

UE

gNB

pixel_6a.pcap

RRC Setup Request

Duplex	FDD
ID RNTI	0x4601
RNTI type	C-RNTI
HARQ pid	0
UL LCID	52 (CCCH (48 bits))
Random	26c0de9082
Cause	mo-Signalling
UL LCID	63 (Padding)

[Frame 1] RRC Setup Request – Msg3 over CCCH; UE asks gNB to establish RRC connection

RRC Setup

Duplex	FDD
ID RNTI	0x4601
RNTI type	C-RNTI
HARQ pid	0
DL LCID	62 (UE Contention Resolution Identity)
DL LCID	0 (CCCH)
Trans ID	0
SRB add	1
CellGroup	0
SRB add	1
RLC mode	AM
T-PollRetx	ms45
maxRetx	t8
T-Reassembly	ms35
T-StatusProhibit	ms10...
	9 more

[Frame 2] RRC Setup – Msg4 payload carrying SRB1 config and master cell group; UE moves to RRC_CONNECTED on receipt

RRC Setup Complete

Duplex	FDD
ID RNTI	0x4601
RNTI type	C-RNTI
HARQ pid	0
UL LCID	1 (1)
SRB	1
Trans ID	0
PLMN idx	1
NAS	7e004179000d0100...
NAS msg	Registration request
UL LCID	61 (Short BSR)
BSR LCG0 idx	0
UL LCID	57 (Single Entry PHR)
UL LCID	63 (Padding)

[Frame 3] RRC Setup Complete – UE acks SRB1 and piggybacks an initial NAS message to the AMF

RLC AM Status PDU

Duplex	FDD
ID RNTI	0x4601
RNTI type	C-RNTI
HARQ pid	0
DL LCID	1 (1)
RLC mode	Acknowledged
Bearer	1
RLC SN size	12-bit
ACK SN	1
E1	A set of NACK_SN, E1, E2 and E3 does not follow
DL LCID	63 (Padding)

[Frame 4] RLC AM Status PDU – receiver reports cumulative ACK_SN and any NACK_SN list; drives RLC retransmissions on the AM bearer

DL Information Transfer

Duplex	FDD
ID RNTI	0x4601
RNTI type	C-RNTI
HARQ pid	0
DL LCID	1 (1)

[Frame 5] DL Information Transfer – transparent NAS container from AMF/SMF to UE

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SRB	1
Trans ID	1
NAS	7e00560102000021...
NAS 5GMM	Authentication request
DL LCID	63 (Padding)

RLC AM Status PDU

Duplex	FDD
RNTI	0x4601
RNTI type	C-RNTI
HARQ pid	0
UL LCID	1 (1)
RLC mode	Acknowledged
Bearer	1
RLC SN size	12-bit
ACK SN	1
E1	A set of NACK_SN, E1, E2 and E3 does not follow
UL LCID	61 (Short BSR)
BSR LCG0 idx	0
UL LCID	57 (Single Entry PHR)
UL LCID	63 (Padding)

UL Information Transfer

Duplex	FDD
RNTI	0x4601
RNTI type	C-RNTI
HARQ pid	0
UL LCID	1 (1)
SRB	1
NAS	7e00572d10b729dd...
NAS 5GMM	Authentication response
UL LCID	61 (Short BSR)
BSR LCG0 idx	0
UL LCID	57 (Single Entry PHR)
UL LCID	63 (Padding)

RLC AM Status PDU

Duplex	FDD
RNTI	0x4601
RNTI type	C-RNTI
HARQ pid	0
DL LCID	1 (1)
RLC mode	Acknowledged
Bearer	1
RLC SN size	12-bit
ACK SN	2
E1	A set of NACK_SN, E1, E2 and E3 does not follow
DL LCID	63 (Padding)

DL Information Transfer

Duplex	FDD
RNTI	0x4601
RNTI type	C-RNTI
HARQ pid	0
DL LCID	1 (1)
SRB	1
Trans ID	2
NAS	7e03e05117fb007e...
NAS 5GMM	Security mode command
DL LCID	63 (Padding)

UL Information Transfer

Duplex	FDD
RNTI	0x4601
RNTI type	C-RNTI
HARQ pid	0

[Frame 6] RLC AM Status PDU – receiver reports cumulative ACK_SN and any NACK_SN list; drives RLC retransmissions on the AM bearer

[Frame 7] UL Information Transfer – transparent NAS container from UE to AMF/SMF

[Frame 8] RLC AM Status PDU – receiver reports cumulative ACK_SN and any NACK_SN list; drives RLC retransmissions on the AM bearer

[Frame 9] DL Information Transfer – transparent NAS container from AMF/SMF to UE

[Frame 10] UL Information Transfer – transparent NAS container from UE to AMF/SMF

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UL LCID	1 (1)
UL LCID	1 (1)
SRB	1
NAS	7e049fe2806e007e...
NAS 5GMM	Security mode complete
NAS 5GMM	Registration request
UL LCID	61 (Short BSR)
BSR LCG0 idx	0
UL LCID	57 (Single Entry PHR)
UL LCID	63 (Padding)

RLC AM Status PDU

Duplex	FDD
RNTI	0x4601
RNTI type	C-RNTI
HARQ pid	0
DL LCID	1 (1)
RLC mode	Acknowledged
Bearer	1
RLC SN size	12-bit
ACK SN	3
E1	A set of NACK_SN, E1, E2 and E3 does not follow
DL LCID	63 (Padding)

[Frame 11] RLC AM Status PDU – receiver reports cumulative ACK_SN and any NACK_SN list; drives RLC retransmissions on the AM bearer

Security Mode Command

Duplex	FDD
RNTI	0x4601
RNTI type	C-RNTI
HARQ pid	0
DL LCID	1 (1)
SRB	1
Trans ID	3
Cipher	nea0
Integrity	nia2
DL LCID	63 (Padding)

[Frame 12] Security Mode Command – gNB activates AS security; subsequent SRB/DRB traffic is ciphered and integrity-protected

Security Mode Complete

Duplex	FDD
RNTI	0x4601
RNTI type	C-RNTI
HARQ pid	0
UL LCID	1 (1)
UL LCID	1 (1)
SRB	1
Trans ID	3
UL LCID	61 (Short BSR)
BSR LCG0 idx	0
UL LCID	57 (Single Entry PHR)
UL LCID	63 (Padding)

[Frame 13] Security Mode Complete – UE confirms AS security activation

UE Capability Enquiry

Duplex	FDD
RNTI	0x4601
RNTI type	C-RNTI
HARQ pid	0
DL LCID	1 (1)
DL LCID	1 (1)
SRB	1
Trans ID	0
RAT	nr
DL LCID	63 (Padding)

[Frame 14] UE Capability Enquiry – gNB asks UE to report supported bands, MIMO layers, modulation, ROHC profiles

RLC AM Status PDU

Duplex	FDD
RNTI	0x4601
RNTI type	C-RNTI

[Frame 15] RLC AM Status PDU – receiver reports cumulative ACK_SN and any NACK_SN list; drives RLC retransmissions on the AM bearer

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HARQ pid	0
UL LCID	1 (1)
RLC mode	Acknowledged
Bearer	1
RLC SN size	12-bit
ACK SN	4
E1	A set of NACK_SN, E1, E2 and E3 does not follow
UL LCID	61 (Short BSR)
BSR LCG0 idx	0
UL LCID	57 (Single Entry PHR)
UL LCID	63 (Padding)

UE Capability Information

Duplex	FDD
RNTI	0x4601
RNTI type	C-RNTI
HARQ pid	0
UL LCID	1 (1)
SRB	1
Trans ID	0
UL LCID	61 (Short BSR)
BSR LCG0 idx	0
UL LCID	57 (Single Entry PHR)
UL LCID	63 (Padding)

RRC Reconfiguration

Duplex	FDD
RNTI	0x4601
RNTI type	C-RNTI
HARQ pid	0
DL LCID	1 (1)
DL LCID	1 (1)
SRB	1
Trans ID	1
DL LCID	63 (Padding)

RRC Reconfiguration Complete

Duplex	FDD
RNTI	0x4601
RNTI type	C-RNTI
HARQ pid	0
UL LCID	1 (1)
UL LCID	1 (1)
SRB	1
Trans ID	1
UL LCID	1 (1)
SRB	1
UL LCID	61 (Short BSR)
BSR LCG0 idx	0
UL LCID	57 (Single Entry PHR)
UL LCID	63 (Padding)

RLC AM Status PDU

Duplex	FDD
RNTI	0x4601
RNTI type	C-RNTI
HARQ pid	0
DL LCID	1 (1)
RLC mode	Acknowledged
Bearer	1
RLC SN size	12-bit
ACK SN	7
E1	A set of NACK_SN, E1, E2 and E3 does not follow
DL LCID	63 (Padding)

DL Information Transfer

[Frame 16] UE Capability Information – UE returns supported bands, MIMO, modulation, ROHC profiles

[Frame 17] RRC Reconfiguration – gNB pushes radio-bearer / measurement / PHY config; may carry a piggybacked NAS message

[Frame 18] RRC Reconfiguration Complete – UE has applied the new bearer/PHY config

[Frame 19] RLC AM Status PDU – receiver reports cumulative ACK_SN and any NACK_SN list; drives RLC retransmissions on the AM bearer

[Frame 20] DL Information Transfer – transparent NAS

UE

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container from AMF/SMF to UE

Duplex	FDD
RNTI	0x4601
RNTI type	C-RNTI
HARQ pid	0
DL LCID	1 (1)
SRB	1
Trans ID	2
NAS	7e02cd6d7c67027e...
NAS 5GMM	Configuration update command
DL LCID	63 (Padding)

RLC AM Status PDU

Duplex	FDD
RNTI	0x4601
RNTI type	C-RNTI
HARQ pid	0
UL LCID	1 (1)
RLC mode	Acknowledged
Bearer	1
RLC SN size	12-bit
ACK SN	6
E1	A set of NACK_SN, E1, E2 and E3 does not follow
UL LCID	61 (Short BSR)
BSR LCG0 idx	0
UL LCID	57 (Single Entry PHR)
UL LCID	63 (Padding)

UL Information Transfer

Duplex	FDD
RNTI	0x4601
RNTI type	C-RNTI
HARQ pid	0
UL LCID	1 (1)
SRB	1
NAS	7e022875b76d027e...
NAS 5GMM	UL NAS transport
NAS 5GSM	PDU session establishment request
UL LCID	1 (1)
SRB	1

UL Information Transfer

NAS	7e0251c06e5b037e...
NAS 5GMM	UL NAS transport
NAS 5GSM	PDU session establishment request
UL LCID	61 (Short BSR)
BSR LCG0 idx	0
UL LCID	57 (Single Entry PHR)
UL LCID	63 (Padding)

RLC AM Status PDU

Duplex	FDD
RNTI	0x4601
RNTI type	C-RNTI
HARQ pid	0
DL LCID	1 (1)
RLC mode	Acknowledged
Bearer	1
RLC SN size	12-bit
ACK SN	9
E1	A set of NACK_SN, E1, E2 and E3 does not follow
DL LCID	63 (Padding)

UL Information Transfer

Duplex	FDD
RNTI	0x4601
RNTI type	C-RNTI

[Frame 21] RLC AM Status PDU – receiver reports cumulative ACK_SN and any NACK_SN list; drives RLC retransmissions on the AM bearer

[Frame 22] UL Information Transfer – transparent NAS container from UE to AMF/SMF

[Frame 23] RLC AM Status PDU – receiver reports cumulative ACK_SN and any NACK_SN list; drives RLC retransmissions on the AM bearer

[Frame 24] UL Information Transfer – transparent NAS container from UE to AMF/SMF

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HARQ pid	0
UL LCID	1 (1)
SRB	1
NAS	7e02dbc4b4d2047e...
NAS 5GMM	UL NAS transport
NAS 5GSM	PDU session establishment request
UL LCID	1 (1)
SRB	1

[UL Information Transfer](#)

NAS	7e02ffca8fdd057e...
NAS 5GMM	UL NAS transport
NAS 5GSM	PDU session establishment request
UL LCID	61 (Short BSR)
BSR LCG0 idx	0
UL LCID	57 (Single Entry PHR)
UL LCID	63 (Padding)

[RLC AM Status PDU](#)

Duplex	FDD
RNTI	0x4601
RNTI type	C-RNTI
HARQ pid	0
DL LCID	1 (1)
RLC mode	Acknowledged
Bearer	1
RLC SN size	12-bit
ACK SN	11
E1	A set of NACK_SN, E1, E2 and E3 does not follow
DL LCID	63 (Padding)

[UL Information Transfer](#)

Duplex	FDD
RNTI	0x4601
RNTI type	C-RNTI
HARQ pid	0
UL LCID	1 (1)
SRB	1
NAS	7e02d490079e067e...
NAS 5GMM	Deregistration request (UE originating)
UL LCID	61 (Short BSR)
BSR LCG0 idx	0
UL LCID	57 (Single Entry PHR)
UL LCID	63 (Padding)

[RLC AM Status PDU](#)

Duplex	FDD
RNTI	0x4601
RNTI type	C-RNTI
HARQ pid	0
DL LCID	1 (1)
RLC mode	Acknowledged
Bearer	1
RLC SN size	12-bit
ACK SN	12
E1	A set of NACK_SN, E1, E2 and E3 does not follow
DL LCID	63 (Padding)

[RRC Release](#)

Duplex	FDD
RNTI	0x4601
RNTI type	C-RNTI
HARQ pid	0
DL LCID	1 (1)
RLC Poll	Status report is requested
RLC SN=6	

[Frame 25] RLC AM Status PDU – receiver reports cumulative ACK_SN and any NACK_SN list; drives RLC retransmissions on the AM bearer







[Frame 26] UL Information Transfer – transparent NAS container from UE to AMF/SMF

[Frame 27] RLC AM Status PDU – receiver reports cumulative ACK_SN and any NACK_SN list; drives RLC retransmissions on the AM bearer

[Frame 28] RRC Release – gNB sends UE to RRC_IDLE (or RRC_INACTIVE if suspendConfig is present). Watch for repeated SN+Poll: that signals UE already gone (RLC poll-retx storm).

 UE

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 SRB	1
 PDCP COUNT	6
 PDCP SN=6	
 Trans ID	3
 MAC-I	0xa1a748bb
 DL LCID	63 (Padding)