ACKNOWLEDGEMENT

By utilizing this website and/or documentation, I hereby acknowledge as follows:

Effective October 1, 2012, QUALCOMM Incorporated completed a corporate reorganization in which the assets of certain of its businesses and groups, as well as the stock of certain of its direct and indirect subsidiaries, were contributed to Qualcomm Technologies, Inc. (QTI), a wholly-owned subsidiary of QUALCOMM Incorporated that was created for purposes of the reorganization.

Qualcomm Technology Licensing (QTL), the Company's patent licensing business, continues to be operated by QUALCOMM Incorporated, which continues to own the vast majority of the Company's patent portfolio. Substantially all of the Company's products and services businesses, including QCT, as well as substantially all of the Company's engineering, research and development functions, are now operated by QTI and its direct and indirect subsidiaries[1]. Neither QTI nor any of its subsidiaries has any right, power or authority to grant any licenses or other rights under or to any patents owned by QUALCOMM Incorporated.

No use of this website and/or documentation, including but not limited to the downloading of any software, programs, manuals or other materials of any kind or nature whatsoever, and no purchase or use of any products or services, grants any licenses or other rights, of any kind or nature whatsoever, under or to any patents owned by QUALCOMM Incorporated or any of its subsidiaries. A separate patent license or other similar patent-related agreement from QUALCOMM Incorporated is needed to make, have made, use, sell, import and dispose of any products or services that would infringe any patent owned by QUALCOMM Incorporated in the absence of the grant by QUALCOMM Incorporated of a patent license or other applicable rights under such patent.

Any copyright notice referencing QUALCOMM Incorporated, Qualcomm Incorporated, QUALCOMM Inc., Qualcomm Inc., Qualcomm or similar designation, and which is associated with any of the products or services businesses or the engineering, research or development groups which are now operated by QTI and its direct and indirect subsidiaries, should properly reference, and shall be read to reference, QTI.

[1] The products and services businesses, and the engineering, research and development groups, which are now operated by QTI and its subsidiaries include, but are not limited to, QCT, Qualcomm Mobile & Computing (QMC), Qualcomm Atheros (QCA), Qualcomm Internet Services (QIS), Qualcomm Government Technologies (QGOV), Corporate Research & Development, Qualcomm Corporate Engineering Services (QCES), Office of the Chief Technology Officer (OCTO), Office of the Chief Scientist (OCS), Corporate Technical Advisory Group, Global Market Development (GMD), Global Business Operations (GBO), Qualcomm Ventures, Qualcomm Life (QLife), Quest, Qualcomm Labs (QLabs), Snaptracs/QCS, Firethorn, Qualcomm MEMS Technologies (QMT), Pixtronix, Qualcomm Innovation Center (QuIC), Qualcomm iSkoot, Qualcomm Poole and Xiam.

QUALCOMM®
CDMA Technologies

LTE Data Call Scenarios

80-VU868-1 F

Qualcomm Confidential and Proprietary

QUALCOMM Incorporated
5775 Morehouse Drive
San Diego, CA 92121-1714
U.S.A.

Revision History

Version	Date	Description
A	Nov 2009	Initial release
B	Jan 2010	Added UE-initiated QoS call flows
C	Mar 2010	Added additional default-bearer call flows and external interfaces sections; updated dedicated bearer establishment section
D	Sep 2010	Numerous changes were made to this document. It should be read in its entirety.
E	Oct 2010	Added slides 44-48; updated slide 60
F	Mar 2012	Numerous changes were made to this document. It should be read in its entirety.

Contents

- Introduction
- Attach/Detach Call Flows
- Additional PDN Connectivity Call Flows
- Dedicated-Bearer Establishment
- Dormancy
- Inter-RAT Scenarios
- External Interfaces
- Failure Scenarios
- References
- Questions?

Introduction

Objectives

- At the end of this presentation, you will understand:
  - Default-bearer setup call flows
  - On-demand PDN setup call flows
  - Dedicated-bearer setup call flows
  - Dormancy call flows
  - Inter-RAT scenarios
  - Common failure scenarios

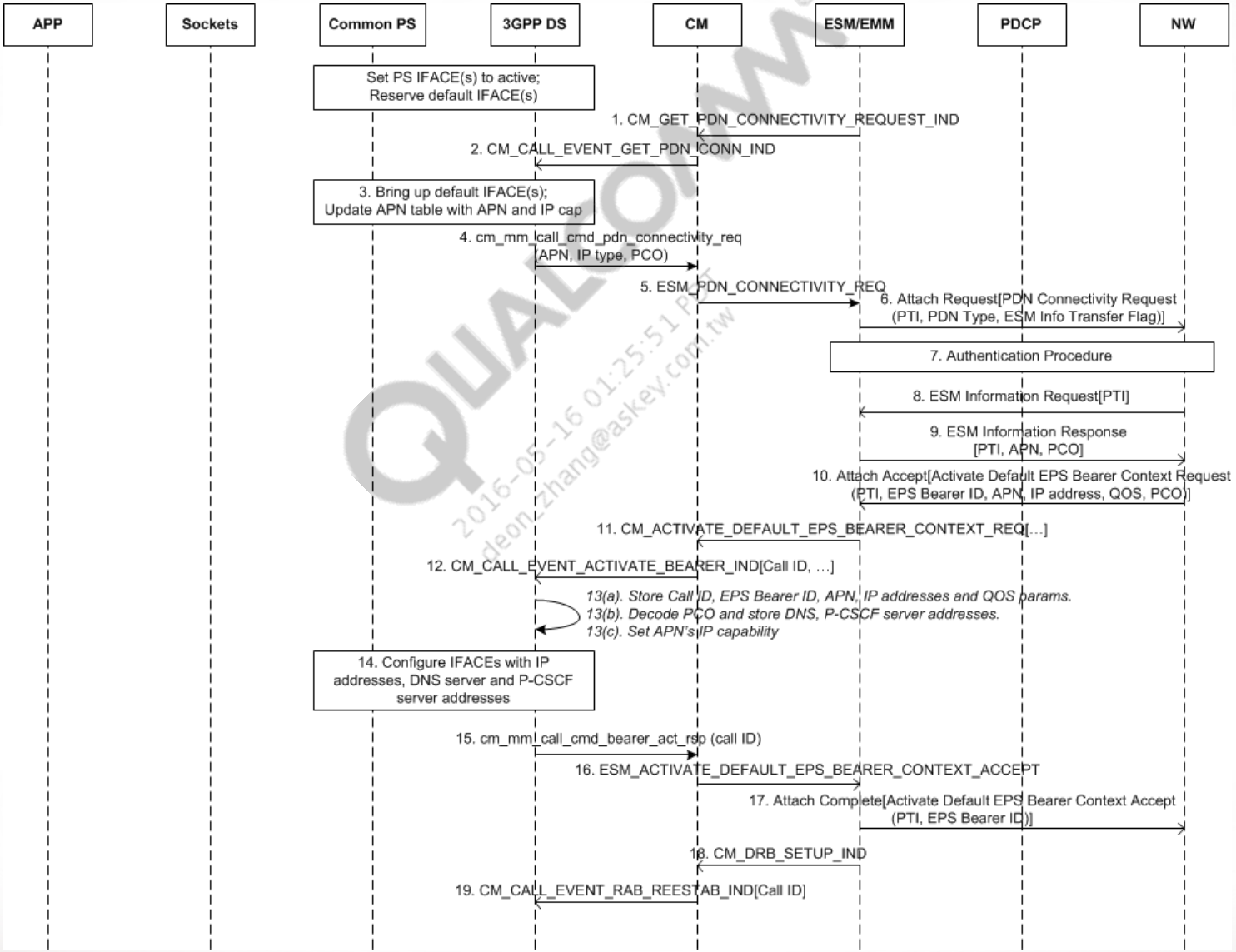
Call Flows

- This document provides information about the following call flows:

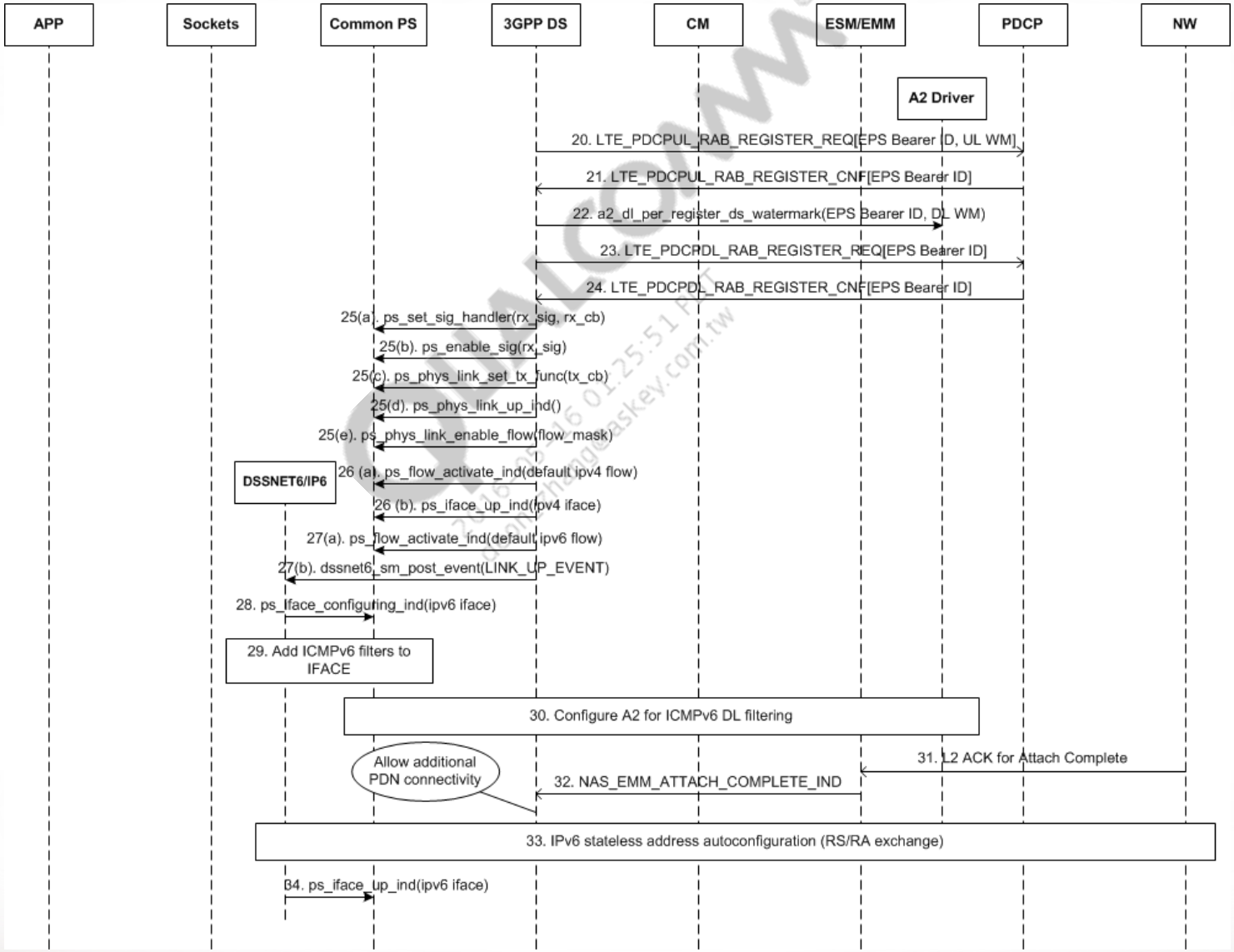
Call flow description
Default-bearer establishment at attach
Default-bearer release at detach
UE requests IPv4v6 IP address, network assigns IPv4
UE requests IPv4v6 IP address, network assigns IPv6
Detach with PDN type IPv4v6
IPv4 address assignment using DHCPv4
DUN connectivity using default-bearer established at attach
Additional default-bearer establishment
Additional default-bearer disconnection
Dedicated-bearer establishment by network
UE-initiated dedicated-bearer establishment – Legacy bearer
UE-initiated dedicated-bearer establishment – New bearer
UE-initiated dedicated-bearer modification

Attach/Detach Call Flows

Default-Bearer Establishment at Attach



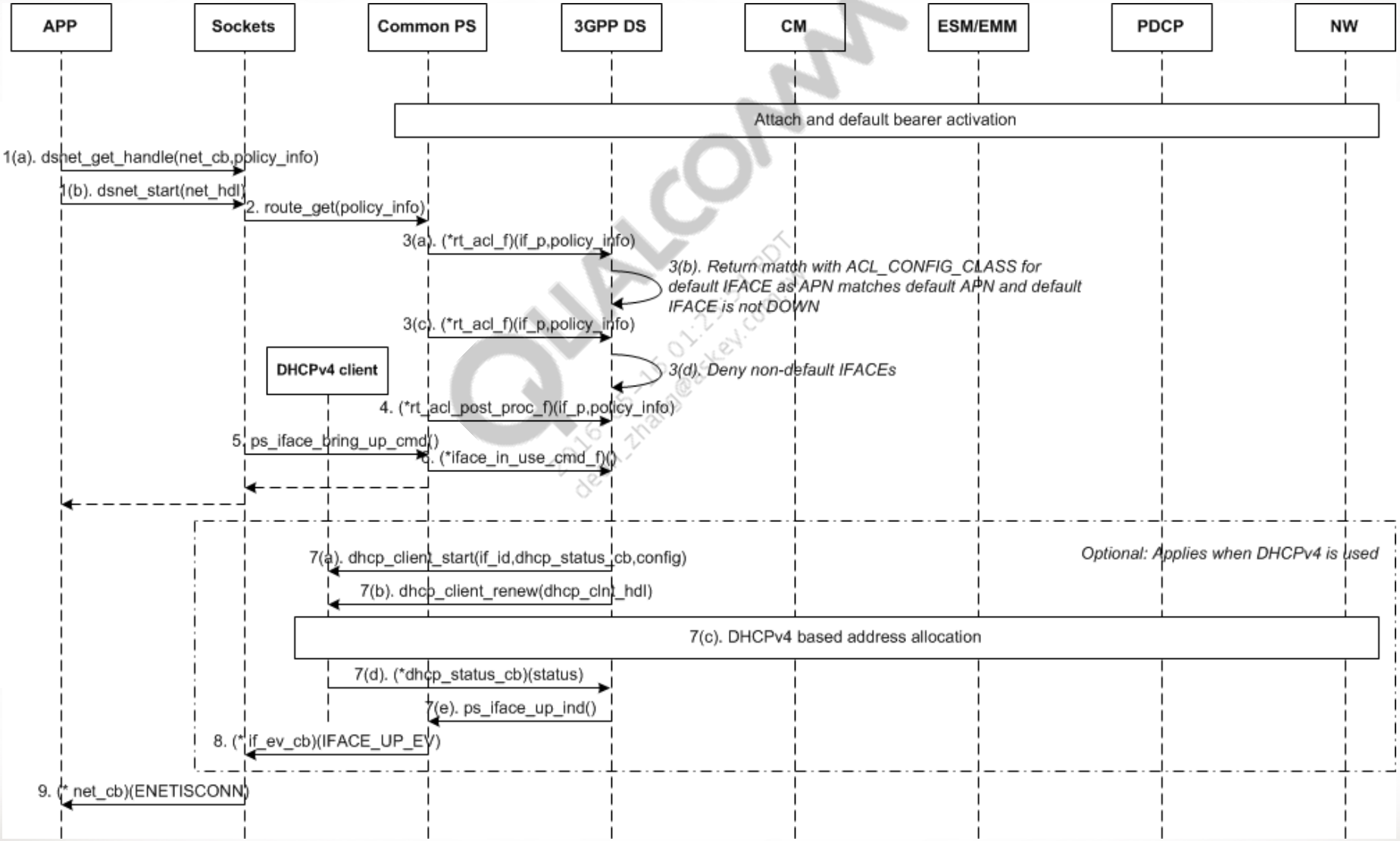
Default-Bearer Establishment at Attach (cont.)



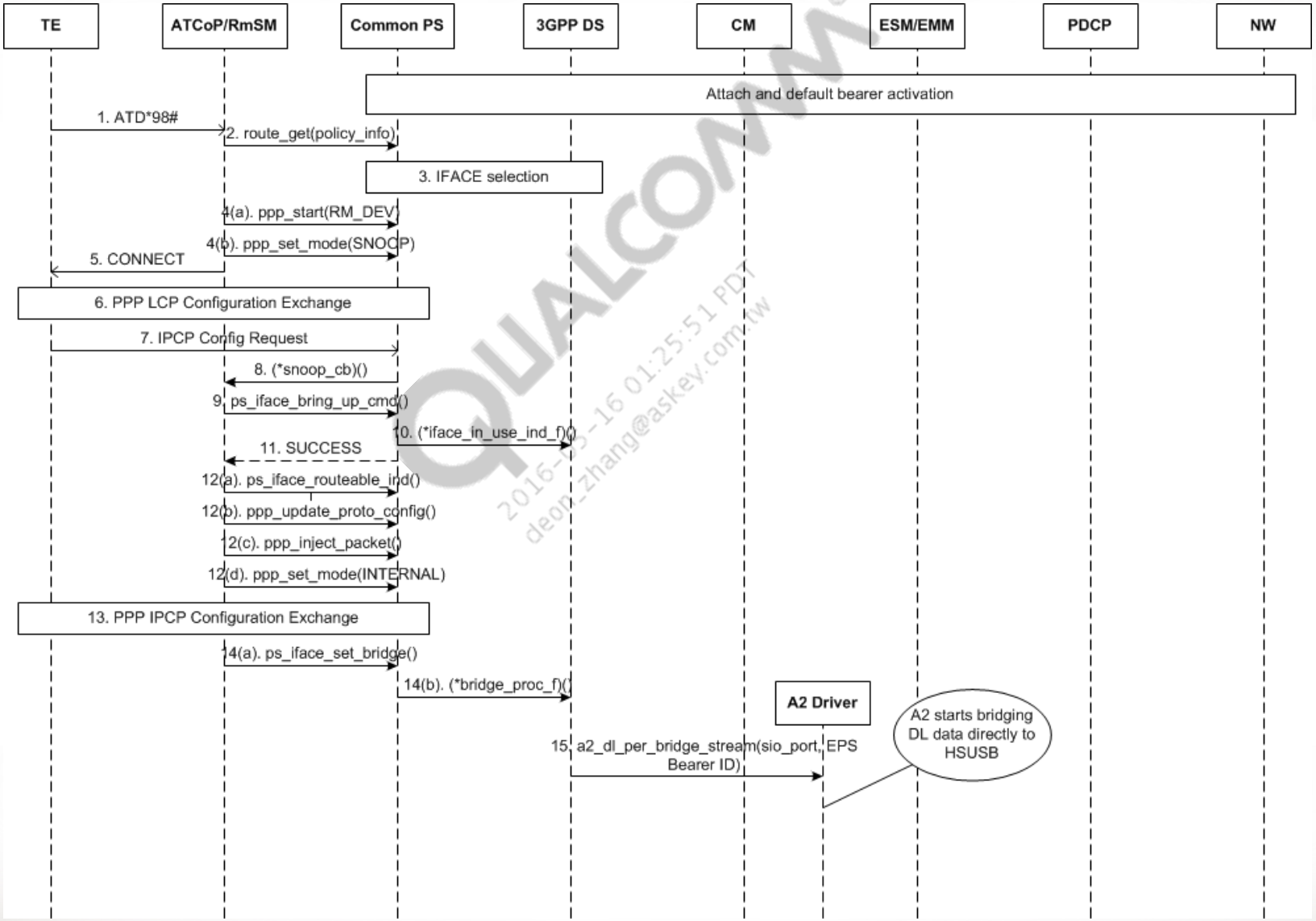
Default-Bearer Establishment at Attach – Logs

ds3gcmif.c	04470	Attach request – Rx’d CM_CALL_EVENT_GET_PDN_CONN_IND
ps_iface.c	03454	Active bringing up iface 0x8004:0, state 2
ds3gmshif.c	01104	Initiate PDN connectivity request
ds3gcmif.c	04547	Rx'ed CM_CALL_EVENT_ACT_BEARER_IND, call id: 0
ds_3gpp_pdn_context.c	06846	PDP type IPV4 is selected in setupPdpIP
ps_iface.c	02086	Setting iface 0x8004:0 IP address to 30.26.5.77
ds3gcmif.c	04632	Data call connected
ds3gcmif.c	05207	Rx’d CM_CALL_RAB_REESTAB_IND_CMD
ds_3gpp_bearer_context.c	2796	RAB reestab ind call ID:0 bearer inst:0 during bearer setup
ds_eps_bearer_context.c	01318	RAB_REG_ULCNF for EPS bearer ID:5
ds_eps_bearer_context.c	01411	Sent RAB_REG_DL_REQ for EPS bearer ID:5
ds_eps_bearer_context.c	1059	RAB_REG_DL_CNF for EPS bearer ID:5
ps_phys_linki_event.c	00986	PHYS LINK UP IND 0x02AC2258, state 2
ps_phys_link.c	00794	Client 0x100000 enabling flow on phys link 0x02AC2258 → mask 0x0
ps_flow.c	00996	FLOW ACTIVATE IND 0x0006FD58, state 0x1, info code 0
ps_ifacei_event.c	02236	IFACE UP IND 0x8004:0, state 4
ps_ifacei_event.c	0453	Iface 0x00008004 associated with iface 0x00008880 is flow-enabled

Embedded Call over Default Bearer Established at Attach



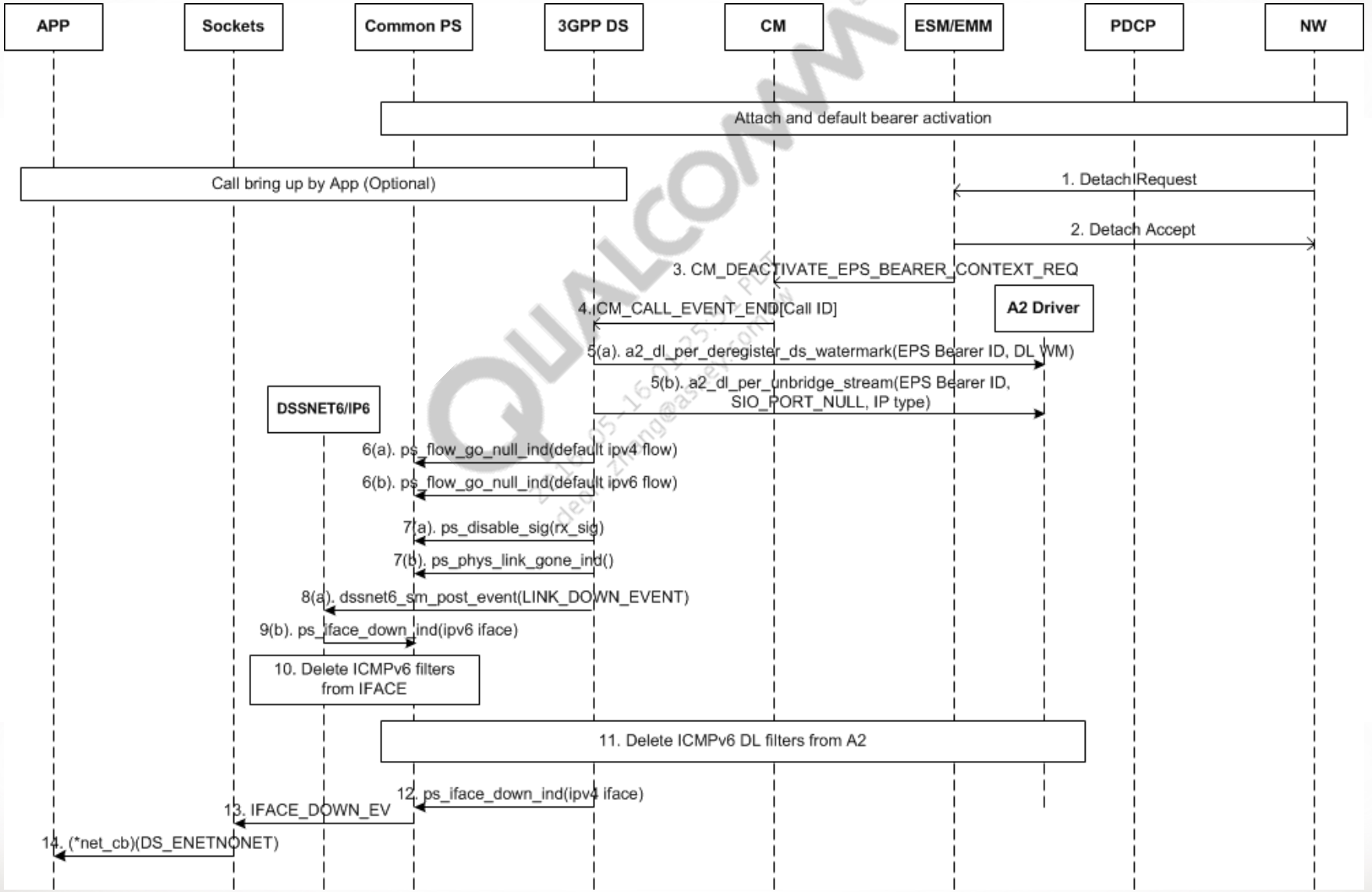
DUN Connectivity over Default Bearer Established at Attach



DUN Connectivity over Default Bearer – Logs

ps_ppp.c	02362	ppp_start(dev 1)
ps_ppp_snpip.c	01590	Snoop IP dev 1, dev 0 in state 0ps_ppp_ipcp.c 02633 IPCP established on dev 1
ps_ifacei_event.c	02257	IFACE UP IND 0x8008:0, state 2
ps_phys_linki_event.c	01001	PHYS LINK UP IND 0x01BD0D28, state 64
ps_iface.c	01754	Bridging iface 0x8008:0 in state 2 to iface 0x8004:3
ps_iface.c	01754	Bridging iface 0x8004:3 in state 16 to iface 0x8008:0

Default-Bearer Release at Detach

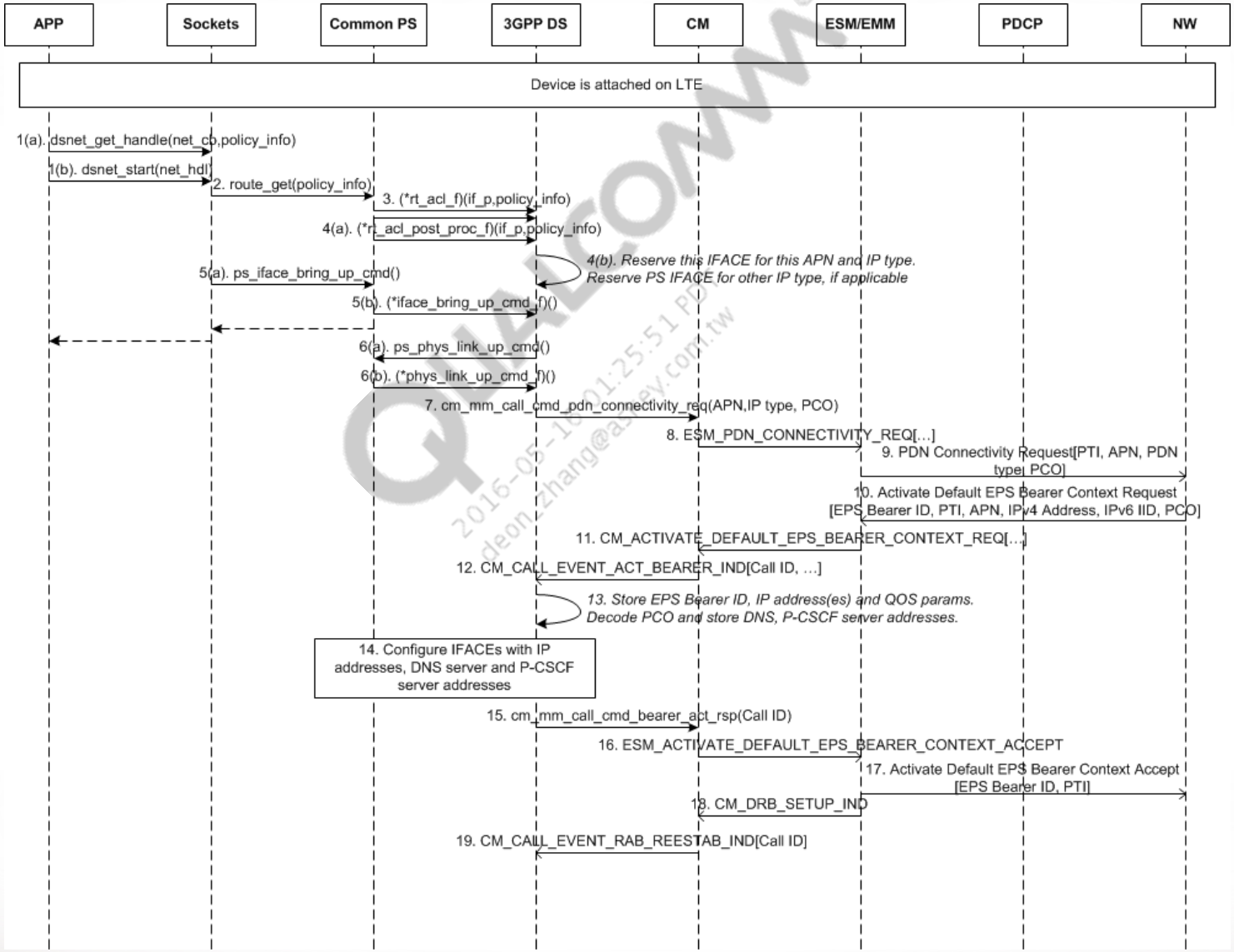


Default-Bearer Release at Detach – Logs

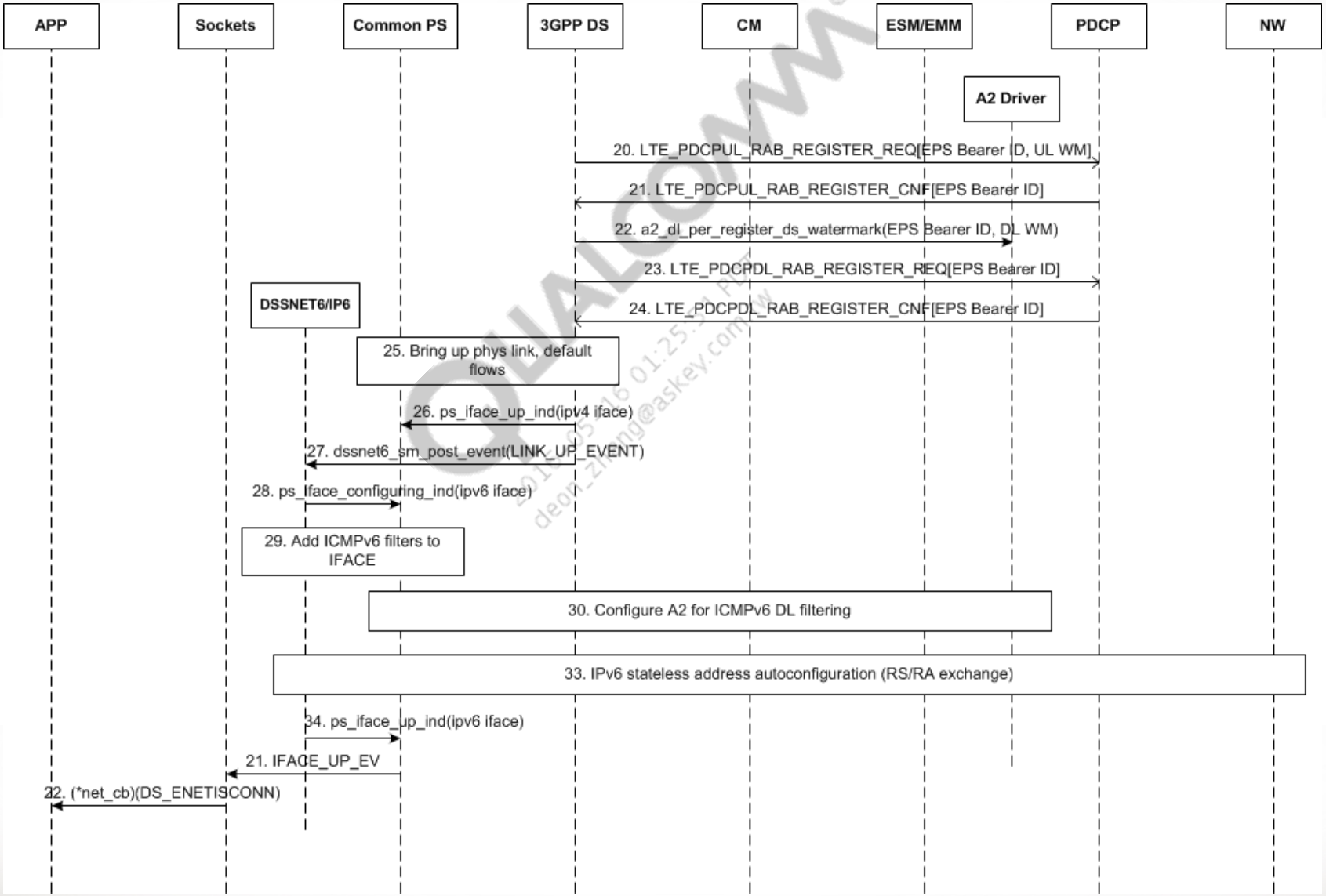
ps_flow.c	01210	FLOW GO NULL IND 0x00035980, state 0x1, info code 0
ps_flowi.c	01166	Unbinding flow, 0x00035980, from phys link, 0x00000000
ps_flowi.c	01170	Flow, 0x00035980, not bound to phys link
ps_phys_linki_event.c	01056	PHYS LINK GONE IND 0x02AE4558, state 64
ds3gcmif.c	02498	Rx'd CM_CALL_END_CMD
ds_eps_bearer_context.c	01685	Phys link gone
ds_eps_bearer_context.c	01758	BEARER DOWN IND CB for bearer:2ac2248
ds_3gpp_pdn_context.c	03512	Number of active bearer_cntx 0
ds_3gpp_pdn_context.c	3516	Freeing last phys link PDN CNTX 0x1be3bc0
ds_3gpp_bearer_context.c	01779	Bearer inst: 0 deregistering for RM phys link events
ps_ifacei_event.c	01903	IFACE DOWN IND 0x8004:0, state 32
ds3gcmif.c	01755	Data call ended
ps_ifacei_event.c	1903	IFACE DOWN IND 0x8880:1, state 16
ds_rmnet_meta_sm.c	03652	UM iface down, posting RMNET_META_SM_UM_IFACE_DOWN_EV
ps_ifacei_event.c	01903	IFACE DOWN IND 0x8008:2, state 16
ds_qmi_wds.c	13252	Net interface is disconnected!
ds_qmi_wds.c	14152	Media disconnected (00000000)

Additional PDN Connectivity Call Flows

Additional PDN Connection Establishment



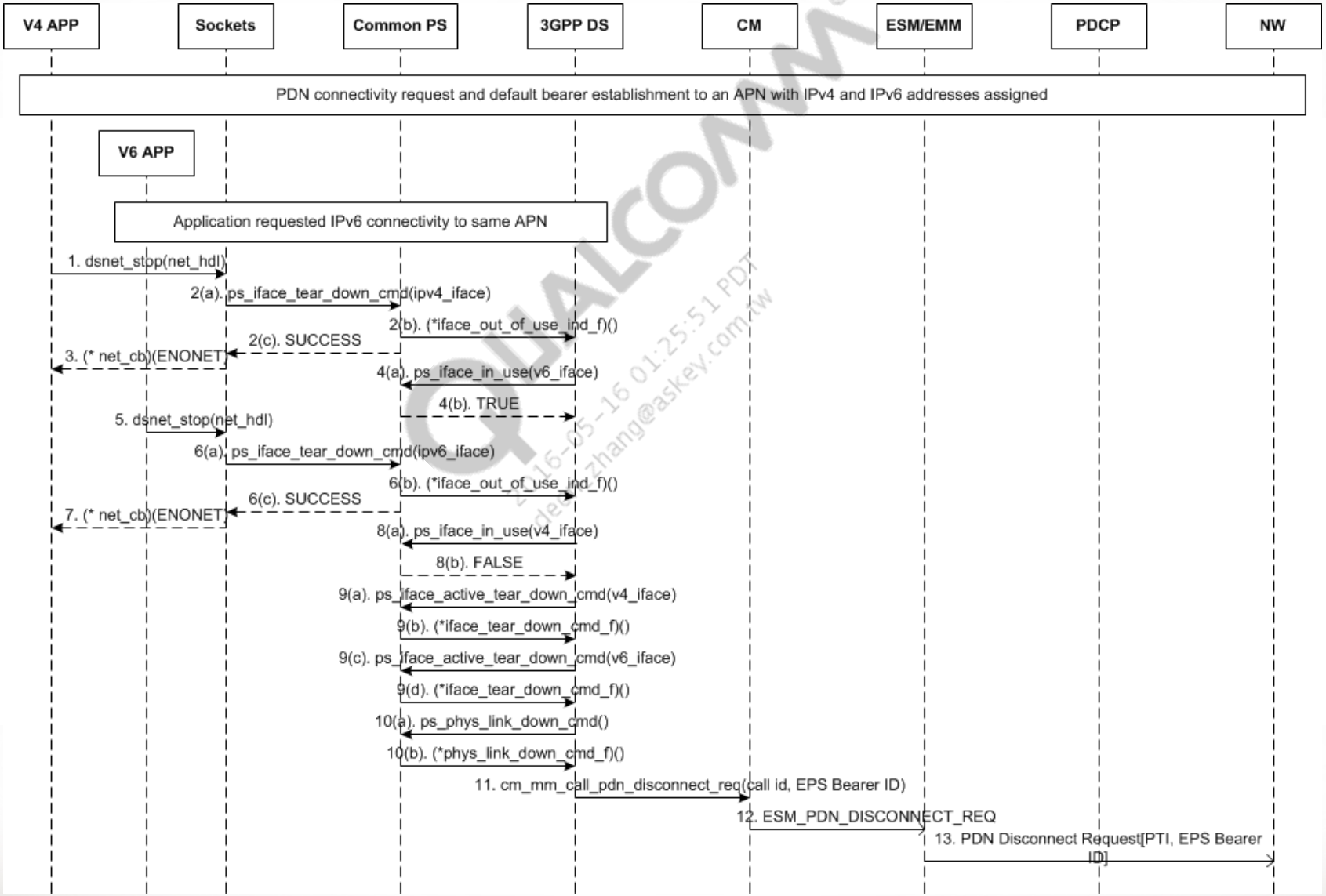
Additional PDN Connection Establishment (cont.)



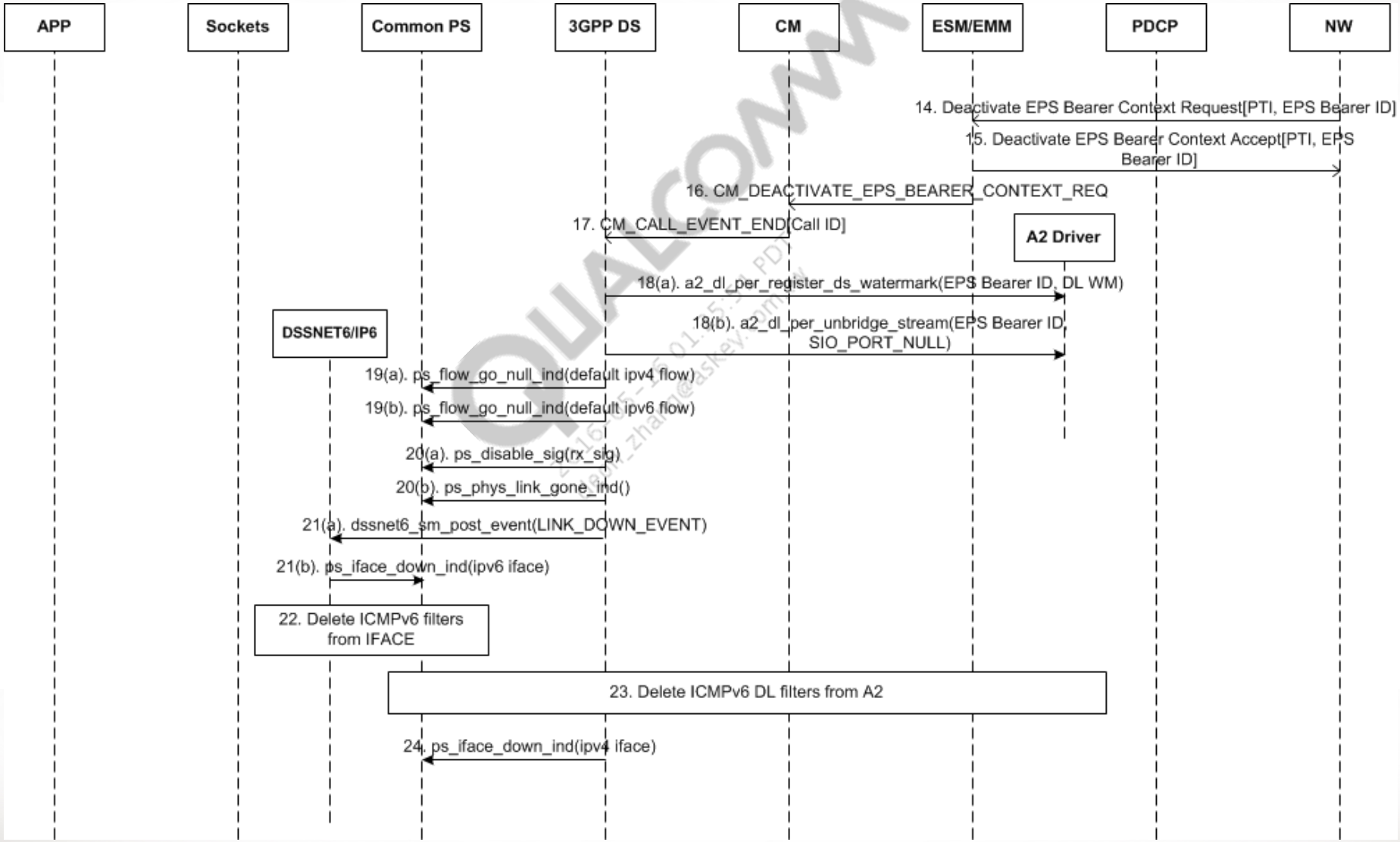
Additional PDN Connection Establishment – Logs

ds_qmi_wds.c	03414	Start RmNet call
ds_rmnet_meta_sm.c	03629	RMNET_META_SM state goes 'Null state' to 'Um configuring'
ps_iface.c	03439	Active bringing up iface 0x8880:1, state 2
ps_iface.c	03439	Active bringing up iface 0x8004:6, state 2
ps_iface.c	03439	Active bringing up iface 0x8004:7, state 2
ds_3gpp_bearer_context.c	00537	DSUMTSPS PHYS LINK up cmd bearer Inst:3
ds3gmshif.c	01104	Initiate PDN connectivity request
ds3gcmif.c	04577	Rx'd CM_CALL_EVENT_ACT_BEARER_IND, call ID: 3
ds_3gpp_pdn_context.c	06565	Setting up type IP V4 PS Iface
ps_iface.c	02071	Setting iface 0x8004:6 IP address to 10.184.2.149
ds_3gpp_pdn_context.c	06721	PDN CNTX Inst:28787256 ID for type IPV6 call: 4cfc3c01
ds3gcmif.c	04662	Data call connected
ds3gcmif.c	05237	Rx'd CM_CALL_RAB_REESTAB_IND_CMD
ds_eps_bearer_context.c	01568	RAB_REG_ULCNF for EPS bearer id:8
ds_eps_bearer_context.c	01309	RAB_REG_DL_CNF for EPS bearer id:8
ps_phys_linki_event.c	00986	PHYS LINK UP IND 0x02A52150, state 2
ds_rmnet_meta_sm.c	03434	Phys link flow enabled!
ps_flow.c	00996	FLOW ACTIVATE IND 0x00032FA8, state 0x1, info code 0

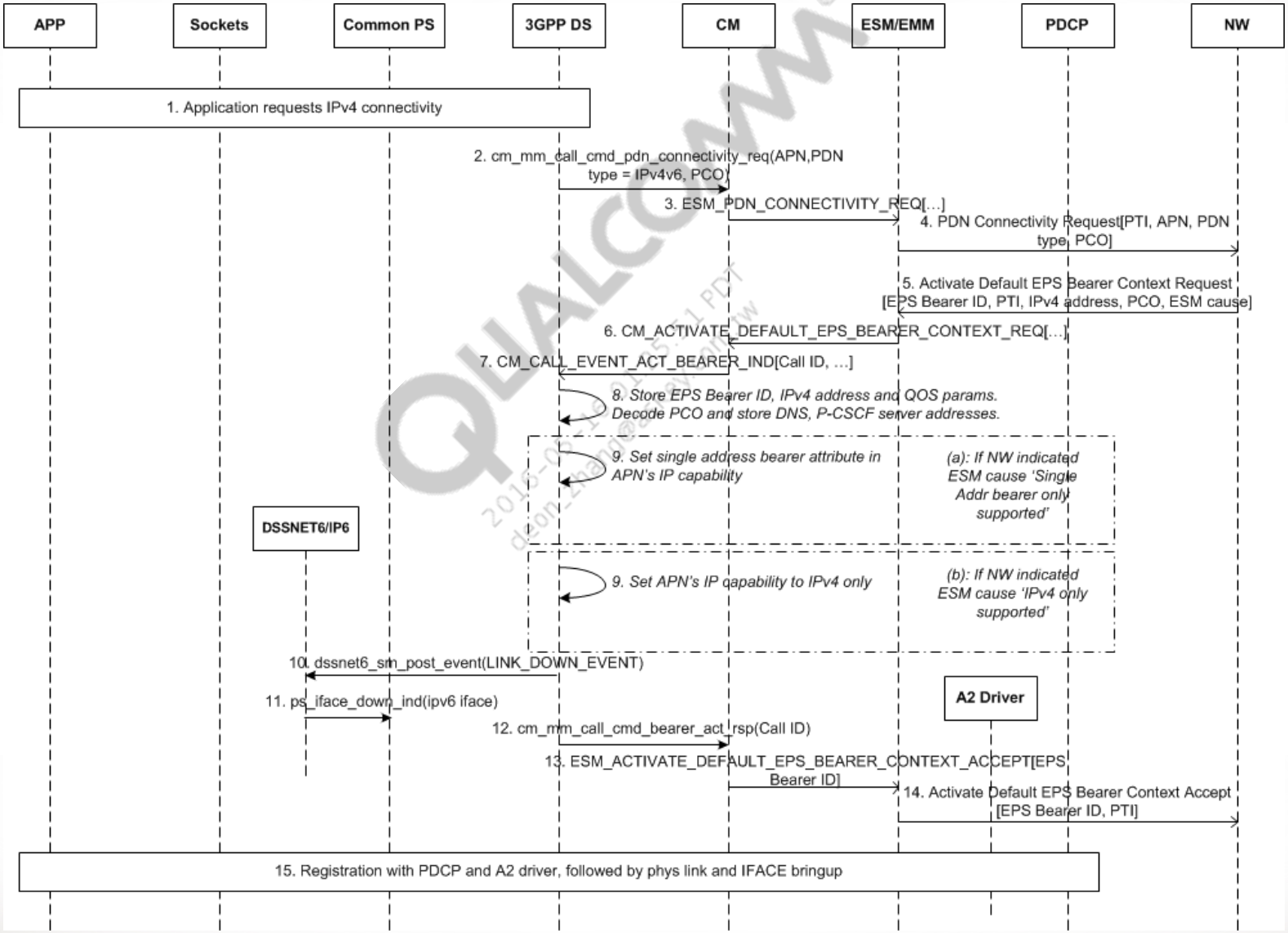
Additional PDN Disconnection



Additional PDN Disconnection (cont.)



Dual IP to Single IP Fallback



UE Requests IPv4v6 and Network Returns Single Address Bearer Only – Logs

ds3gmshif.c	01044	Initiate PDN connectivity request
ds3gcmif.c	04922	Rx'ed CM_CALL_EVENT_ACT_BEARER_IND, call id: 0
ds_eps_pdn_context.c	01184	Received ESM cause Single address bearer only while sent out V4V6
ds3gcmif.c	05580	Rx'ed CM_CALL_RAB_REESTAB_IND_CMD
ds_3gpp_pdn_context.c	05444	Setting up Type IP V4 PS Iface
ps_iface.c	02121	Setting iface 0x8004:3 IP Address to 172.22.1.100
ds3gcmif.c	05006	Data call connected
ds3gmshif.c	01044	Initiate PDN connectivity request
ds3gcmif.c	04922	Rx'ed CM_CALL_EVENT_ACT_BEARER_IND, call id: 1
ds_3gpp_pdn_context.c	05938	PDP type IPV6 is selected in setupPdpIP
ds_3gpp_pdn_context.c	05600	PDN cntx Inst:46320528 iid for type IPV6 call :1
ds3gcmif.c	05580	Rx'ed CM_CALL_RAB_REESTAB_IND_CMD 00:00:47.921

UE Requests IPv4v6 and Network Returns v4 Only – Logs

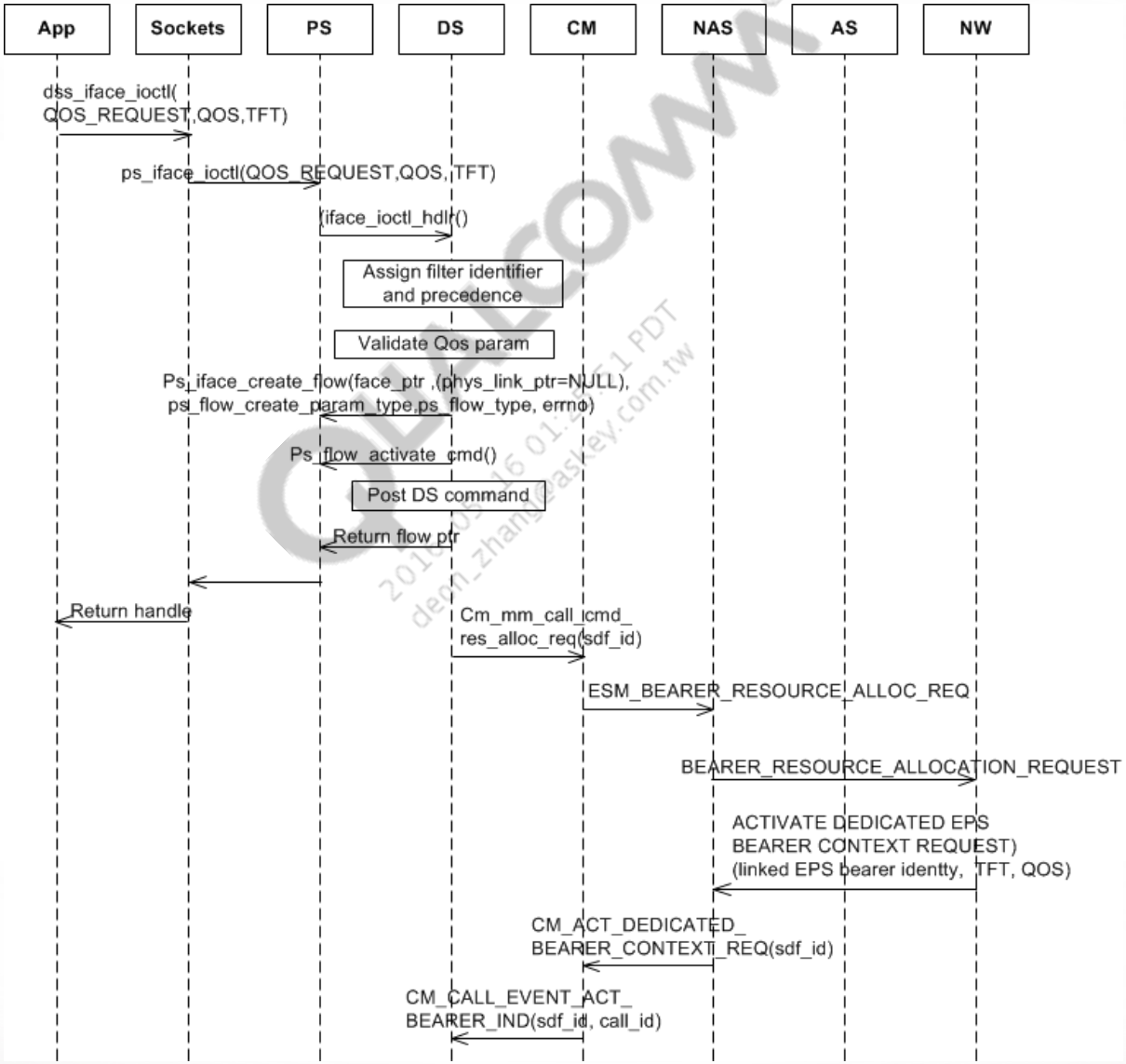
ds3gmshif.c	01044	Initiate PDN connectivity request
ds3gcmif.c	04922	Rx'ed CM_CALL_EVENT_ACT_BEARER_IND, call id: 0
ds_eps_pdn_context.c	01184	Received ESM cause Single address bearer only while sent out V4V6
ds3gcmif.c	05580	Rx'ed CM_CALL_RAB_REESTAB_IND_CMD
ds_3gpp_pdn_context.c	05444	Setting up Type IP V4 PS Iface
ps_iface.c	02121	Setting iface 0x8004:3 IP Address to 172.22.1.100
ds3gcmif.c	05006	Data call connected
ps_flow.c	01210	FLOW GO NULL IND 0x0006FDB0, state 0x1, info code 0
ps_flowi.c	01166	Unbinding flow, 0x0006FDB0, from phys link, 0x02A46818
ds_3gpp_pdn_context.c	09668	Returning bridge iface ptr: 0x0

Additional Default-Bearer Disconnection – Logs

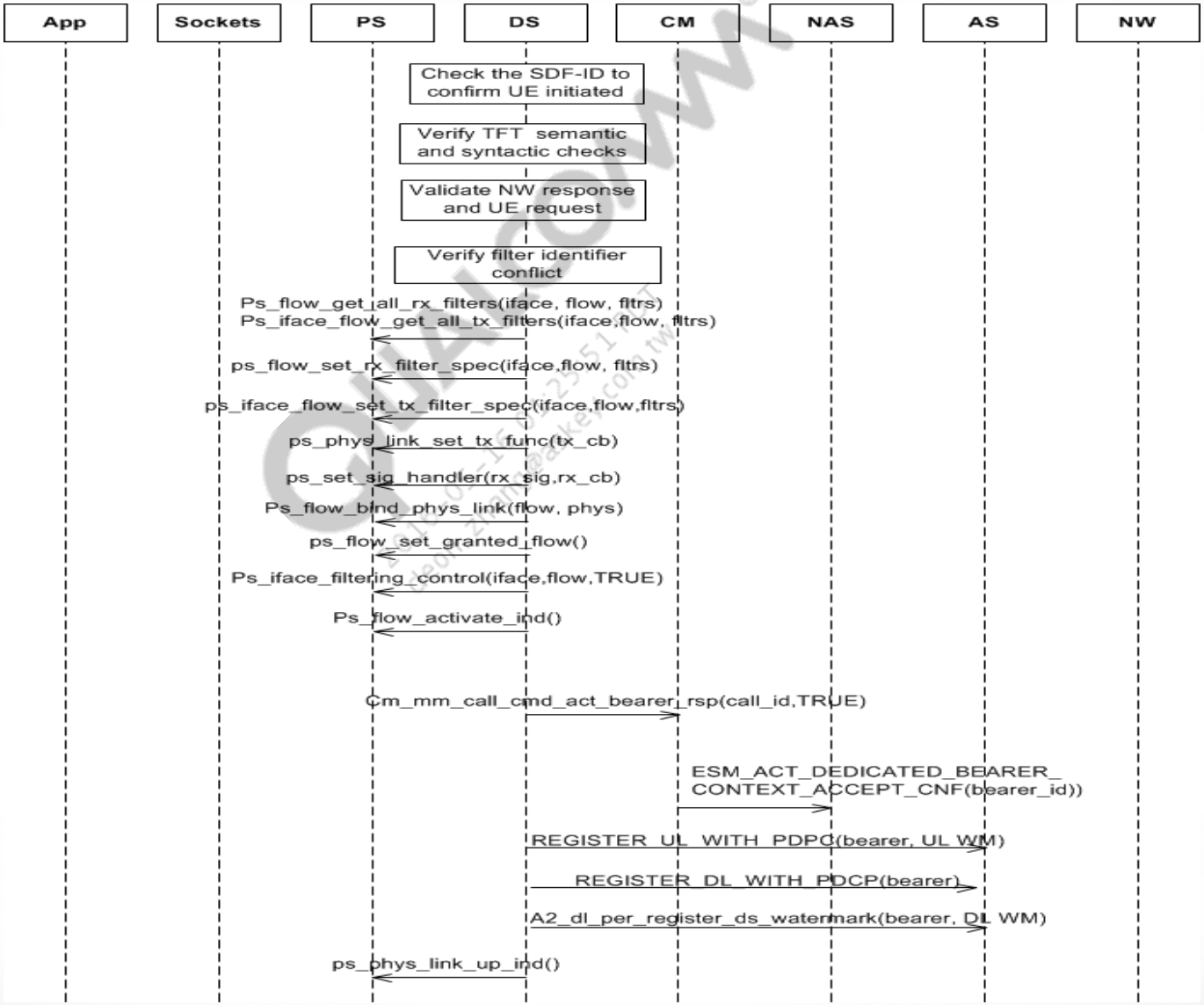
ds_qmi_wds.c	03904	Client 3 end RmNet call
ds_rmnet_meta_sm.c	03629	RMNET_META_SM state goes ‘Um & Rm up’ to ‘Waiting for Um to go down’
ds_3gpp_pdn_context.c	04930	iface down cmd hdlr PDN cntx ptr:0x1de5eb0
ds_rmnet_meta_sm.c	03446	Phys link flow disabled!
ds_rmnet_meta_sm.c	03446	Phys link flow disabled!
ds3gmshif.c	01023	PDN disconnect request
ds3gcmif.c	02538	Rx’d CM_CALL_END_CMD
ds_eps_bearer_context.c	01048	Deregistering WM with A2
ds_rmnet_meta_sm.c	03446	Phys link flow disabled!
ds_3gpp_pdn_context.c	01227	Setting bridge Iface Ptr to NULL
ds3gcmif.c	01796	Data call ended

Dedicated-Bearer Establishment

UE-Initiated QoS Request



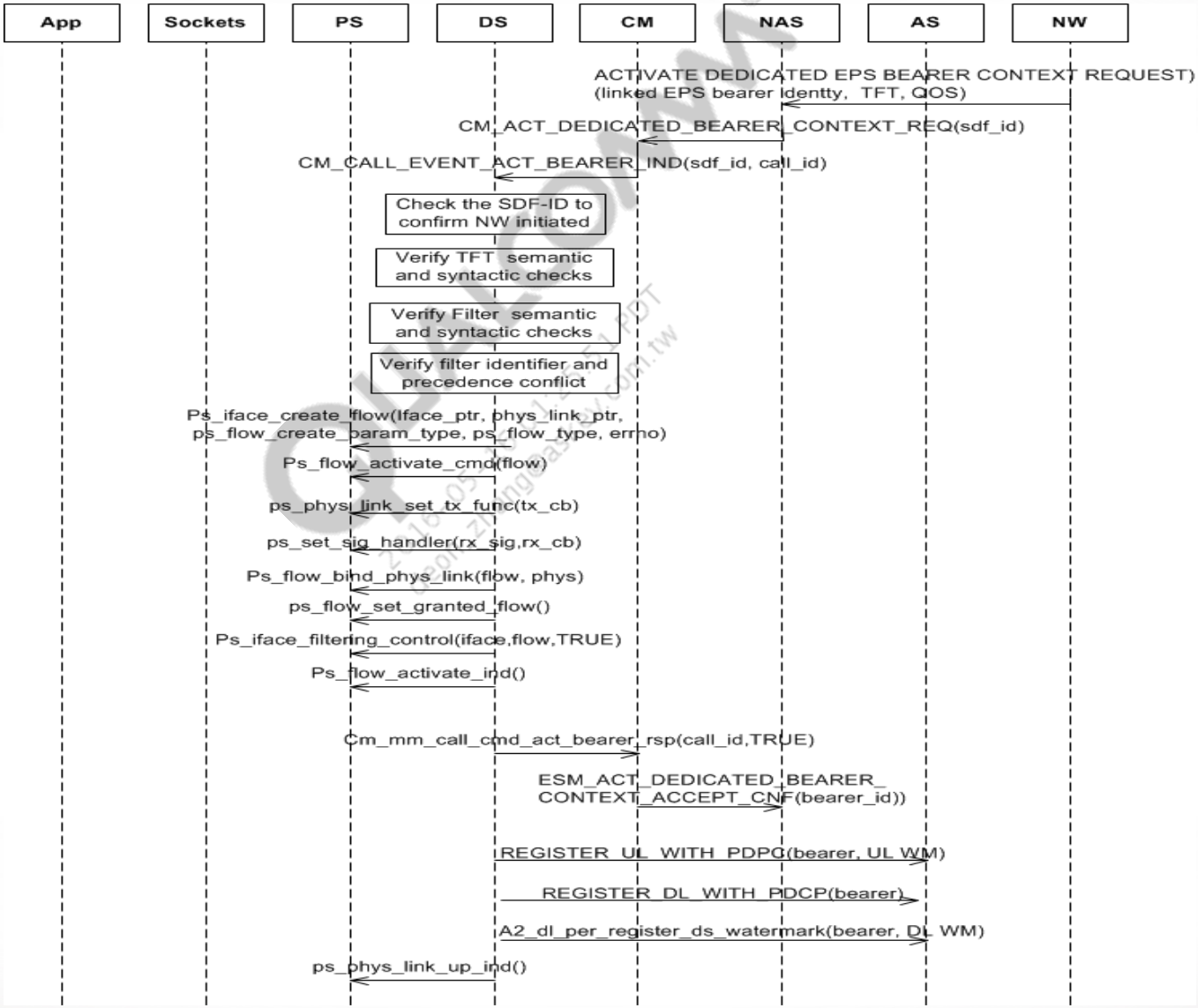
UE-Initiated QoS Request (cont.)



UE-Initiated QoS Request – Logs

ds_epc_hdlr.c	0496	EPC:PS_IFACE_IOCTL_QOS_REQUEST
ds_3gpp_pdn_context.c	02848	Received secondary context activation request from IOCTL
ds_3gpp_tft.c	00149	Set 0x1 for precedence
ds_3gpp_tft.c	00149	Set 0x2 for precedence
ds_3gpp_flow_manager.c	08176	Allocated free-flow context
ds_3gpp_flow_manager.c	1370	Filter validation for Rx
ds_3gpp_flow_manager.c	01397	Filter validation for Tx
ds_3gpp_flow_context.c	00341	POST-PS FLOW ACTIVATE CMD on flow context:0x5400
ds_3gpp_bearer_flow_manager.c	01175	Convert app QoS to network QoS
ds3gmshif.c	01175	Bearer-resource allocation request
ds3gcmif.c	04961	Rx'd CM_CALL_EVENT_ACT_BEARER_IND, call ID: 1
ds_3gpp_flow_manager.c	1028	Found flow_context for SDF_ID 0x5400
ds_eps_pdn_context.c	00904	Received dedicated bearer Activ Ind:lbi=5:bearer=6
ds_eps_bearer_flow_manager.c	00469	Received NON-GBR QoS request with QCI value:5
ds_3gpp_flow_context.c	00720	Bind flow to phys link on flow context:0x5400
ds3gcmif.c	05621	Rx'd CM_CALL_RAB_REESTAB_IND_CMD
ds_eps_bearer_context.c	01543	RAB_REG_ULCNF for EPS bearer ID:6
ds_eps_bearer_context.c	01284	RAB_REG_DL_CNF for EPS bearer ID:6

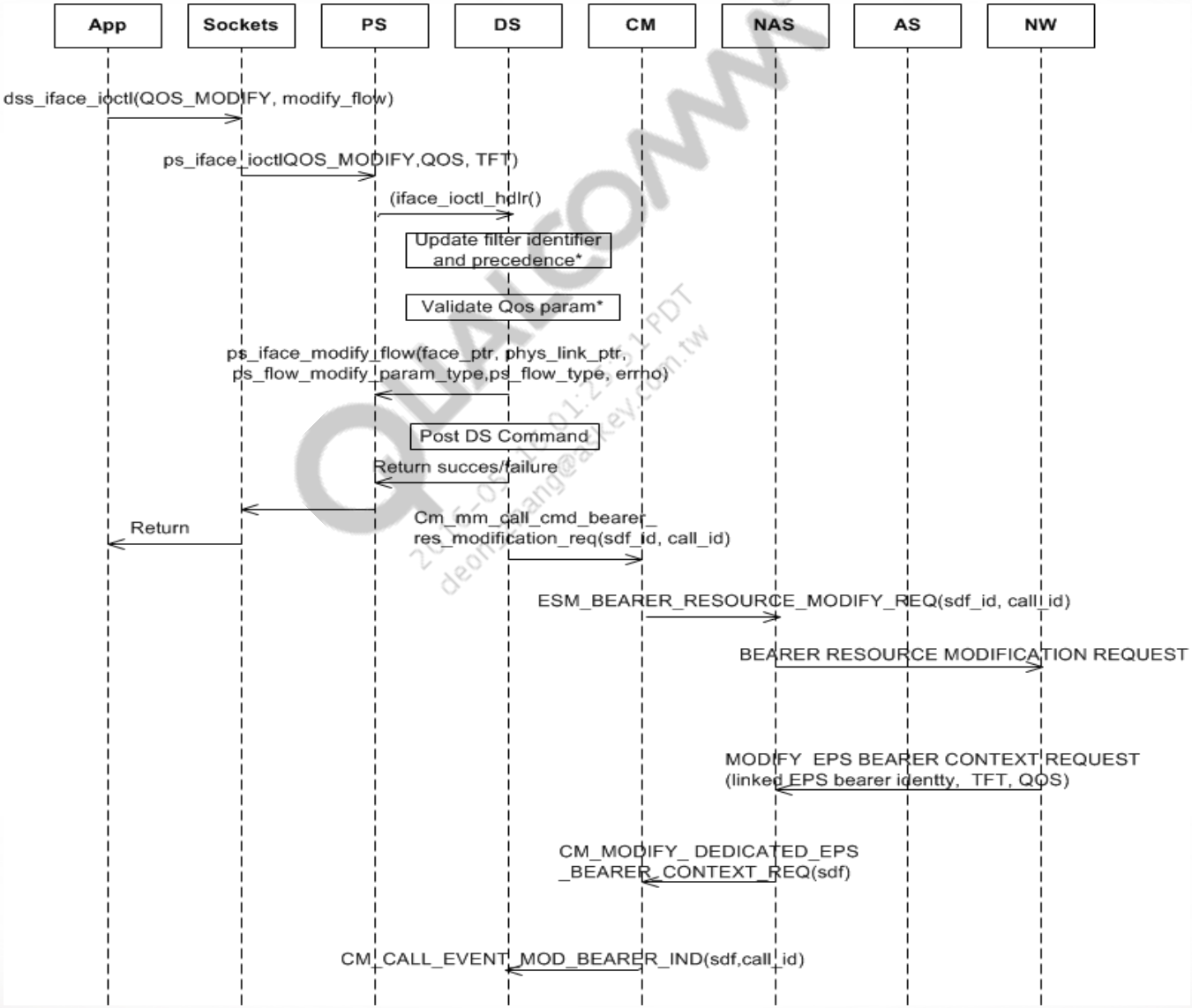
Network-Initiated QoS Request



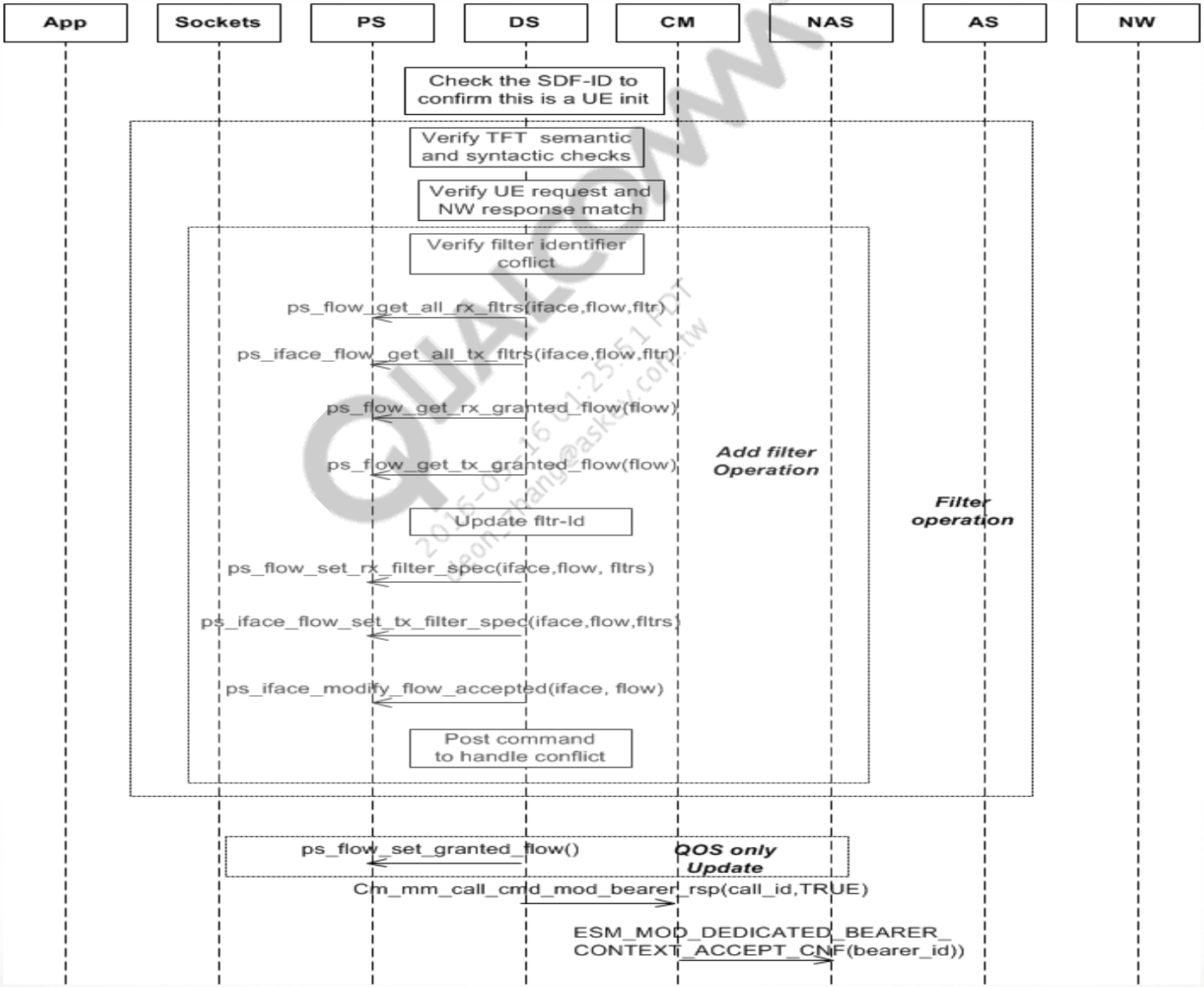
Network-Initiated QoS Request – Logs

ds3gcmif.c	04994	Rx'd CM_CALL_EVENT_ACT_BEARER_IND, call ID: 1
ds_3gpp_hdlr.c	01928	Cannot find bearer corresponding to SDF ID 0xffff
ds_3gpp_flow_manager.c	03271	Create flow context for PDN:28109592, bearer:45674000
ds_eps_bearer_flow_manager.c	00450	Received GBR QoS request with QCI value:1
ds_3gpp_flow_context.c	00720	Bind flow to phys link on flow context:0x0
ds3gcmif.c	05654	Rx'd CM_CALL_RAB_REESTAB_IND_CMD
ds_eps_bearer_context.c	01553	RAB_REG_ULCNF for EPS bearer ID:6
ds_eps_bearer_context.c	01294	RAB_REG_DL_CNF for EPS bearer ID:6
ds_3gpp_flow_context.c	00490	Indicate PS FLOW activated on flow context:0x0
ds_3gpp_bearer_context.c	00549	DSUMTSPS PHYS LINK up CMD bearer inst:2

UE-Initiated QoS Modification



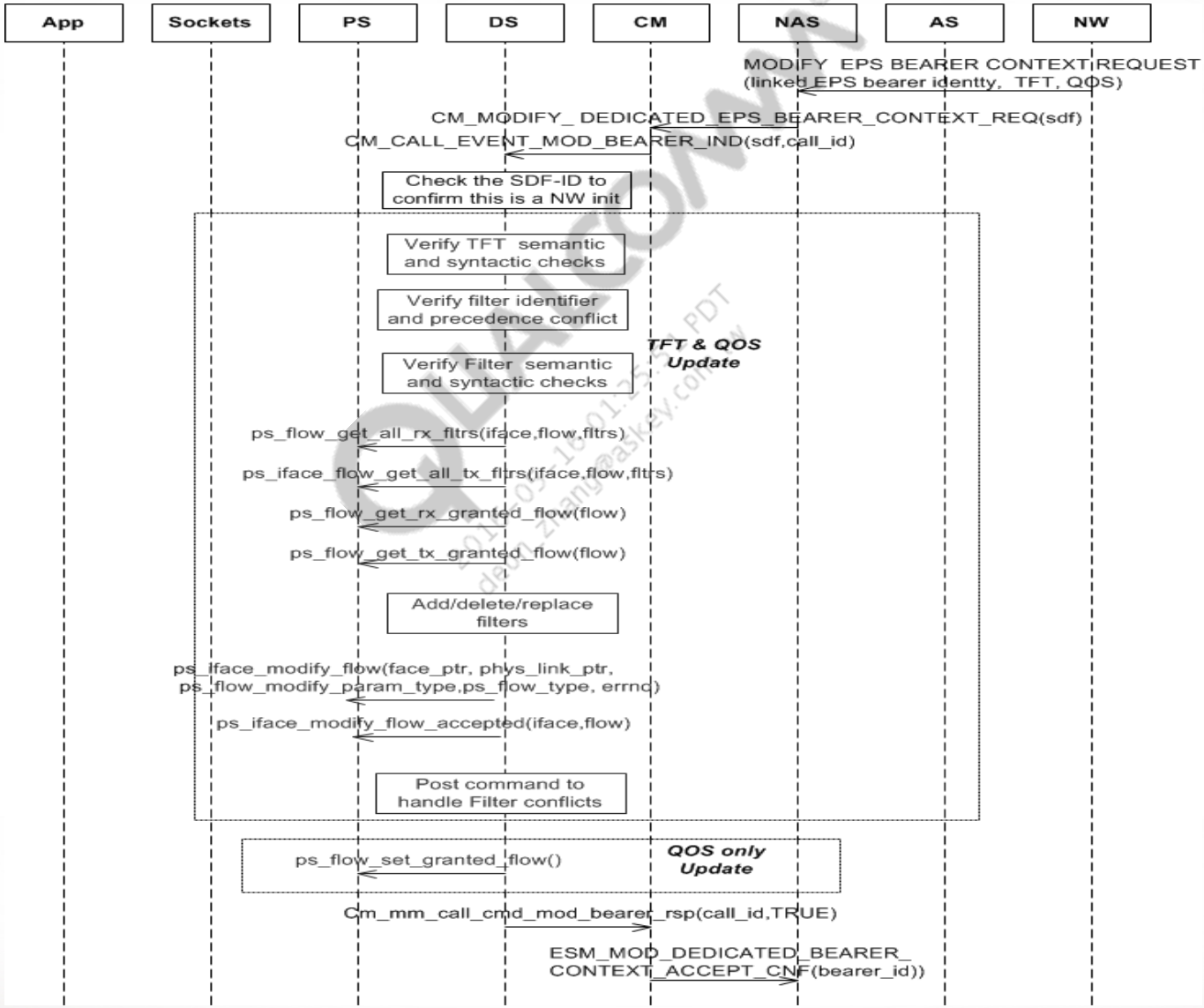
UE-Initiated QoS Modification (cont.)



UE-Initiated QoS Modification – Logs

ds3gmshif.c	01218	Bearer resource modification request
ds3gcmif.c	05353	Rx'd CM_CALL_EVENT_BEARER_MOD_IND
ds_eps_flow_manager.c	00843	EPS flow manager received bearer-modification indication
ds_eps_flow_manager.c	00854	Modify IND for SDF ID:0xffff
ds_eps_bearer_flow_manager.c	00450	Received GBR QoS request with QCI value:1

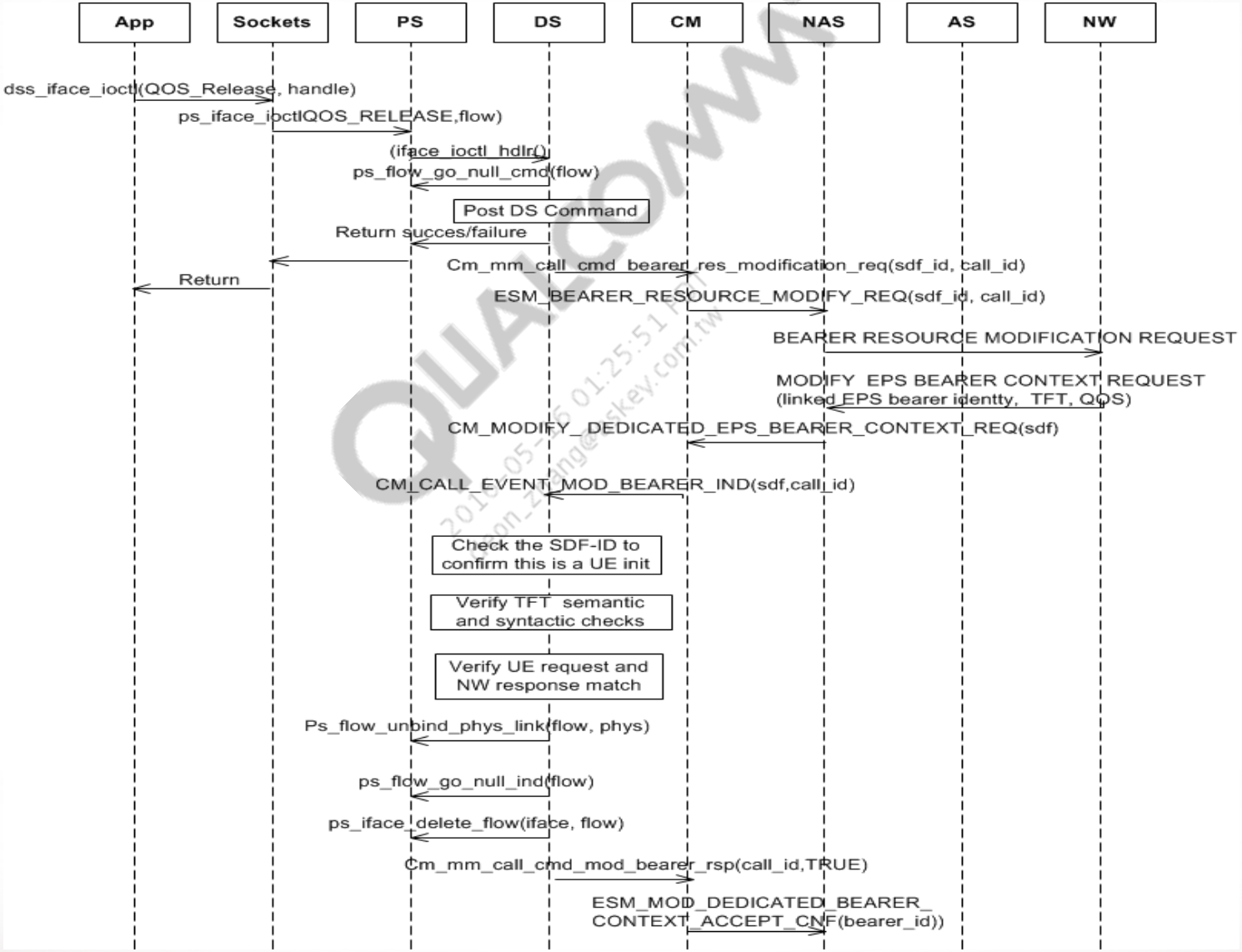
Network-Initiated QoS Modification



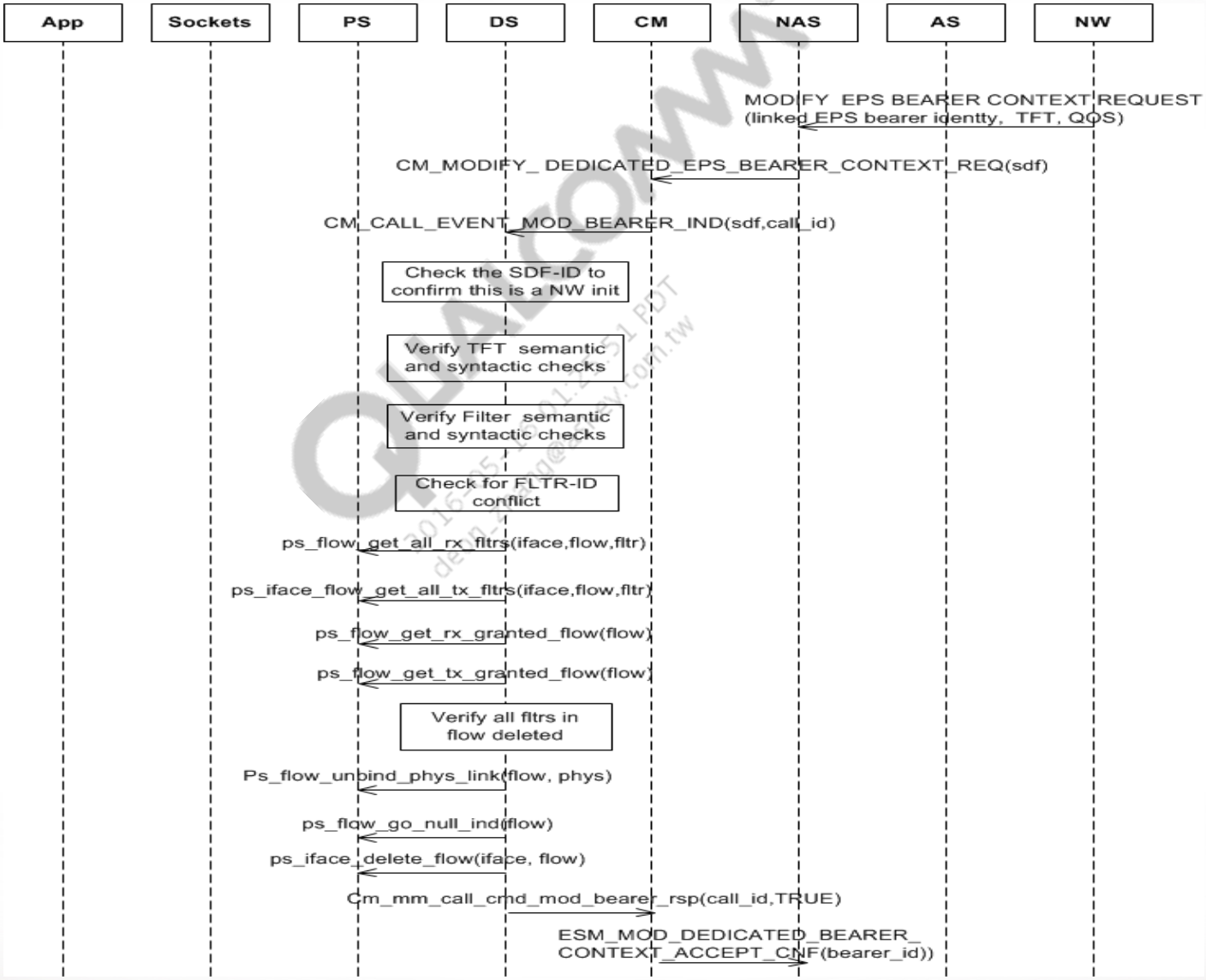
UE-Initiated QoS Modification – Logs

ds3gcmif.c	05342	Rx'd CM_CALL_EVENT_BEARER_MOD_IND
ds_eps_flow_manager.c	00854	Modify IND for SDF ID:0xffff
ds_eps_flow_manager.c	01963	Bearer modification received on default bearer
ds_eps_bearer_flow_manager.c	00469	Received NON-GBR QoS request with QCI value:8

UE-Initiated QoS Deletion

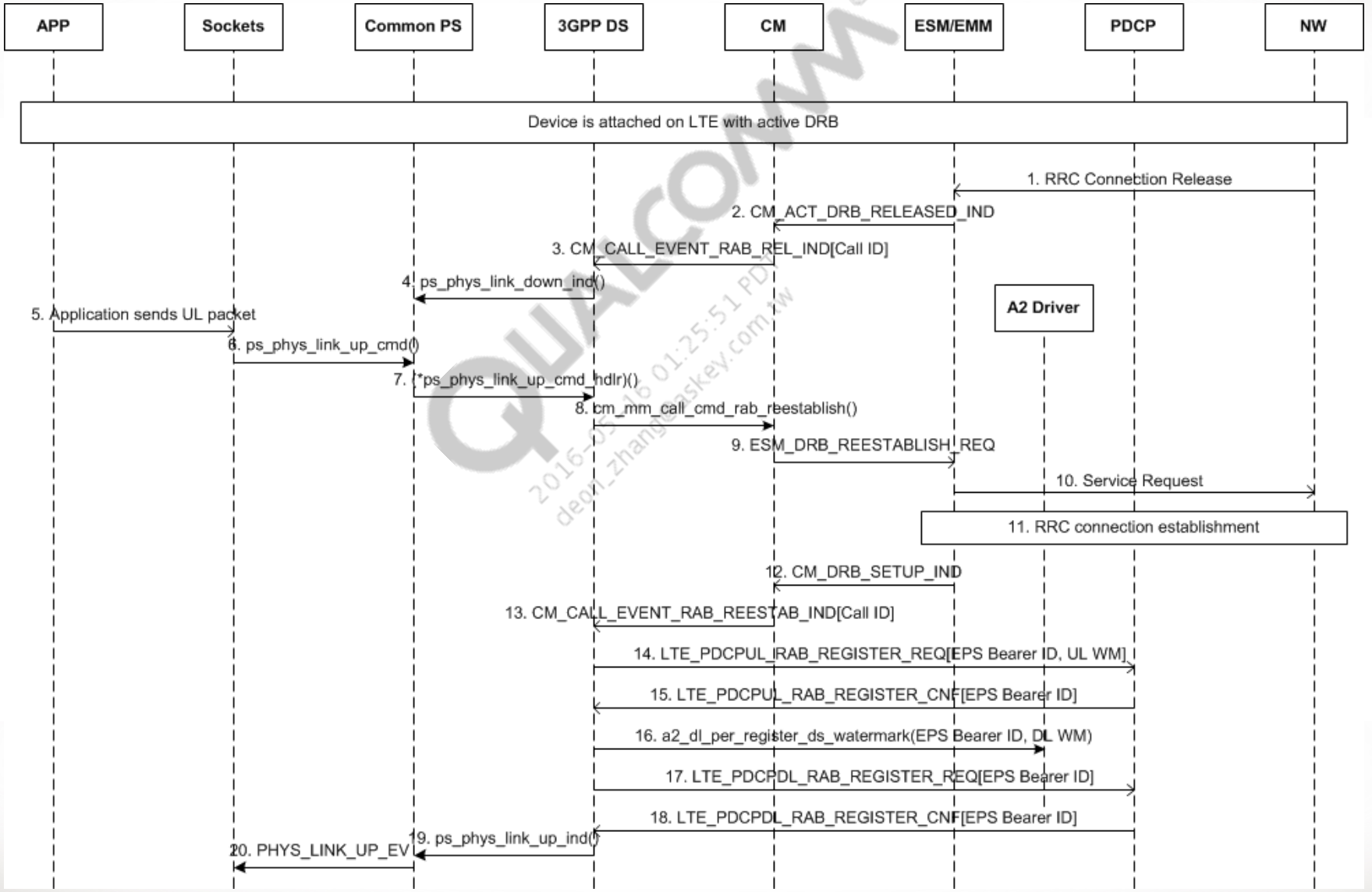


Network-Initiated QoS Deletion



Dormancy

Dormancy and DRB Reestablishment



Enter Dormancy Logs

- Release RAB

  ds3gcmif.c – Rx'd CM_CALL_RAB_REL_CMD
- Physical link down indicator

  ps_phys_linki_event.c – PHYS LINK DOWN IND 0x06160558, state 4

Reoriginate from Dormancy – Logs

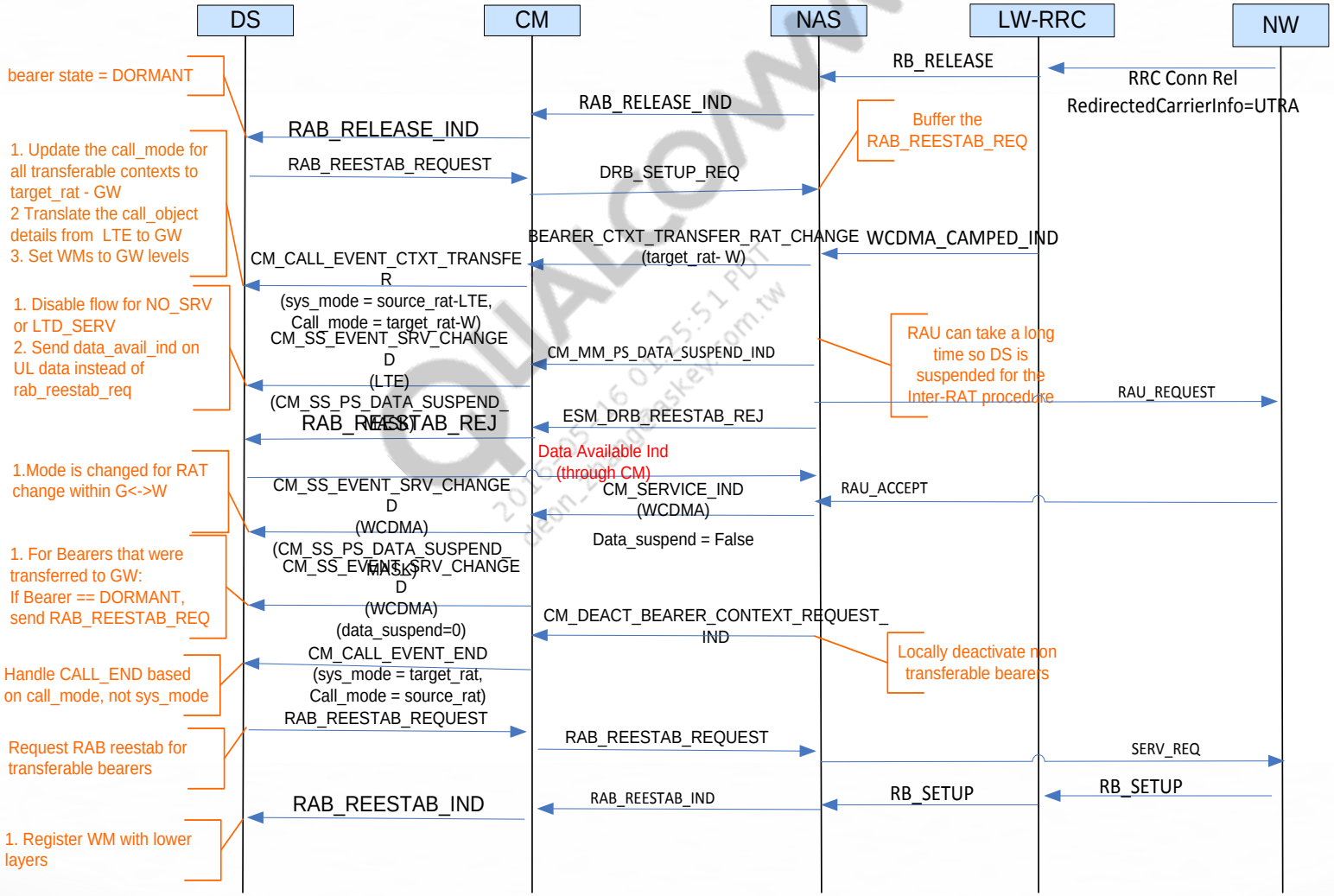
- Reestablish RAB

  ds3gcmif.c – Rx'd CM_CALL_RAB_REESTAB_IND_CMD
- Physical link up

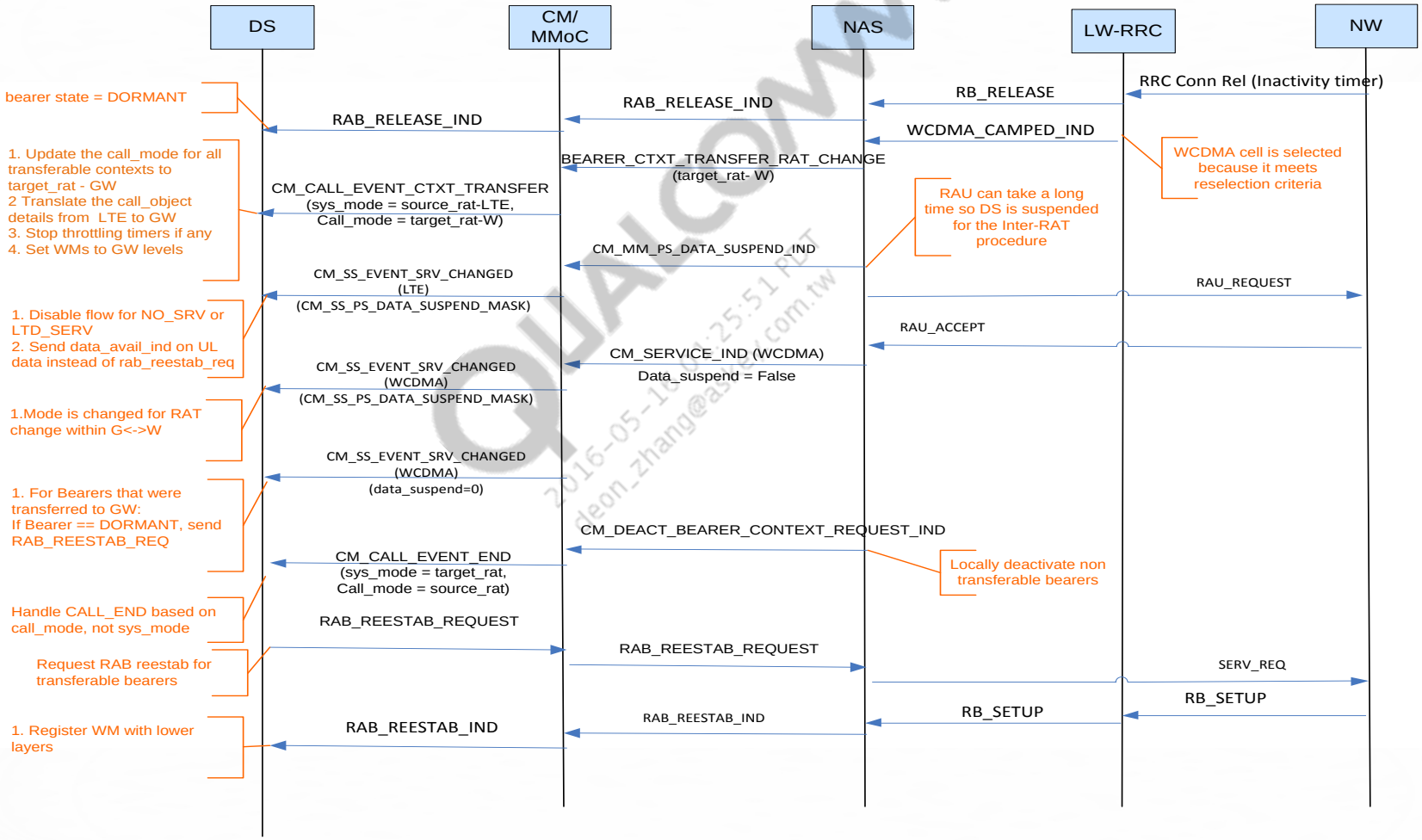
  ps_phys_linki_event.c – PHYS LINK UP IND 0x06160558, state 1

Inter-RAT Scenarios

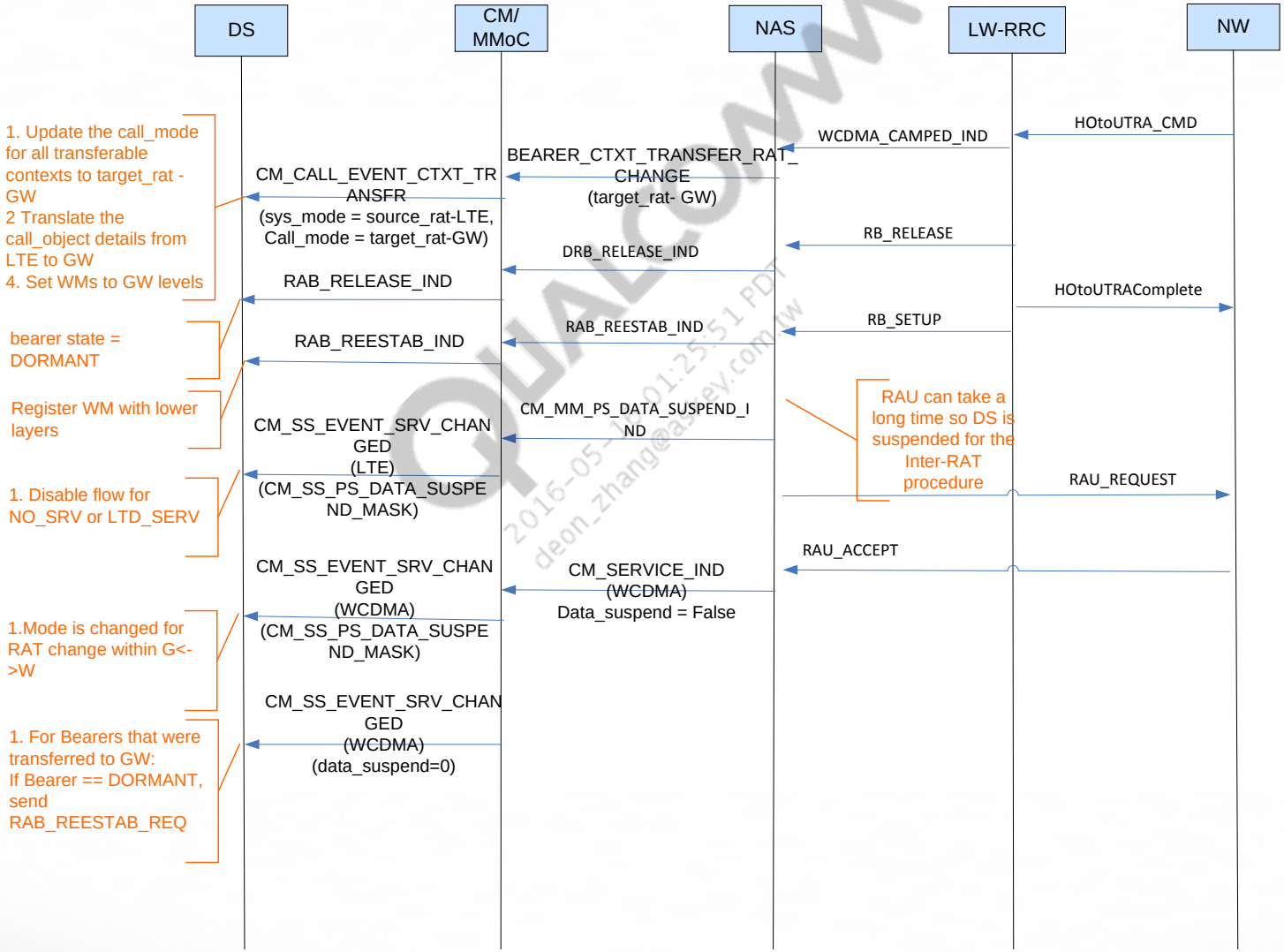
LTE to WCDMA Redirection



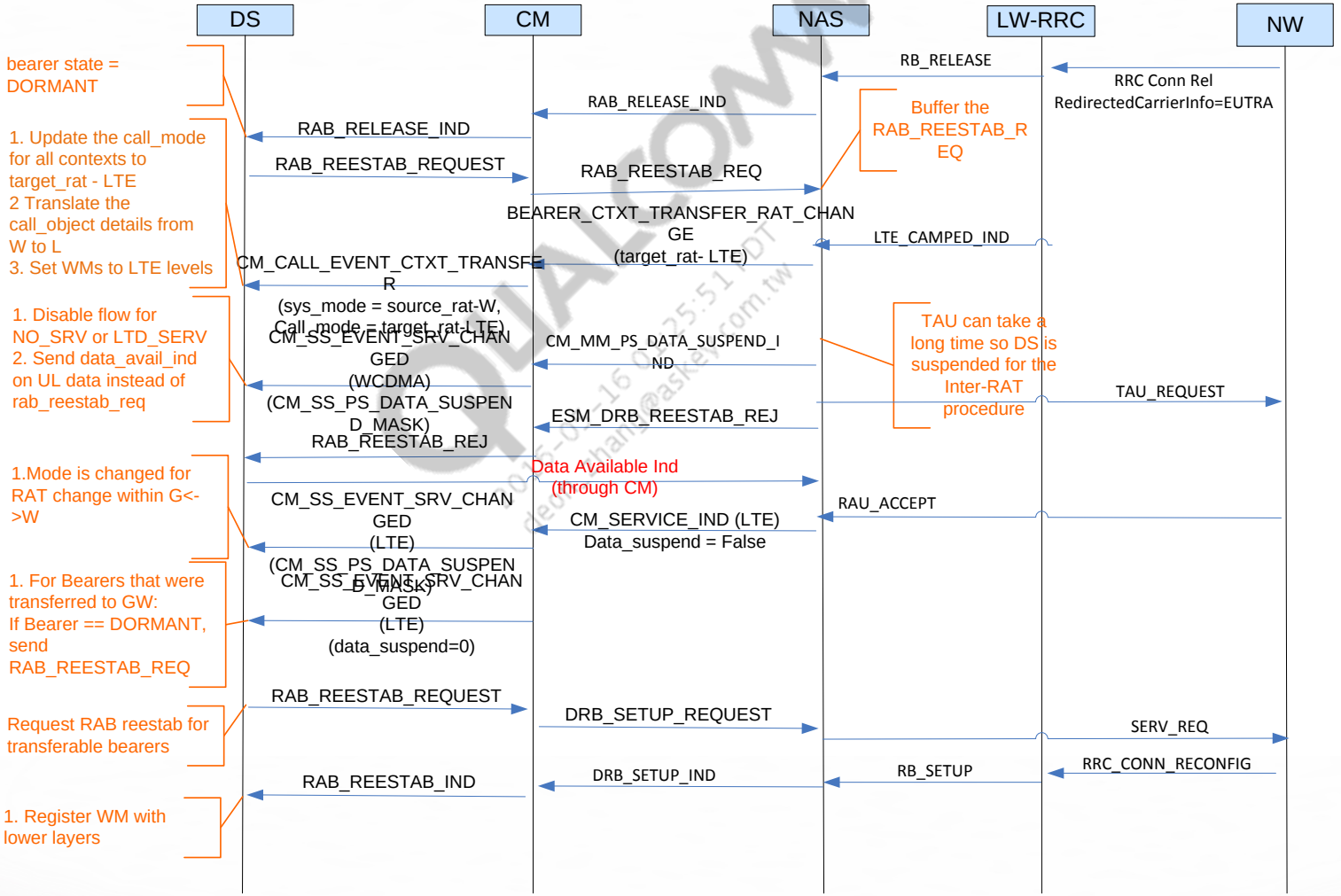
LTE to WCDMA Reselection



LTE to WCDMA PS Handover



WCDMA to LTE Redirection



External Interfaces

Data-Service Interfaces

- DS – CM interface – Used for bearer-control procedures; new APIs and events are defined for EPS-specific procedures; current APIs are modified to add EPS-related parameters
- DS – LTE PDCP interface – Message router-based interface for UL watermark registration and deregistration
- DS – PS interface – Interface with PS task to bring up and bring down IFACE

DS – CM Interface

- DS uses CM public API to interface with CM for originating requests and receiving responses, and incoming indications for network-originated signaling
- Tables show CM interface subset exercised for operation in LTE

CM API	Description
cm_mm_call_cmd_pdn_connectivity_req()	Request establishment of default-bearer to PDN
cm_mm_call_cmd_pdn_connectivity_abort_req()	Abort PDN connection
cm_mm_call_cmd_pdn_disconnect_req()	Disconnect from PDN connection
cm_mm_call_cmd_end( )	Request termination of default-bearer (and, by association, linked dedicated bearers)
cm_mm_call_cmd_activate_bearer_rsp( )	Accept or reject incoming bearer activation request from network
cm_mm_call_cmd_modify_bearer_rsp( )	Accept or reject incoming bearer modification request from network
cm_mm_call_cmd_bearer_resource_alloc_req( )	Request allocation of bearer resources
cm_mm_call_cmd_bearer_resource_rel_req( )	Request release of bearer resources
cm_mm_call_cmd_bearer_resource_alloc_abort_req( )	Abort outstanding bearer-allocation request
cm_mm_call_cmd_bearer_res_mod_req()	Request modification of bearer resources

CM Events Received by DS

CM events	Description
CM_CALL_EVENT_END	When ESM sends deactivate bearer request to CM, CM sends CM_CALL_EVENT_END to DS, terminating LTE call
CM_CALL_EVENT_ACT_BEARER_IND	When ESM sends activate bearer request to CM, CM sends CM_CALL_EVENT_ACT_BEARER_IND to DS, initiating LTE call
CM_CALL_EVENT_GET_PDN_CONN_IND	When ESM sends Get PDN Connectivity Request indication to CM, CM sends CM_CALL_EVENT_GET_PDN_CONN_IND to DS, initiating attach procedure
CM_CALL_EVENT_MOD_BEARER_IND	When ESM sends Bearer Resource Modification request to CM, CM sends CM_CALL_EVENT_MOD_BEARER_IND to DS, modifying existing bearer resource
CM_CALL_EVENT_PDN_CONN_REJ	When ESM sends PDN Connectivity Reject indication to CM, CM sends CM_CALL_EVENT_PDN_CONN_REJ to DS, indicating request for PDN connectivity is rejected
CM_CALL_EVENT_PDN_CONN_FAIL	When ESM sends PDN Connectivity Failure indication to CM, CM sends CM_CALL_EVENT_PDN_CONN_FAIL to DS, indicating request for PDN connectivity abort is processed
CM_CALL_EVENT_RES_ALLOC_REJ	When ESM sends Bearer Resource Allocation Reject indication to CM, CM sends CM_CALL_EVENT_RES_ALLOC_REJ to DS, indicating request for bearer resource allocation is rejected
CM_CALL_EVENT_RES_ALLOC_FAIL	When ESM sends Bearer Resource Allocation Failure indication to CM, CM sends CM_CALL_EVENT_RES_ALLOC_FAIL to DS, indicating request for bearer resource allocation abort is processed
CM_CALL_EVENT_BEARER_MOD_REJ	When ESM sends Bearer Modification Failure indication to CM, CM sends CM_CALL_EVENT_BEARER_MOD_FAIL to DS, indicating request for bearer context modification is rejected

DS – PDCP Interface

- DS uses this interface to register watermarks with PDCP to set up data path binding between PS and access stratum; this is a message router-based interface

PDCP message	Description
LTE_PDCPUL_RAB_REGISTER_REQ	Registers uplink DS watermarks with PDCPUL; sent at EPS bearer activation and when radio bearer is reestablished
LTE_PDCPDL_RAB_REGISTER_REQ	Registers downlink DS watermarks with PDCP; sent at EPS bearer activation and when radio bearer is reestablished
LTE_PDCPUL_RAB_REGISTER_CNF	Sent by PDCPUL in response to corresponding REQ message sent by DS; also indicates whether registration was successful
LTE_PDCPDL_RAB_REGISTER_CNF	Sent by PDCPDL in response to corresponding REQ message sent by DS; also indicates whether registration was successful

PS IFACE API

- Used for PS IFACE control; APIs below are extension of existing framework

PS IFACE API	Description
PS_IFACE_SET_IS_ACTIVE	Used by mode handler to mark IFACE as active; active IFACE is not brought down automatically by PS IFACE framework when ref count goes to zero; mode handler must bring IFACE down as and when needed
ps_iface_active_bringup_cmd	Used by mode handler to bring up IFACE without incrementing ref count of IFACE; IFACE remains out-of-use until another client calls ps_iface_bringup_cmd
ps_iface_in_use_cmd_cb	Used to notify mode handler when ref count of active IFACE goes from 0 to 1, i.e., IFACE becomes in use by client; can be used by mode handler to kick-start address configuration procedure, if needed
ps_iface_out_of_use_cmd_cb	Used to notify mode handler when active IFACE ref count goes from 1 to 0, i.e., when IFACE is no longer in use by clients; can be used by mode handler to bring down active IFACE, if needed

Failure Scenarios

Common Failure Scenarios

- Bearer-activation rejection, due to invalid APN
- Invalid IPv4 address in NAS Signaling mode
- PDCP failure
- RAB reestablishment failure
- DHCP failure

Common Failure Scenarios (cont.)

- Bearer-activation rejection, due to invalid APN

ds3gmshif.c	1044	Initiate PDN connectivity request
ds_3gpp_pdn_context.c	5327	NULL APN
ds_eps_pdn_context.c	407	Profile does not have VALID APN Name:length=1
ds_eps_pdn_context.c	906	PDN address is invalid, valid flag not set
ds3gcmif.c	4971	Mode handler rejected call
ds3gcmif.c	2498	Rx'd CM_CALL_END_CMD

- Invalid IPv4 address in NAS signaling mode

ds3gmshif.c	1044	Initiate PDN connectivity request
ds_eps_pdn_context.c	1153	NULL V4 IP address provided by NW
ds_eps_pdn_context.c	1156	NULL V4 IP address, but DHCPV4 is not supported
ds3gcmif.c	4971	Mode handler rejected call
ds3gcmif.c	2498	Rx'd CM_CALL_END_CMD

Common Failure Scenarios (cont.)

- DHCP failure

ds3gmshif.c	1044	Initiate PDN connectivity request
ps_iface.c	2115	Setting iface 0x8004:3 IP address to 0.0.0.0
ds_3gpp_pdn_context.c	1159	DHCP IP address request failed, ind = 3, PDN cntx Ptr = 0x23fc6a0
ds3gcmif.c	1775	Data call ended

- PDCP failure

ds3gmshif.c	1044	Initiate PDN connectivity request
ds3gcmif.c	4873	Rx'd CM_CALL_EVENT_ACT_BEARER_IND, call id: 1
ps_iface.c	2115	Setting iface 0x8004:3 IP address to 10.0.0.1
ds3gcmif.c	4953	Data call connected
ds3gcmif.c	5515	Rx'd CM_CALL_RAB_REESTAB_IND_CMD
ds_eps_bearer_context.c	1257	RAB_REG_UL_CNF FAILURE for EPS bearer ID: 5, setting bearer to UP dormant

Common Failure Scenarios (cont.)

- RAB reestablishment failure

ds3gmshif.c	1044	Initiate PDN connectivity request
ds3gcmif.c	4953	Data call connected
ds3gcmif.c	5515	Rx'd CM_CALL_RAB_REESTAB_IND_CMD
ds3gcmif.c	5386	Rx'd CM_CALL_RAB_REL_CMD
ds3gmshif.c	556	Rx'd CM_CALL_RAB_REESTAB_REQ_CMD
ds3gcmif.c	5641	Rx'd CM_CALL_EVENT_RAB_REESTAB_REJ_CMD
ds_3gpp_bearer_context.c	2371	Reoriginate dorm-timer callback
ds3gmshif.c	556	Rx'd CM_CALL_RAB_REESTAB_REQ_CMD
ds3gcmif.c	5641	Rx'd CM_CALL_EVENT_RAB_REESTAB_REJ_CMD
ds_3gpp_bearer_context.c	2371	Reoriginate dorm-timer callback
ds3gmshif.c	556	Rx'd CM_CALL_RAB_REESTAB_REQ_CMD
ds3gcmif.c	5515	Rx'd CM_CALL_RAB_REESTAB_IND_CMD
ds3gcmif.c	2498	Rx'd CM_CALL_END_CMD

DMC File Configuration and Log Traces

- For collecting LTE logs, use the following DMC file:
  - C:\Documents and Settings\All Users\Documents\Qualcomm\QXDM\Extensions\GSM_GPRS_EDGE_WCDMA_LTE_DATA.dmc
- Important log analysis keywords
  - GET_PDN_
  - ACT_BEARER
  - Bearer Up
  - Active Bring
  - Active tear
  - Iface Up ind
  - Iface Down Ind
  - Start RmNet
  - CALL_END

DMC File Configuration and Log Traces (cont.)

- Important log analysis keywords (cont.)
  - Media
  - RA Proc
  - Bridge
  - Initiate PDN
  - Client.end
  - Plain OTA
  - PDN Disconnect
  - Data call ended
  - Originating Data
  - Processing AT
  - RT: Found ACL match on iface
  - ROUTE LOOKUP FAILED

References

Ref.	Document	
Qualcomm		
Q1	*Application Note: Software Glossary for Customers*	CL93-V3077-1

Questions?

https://support.cdmatech.com