

# 5G PDU Session Establishment

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Oct 18, 2018 (<http://5gblogs.com/2018/10/>)

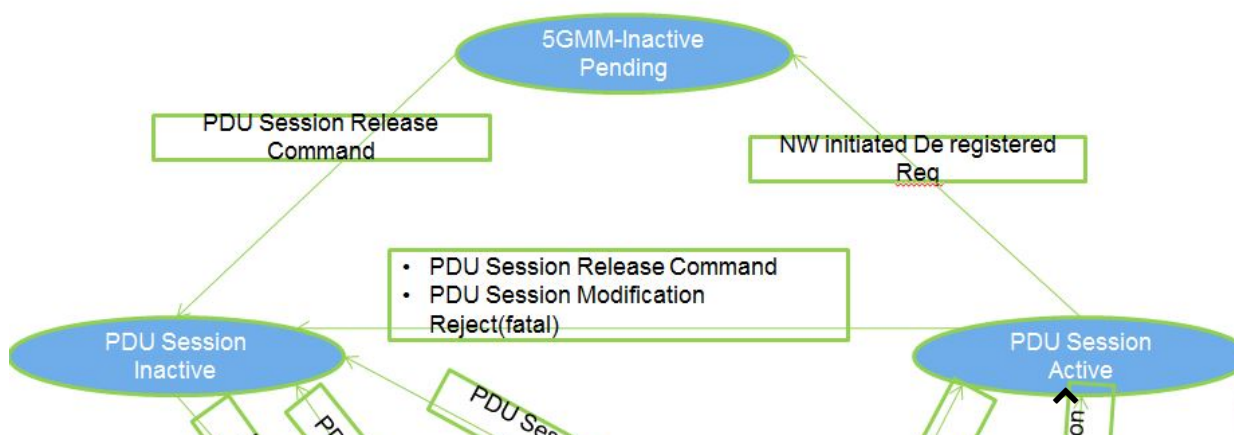
## 5G PDU Session Establishment

By [prasanna](http://5gblogs.com/author/prasanna/) in [5G PDU Session Establishment](http://5gblogs.com/5g-pdu-session-establishment/) [5G Core](http://5gblogs.com/category/5gcore/)

### PDU Session Establishment Concepts

- In 5G, PDU session Establishment is parallel procedure of PDN connection procedure in 4G.
- This Procedure can be UE requested or NW initiated(In case of emergency call with mobility registr...
- This procedure is required in case of
  1. UE requested PDU session establishment.
  2. UE initiated PDU session HO between 3GPP and Non-3Gpp.
  3. UE initiated HO from EPS to 5GS.
- In roaming scenario AMF determines, if the PDU session will be established at LBO(Local Breakout PLMN network slice).

### PDU Session Management State





- 18/05/20, 12:12 pm


7. SM PDU DN Request Container -> This include Authorization information to access DN.

- Based on request Type AMF Determines if it is a new PDU session or associated to any existing PD
- If NAS message doesn't contain S-NSSAI. Then AMF selects default NSSAI.
- If NAS message contains S-NSSAI, but doesn't contain DNN then AMF selects default DNN for that I has subscription to that DNN else a local DNN is selected.
- If Request type is Initial Request, or HO from EPS or non-3GPP then AMF stores a mapping of S-NS: PDU-Session ID, SMF-ID, Access Type.
- When AMF doesn't have an association with SMF for the PDU session ID provided by UE, AMF send Nsmf\_PDUSession\_CreateSMContextRequest. Else Nsmf\_PDUSession\_UpdateSMContextRequest is: SMF.
- Based on the data provided by UE SMF communicates with UDM and PCF to get relevant informati session creation.
- If request type is initial request, SMF initiates a N4 Session Establishment Request with selected UF sends a N4 Session Modification Request.
- UPF Acknowledge the request N4 Session Establishment/Modification Response.
- Using N4 session establishment SMF gets the GTP tunnel info from UPF.
- After Successful creation of Tunnel end point, SMF sends Namf\_Communication\_N1N2MessageTra Tunnel Details for N2 message and PDU session details in N1 Container.
- Upon Reception of above message AMF Sends a NGAP PDU session Setup Request along with N2 p from SMF in above message with parameters, PDU Session ID, QFIs, QoS Profile, CN tunnel Info, PI type, Session AMBR.
- Inside N2 message above, AMF piggyback N1 PDU Session Establishment Accept with NAS Header session parameters like QoS Rules, UE IP address.
- Then NG RAN(gNB) Setups the GTP Tunnel based on the N2 information received from AMF and se Tunnel End point (or Bearer).
- And gNB forwarded N1 message to UE for setting of PDU session.
- gNB after setting up the tunnel, it sends back N2 PDU session setup response to AMF.
- Then AMF Updates SMF about successful tunnel setup by sending Nsmf\_PDUSession\_UpdateSMContext\_Request and receives response from SMF.

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I am Prasanna Sahu. I live in Dublin Ireland. I work in 3gpp wireless technology UMTS and LTE and 5G. I love Photography, painting. Know more  about

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**prasanna** (<http://in.linkedin.com/pub/prasanna-sahu/29/257/91a>)

I am Prasanna Sahu. I live in Dublin Ireland. I work in 3gpp wireless technology I and LTE and 5G. I love Photography, painting. Know more about me: <http://in.linkedin.com/pub/prasanna-sahu/29/257/91a> See my photographs: <http://www.flickr.com/photos/24986299@N05/>

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**Debashish Deka**

Posted on 12:07 pm - May 18, 2020

How SMF encodes N2 SM information? AMF-service based document (29.518) specifies that N2 SM information is encoded in binary. Which NGAP IE corresponds to N2 SM information?

(<http://in.linkedin.com/pub/prasanna-sahu/29/257/91a>)

23.501 says: N2 SM information will be transparently transferred to RAN or UE by AMF. In various sections of 23.502, it has been made clear that N2 SM information will be transferred by NGAP Message.

There are two NAS PDUs in "PDU session resource setup request" NGAP message. Which one corresponds to N1 SM container?. What about the other one?

Thank You !

Reply



**prasanna****Posted on 3:09 pm - Jul**

Hi Debashis,

(<http://in.linkedin.com/pub/prasanna-sahu/29/257/91a>) Yes, AMF will encode N1/N2 SM information with DL tunnel details and send it to gNB and UE. AMF will not do any manipulation to this IE, it will transparently pass this info to UE/gNB on NGAP Initial Context Request and NAS PDU session establishment accept.

Thanks  
Prasanna

Reply

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**Debashish Deka****Posted on 6:18 am - Nov**

The mappings are there in [6.1.6.4.3 N2 Information Content, 29.518]

(<http://in.linkedin.com/pub/prasanna-sahu/29/257/91a>)

Reply

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**susil****Posted on 1:02 pm - Ma**

good information prasanna

(<http://in.linkedin.com/pub/prasanna-sahu/29/257/91a>)

Reply

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**Vishwajeet****Posted on 1:04 pm - May**

can anyone mail me the full documents of 5G.

([http://in.linkedin.com/pub/prasanna-sahu/29/257/91a](mailto:vishwajeet.patel@yahoo.com)) vishwajeet.patel@yahoo.com (mailto:vishwajeet.patel@yahoo.com)

Reply

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**Nikita****Posted on 12:06 pm - Jun**

How multiple PDU sessions differs from one another?

<http://in.linkedin.com>[/pub/prasanna-](#)

Reply

[sahu/29](#)[/257/91a\)](#)**ddeka****Posted on 9:55 am - Aug**Go to <https://www.3gpp.org/specifications/specification-numbering> (<https://www.3gpp.org/specifications/specification-numbering>) and download your required specification<http://in.linkedin.com>[/pub/prasanna-](#)[sahu/29](#)[/257/91a\)](#)

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**Rick****Posted on 6:47 am - Oct**

In LTE, EPS bearer ID is mapped on EPS bearer ID.

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Reply

**Rick****Posted on 6:50 am - Oct**

Correction :

<http://in.linkedin.com>[/pub/prasanna-What is mapped on the NSAPI in 5G?](#)[sahu/29](#)[/257/91a\)](#)

Reply

**iahim****Posted on 10:08 am - Nov**

E2E Network Slicing within One PLMN can be deployed with which 5g architecture or

<http://in.linkedin.com>

/pub/prasanna-b)SA option 2  
sahu/29 c) NSA Option 3a  
/257/91a) d) NSA Option 3x  
Can anybody help me with this question?  
Thank you

Reply



**prasanna**

Posted on 5:32 pm - Jan 2019

In Option 2 and 7/7a/7x  
(<http://in.linkedin.com/pub/prasanna-sahu/29/257/91a>)

Reply



**Susil kumar gupta**

Posted on 10:18 am - Nov 2018

hello prasanna – like LTE support 11 bearer initially and later part support max 15 be  
(<http://in.linkedin.com/pub/prasanna-sahu/29/257/91a>)  
can you come across any information for the 5G – what is the max number of bearer pos  
/pub/prasanna-a UE it is still 15 or some thing else  
sahu/29  
/257/91a)

Reply



**verma**

Posted on 2:05 pm - Apr 2019

Unlike to 4G, in 5G we have separate attach and PDU session request, can anyone le  
(<http://in.linkedin.com/pub/prasanna-sahu/29/257/91a>)  
know why this is its so!!  
/pub/prasanna-sahu/29  
/257/91a)

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