Jump to botton 5G SA service reject (semantically incorrect message) #1006 Closed ramonss opened this issue on May 18, 2021 · 17 comments Housekeeping:ToClose ramonss commented on May 18, 2021 · edited Cacetcom Some time after a context release (due to inactivity), the gNB sends out a uplinkNasTransport message with service request and gets a 'service reject (semantically incorrect message)' reply from the Open5GS core. In the pcap attached, see lines 13 and 14, and later 20 and 21. Due to this problem, the UE has to start a new registration procedure and gets a new IP address each time it becomes inactive. Could you help me identify where the problem is? At the core, UE, or gNB? Thank you in advance. open5gs_service_reject_after_context_release.zip
ramonss commented on May 18, 2021 • edited \Rightarrow @acetcom Some time after a context release (due to inactivity), the gNB sends out a uplinkNasTransport message with service request and gets a 'service reject (semantically incorrect message)' reply from the Open5GS core. In the pcap attached, see lines 13 and 14, and later 20 and 21. Due to this problem, the UE has to start a new registration procedure and gets a new IP address each time it becomes inactive. Could you help me identify where the problem is? At the core, UE, or gNB? Thank you in advance.
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©
acetcom commented on May 18, 2021
@ramonss
Refer to the following standard.
 TS24.501 Ch 4.4.6 Protection of initial NAS signalling messages TS33.501 Ch 6.4.6. Protection of initial NAS message
IMHO, non-cleartext IE need to be included in NAS container. So, please contact UE/gNB side. Let me know if my understanding is wrong.
Thanks! Sukchan

acetcom commented on May 19, 2021

@ramonss

This is an Open5GS bug. Line 13 uses the UplinkNASTransport message to deliver the Service request message. UplinkNASTransport message is not an initial NAS message. So, Open5GS should not send the Service reject message to the UE/gNB.

I modified and updated it to the main branch. It's also a really serious problem, so I've released a new package v2.2.9 right now.

Thank you for sharing it! Sukchan

ramonss commented on May 19, 2021

@acetcom

It seems that the problem has been fixed, thank you a lot for your quick reply!

Best regards

Ramon



ramonss commented on May 19, 2021

@acetcom

I'm getting now a different problem: error indication in one of the two PDU sessions after a the PDU session re-establishment (Payload was not forwarded).

See lines 11, 13, 14 in the pcap attached.

Any ideas of could be causing this?

Thank you in advance.

Best regards

 $open 5gs_error_indication.zip$



acetcom commented on May 19, 2021

@ramonss

Can you capture http and pfcp protocol? If it is difficult, please do not filter or capture with any interface.

Thanks a lot! Sukchan



ramonss commented on May 19, 2021

@acetcom

I'm suspecting it might be related to the fact that after the latest open5gs release I can no longer have two SMF instances binded to the same ::1 ipv6 addr. So I commented out the ::1 in the pfcp in each SMF conf and left only the ipv4 addr. I then changed NSSF to use the ipv4 addr instead of ::1.

What is the proper way of having two SMF instances co-existing in the same machine? Should we always use ipv6 for discovery?

acetcom commented on May 19, 2021

@ramonss

In v2.2.9, I added IP collision checking. So, if two SMFs use the same IP address (:: 1) then one SMF will be exited. So, the error indication seems to be a configuration problem.

Cheers! Sukchan



ramonss commented on May 19, 2021 • edited -

@acetcom

Unfortunately, even after solving the binding address issue (now I use only ipv4 addresses), there seems still to be a problem between AMF and SMF. To reproduce the problem, I first establish two PDU sessions from the UE and then let it without activity to trigger a context release. Then after a while, I try to ping again and then get the following error/warning messages in the AMF and SMF after getting no ping reply:

The AMF keeps doing a NGReset (not that it thinks there are 7 UEs when in fact there are two connected):

```
05/19 15:15:09.250: [gmm] INFO: UE SUPI[imsi-204950113000152] DNN[default] S_NSSAI[SST:1 SD:0x1] (../src/amf/gmm-handler.c:1017)
05/19 15:15:09.258: [amf] WARNING: [imsi-204950113000152:2] Receive Update SM context(DUPLICATED PDU_SESSION_ID) (../src/amf/nsmf-handler.c:426)
05/19 15:15:09.275: [amf] ERROR: No PDUSessionResourceSetupListSURes (../src/amf/ngap-handler.c:3626)
05/19 15:15:10.640: [amf] WARNING: NGReset (../src/amf/ngap-handler.c:3626)
05/19 15:15:10.640: [amf] WARNING: Cause[Group:5 Cause:5] (../src/amf/ngap-handler.c:3653)
05/19 15:15:10.640: [amf] WARNING: NGAP_ResetType_PR_partOfMG_Interface (../src/amf/ngap-handler.c:3707)
05/19 15:15:10.640: [amf] WARNING: NGAP_ResetType_PR_partOfMG_Interface (../src/amf/ngap-handler.c:638)
05/19 15:15:11.177: [amf] INFO: InitialUEMessage (../src/amf/ngap-handler.c:361)
05/19 15:15:11.177: [amf] INFO: InitialUEMessage (../src/amf/ngap-handler.c:1956)
05/19 15:15:11.178: [amf] INFO: [suci-0-204-95-0-0-0-1023456779] 5G-S_TMSI[AMF_ID:0x20040,M_TMSI:0xcc00fc7f] (../src/amf/ngap-handler.c:434)
05/19 15:15:11.178: [amf] INFO: RAN_UE_NGAP_ID[11955] AMF_UE_NGAP_ID[18] TAC[3001] CellID[@x4e3c001] (../src/amf/ngap-handler.c:497)
05/19 15:15:11.178: [gmm] INFO: Service request (../src/amf/gmm-sm.c:220)
```

And the SMF keeps giving a warning of PDU session not found:

```
ubuntu@open5gs-core:~$ sudo tail -f /var/log/open5gs/smf.log
05/19 15:16:07.263: [pfcp] INFO: pfcp_server() [127.0.0.4]:8805 (../lib/pfcp/path.c:30)
05/19 15:16:07.263: [pfcp] INFO: ogs_pfcp_connect() [127.0.0.7]:8805 (../lib/pfcp/path.c:59)
05/19 15:16:07.263: [sbi] INFO: nghttp2_server() [127.0.0.4]:7777 (../lib/sbi/nghttp2-server.c:144)
05/19 15:16:07.264: [app] INFO: SMF initialize...done (../src/smf/app.c:31)
05/19 15:16:07.265: [smf] INFO: PFCP associated (../src/smf/pfcp-sm.c:174)
05/19 15:16:07.269: [smf] INFO: [22845418-b8b5-41eb-b575-479037d47f73] NF registred [Heartbeat:10s] (../src/smf/nf-sm.c:199)
05/19 15:16:10.055: [smf] WARNING: Not found [/nsmf-pdusession/v1/sm-contexts/1/modify] (../src/smf/smf-sm.c:325)
05/19 15:16:33.910: [smf] WARNING: Not found [/nsmf-pdusession/v1/sm-contexts/1/modify] (../src/smf/smf-sm.c:325)
05/19 15:16:49.813: [smf] WARNING: Not found [/nsmf-pdusession/v1/sm-contexts/1/modify] (../src/smf/smf-sm.c:325)
05/19 15:17:05.808: [smf] WARNING: Not found [/nsmf-pdusession/v1/sm-contexts/1/modify] (../src/smf/smf-sm.c:325)
```

```
DOY:19 13:-13:21, 398; [sef] NARNLING: Unknown PCU ID: (02/3) [.../src/smf/context.c:2528]
DOS:19 13:-04:19.777; [sef] IMPG: [sf8:1220-bba2-4]e-ba-39f-2330bith*Poleg) NF expired (../src/smf/nf-sm.c:296)
DOS:19 14:04:19.788; [sef] IMPG: [sf9:3776-bba2-4]e-ba-85-C71062153bil] NF expired (../src/smf/nf-sm.c:296)
DOS:19 14:05:38.657; [sef] ERROR: invalid Downlink Data Service Information (../src/smf/nf-sm.c:279)
DOS:19 14:05:38.657; [sef] ERROR: invalid Downlink Data Service Information (../src/smf/nd-handler.c:827)
DOS:19 14:05:38.659; [sef] ERROR: invalid Sep[2] type[5] (../ilp/fpc/sact.c:238)
DOS:19 14:05:38.659; [sef] ERROR: invalid step[2] type[5] (../ilp/fpc/sact.c:238)
DOS:19 14:05:38.659; [sef] ERROR: invalid step[2] type[5] (../ilp/fpc/sact.c:238)
DOS:19 14:05:38.659; [sef] ERROR: invalid step[2] type[5] (../ilp/fpc/sact.c:238)
DOS:19 14:05:38.659; [sef] FATAL: smf_nf_handle_session_report_response: Expectation 'rv = 055.0K' failed. (../src/smf/pfcp-path.c:534)
DOS:19 14:05:38.659; [sef] FATAL: smf_nf_handle_session_report_response: Assertion 'rv = 055.0K' failed. (../src/smf/pfcp-path.c:534)
DOS:19 14:05:38.659; [sef] FATAL: smf_nf_handle_session_report_response( pfcp_xact, sess, 065_PFCP_CAUSE_REQUEST_ACCEPTED)' failed. (../src/smf/n4-handler.c:869)
DOS:19 14:05:38.659; [sef] [DATO:19 15:05:05]
DOS:10 14:05:280; [OS:28057e10]
DOS:10 14:05:280; [
```

Can you take a look at it?

FYI, I could not get the http messages from the wirehsark traces. And the PFCP gives only periodic handshake messages.

Best regards



acetcom commented on May 19, 2021

In this case, please share all log/conf files and PCAP.



ramonss commented on May 19, 2021

@acetcom

See attached: pcap, logs, confs.

Thank you in advance.

Best regards

open5gs.zip



acetcom commented on May 20, 2021

@ramonss

Your configuration might be wrong.

1. NSSF

```
$ diff -u nssf.yaml nssf_new.yaml
--- nssf.yaml 2021-05-19 21:08:28.000000000 +0900
+++ nssf_new.yaml 2021-05-20 07:46:37.328581840 +0900
@@ -68,18 +68,18 @@
        port: 7777
    nsi:
       - addr: ::1
      - addr: 127.0.0.4
      - addr: 127.0.0.10
        port: 7777
        s_nssai:
          sst: 1
       - addr: ::1
       - addr: 127.0.0.19
       - addr: 127.0.0.10
        port: 7777
        s_nssai:
          sst: 1
```

```
port: 7777
s_nssai:
sst: 1
```

You should use NRF IP address in NSI information as below document.

```
# o Three NSI
   1. NRF[http://::1:7777/nnrf-nfm/v1/nf-instances]
      S-NSSAI[SST:1]
#
   2. NRF[http://127.0.0.19:7777/nnrf-nfm/v1/nf-instances]
#
      NSSAI[SST:1, SD:000080]
#
#
   2. NRF[http://127.0.0.10:7777/nnrf-nfm/v1/nf-instances]
      NSSAI[SST:1, SD:009000]
#
#
#
    nsi:
#
      - addr: ::1
        port: 7777
#
        s_nssai:
          sst: 1
      - addr: 127.0.0.19
#
       port: 7777
       s_nssai:
#
          sst: 1
          sd: 000080
     - addr: 127.0.0.10
#
      port: 7777
        s_nssai:
          sst: 1
          sd: 009000
```

2. Two UPFs GTP-U conflict.

```
upf:
gtpu:
- addr: 10.109.4.13
```

You use the same GTP-U address 10.109.4.13 in two UPFs.

It is difficult to debug when the full pcap is not provided. I hope your setup is successful with this information I can give you now.

Good luck with you! Sukchan



ramonss commented on May 20, 2021

@acetcom

I made the changes but unfortunately I still get an error 'failed to connect to 127.0.0.19'.

Any ideas why? I attached the pcap with all interfaces related including the tcp packets for requests going to 127.0.0.19 => open5gs_error_indication_not_found_smf.zip

The SMF port seems to be open but apparently the error was still triggered. Could this be related to the ErrorIndication sent by the core to the gNB when the gNB sends out an UplinkNASTransport (PDU session establishment request)? Why is the connection being refused? Is it still a problem related port configuration? Everything starts fine now without issues and the error starts happening only after some time when the gNB sends the UplinkNASTransport (PDU session establishment request) message. Maybe there is still some issue on the core when handling this event (after the changes you made)?

```
| 05/20 | 06:42:20.641: [amf] | ERROR: [2:0] | Cannot receive SBI message (../src/amf/amf-sm.c:557) | 05/20 | 06:42:20.641: [amf] | WARNING: [suci-0-204-95-0-0-0-013000152] | SGSM reject (../src/amf/nas-path.c:542) | 05/20 | 06:42:20.841: [amf] | ERROR: [2:0] | HTTP response error [404] (../src/amf/nsmf-handler.c:638) | 05/20 | 06:42:36.842: [gmm] | INFO: UE SUPI[imsi-204950113000152] | DNN[default] | S.NSSAI[SST: SD:0x1] (../src/amf/gmm-handler.c:1017) | 05/20 | 06:42:36.844: [amf] | ERROR: [2:0] | HTTP response error [404] (../src/amf/nsmf-handler.c:638) | 05/20 | 06:42:52.840: [gmm] | INFO: UE SUPI[imsi-204950113000152] | DNN[default] | S.NSSAI[SST: SD:0x1] (../src/amf/gmm-handler.c:1017) | 05/20 | 06:42:52.840: [gmm] | INFO: UE SUPI[imsi-204950113000152] | DNN[default] | S.NSSAI[SST: SD:0x1] (../src/amf/gmm-handler.c:1017) | 05/20 | 06:43:08.839: [gmm] | INFO: UE SUPI[imsi-204950113000152] | DNN[default] | S.NSSAI[SST: SD:0x1] (../src/amf/gmm-handler.c:1017) | 05/20 | 06:43:08.839: [gmm] | INFO: UE SUPI[imsi-204950113000152] | DNN[default] | S.NSSAI[SST: SD:0x1] (../src/amf/gmm-handler.c:1017) | 05/20 | 06:43:24.839: [gmm] | INFO: UE SUPI[imsi-204950113000152] | DNN[default] | S.NSSAI[SST: SD:0x1] (../src/amf/gmm-handler.c:1017) | 05/20 | 06:43:45.896: [gmm] | INFO: UE SUPI[imsi-204950113000152] | DNN[default] | S.NSSAI[SST: SD:0x1] (../src/amf/gmm-handler.c:1017) | 05/20 | 06:43:45.898: [gmm] | INFO: UE SUPI[imsi-204950113000152] | DNN[default] | S.NSSAI[SST: SD:0x1] (../src/amf/gmm-handler.c:1017) | 05/20 | 06:44:45.898: [gmm] | INFO: UE SUPI[imsi-204950113000152] | DNN[default] | S.NSSAI[SST: SD:0x1] (../src/amf/gmm-handler.c:1017) | 05/20 | 06:44:10.895: [gmm] | INFO: UE SUPI[imsi-204950113000152] | DNN[default] | S.NSSAI[SST: SD:0x1] (../src/amf/gmm-handler.c:1017) | 05/20 | 06:44:17.906: [gmm] | INFO: UE SUPI[imsi-204950113000152] | DNN[default] | S.NSSAI[SST: SD:0x1] (../src/amf/gmm-handler.c:1017) | 05/20 | 06:44:17.906: [gmm] | INFO: UE SUPI[imsi-204950113000152] | DNN[default] | S.NSSAI[SST: SD:0x
```

The port seems to be open:

Proto Re	ecv-Q Se	nd-Q Local Address	Foreign Address	State	PID/Program name
tcp	0	0 0.0.0.0:3000	0.0.0.0:*	LISTEN	709/node
tcp	0	0 127.0.0.1:6010	0.0.0.0:*	LISTEN	445437/sshd: ubuntu
tcp	0	0 127.0.0.1:6011	0.0.0.0:*	LISTEN	445540/sshd: ubuntu
tcp	0	0 127.0.0.4:7777	0.0.0.0:*	LISTEN	445169/open5gs-smfd
tcp	0	0 127.0.0.19:7777	0.0.0.0:*	LISTEN	444519/open5gs-smfd
tcp	0	0 127.0.0.13:7777	0.0.0.0:*	LISTEN	444426/open5gs-pcfd
tcp	0	0 127.0.0.14:7777	0.0.0.0:*	LISTEN	444412/open5gs-nssf
tcp	0	0 127.0.0.5:7777	0.0.0.0:*	LISTEN	444396/open5gs-amfd
tcp	0	0 127.0.0.11:7777	0.0.0.0:*	LISTEN	444388/open5gs-ausf
tcp	0	0 127.0.0.12:7777	0.0.0.0:*	LISTEN	444381/open5gs-udmd
tcp	0	0 127.0.0.20:7777	0.0.0.0:*	LISTEN	444375/open5gs-udrd
tcp	0	0 127.0.0.10:7777	0.0.0.0:*	LISTEN	444355/open5gs-nrfd
tcp	0	0 127.0.0.1:27017	0.0.0.0:*	LISTEN	692/mongod
tcp	0	0 127.0.0.53:53	0.0.0.0:*	LISTEN	610/systemd-resolve
tcp	0	0 0.0.0.0:22	0.0.0.0:*	LISTEN	751/sshd: /usr/sbin
tcp6	0	0 ::1:6010	:::*	LISTEN	445437/sshd: ubuntu
tcp6	0	0 ::1:6011	:::*	LISTEN	445540/sshd: ubuntu
tcp6	0	0 :::22	:::*	LISTEN	751/sshd: /usr/sbir
udp	0	0 127.0.0.4:2123	0.0.0.0:*		445169/open5gs-smfc
udp	0	0 127.0.0.19:2123	0.0.0.0:*		444519/open5gs-smfc
udp	0	0 127.0.0.4:2152	0.0.0.0:*		445169/open5gs-smfc
udp	0	0 127.0.0.19:2152	0.0.0.0:*		444519/open5gs-smfd
udp	0	0 10.109.4.13:2152	0.0.0.0:*		444401/open5gs-upfo

Best regards,

Ramon

(Q)

ramonss commented on May 25, 2021

@acetcom

Any ideas on this? Now with the pcaps from the previous message? Is this pcap enough for you to debug?



acetcom commented on May 25, 2021

@ramonss

So far, I have tried to answer all of the questions as much as possible. However, I realized it wasn't an efficient way. Because we can miss out on other important things.

Otherwise, I recommend that you share as much information as possible. If you can share more log, config, db and pcap, there will be someone in this community who can help you.

Good luck with you! Sukchan



mcatalancid commented on May 27, 2021

Hi @acetcom @ramonss

I'm facing the same problem; in my case, only with one slice (the default one, sst: 1 sd: ffffff); thus, I just modified the AMF and the UPF configuration (IPs ant TAI).

After an UE context release in the AMF, sometimes the UE is not able to connect again and the SMF and the UPF start throwing errors. And usually, the SMF leads to a critical error:

05/27 10:57:33.871: [smf] ERROR: Invalid Downlink Data Service Information (../src/smf/n4-handler.c:827)

05/27 10:57:33.871: [smf] ERROR: No Context [0x7fa0c9a173d0:(nil)] (../src/smf/n4-handler.c:863)

05/27 10:57:33.871: [pfcp] ERROR: invalid step[2] type[57] (../lib/pfcp/xact.c:238)

05/27 10:57:33.872: [smf] ERROR: smf_pfcp_send_session_report_response: Expectation rv == 0GS_0K' failed. (../src/smf/pfcp-

smf_pfcp_send_session_report_response(pfcp_xact, sess, OGS_PFCP_CAUSE_REQUEST_ACCEPTED)' failed. (../src/smf/n4-handler.c:871)

05/27 10:57:33.873: [core] FATAL: backtrace() returned 10 addresses (../lib/core/ogs-abort.c:37)

/usr/bin/open5gs-smfd(+0x29038) [0x5565a44dd038]

/usr/bin/open5gs-smfd(+0x175f3) [0x5565a44cb5f3]

/usr/lib/x86_64-linux-gnu/libogscore.so.2(ogs_fsm_dispatch+0x16) [0x7fa0d61a0c76]

/usr/bin/open5gs-smfd(+0x12600) [0x5565a44c6600]

/usr/lib/x86_64-linux-gnu/libogscore.so.2(ogs_fsm_dispatch+0x16) [0x7fa0d61a0c76]

/usr/bin/open5gs-smfd(+0x8ec6) [0x5565a44bcec6]

/usr/lib/x86_64-linux-gnu/libogscore.so.2(+0xd718) [0x7fa0d6198718]

/lib/x86 64-linux-gnu/libpthread.so.0(+0x76db) [0x7fa0d37e06db]

/lib/x86_64-linux-gnu/libc.so.6(clone+0x3f) [0x7fa0d350971f]



mcatalancid commented on May 27, 2021

Hi,

it seems to happen when trying to send downlink traffic after a UE release (e.g. an iperf from the Core to the UE); I think it's normal to be not able to do this (e.g. the UE is not longer connected), but it should not break the SMF.

BR,

Miguel.



ramonss mentioned this issue on Jun 8, 2021

SMF Fatal Error v2.2.9 - Invalid Downlink Data Service Information #1034



acetcom added a commit that referenced this issue on Jun 8, 2021



Support for Inter-frequency, inter-gNB, inter-RAT Handovers? RRC Connection Release with redirection kills the SM #1057	F
○ Closed	
🔀 🥏 acetcom mentioned this issue on Jun 28, 2021	
AMF crash FATAL: nas_5gs_send_registration_accept: Assertion `ran_ue' failed. (/src/amf/nas-path.c:74) #1077	
pobk added the Housekeeping:ToClose label on Feb 18	
github-actions (bot) commented on Mar 23	
This issue has been closed automatically due to lack of activity. This has been done to try and reduce the amount of noise. Please do not comment any further. The Open5GS Team may choose to re-open this issue if necessary.	
github-actions bot closed this as completed on Mar 23	
Assignees	
No one assigned	
Labels	
Housekeeping:ToClose	
Projects None yet	
Milestone	
No milestone	
Development	
No branches or pull requests	
4 participants	