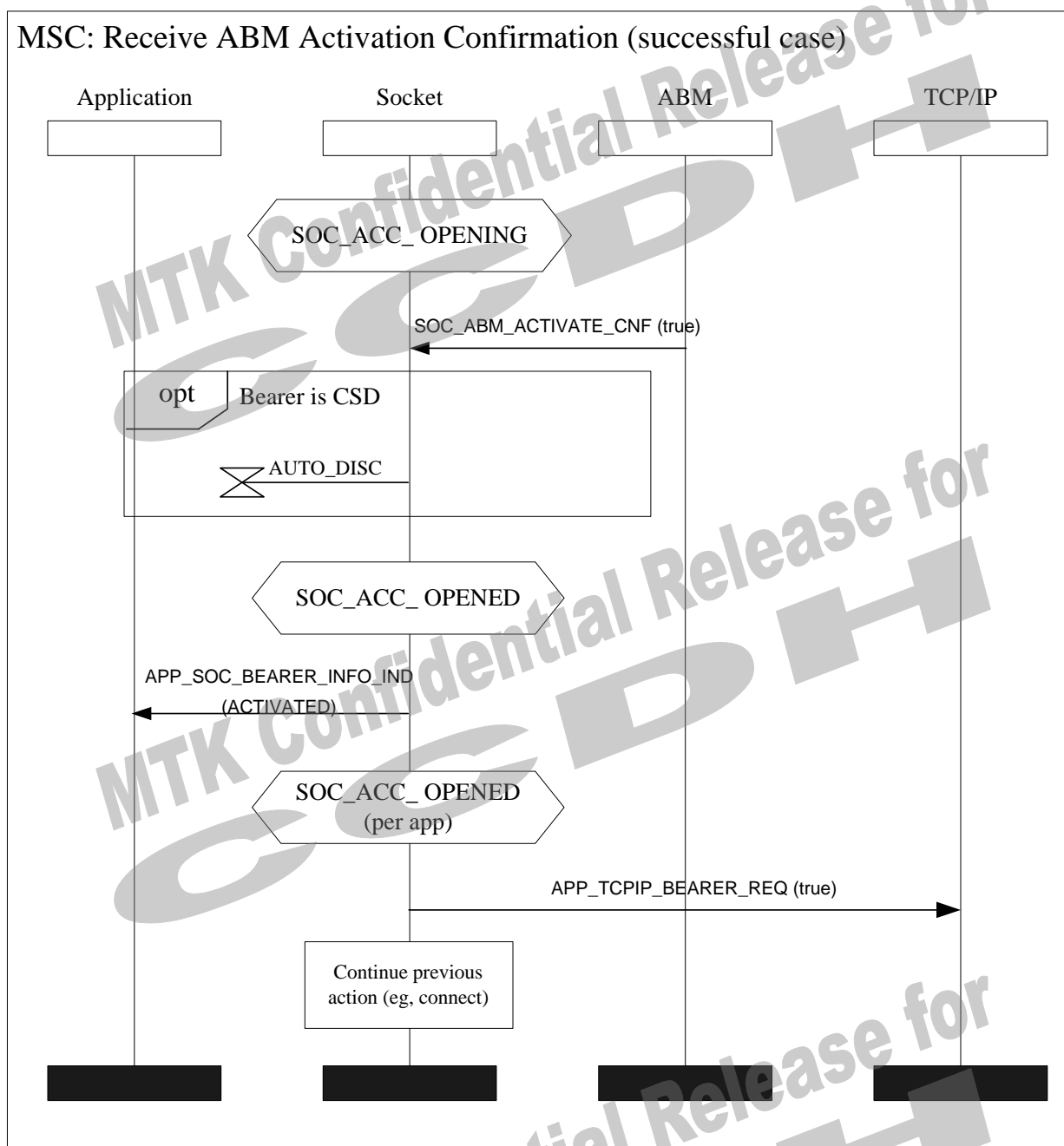
Receive ABM Activation confirmation which indicates Bearer is activated successfully. Socket will activate SRPDU and send bearer info indication to notify application(s) that bearer is activated successfully.

Reference:

Preamble:

SOC0100001

MSC: Receive ABM Activation Confirmation (successful case)



3.1.3 SOC0101003: Receive ABM Activation Confirmation (failed case)

Description:

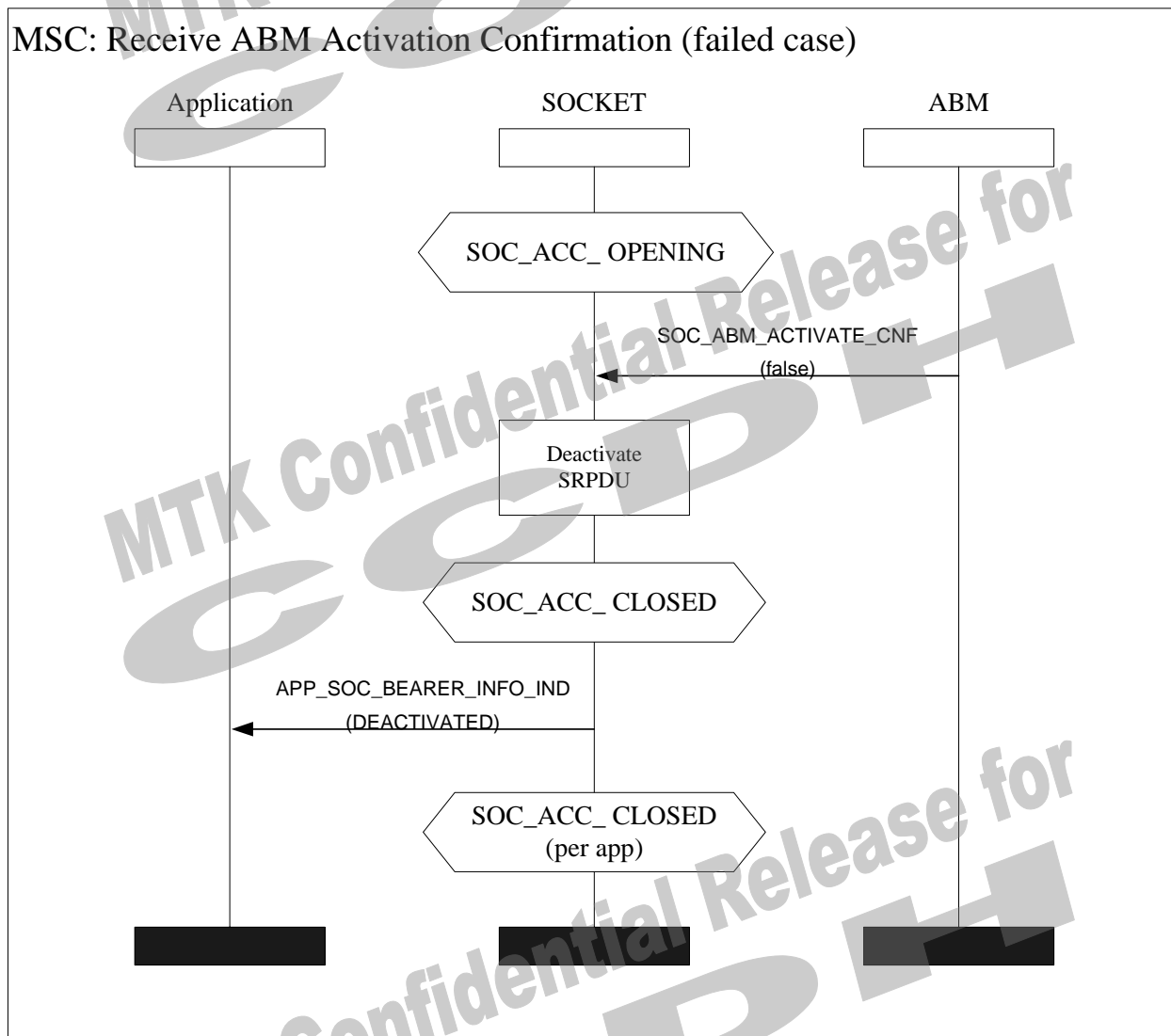
Failed to activate bearer. Socket will deactivate SRPDU and send bearer info indication to notify application(s) that bearer is failed to activate.

Reference:

Preamble:

SOC0100001

MSC: Receive ABM Activation Confirmation (failed case)



3.1.4 SOC0100004: Account Activation (account is opened)

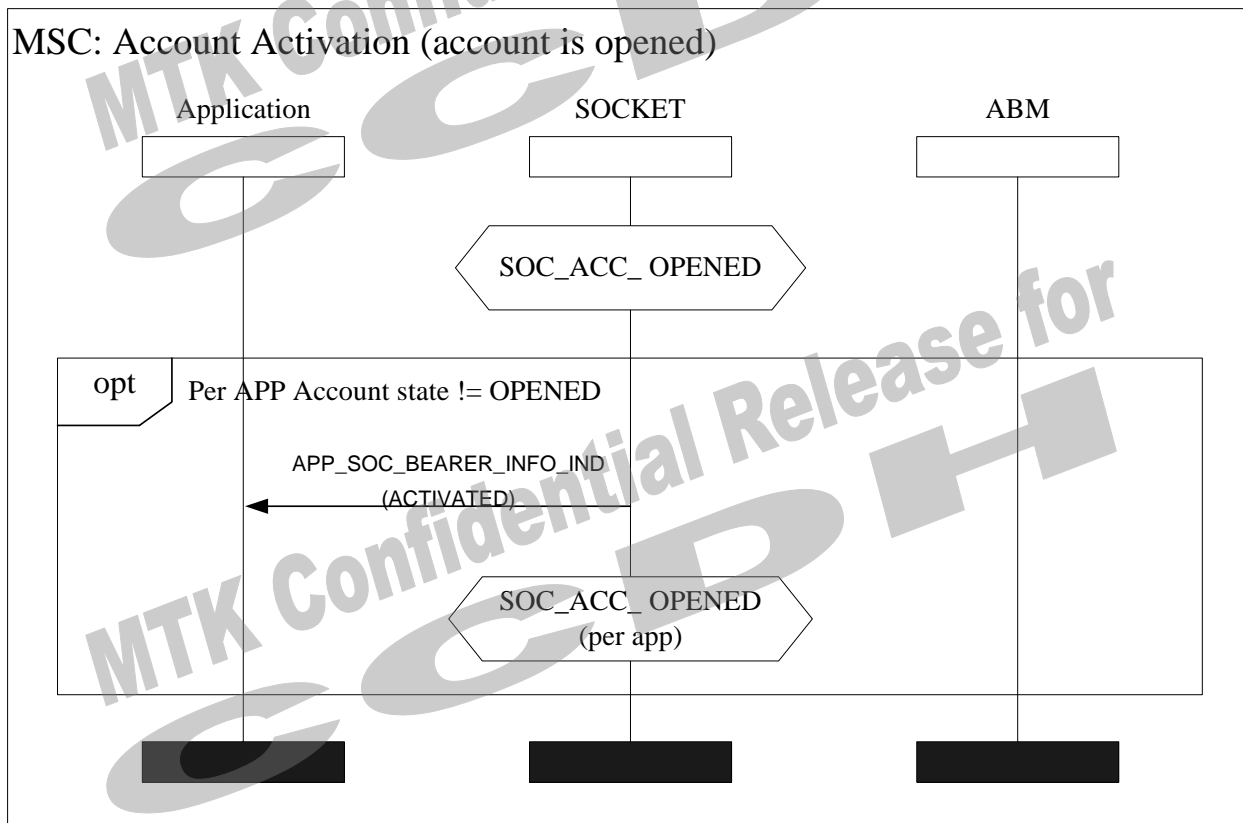
Description:

Bearer was already opened and send bearer info indication to notify app that bearer is activated.

Reference:

Preamble:

MSC: Account Activation (account is opened)



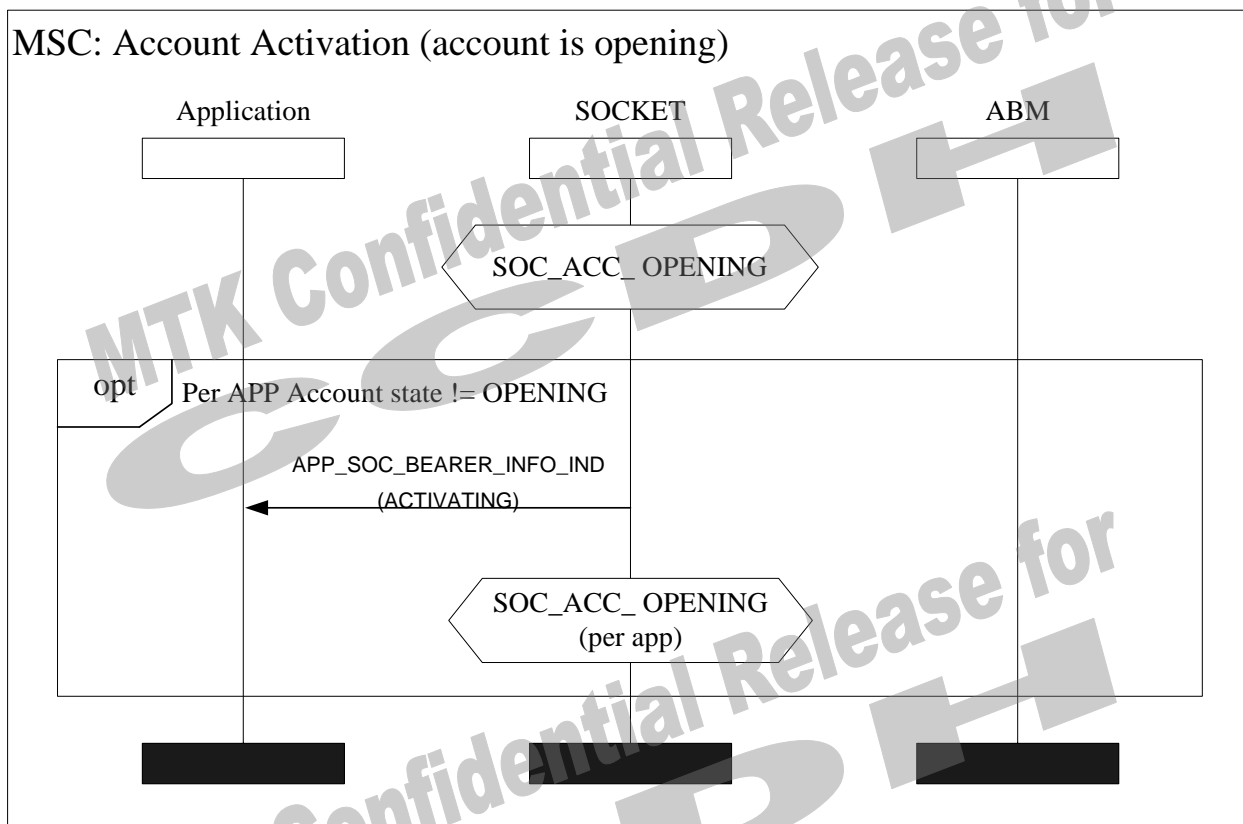
3.1.5 SOC0100005: Account Activation (account is opening)

Description:

Bearer is opening and send bearer info indication to notify app that bearer is activating.

Reference:

Preamble:



3.1.6 SOC0100006: Account Activation (account is closing)

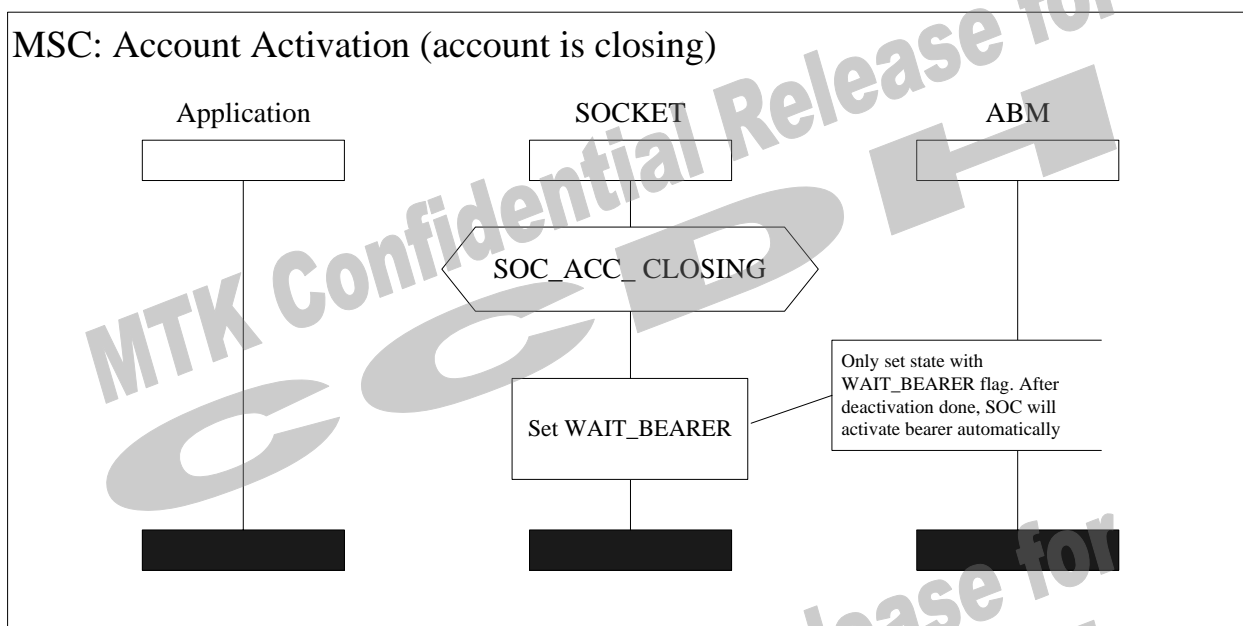
Description:

Bearer state is closing and set a flag. After current deactivation finished, perform activation again.

Reference:

Preamble:

MSC: Account Activation (account is closing)



3.1.7 SOC0100007: Bearer Activation

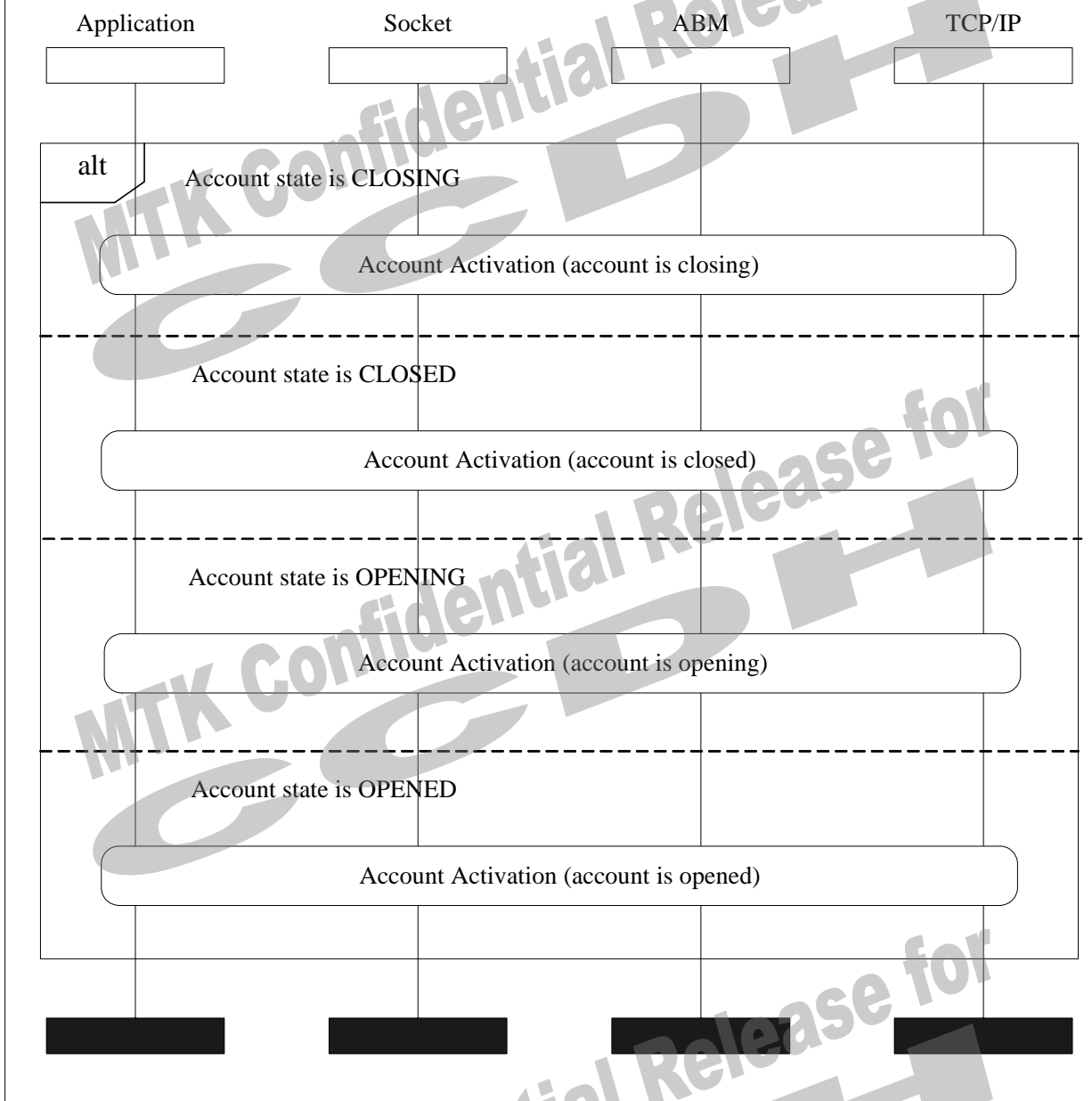
Description:

Send or Connection will trigger Bearer Activation if the bearer is not activated yet.

Reference:

Preamble:

MSC: Bearer Activation



3.2 Bearer Deactivation

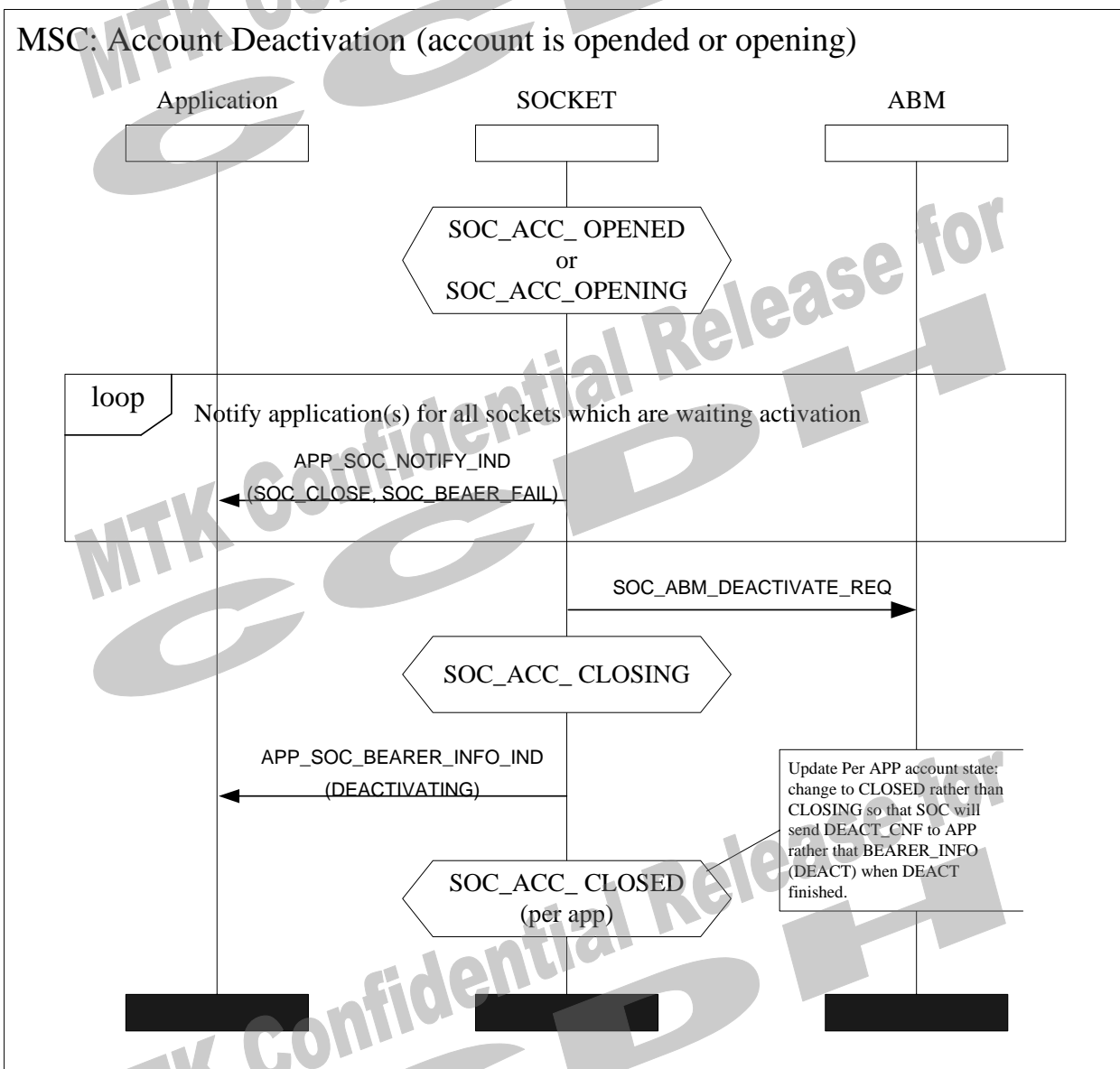
3.2.1 SOC0200001: Account Deactivation (account is opened or opening)

Description:

Send bearer deactivate request to ABM and wait confirmation.

Reference:

Preamble:



3.2.2 SOC0200002: Receive ABM Deactivation Confirmation

Description:

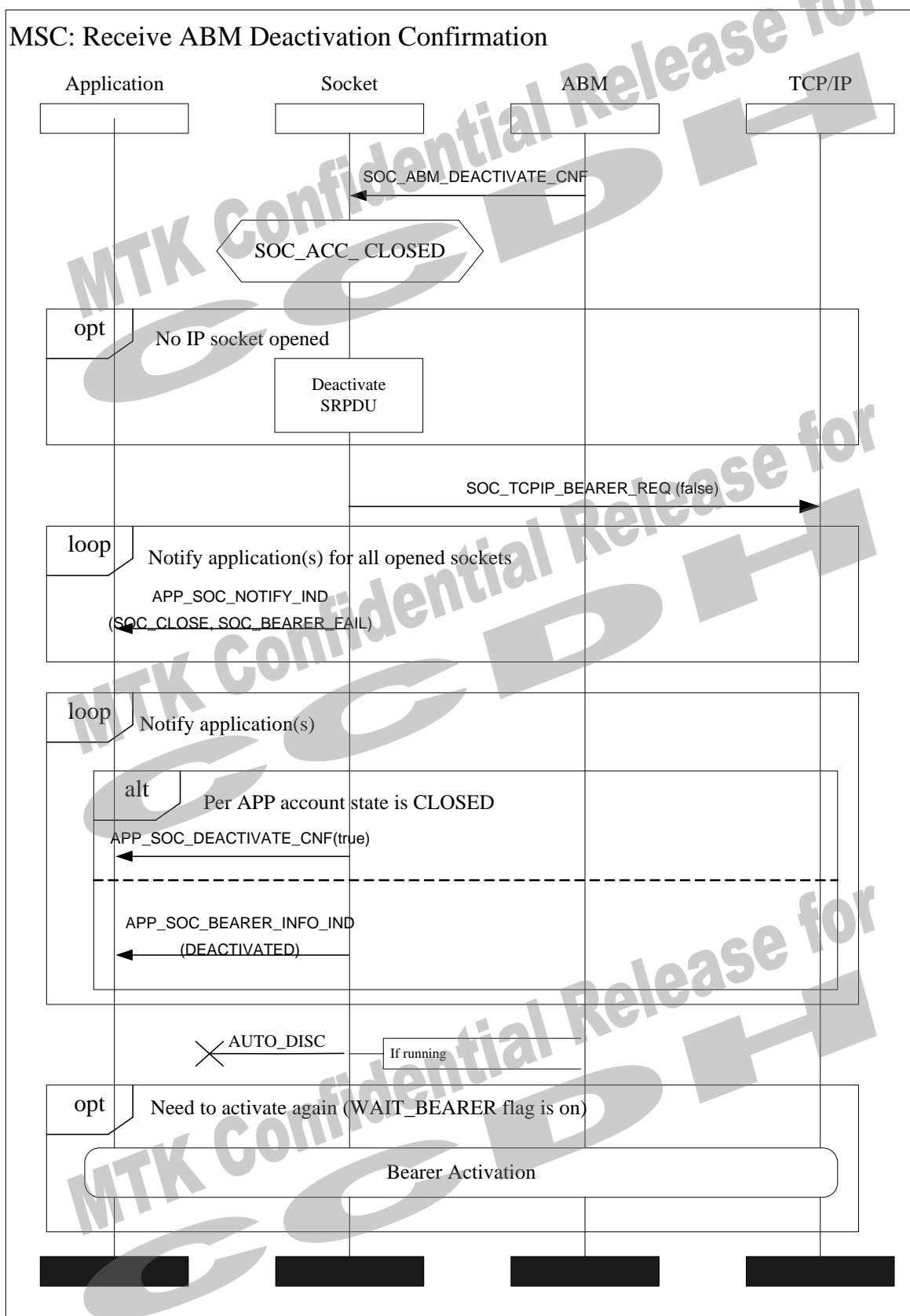
Receive Deactivation confirmation from ABM.

Reference:

Preamble:

SOC0200001

MSC: Receive ABM Deactivation Confirmation



3.2.3 SOC0200003: Bearer Deactivation

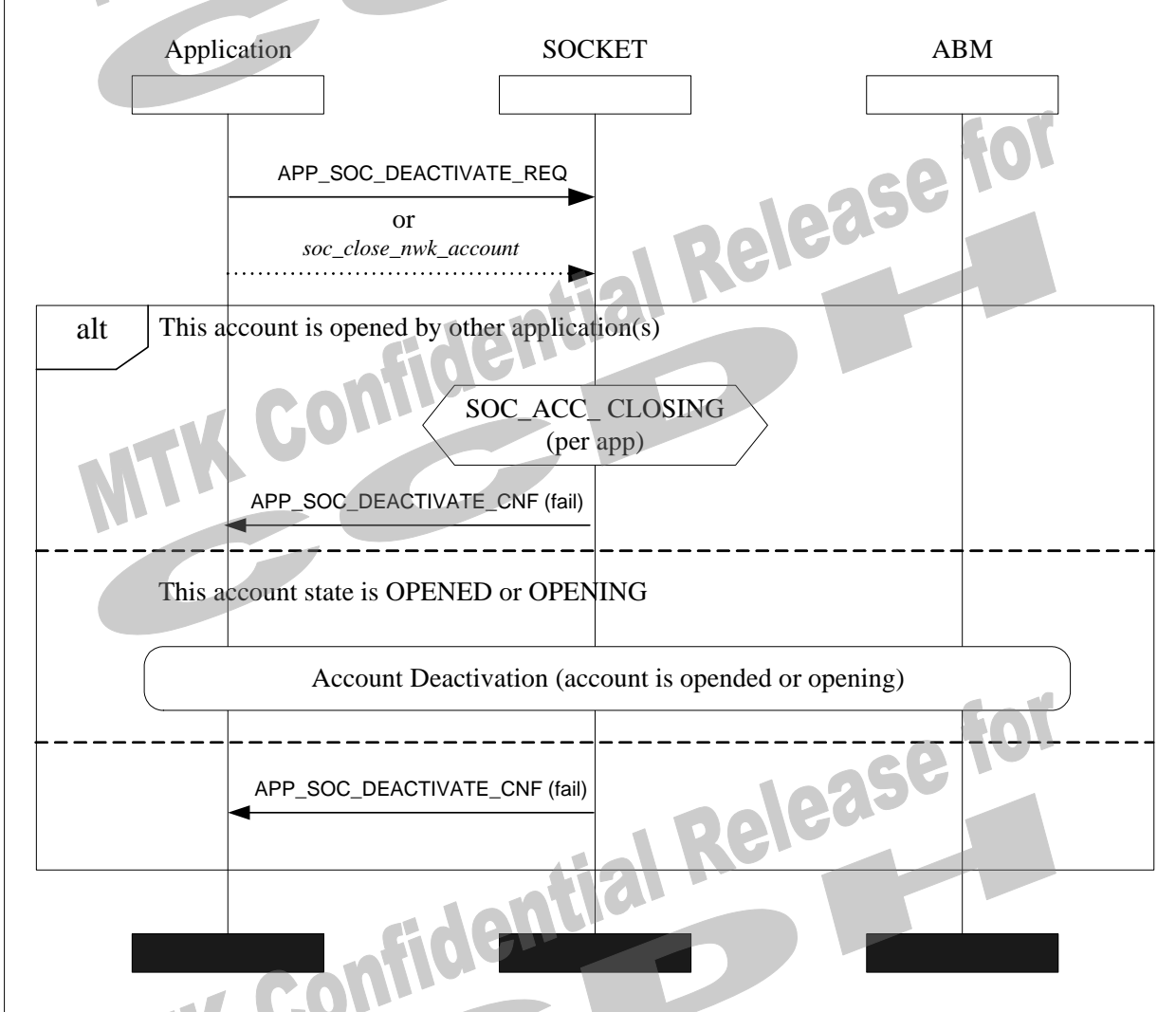
Description:

Application wants to deactivate the bearer by sending DEACTIVATE_REQ or calling soc_close_nwk_account().

Reference:

Preamble:

MSC: Bearer Deactivation



3.3 Create Socket

3.3.1 SOC0300001: Create Socket (initial)

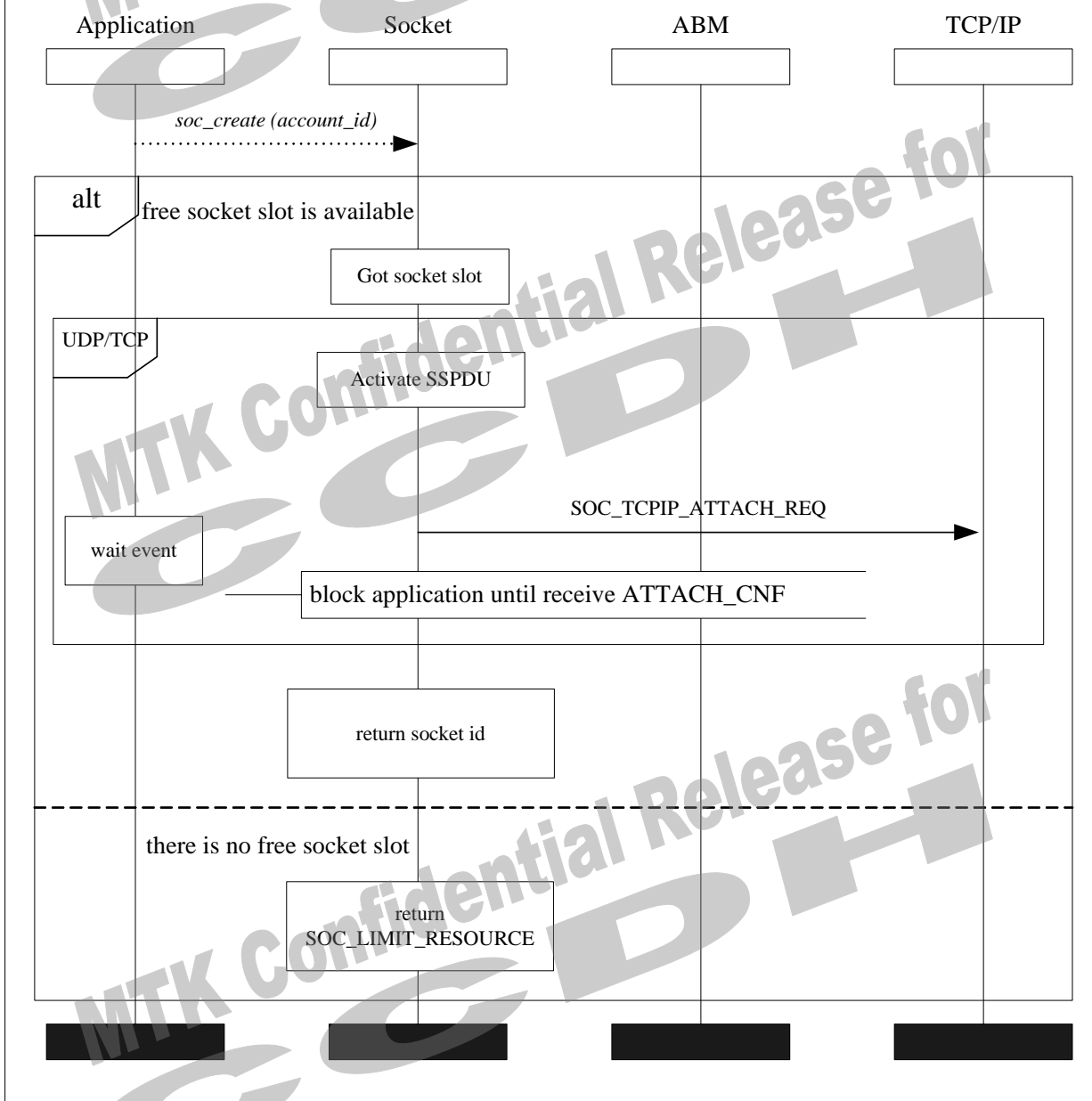
Description:

Get a free socket slot from socket pool and trigger the bearer activation if required.

Reference:

Preamble:

MSC: Create Socket (initial)



3.3.2 SOC0300002: Receive TCPIP Attach Confirmation (successful case)

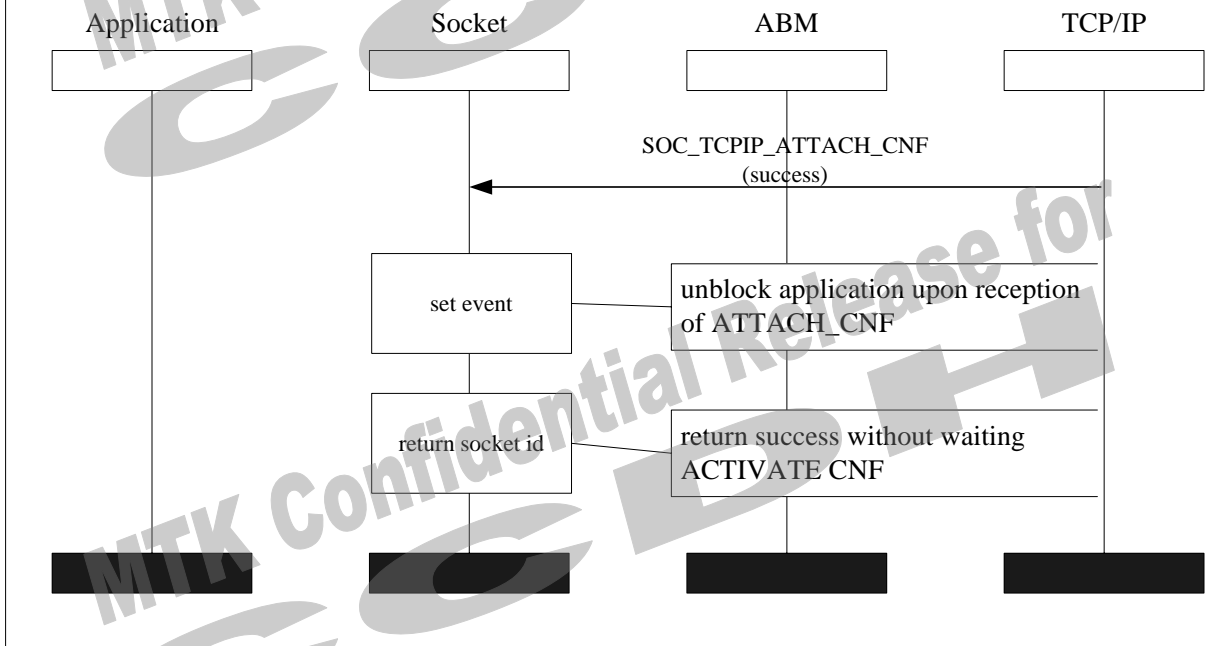
Description:

Receive TCPIP Attach confirmation indicates operation is succeeded.

Reference:

Preamble:

SOC0300001

MSC: Receive TCPIP Attach Confirmation (successful case)**3.3.3 SOC0300003: Receive TCPIP Attach Confirmation (failed case)**

Description:

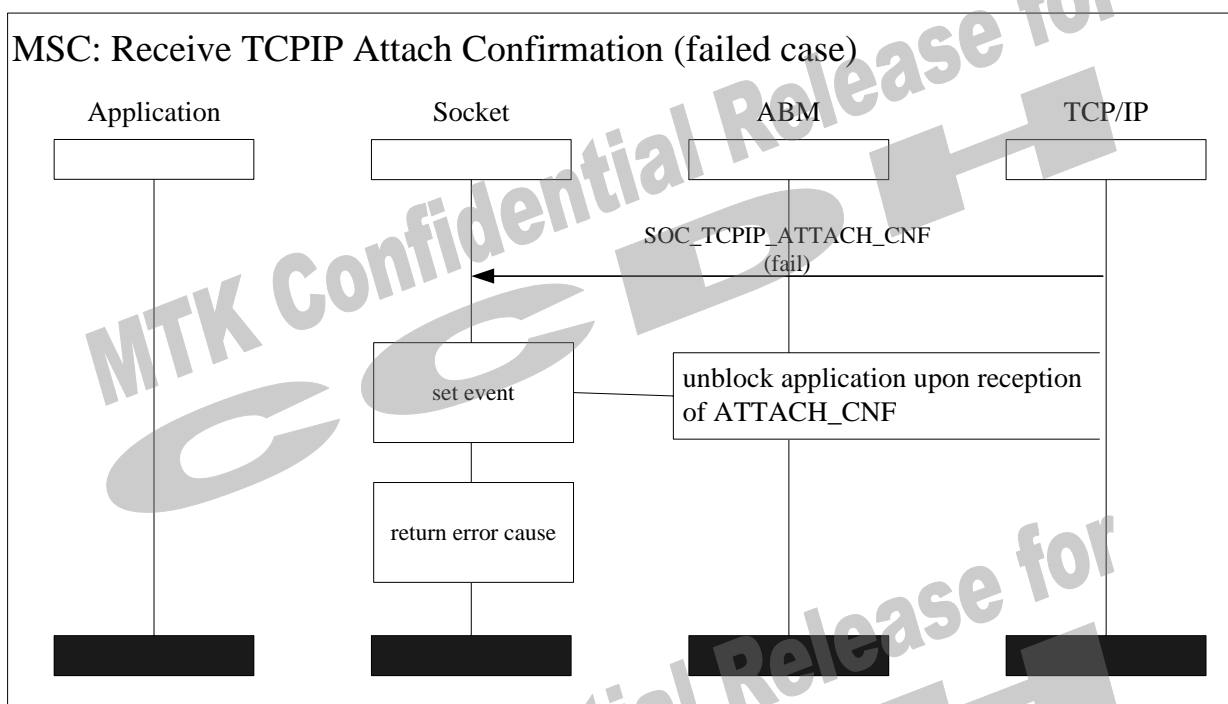
Receive TCPIP Attach confirmation indicates operation is failed.

Reference:

Preamble:

SOC0300001

MSC: Receive TCPIP Attach Confirmation (failed case)



3.4 Close Socket

3.4.1 SOC0400001: Close IP Socket (initial)

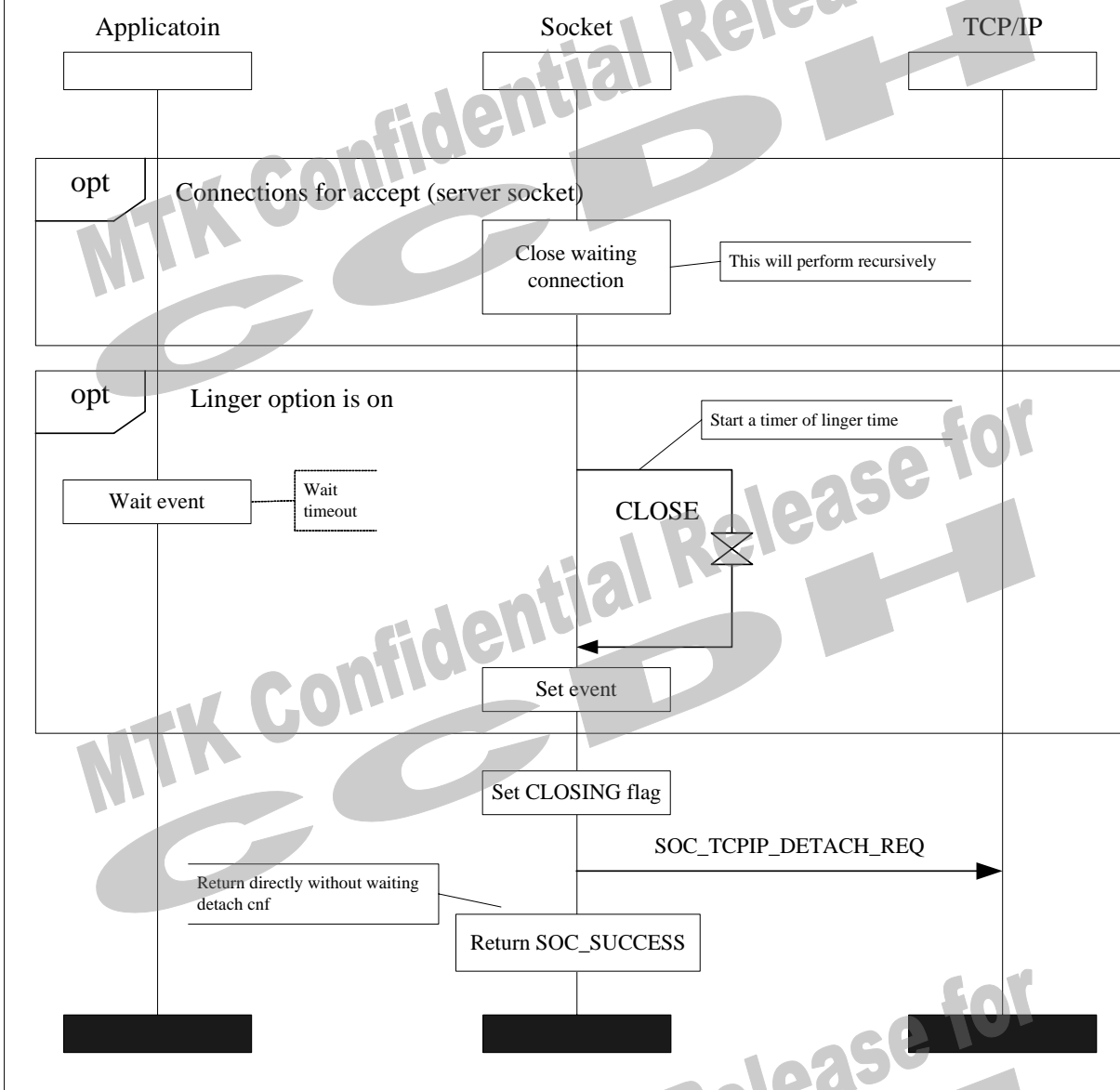
Description:

Close IP socket.

Reference:

Preamble:

MSC: Close IP Socket (initial)



3.4.2 SOC0400002: Receive TCPIP Detach Confirmation

Description:

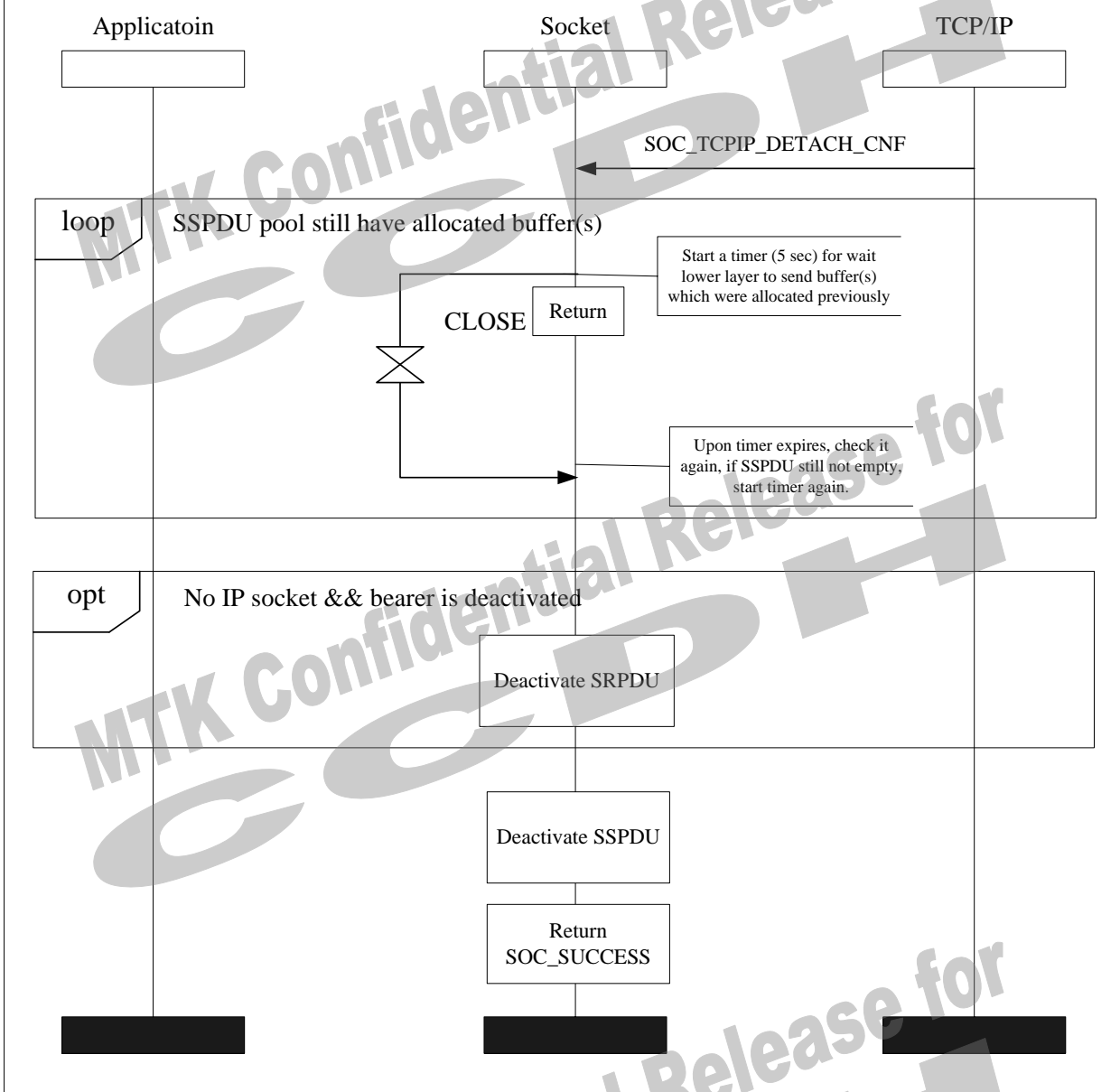
Receive TCPIP Detach confirmation.

Reference:

Preamble:

SOC0400001

MSC: Receive TCPIP Detach Confirmation



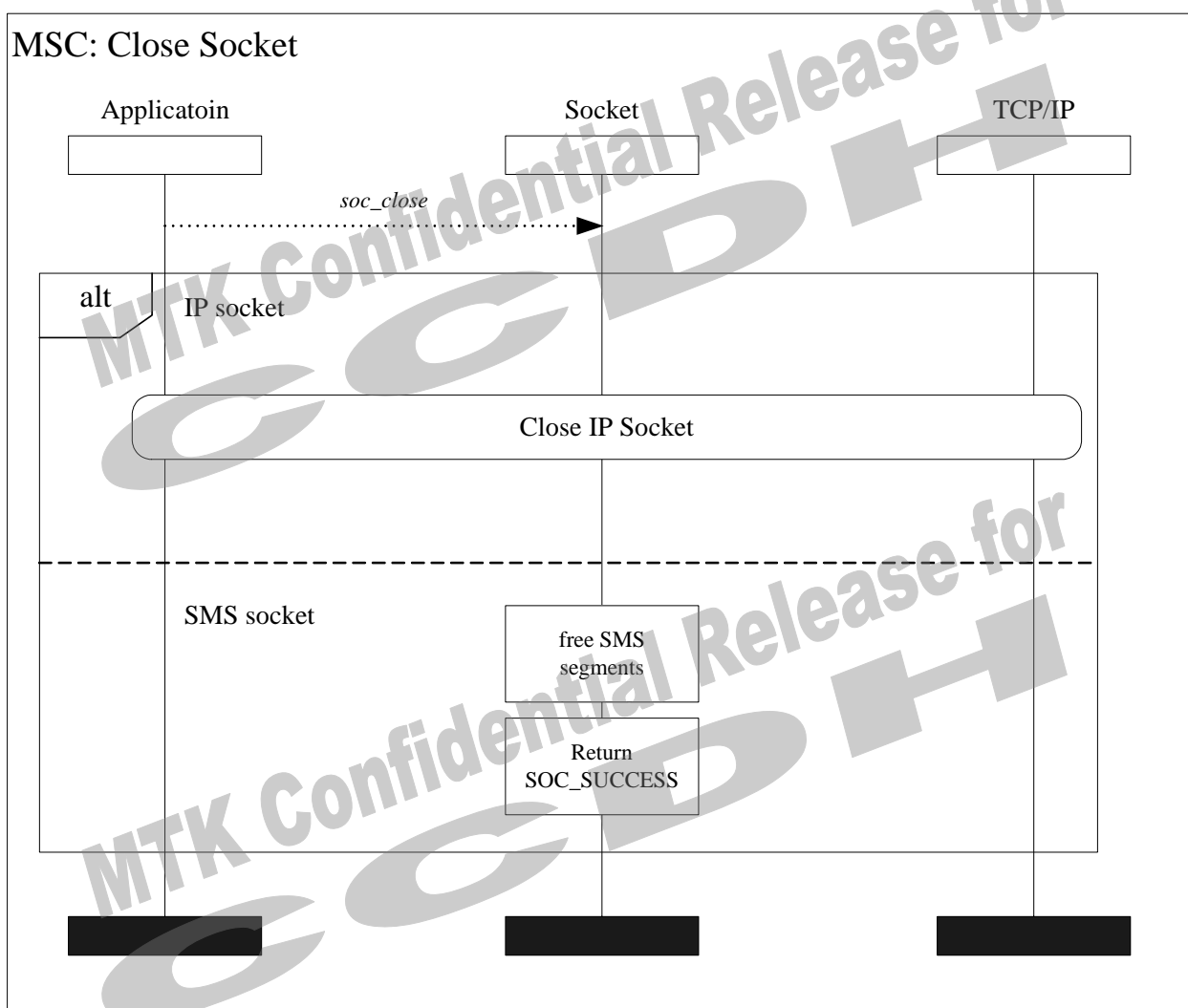
3.4.3 SOC0400003: Close socket

Description:

Close socket, mark the socket slot as free.

Reference:

Preamble:



3.5 Connection Establishment

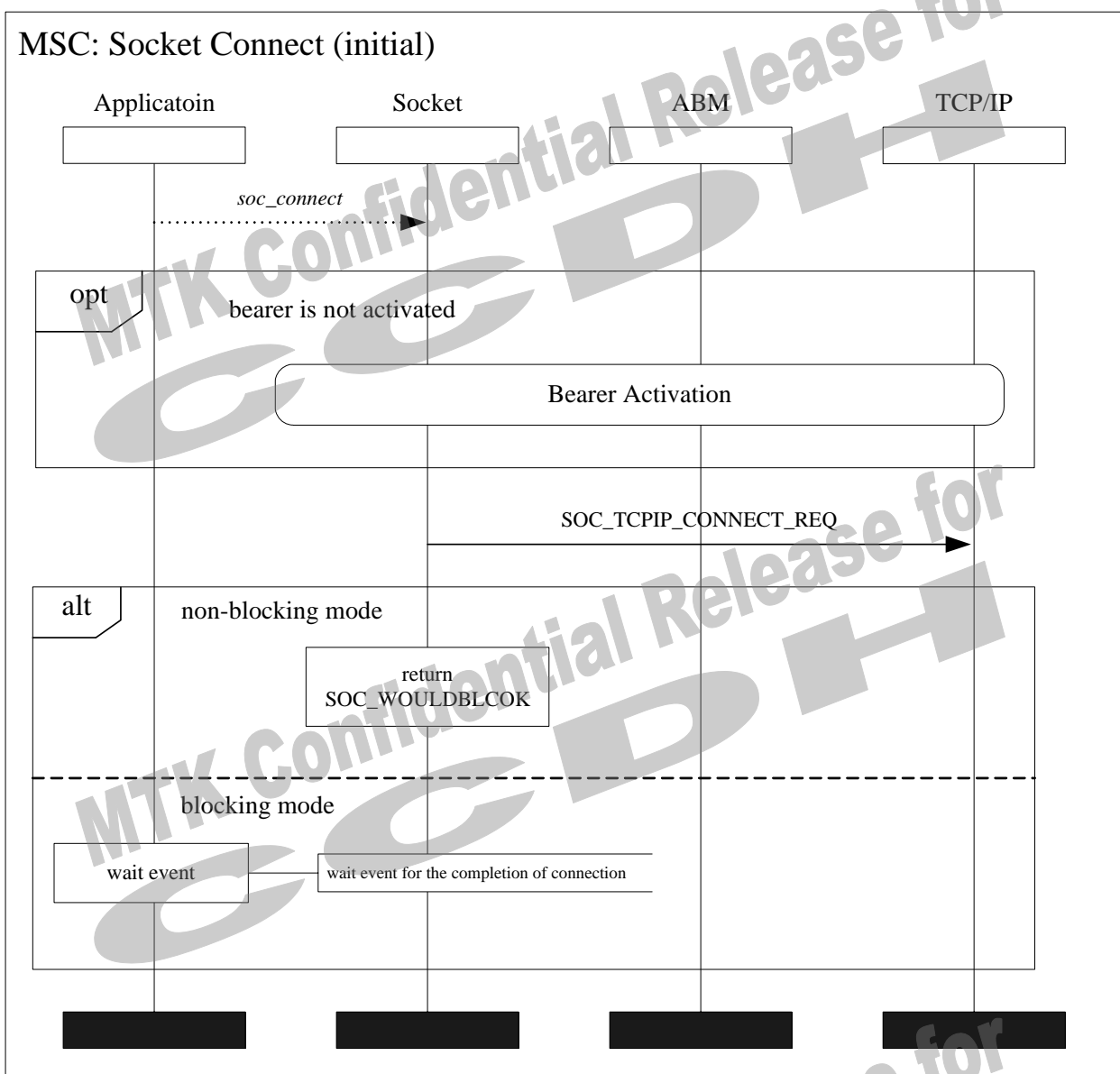
3.5.1 SOC0500001: Socket Connect (initial)

Description:

Send Connect Request to TCP/IP and wait the confirmation.

Reference:

Preamble:



3.5.2 SOC0500002: Receive TCPIP Connect Confirmation (successful case)

Description:

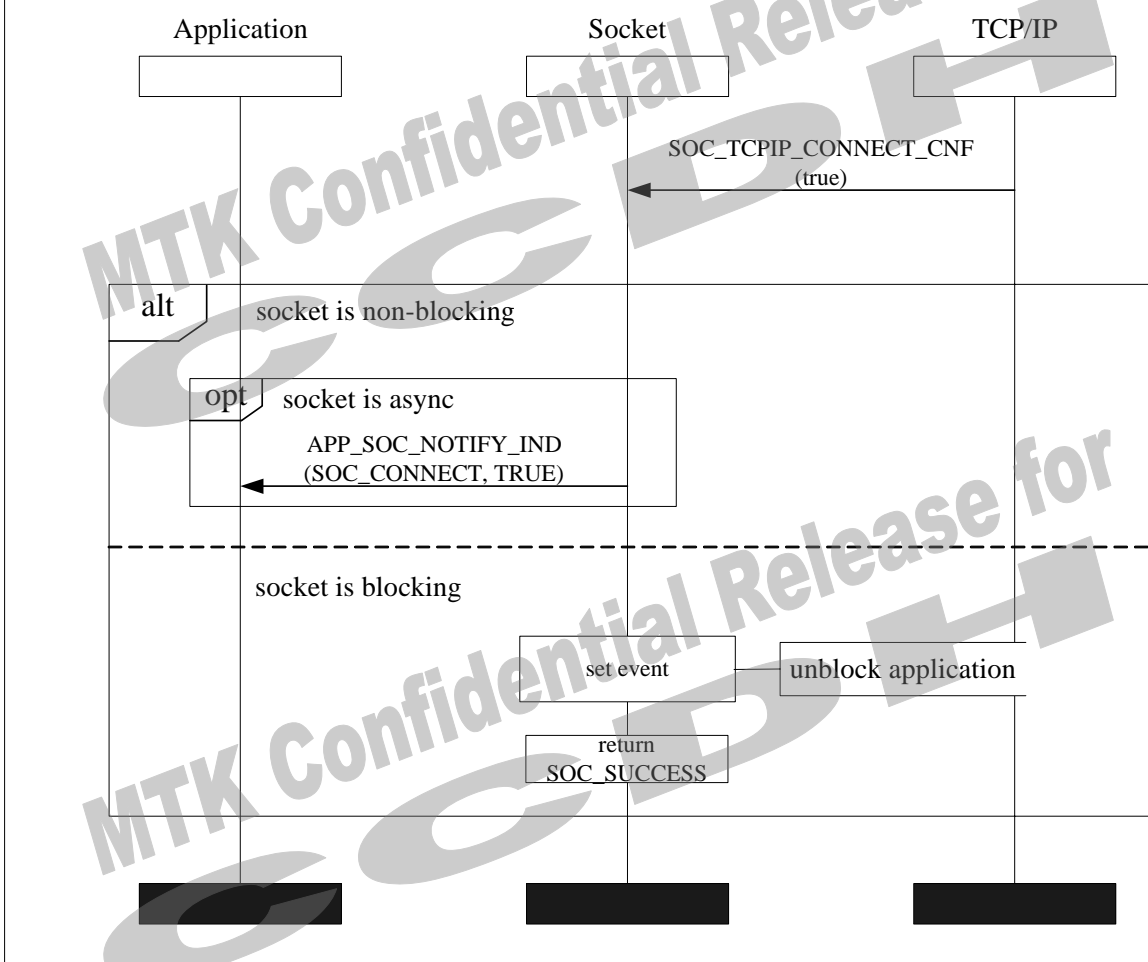
Receive Connection Confirm indicates connection is established successfully.

Reference:

Preamble:

SOC0500001

MSC: Receive TCPIP Connect Confirmation (successful case)



3.5.3 SOC0501003: Receive TCPIP Connect Confirmation (failed case)

Description:

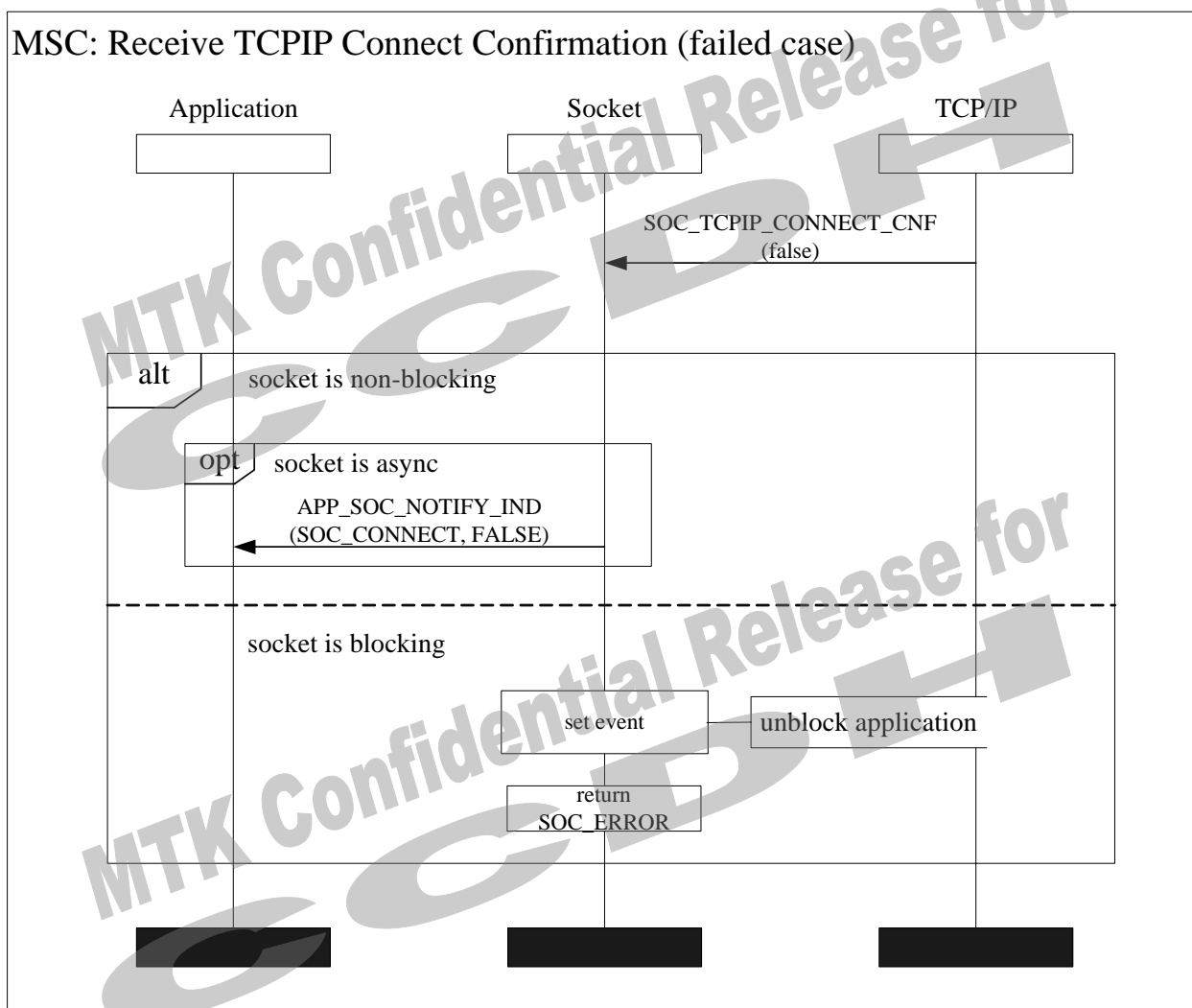
Receive Connection Confirm indicates connection is failed to establish.

Reference:

Preamble:

SOC0500001

MSC: Receive TCPIP Connect Confirmation (failed case)



3.6 Socket Bind

3.6.1 SOC0600001: Socket Bind

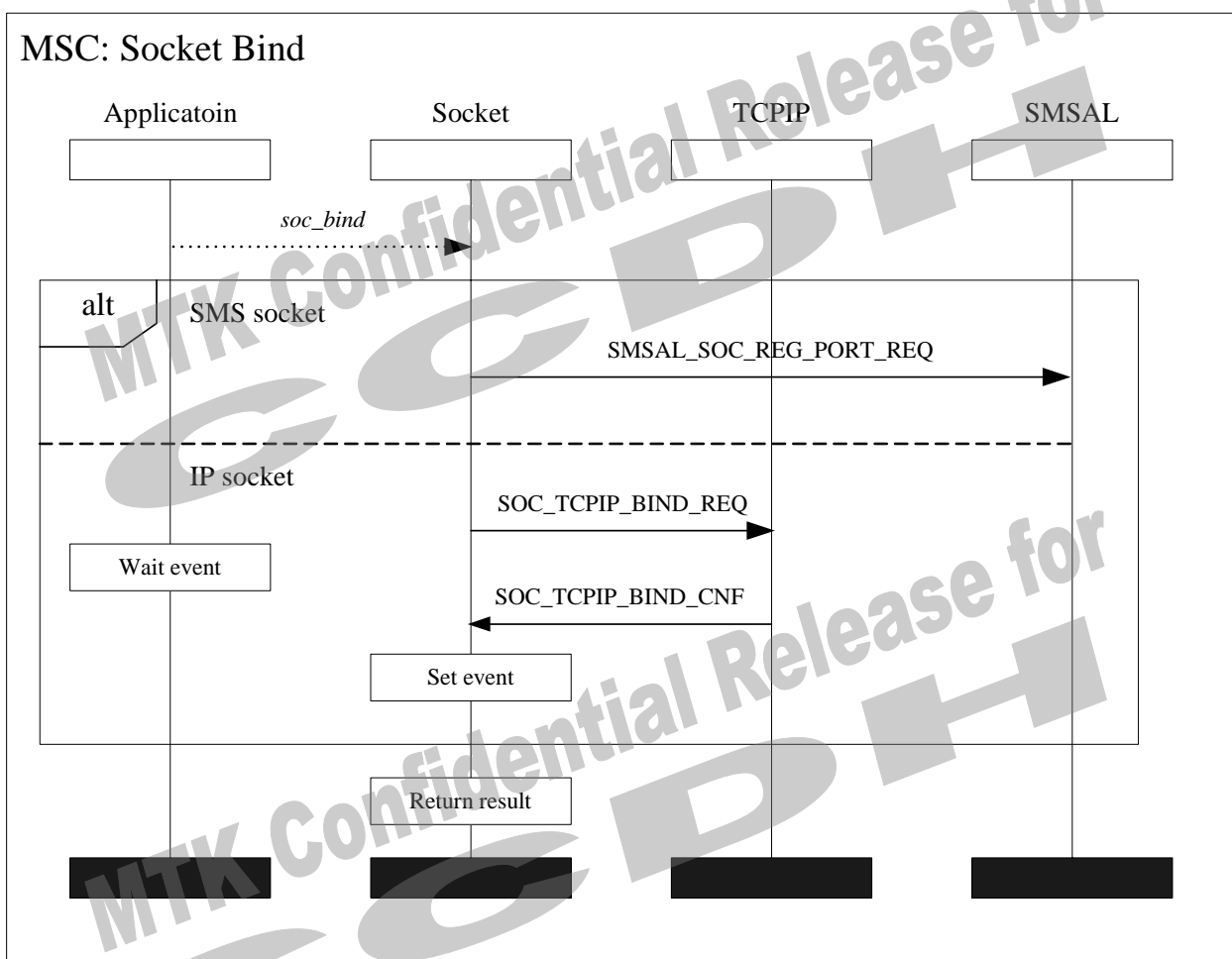
Description:

Bind a local address.

Reference:

Preamble:

MSC: Socket Bind



3.7 Socket Listen

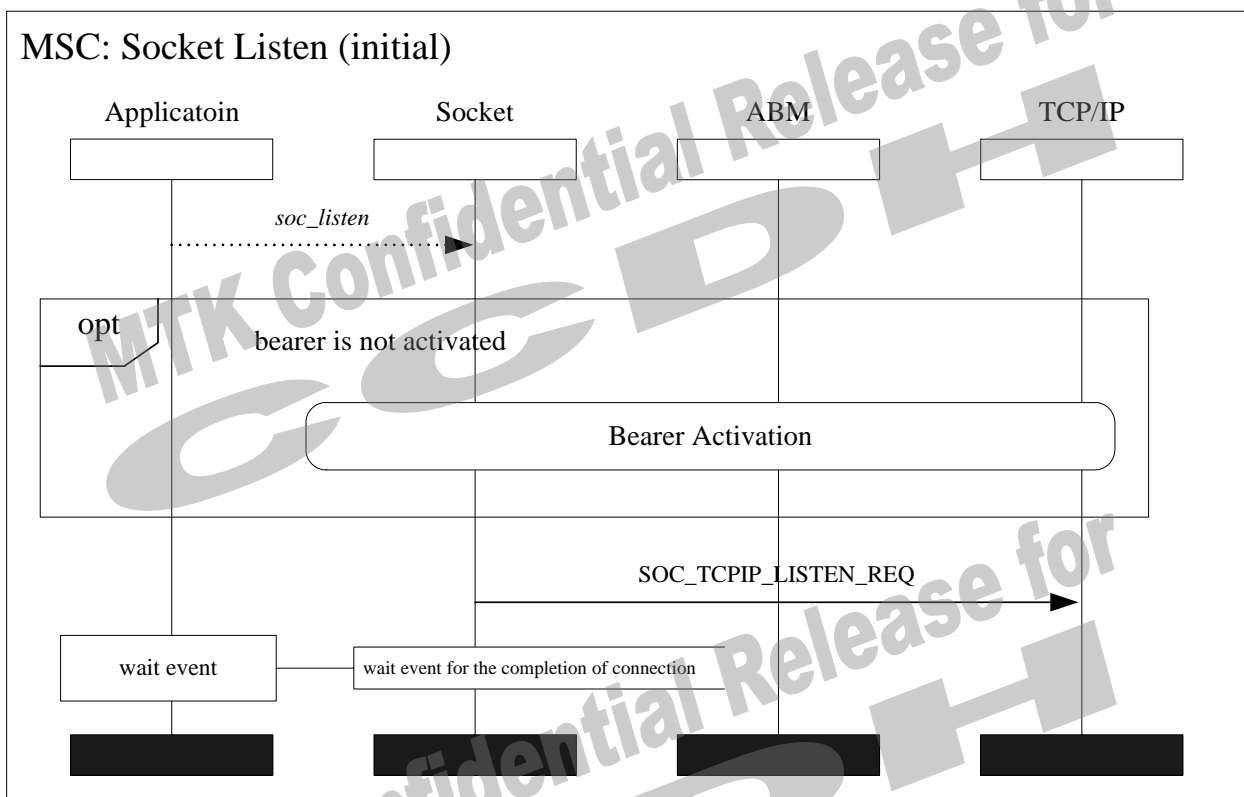
3.7.1 SOC0700001: Socket Listen (initial)

Description:

Make socket to a server socket.

Reference:

Preamble:



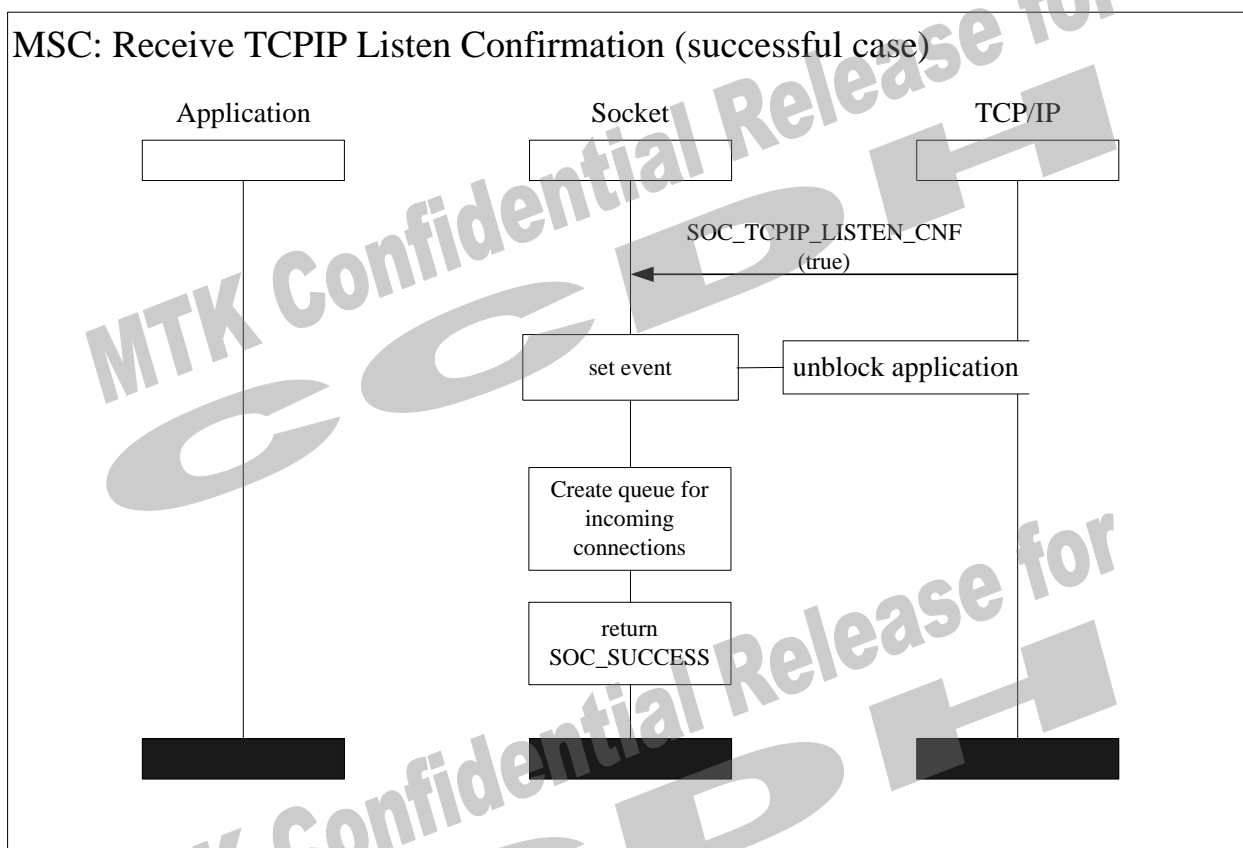
3.7.2 SOC0700002: Receive TCPIP Listen Confirmation (successful case)

Description: Receive Success Listen Confirm.

Reference:

Preamble:
SOC0700001

MSC: Receive TCPIP Listen Confirmation (successful case)



3.7.3 SOC0701003: Receive TCPIP Listen Confirmation (failed case)

Description:

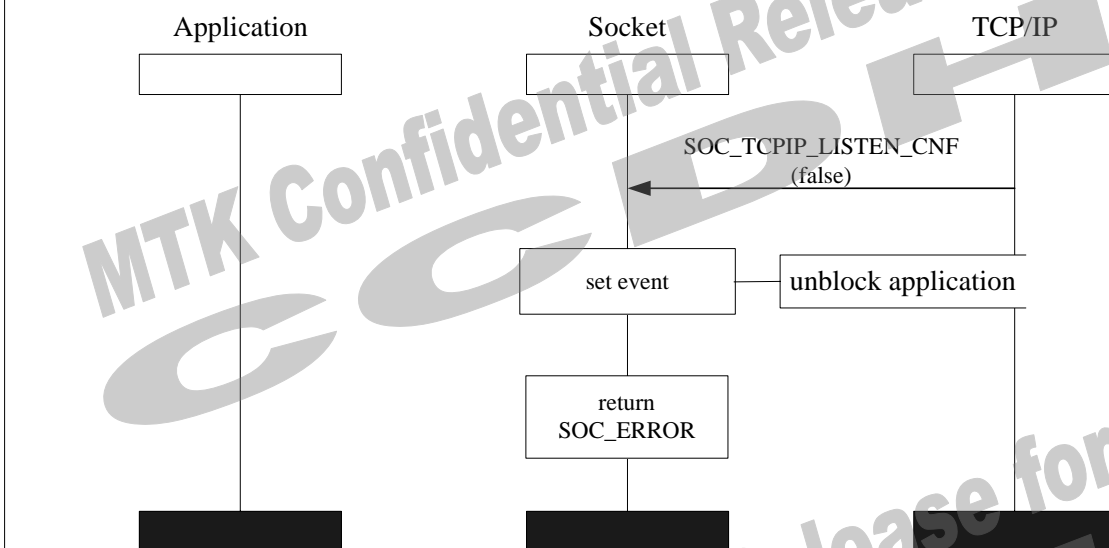
Receive Fail Listen Confirm.

Reference:

Preamble:

SOC0700001

MSC: Receive TCPIP Listen Confirmation (failed case)



3.8 Socket Accept

3.8.1 SOC0800001: Socket Accept

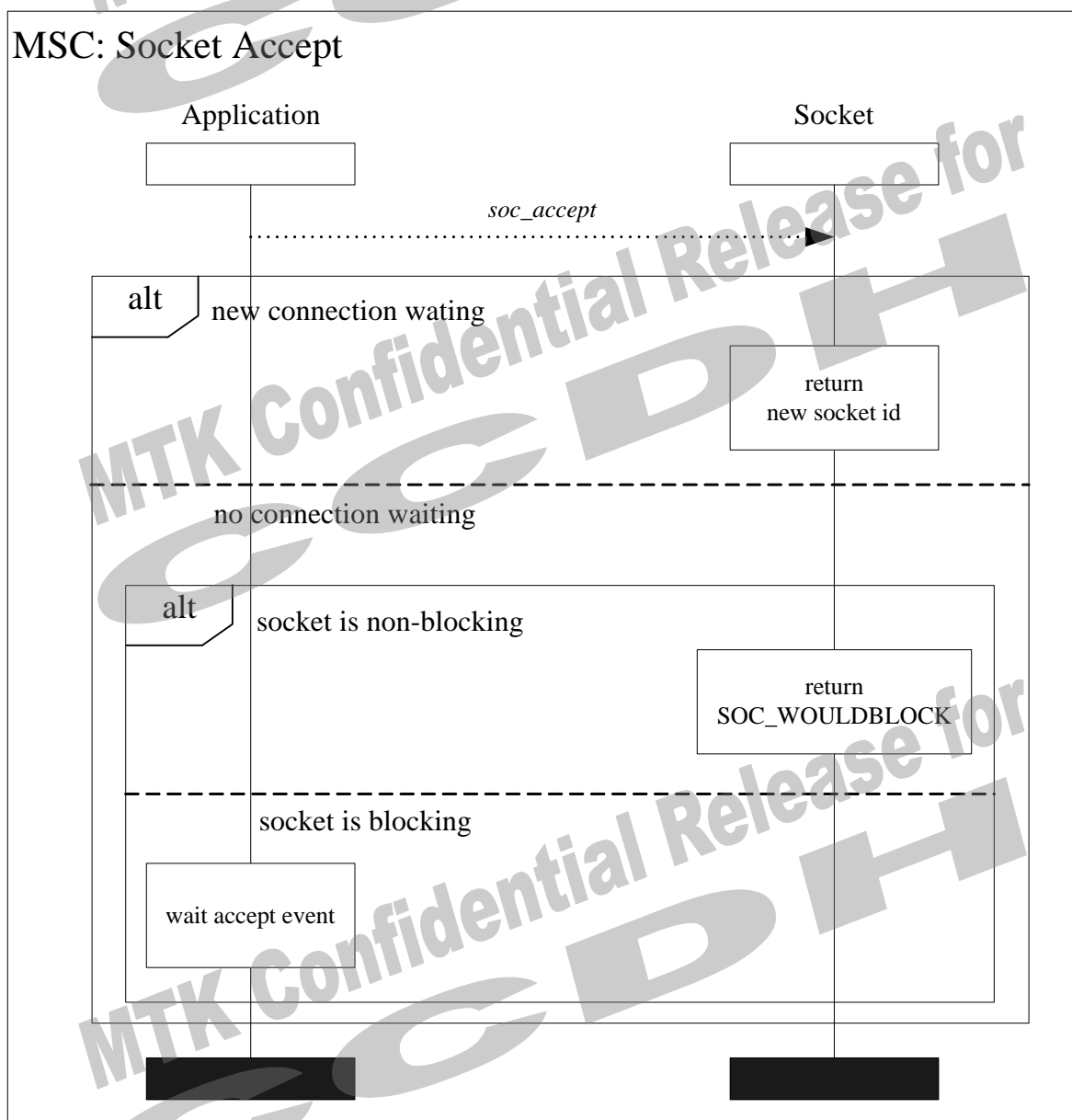
Description:

Application calls the soc_accept.

Reference:

Preamble:

MSC: Socket Accept



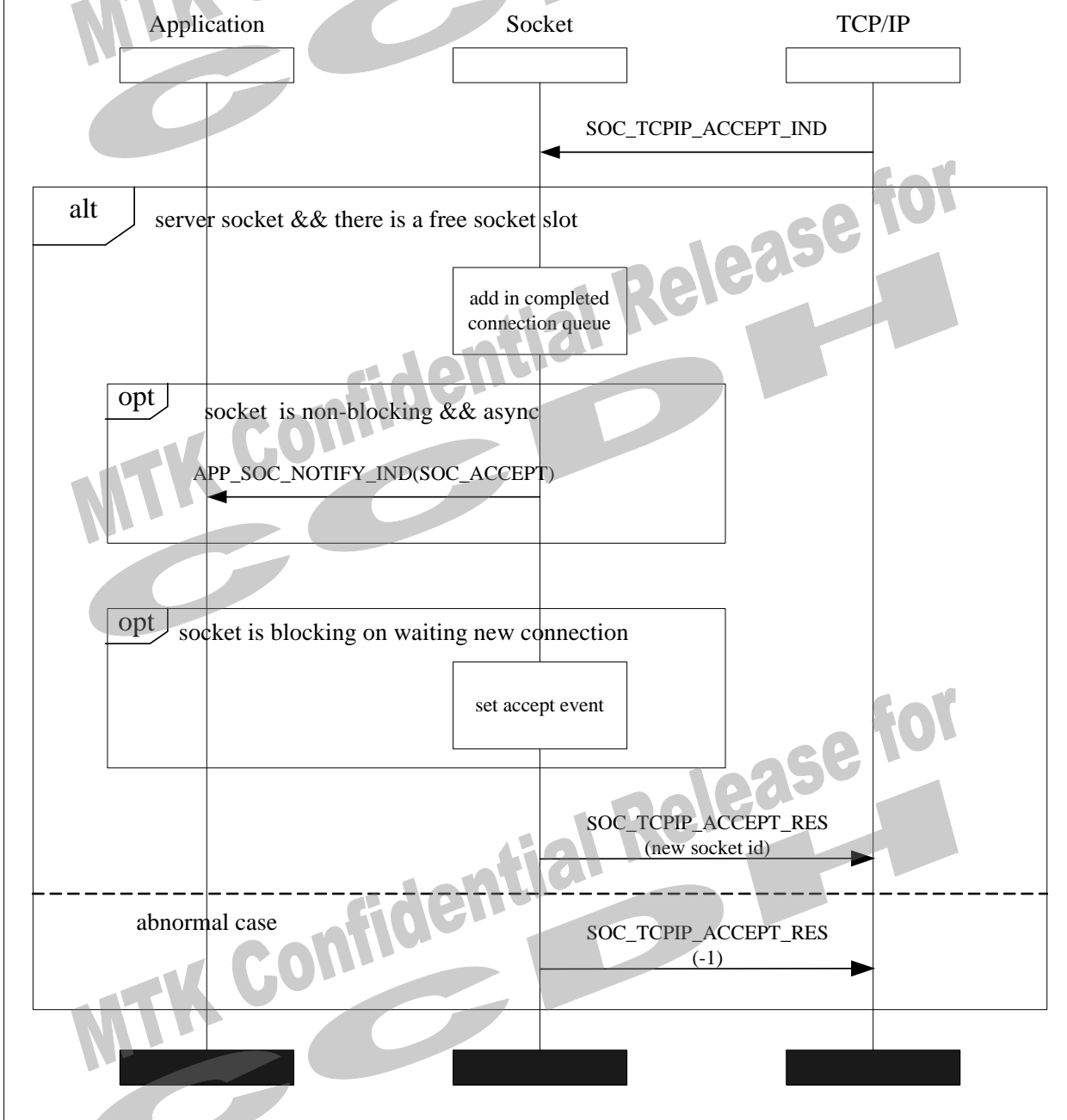
3.8.2 SOC0800002: New TCP connection

Description:

Receive indication from TCP/IP to notify there is a new TCP connection.

Reference:

Preamble:

MSC: New TCP Connection

3.9 Receive Data

3.9.1 SOC0900001: Receive IP Packets

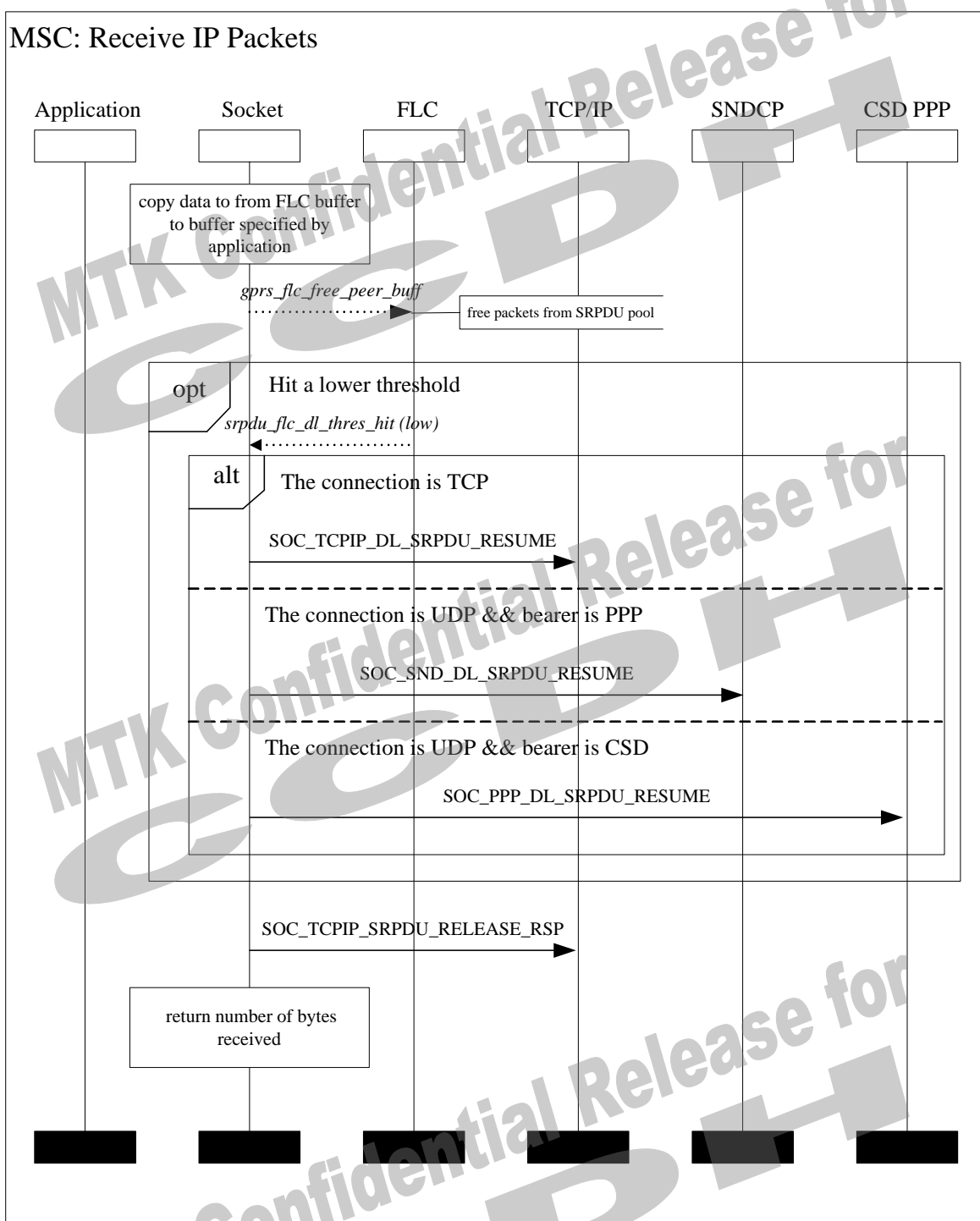
Description:

Copy data from SRPDU to application's buffer and release the packet from SRPDU pool.

Reference:

Preamble:

MSC: Receive IP Packets



3.9.2 SOC0900002: Incoming IP Packets

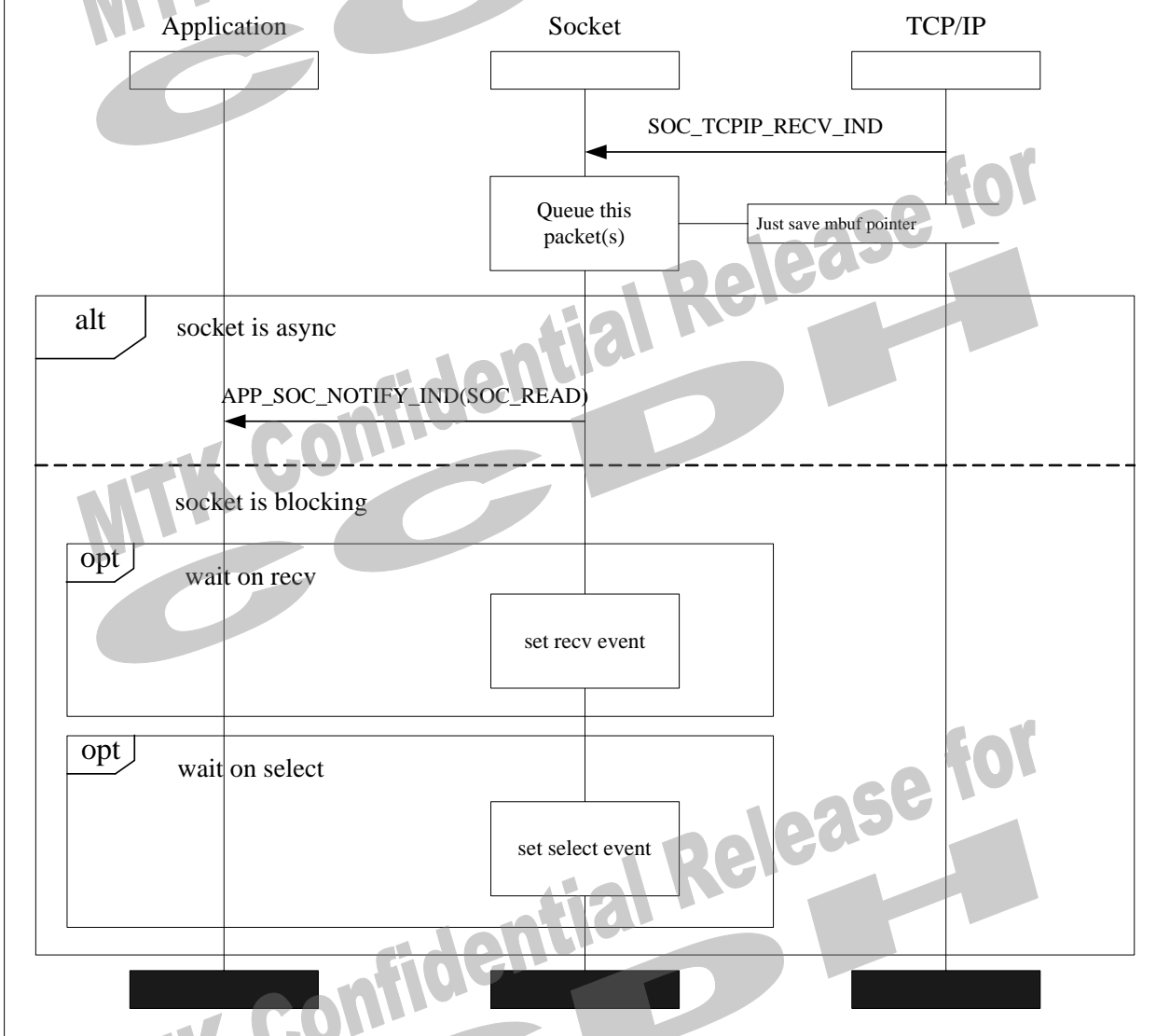
Description:

Queue the incoming data. Send notification if socket is configured with asynchronous mode or set event if the socket is blocking or call soc_select previously.

Reference:

Preamble:

MSC: Incoming IP Packets



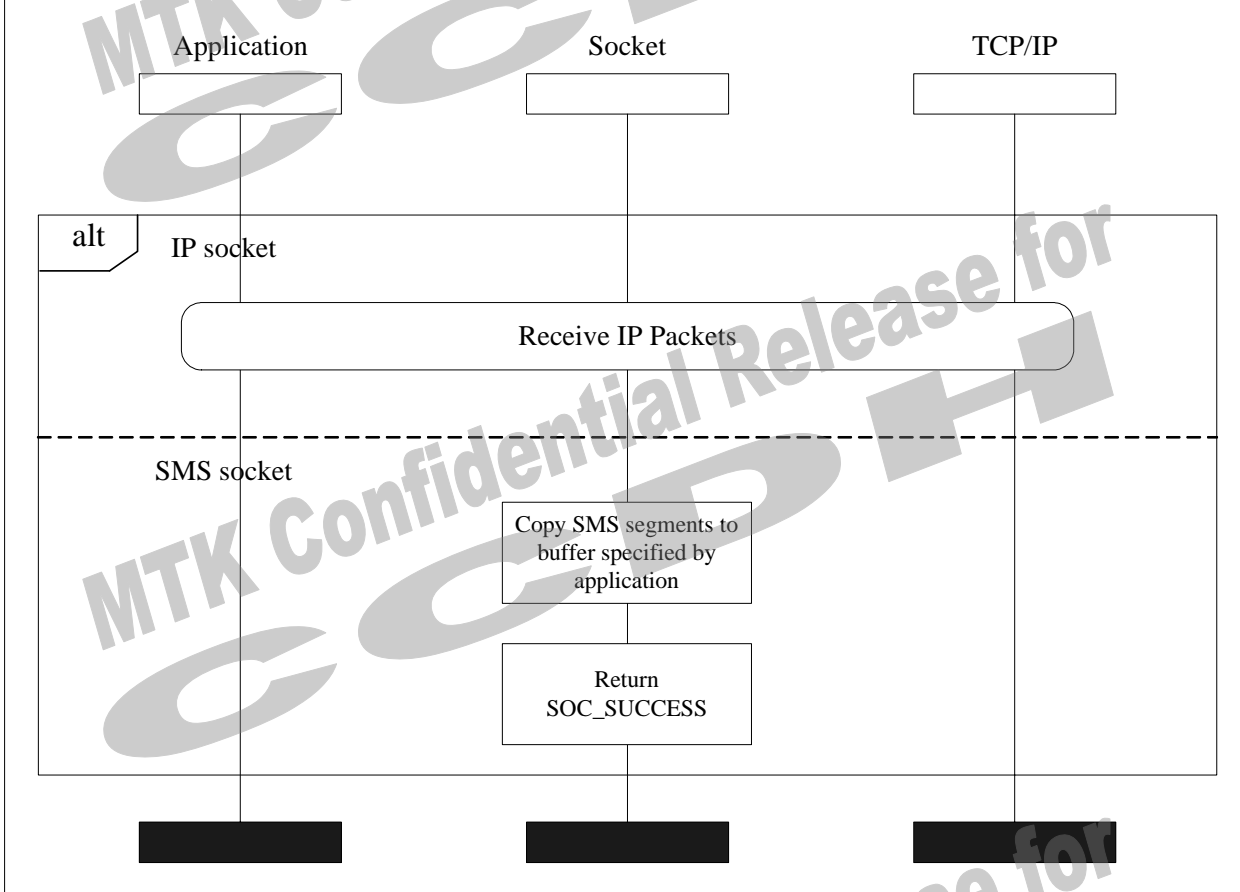
3.9.3 SOC0900003: Receive Data (queue is not empty)

Description:

Socket queue is not empty.

Reference:

Preamble:

MSC: Receive Data (queue is not empty)**3.9.4 SOC0900004: Receive Data**

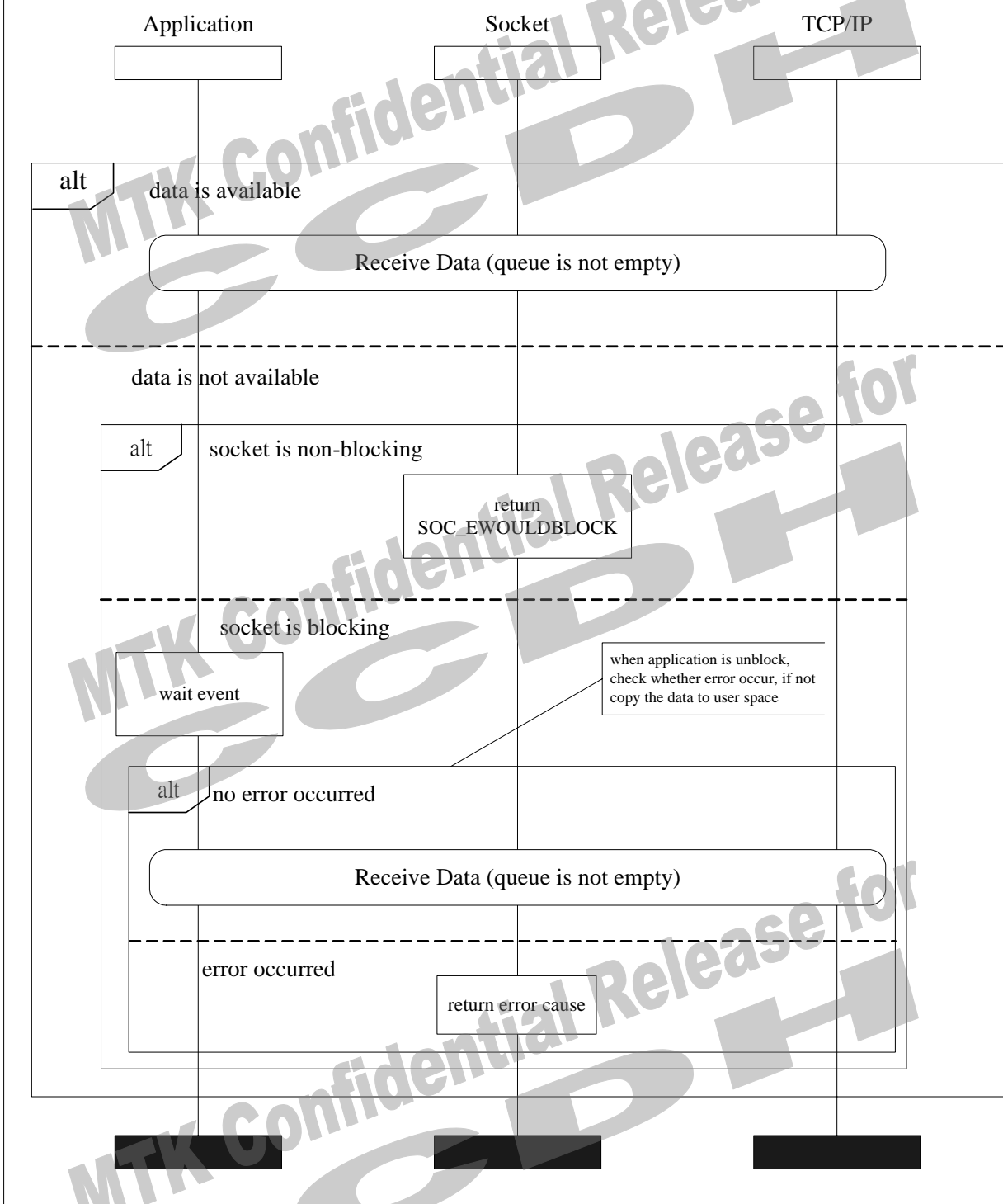
Description:

Receive Data.

Reference:

Preamble:

MSC: Receive Data



3.9.5 SOC0900005: Socket Receive

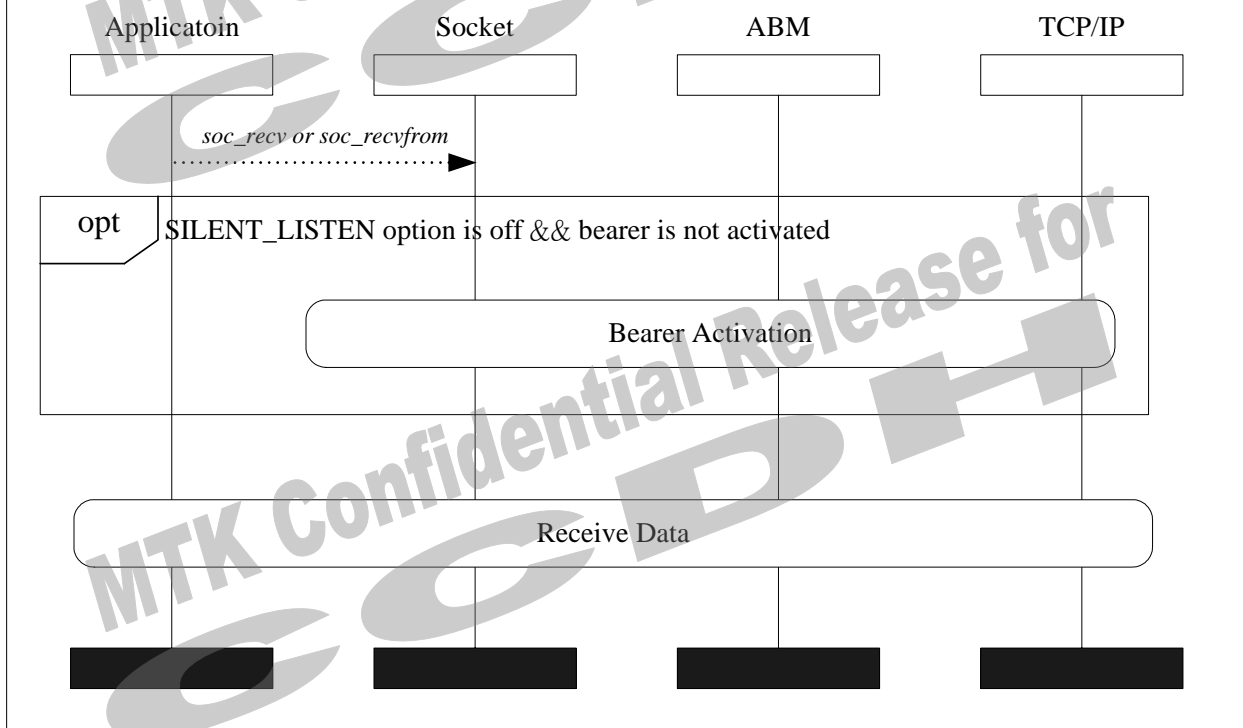
Description:

Application calls soc_rcv() or soc_rcvfrom().

Reference:

Preamble:

MSC: Socket Receive



3.10 Send Data

3.10.1 SOC1000001: Send

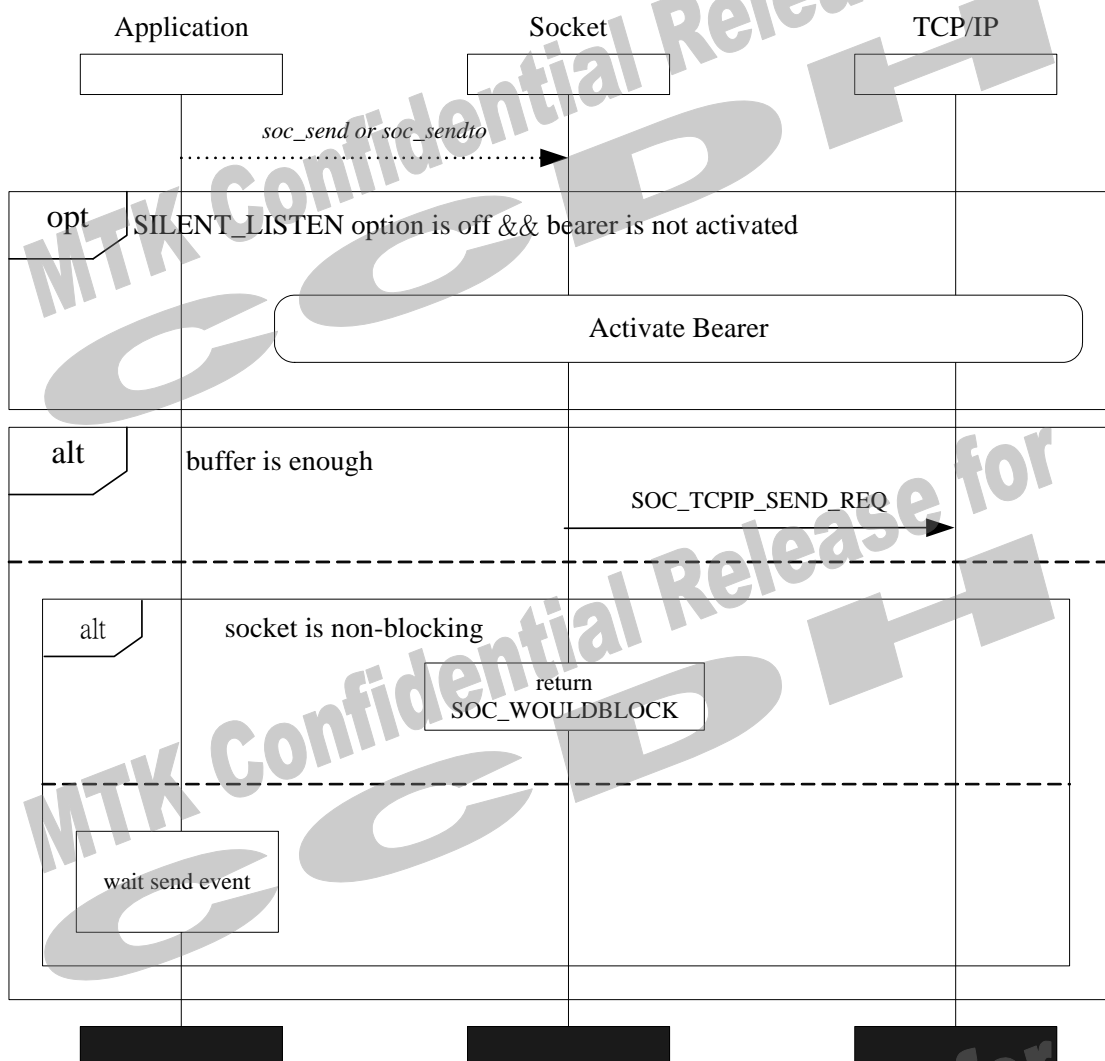
Description:

Application calls soc_send or soc_sendto.

Reference:

Preamble:

MSC: Send



3.10.2 SOC1000002: SSPDU Resume

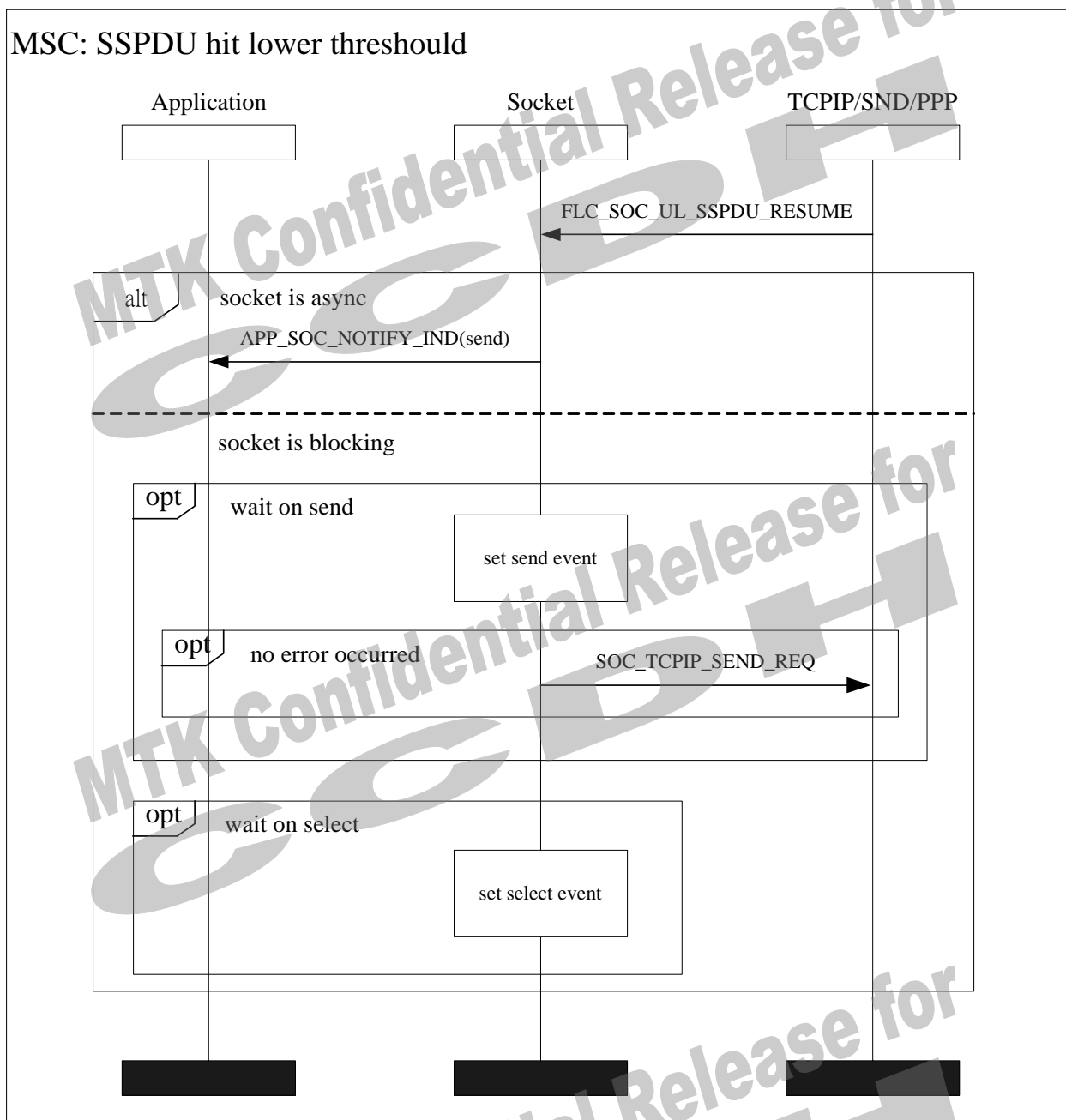
Description:

Socket failed to get buffer from SSPDU previously and receive the primitive to notify there is a space now.

Reference:

Preamble:

MSC: SSPDU hit lower threshold



3.11 Select Sockets

3.11.1 SOC1100001: Select

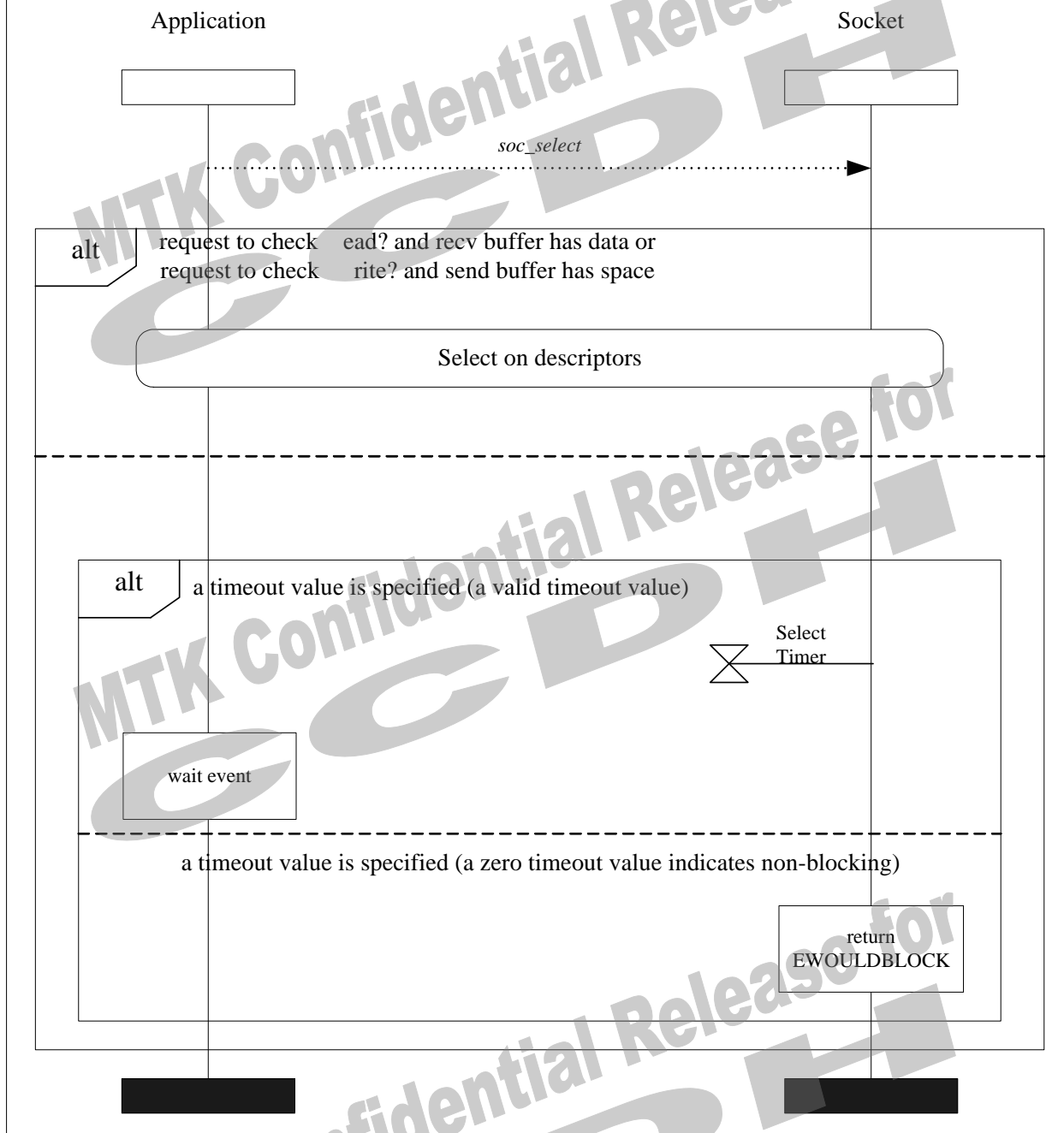
Description:

Application calls soc_select().

Reference:

Preamble:

MSC: Select



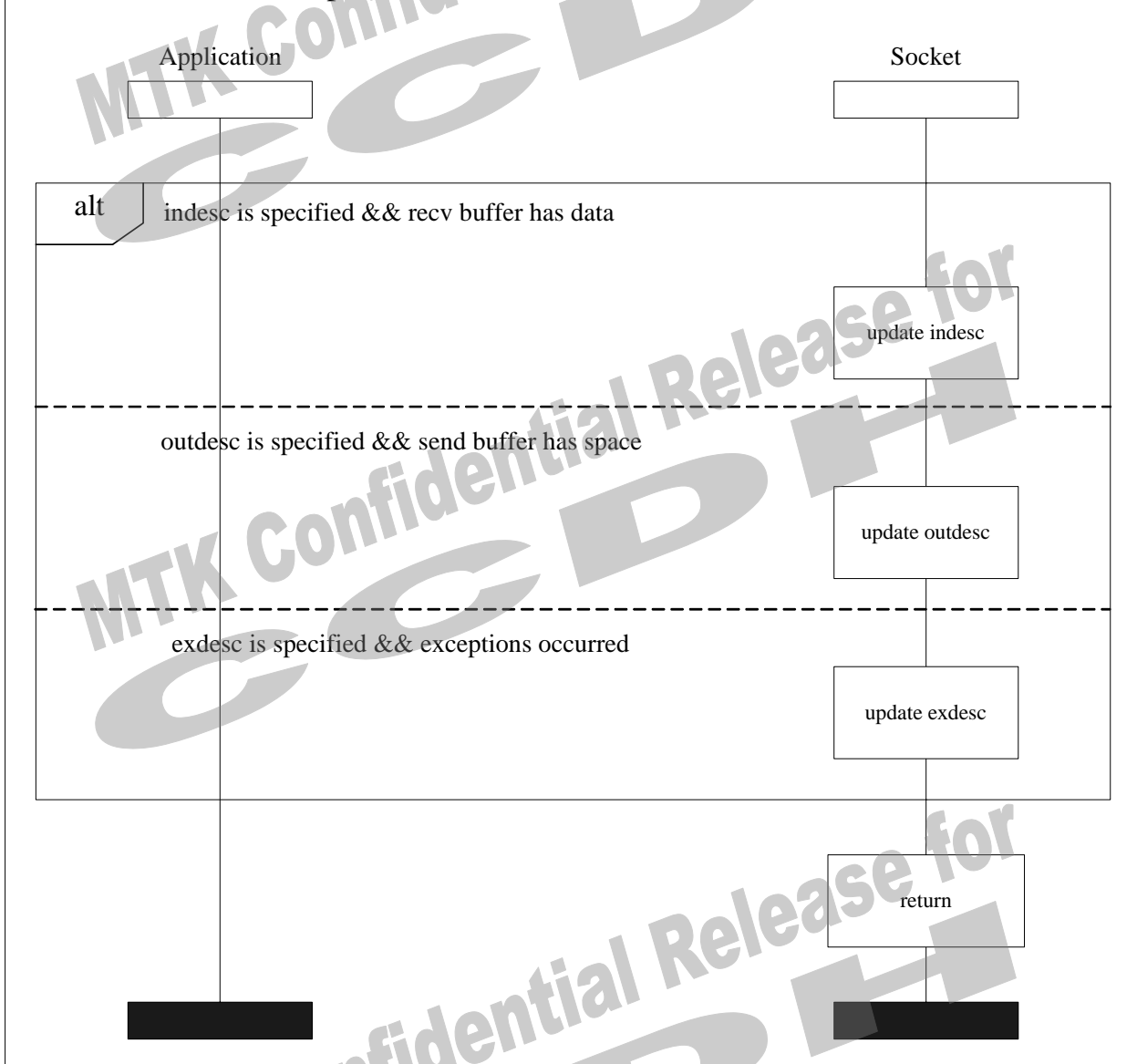
3.11.2 SOC1100002: Select on descriptors

Description:

Select on In/out/ex descriptors.

Reference:

Preamble:

MSC: Select on Descriptors

3.11.3 SOC1101003: Select Timer Expire

Description:

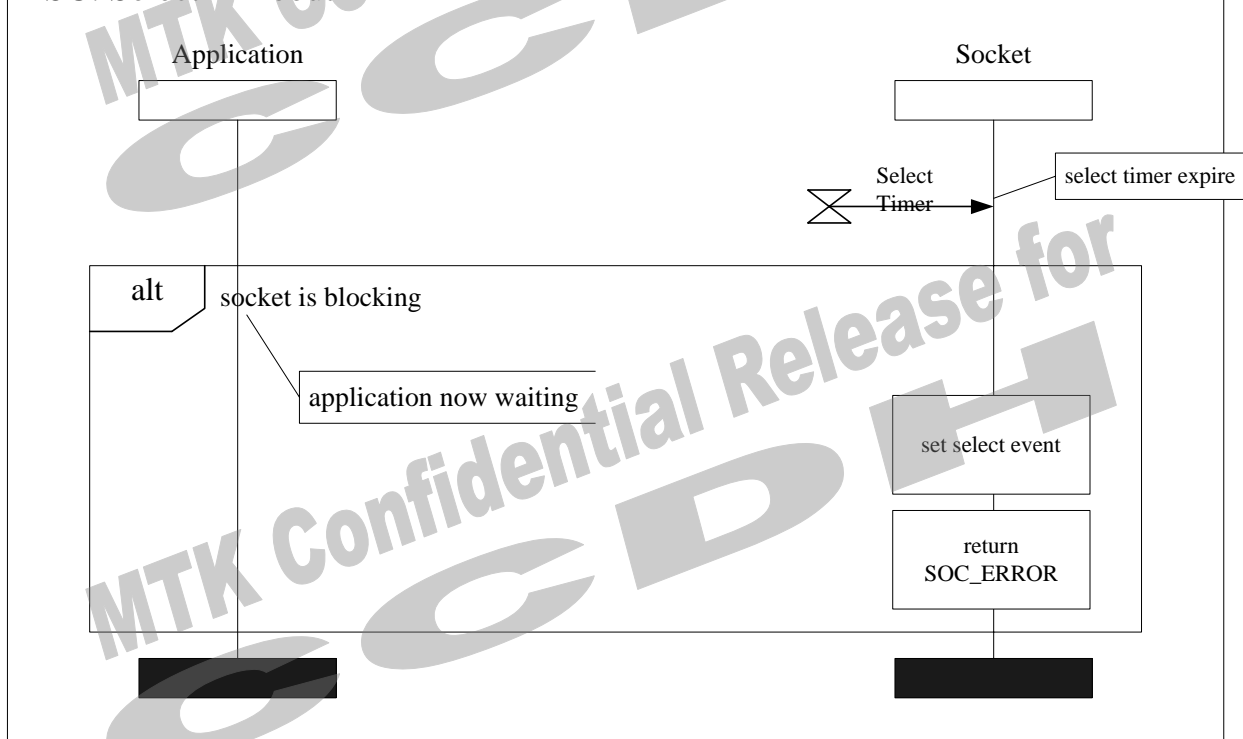
A previously started SELECT timer expires, unblocking application and return SOC_ERROR.

Reference:

Preamble:

SOC1100001

MSC: Select Timeout



3.12 Socket Option

3.12.1 SOC1200001: Get Socket Option

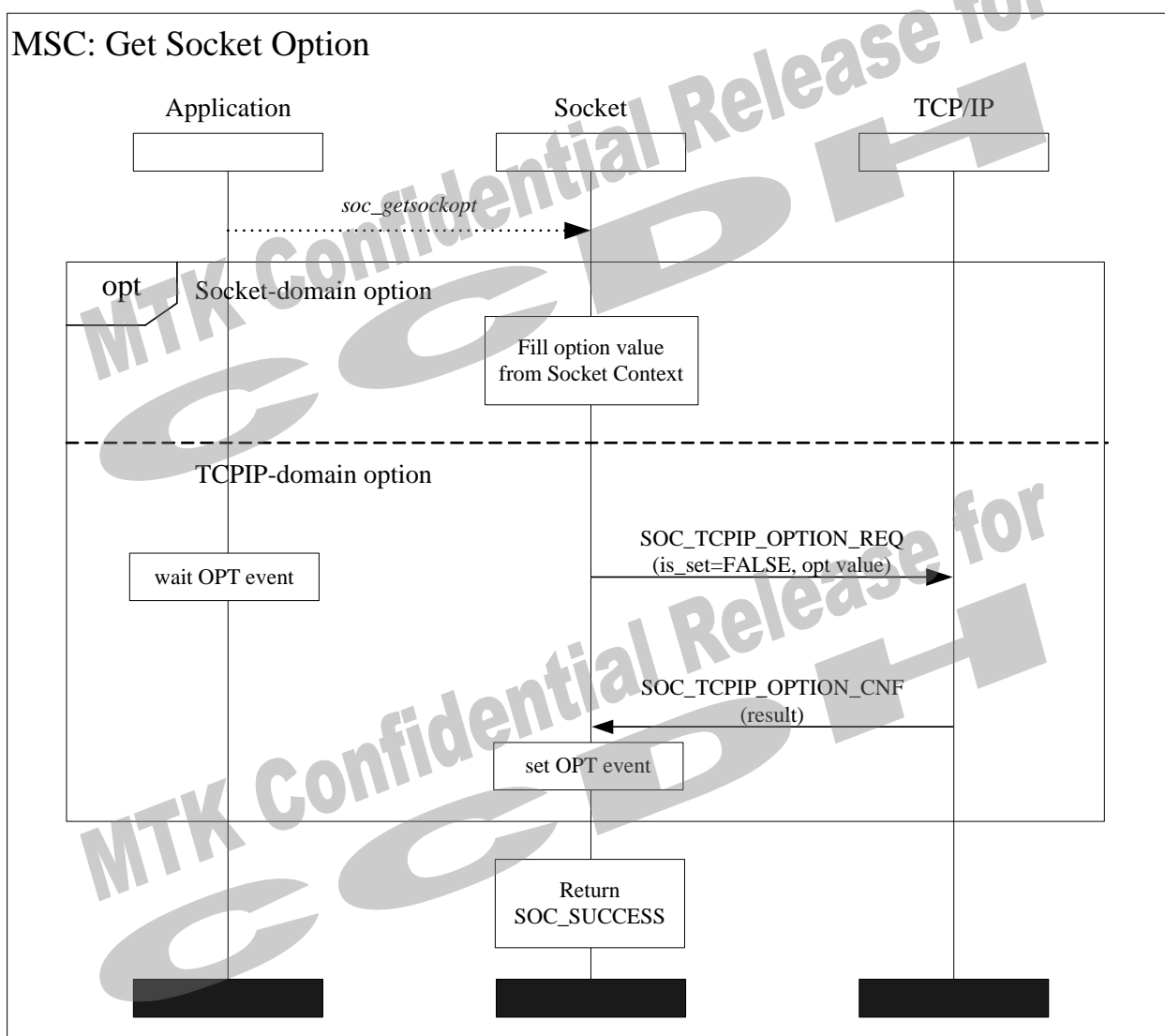
Description:

Application calls soc_getsockopt().

Reference:

Preamble:

MSC: Get Socket Option



3.12.2 SOC1200002: Set Socket Option

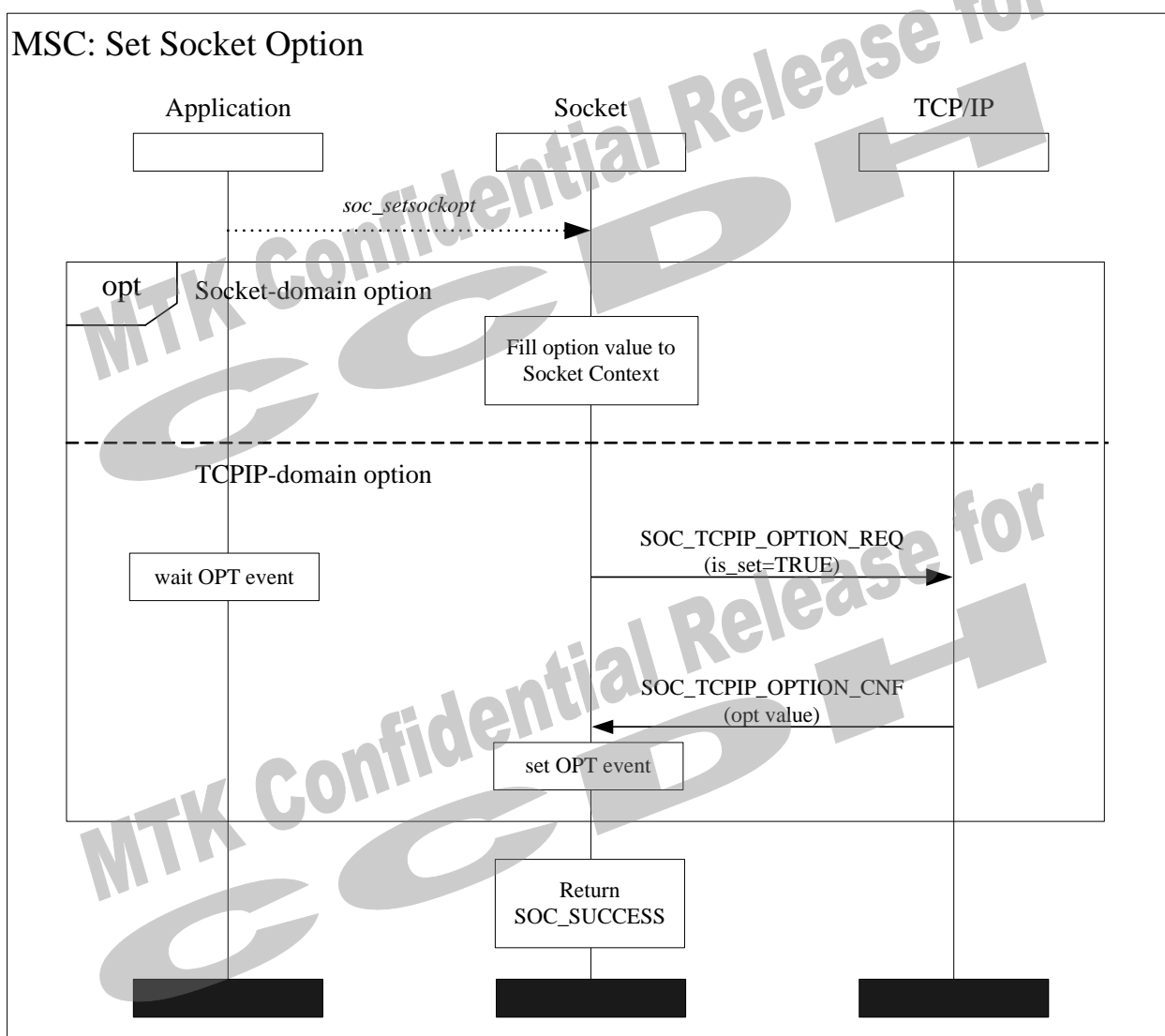
Description:

Application calls `soc_setsockopt()`.

Reference:

Preamble:

MSC: Set Socket Option



3.13 Shutdown

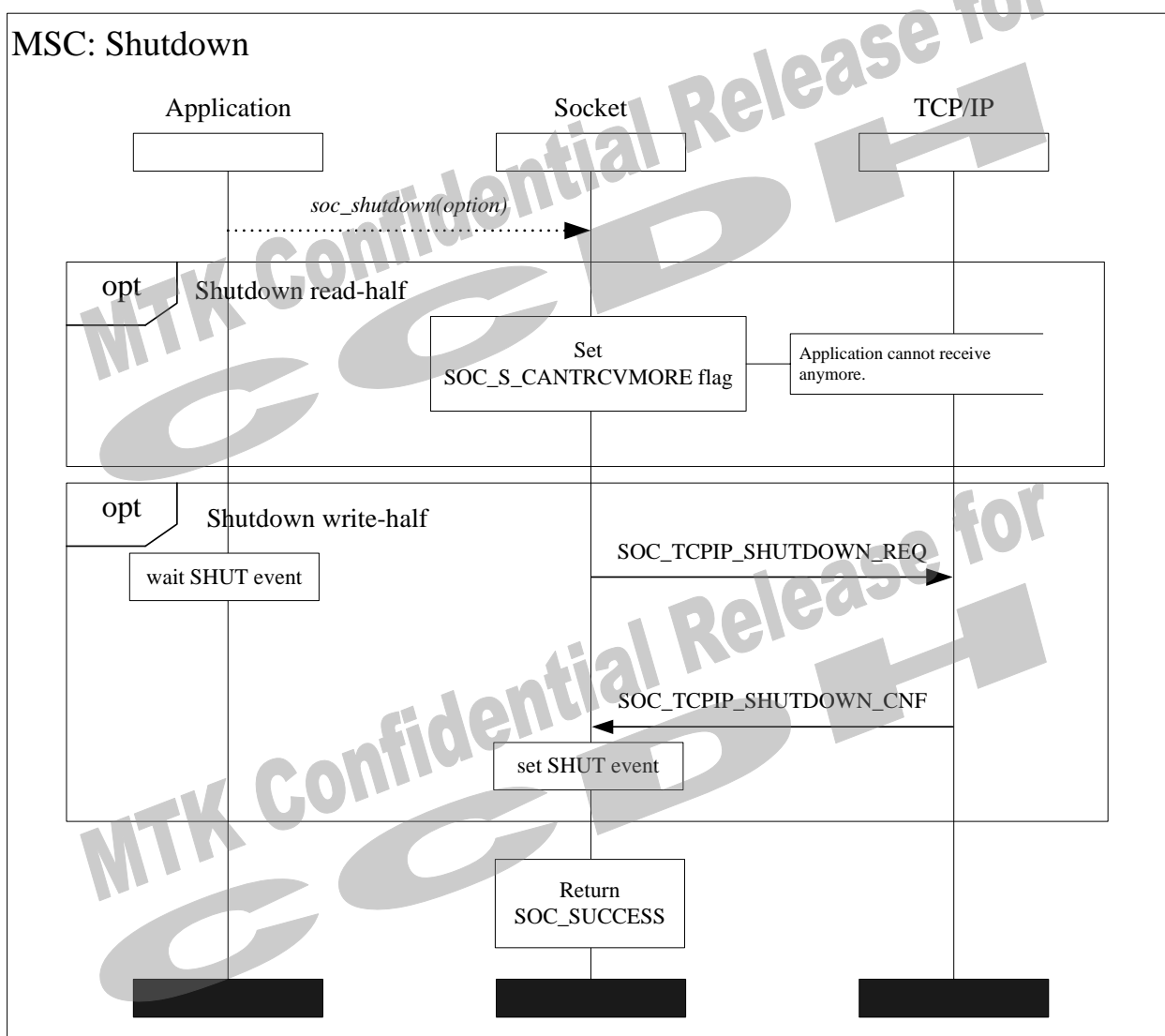
3.13.1 SOC1300001: Shutdown

Description:

Shutdown read-half, write-half or both.

Reference:

Preamble:



3.14 Get Local IP Address

3.14.1 SOC1400001: Select

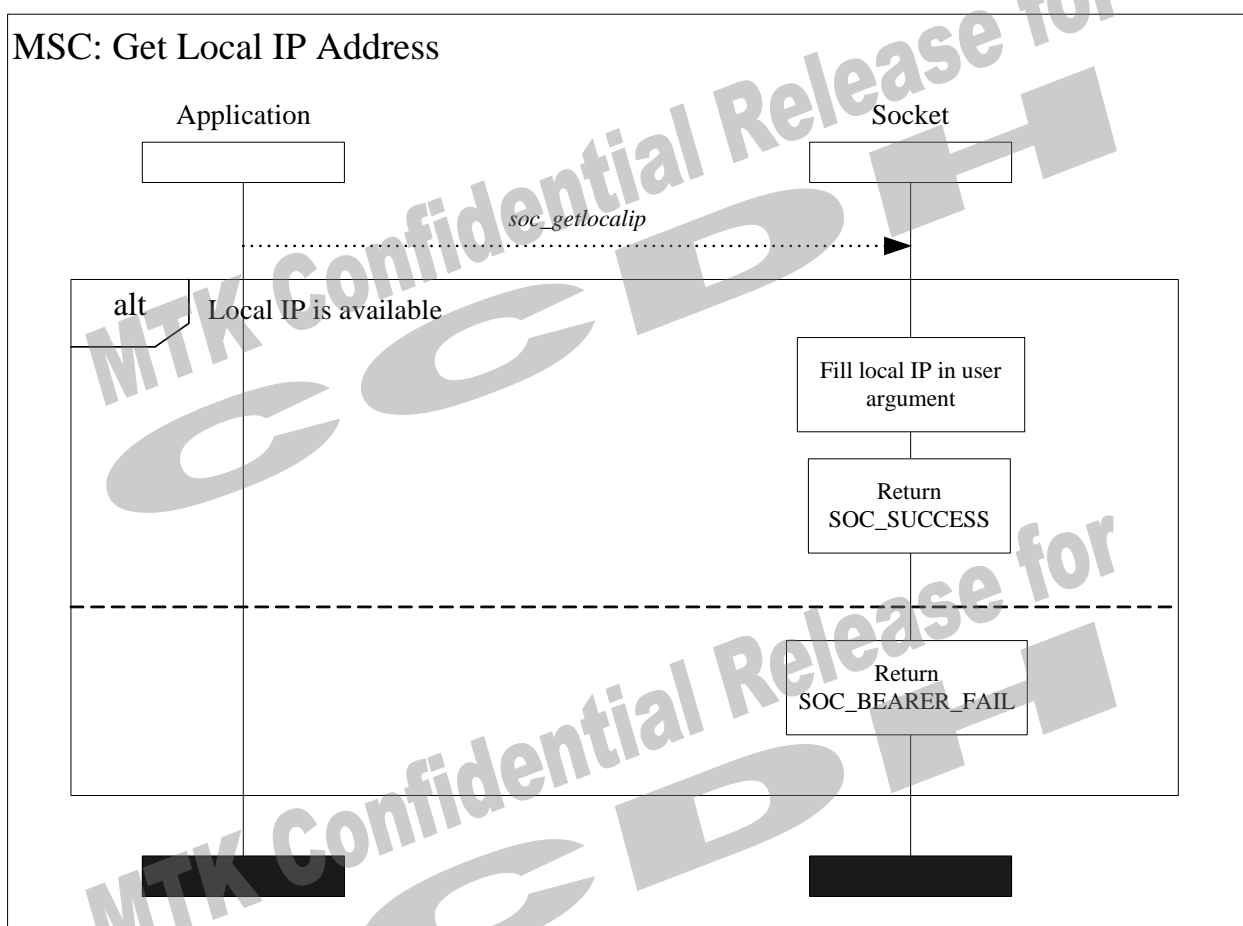
Description:

Get local IP address.

Reference:

Preamble:

MSC: Get Local IP Address



3.15 Get Socket Address

3.15.1 SOC1500001: Get Socket Address

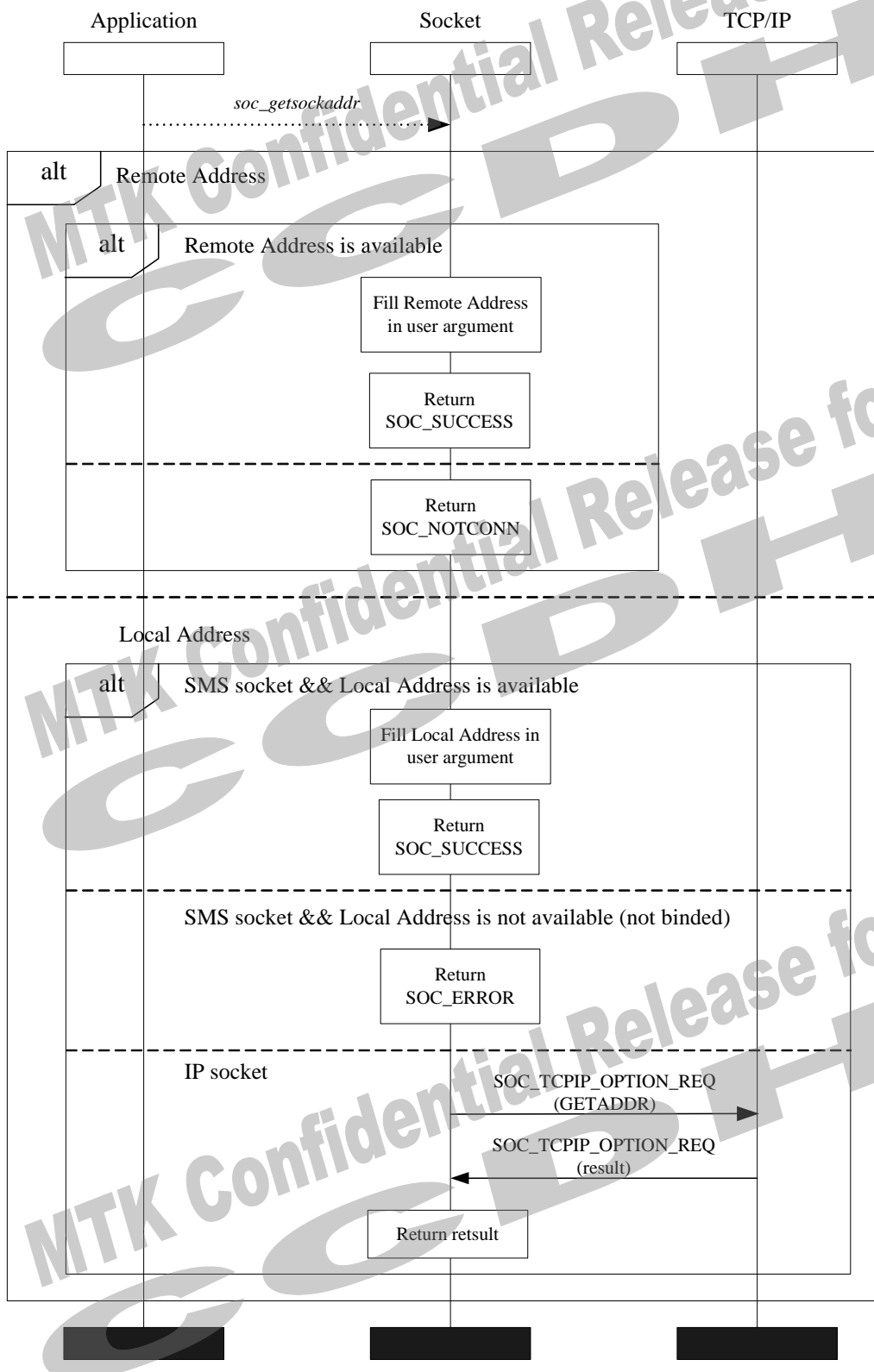
Description:

Get socket address.

Reference:

Preamble:

MSC: Get Socket Address



3.16 Get IP Address by Host Name

3.16.1 SOC1600001: Get IP Address by Name (initial)

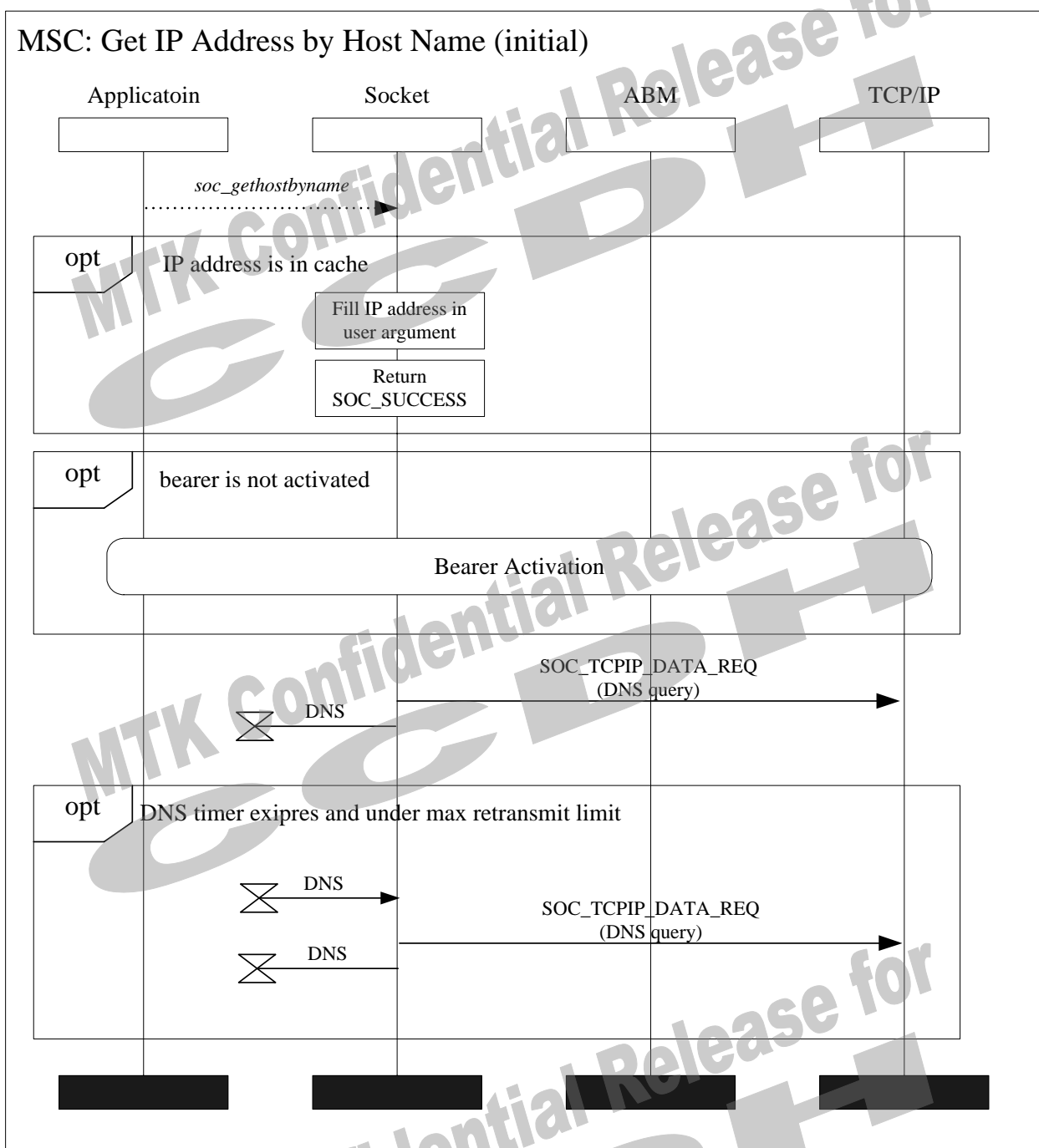
Description:

Application calls soc_gethostbyname(). Socket will return IP address directly if the address is in cache. Otherwise, SOC will compose the DSN query and send it to TCPIP.

Reference:

Preamble:

MSC: Get IP Address by Host Name (initial)



3.16.2 SOC1600002: Receive Response which contain IP address(s) (successful case)

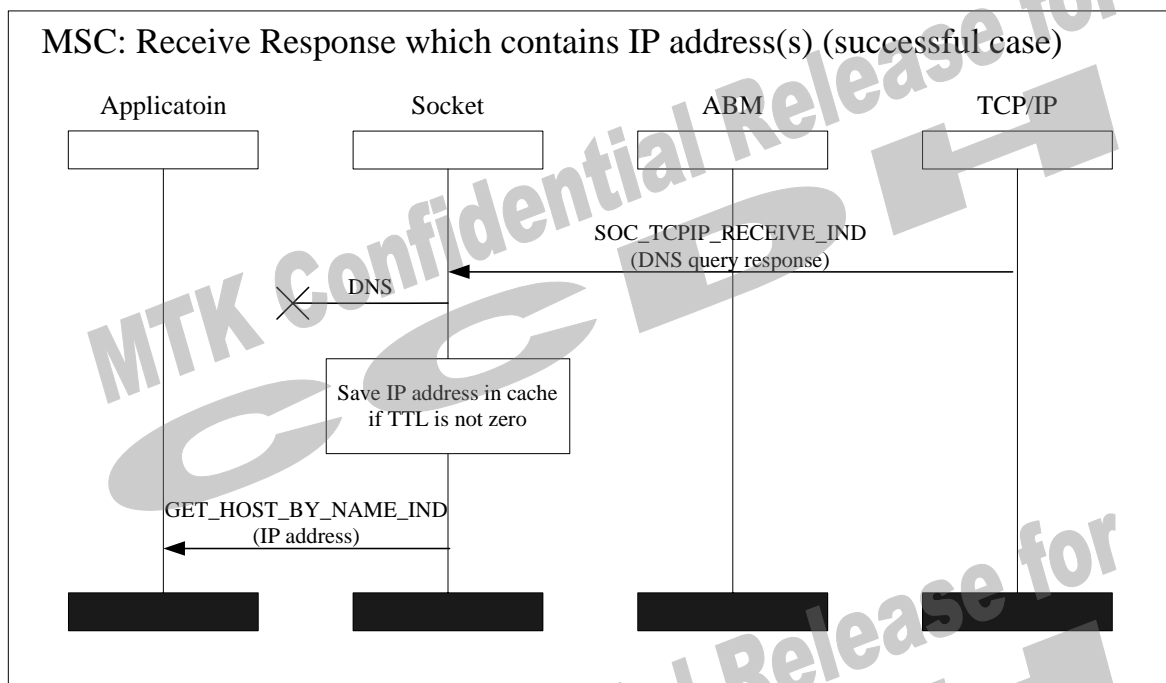
Description:

SOC receives DSN query response which contain IP address(s).

Reference:

Preamble:

SOC1600001



3.16.3 SOC1601003: Can Not Find IP Address (failed case 1)

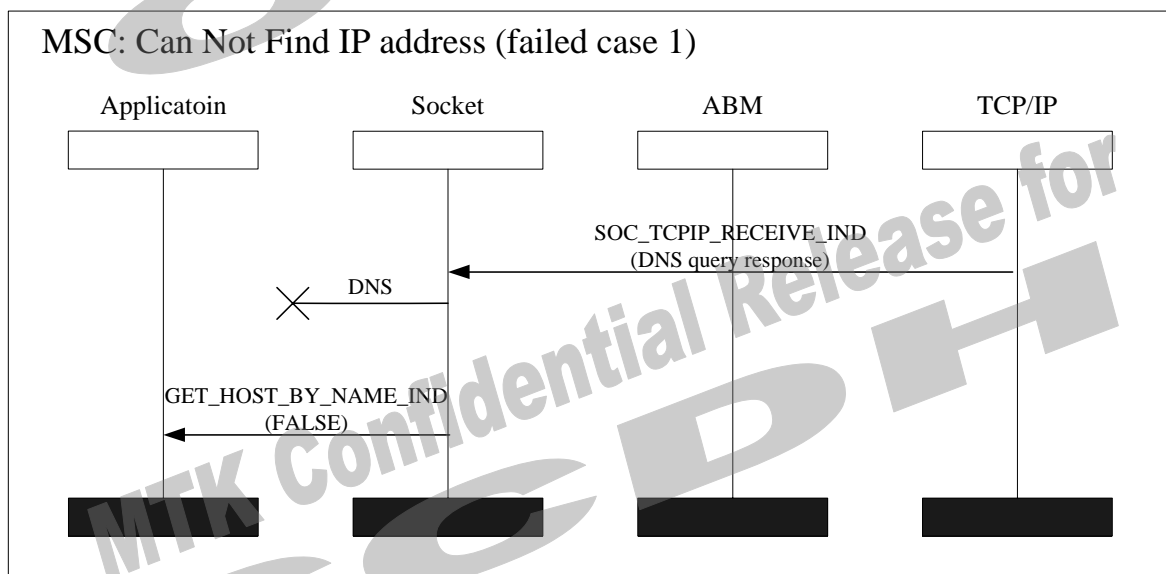
Description:

SOC receives DSN query response which indicates that IP address is not found.

Reference:

Preamble:

SOC1600001



3.16.4 SOC1601004: Retransmission Exceed Limit (failed case 2)

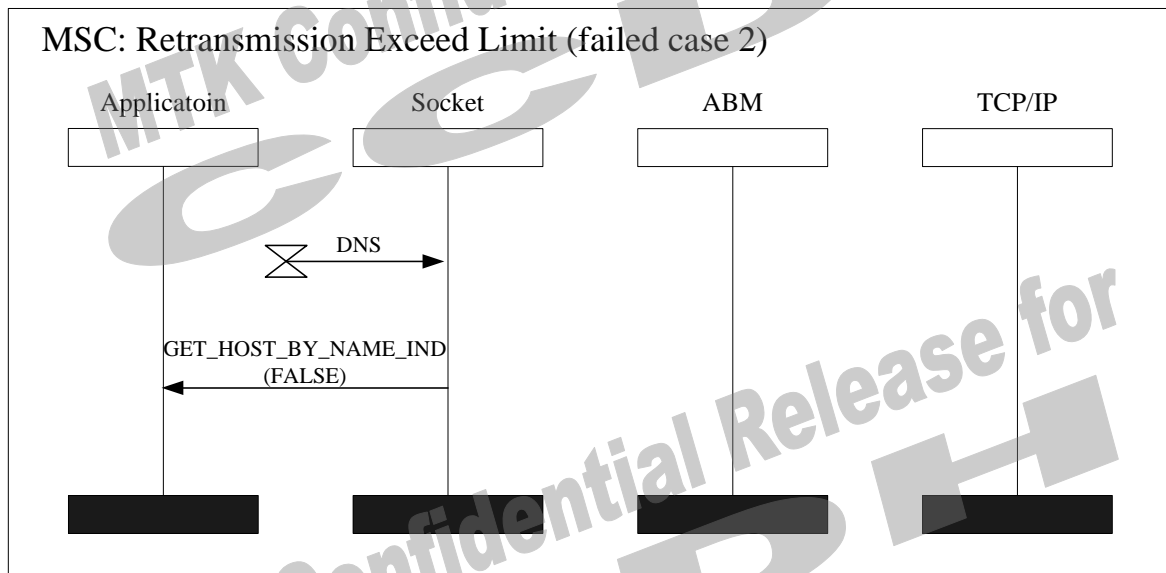
Description:

DNS timer expires and the retransmission exceeds the limit.

Reference:

Preamble:

SOC1600001



3.17 Get Host Name by IP Address

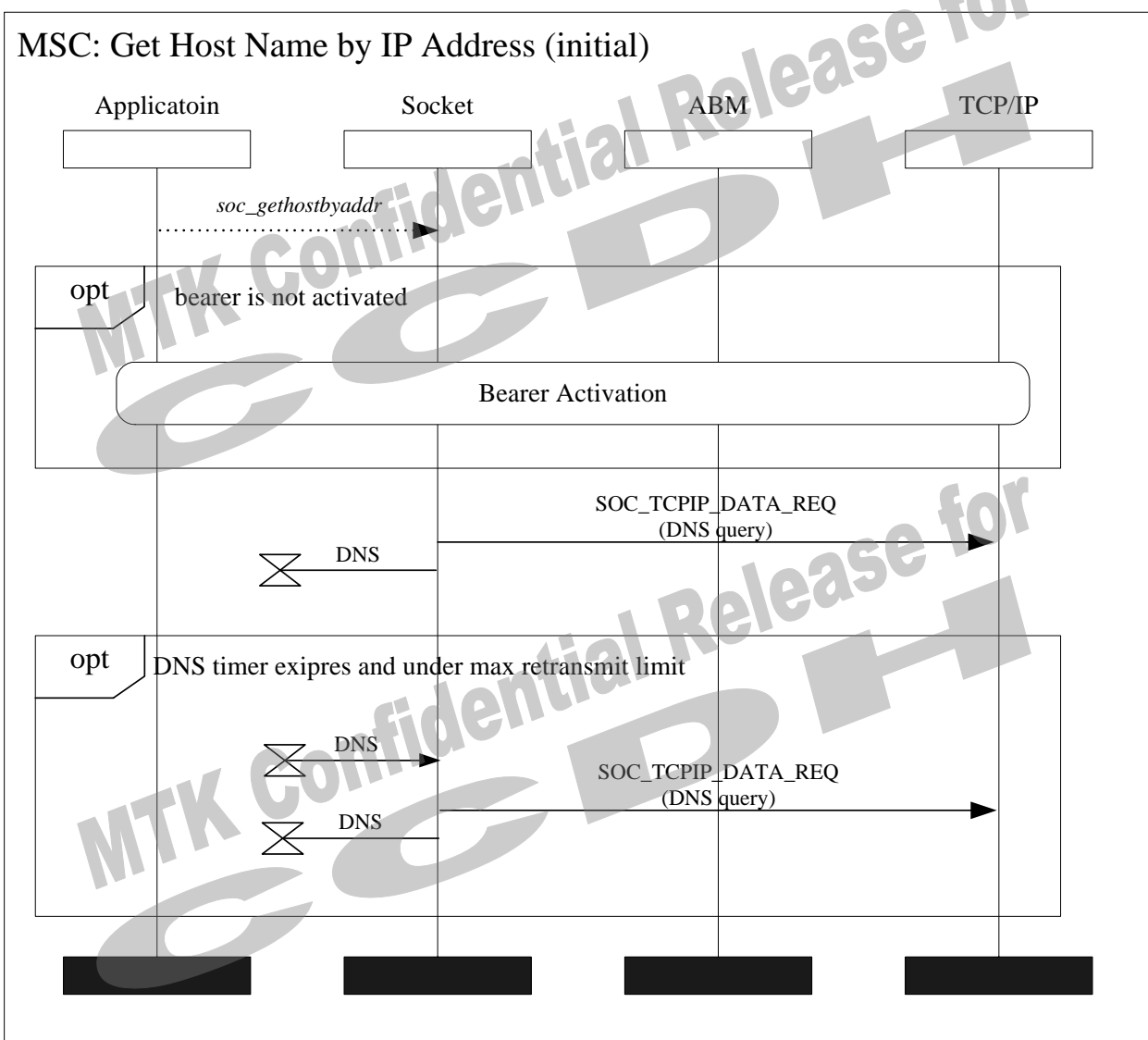
3.17.1 SOC1700001: Get Host Name by IP Address (initial)

Description:

Application calls soc_gethostbyaddr(). SOC will compose the DSN query and send it to TCPIP.

Reference:

Preamble:



3.17.2 SOC1700002: Receive Response which contain Host name (successful case)

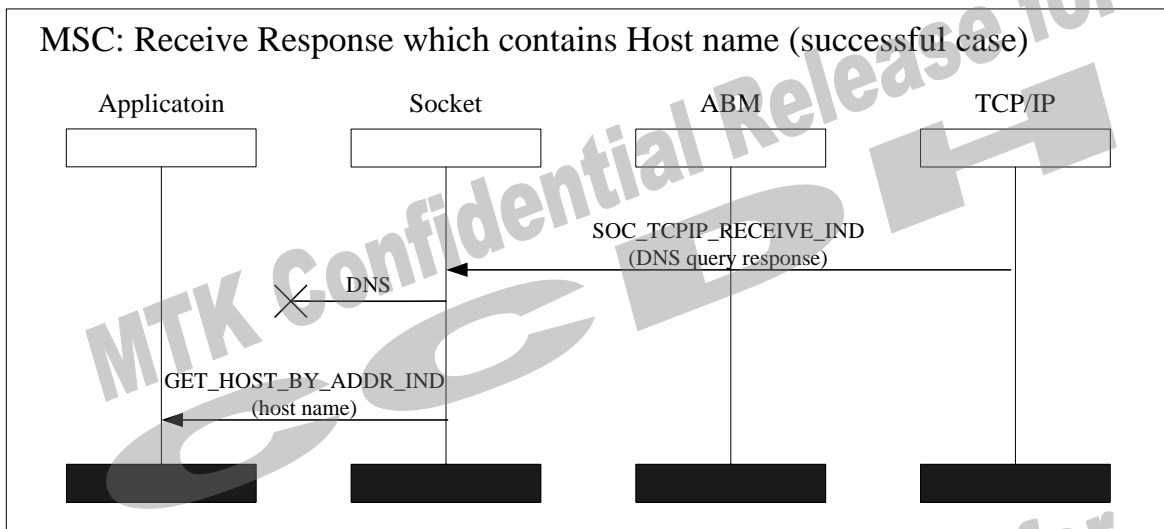
Description:

SOC receives DSN query response which contain host name.

Reference:

Preamble:

SOC1700001



3.17.3 SOC1701003: Can Not Find Host Name (failed case 1)

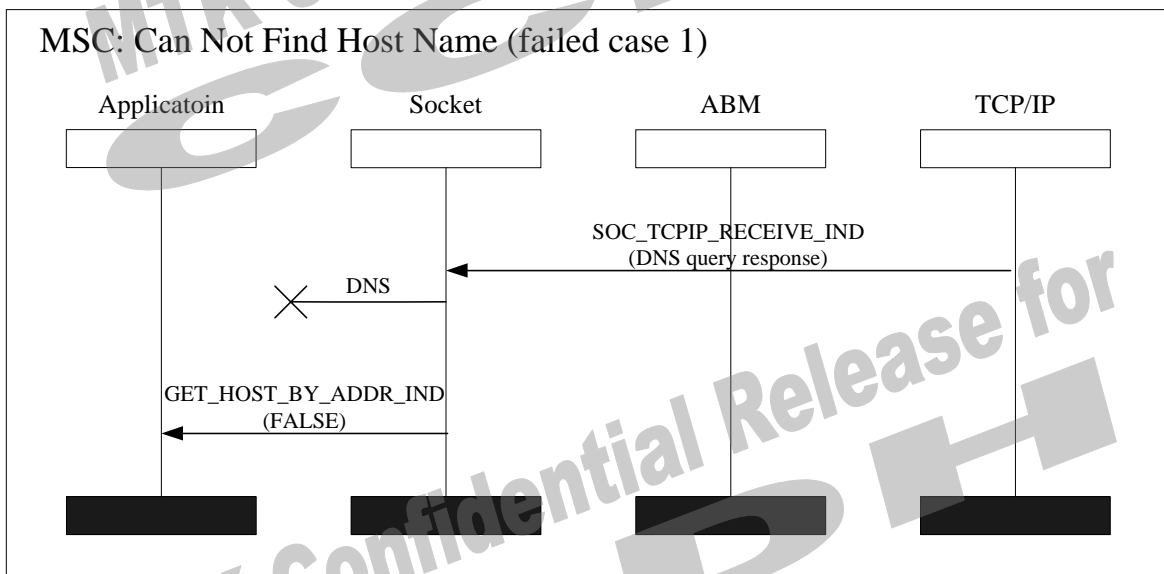
Description:

SOC receives DSN query response which indicates that host name is not found.

Reference:

Preamble:

SOC1700001



3.17.4 SOC1701004: Retransmission Exceed Limit (failed case 2)

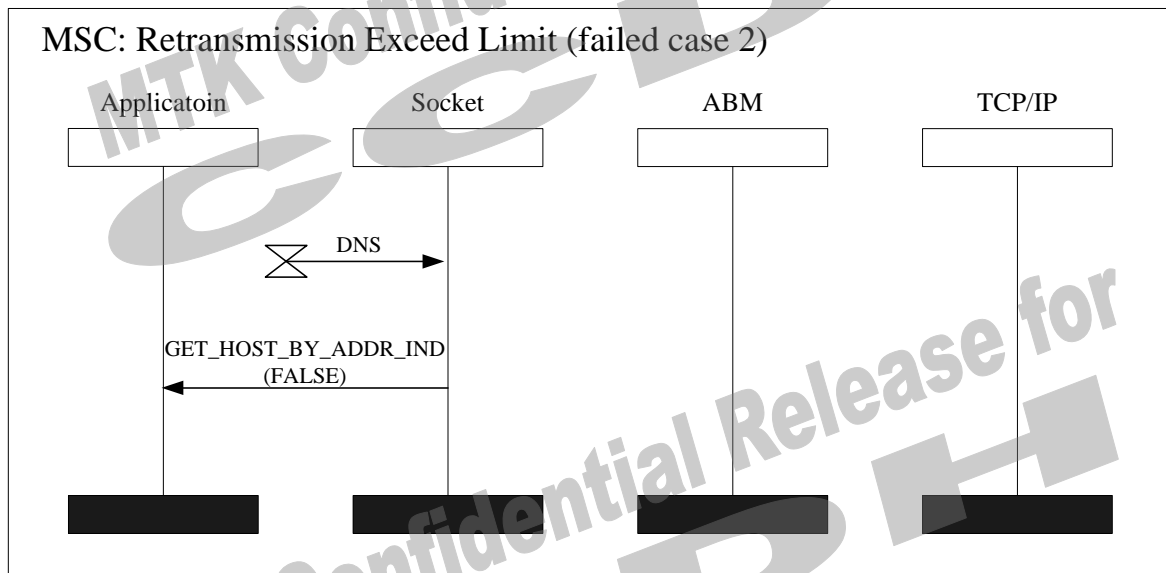
Description:

DNS timer expires and the retransmission exceeds the limit.

Reference:

Preamble:

SOC1700001

MSC: Retransmission Exceed Limit (failed case 2)

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None.