PacketScan™ 5G Protocol Analyzer

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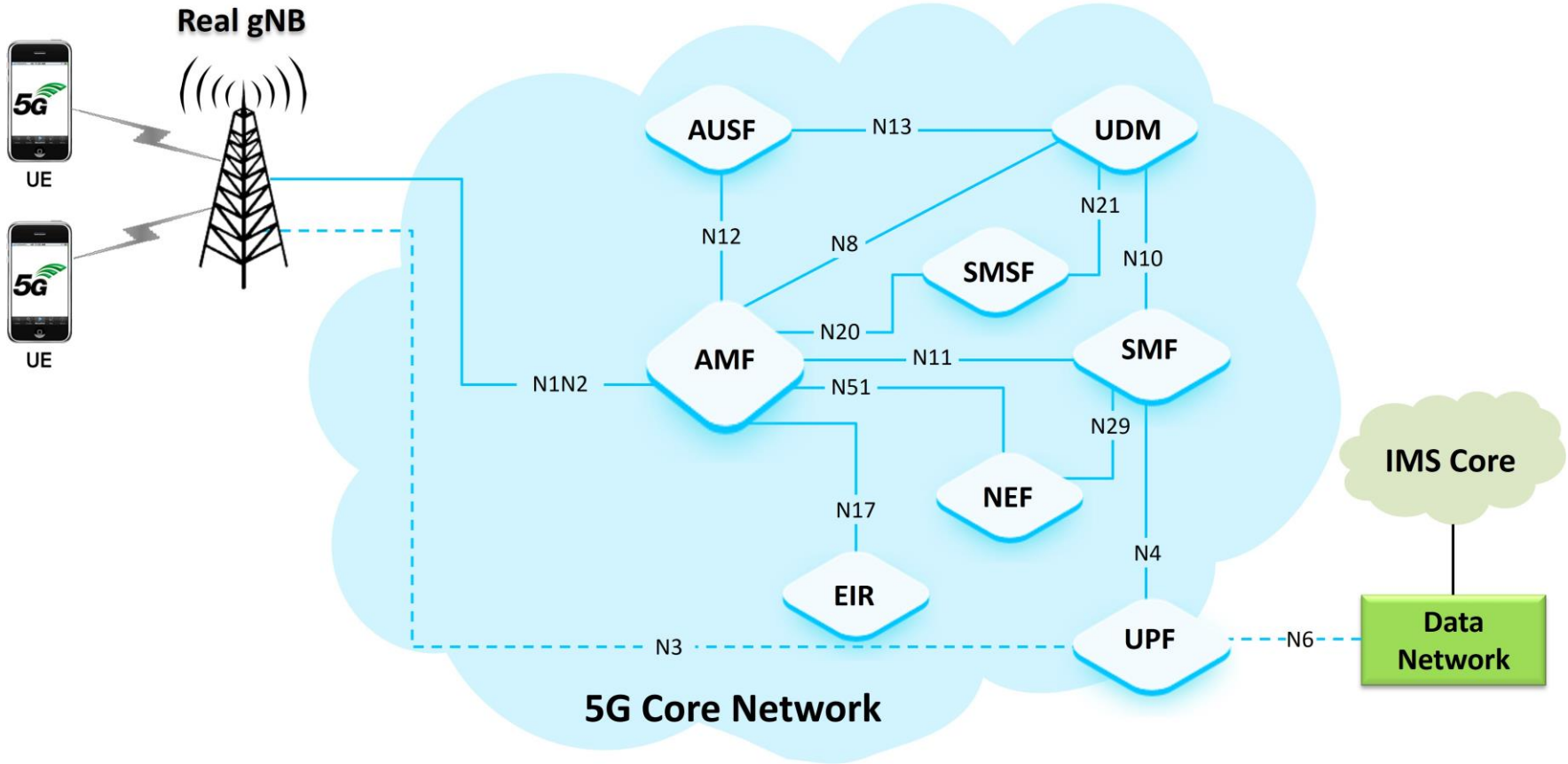
Introduction

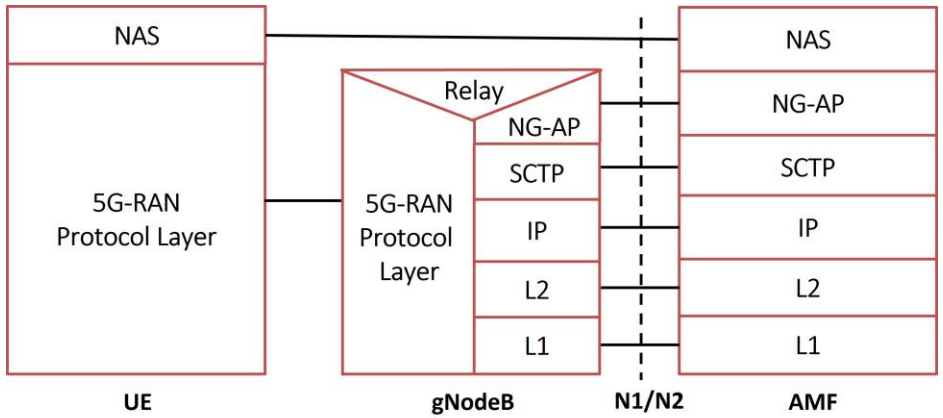


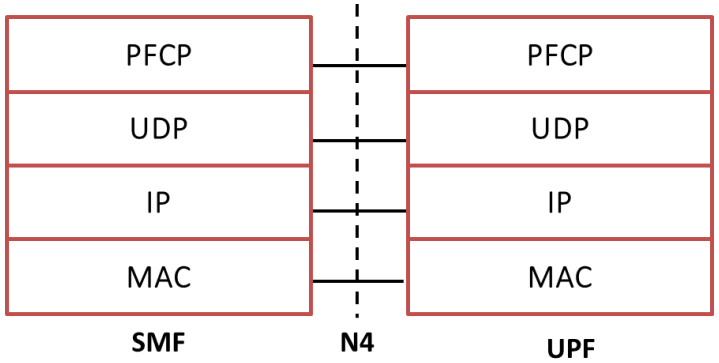
- PacketScan™ 5G protocol analyzer supports monitoring of 5G networks
- Captures, segregates, monitors and collects statistics on all calls over N1N2, N4, N8, N10, N11, N12, and N13 interfaces of the 5G network

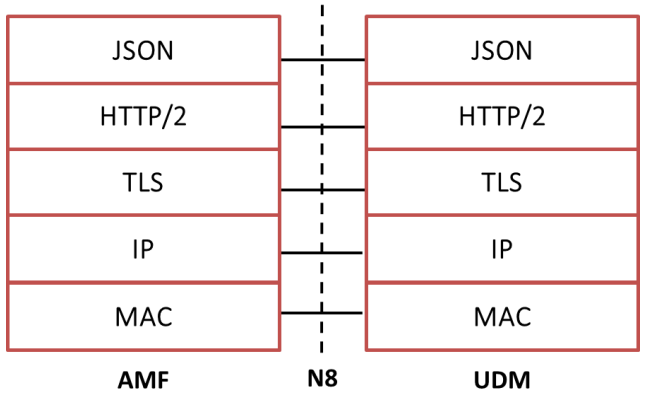
Main Features

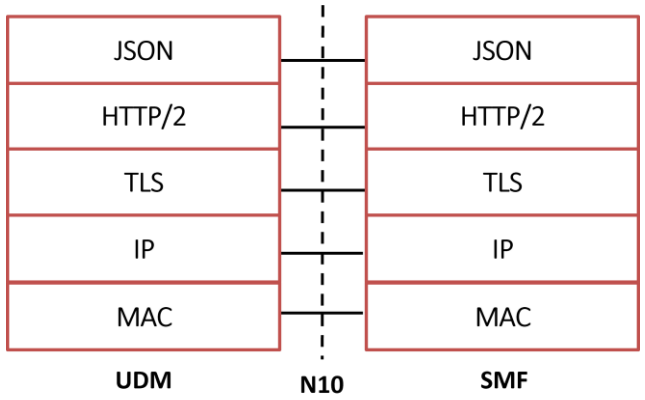
- Capture, decode, and analyze calls in the 5G Network
- Supported protocols include Non-Access Stratum (NAS), Next Generation Application Protocol (NGAP), Packet Forwarding Control Protocol (PFCP)
- Supported interfaces:
  - N1N2 Interface - gNodeB (also called Next Generation RAN), and AMF (Access and Mobility Management Function) nodes
  - N4 Interface - Session Management Function (SMF) and User Plane Function (UPF) elements
  - N8 Interface - Unified Data Management (UDM) and Access and Mobility Management Function (AMF)
  - N10 Interface - Unified Data Management (UDM) and Session Management Function (SMF)
  - N11 Interface - Mobility Management Function (AMF) and Session Management Function (SMF)
  - N12 Interface - Authentication Server Function (AUSF) and Access and Mobility Management Function (AMF)
  - N13 Interface - Authentication Server Function (AUSF) and User Data Management (UDM)
- Provides VoNR call statistics such as caller, callee, MOS scores, discarded packets and voice storage
- Save calls to PCAP (Wireshark® format) and in HDL (GL Proprietary format)
- Packet Data Analyzer feature in Packetscan™ provide a complete call flow of a 5G session
- Displays Summary, Detail, Hex dump, Statistics, and Call Detail Views

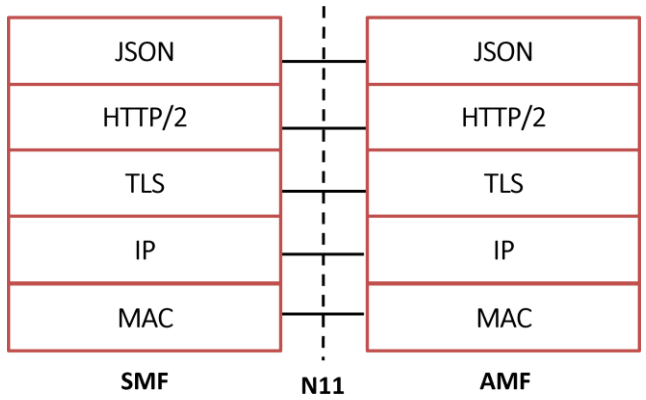
Protocol Stack

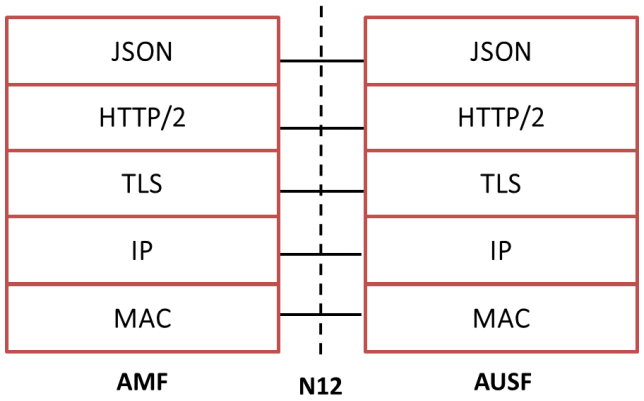


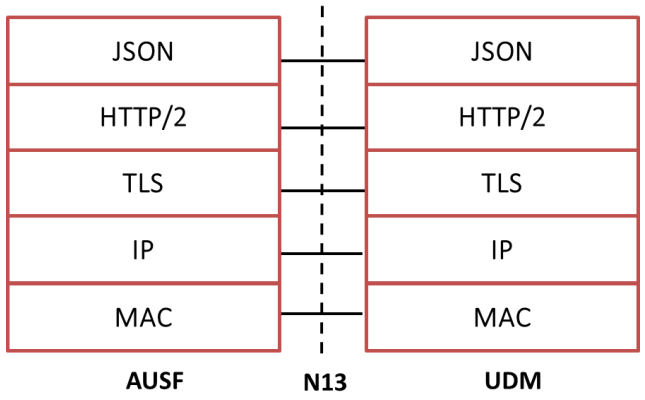












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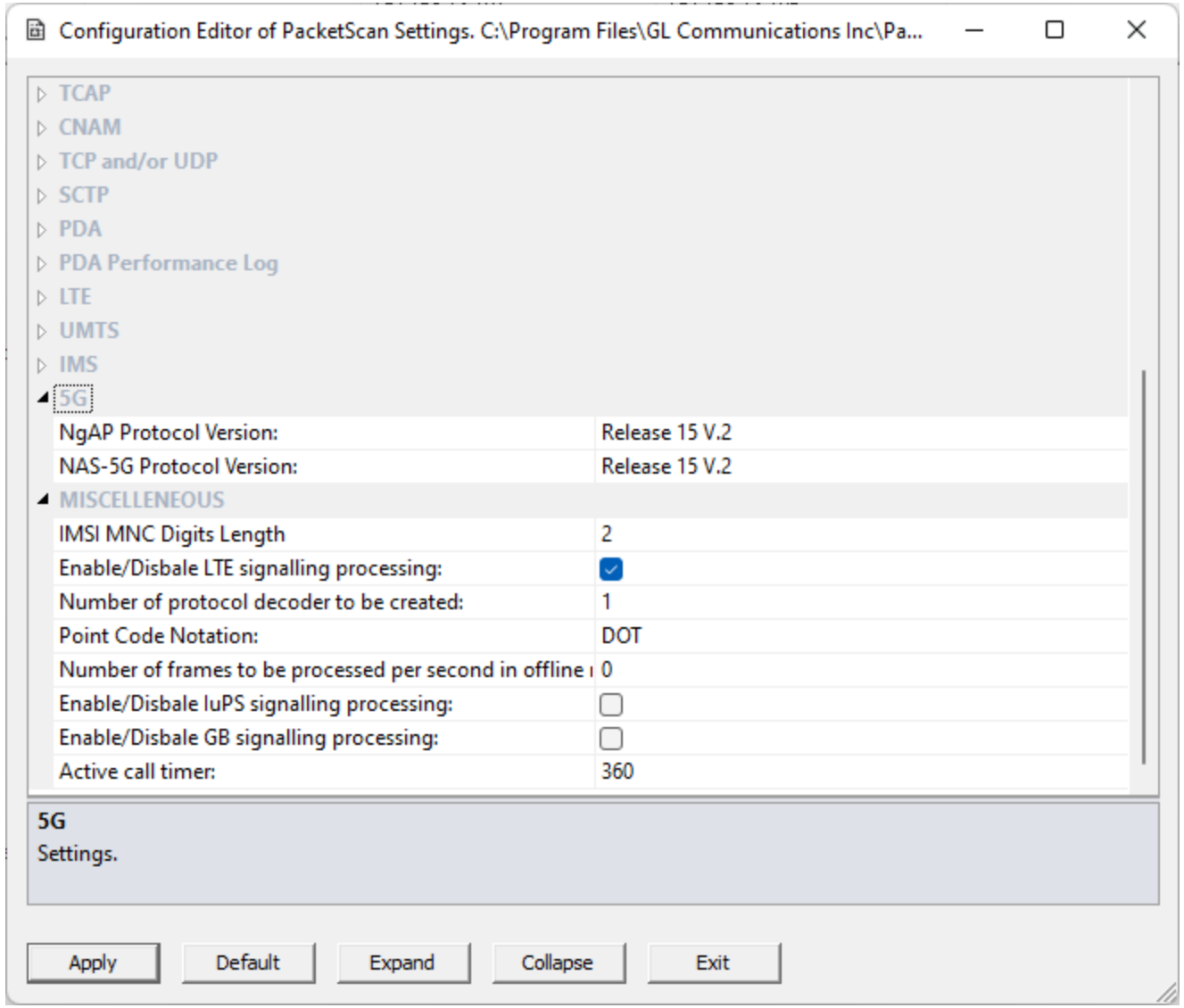
Protocol Specifications

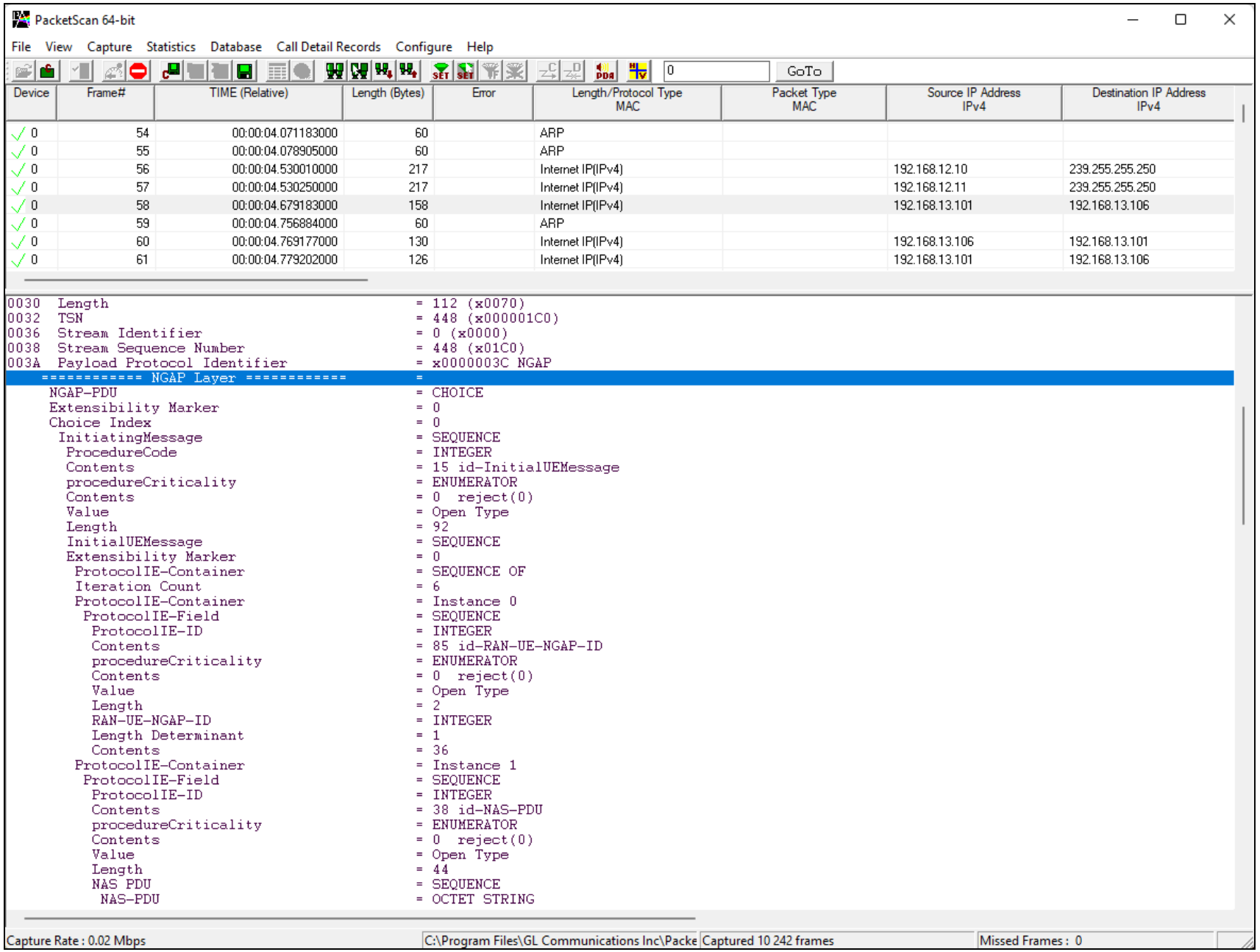
Supported Protocols	Standard / Specification
System Architecture for the 5G	3GPP TS 23.501
NG Application Protocol (NGAP)	3GPP TS 38.413
Non-Access-Stratum (NAS)	3GPP TS 24.501
GPRS Tunneling Protocol for User Plane (GTP-U)	3GPP TS 29.281
NR and NG-RAN Overall Description	3GPP TS 28.300
Packet Forwarding Control Protocol (PFCP)	3GPP TS 29.244
UDP	IETF RFC 768
IPv4	IETF RFC 791 [5]
IPv6	IETF RFC 2460 [6]
JavaScript Object Notation (JSON)	IETF RFC 8259
HTTP/2	IETF RFC 7231 IETF RFC 7540/RFC 7541
TLS	IETF RFC 8446
TCP	IETF RFC 793

Configuration Editor Settings



Real-time Analysis

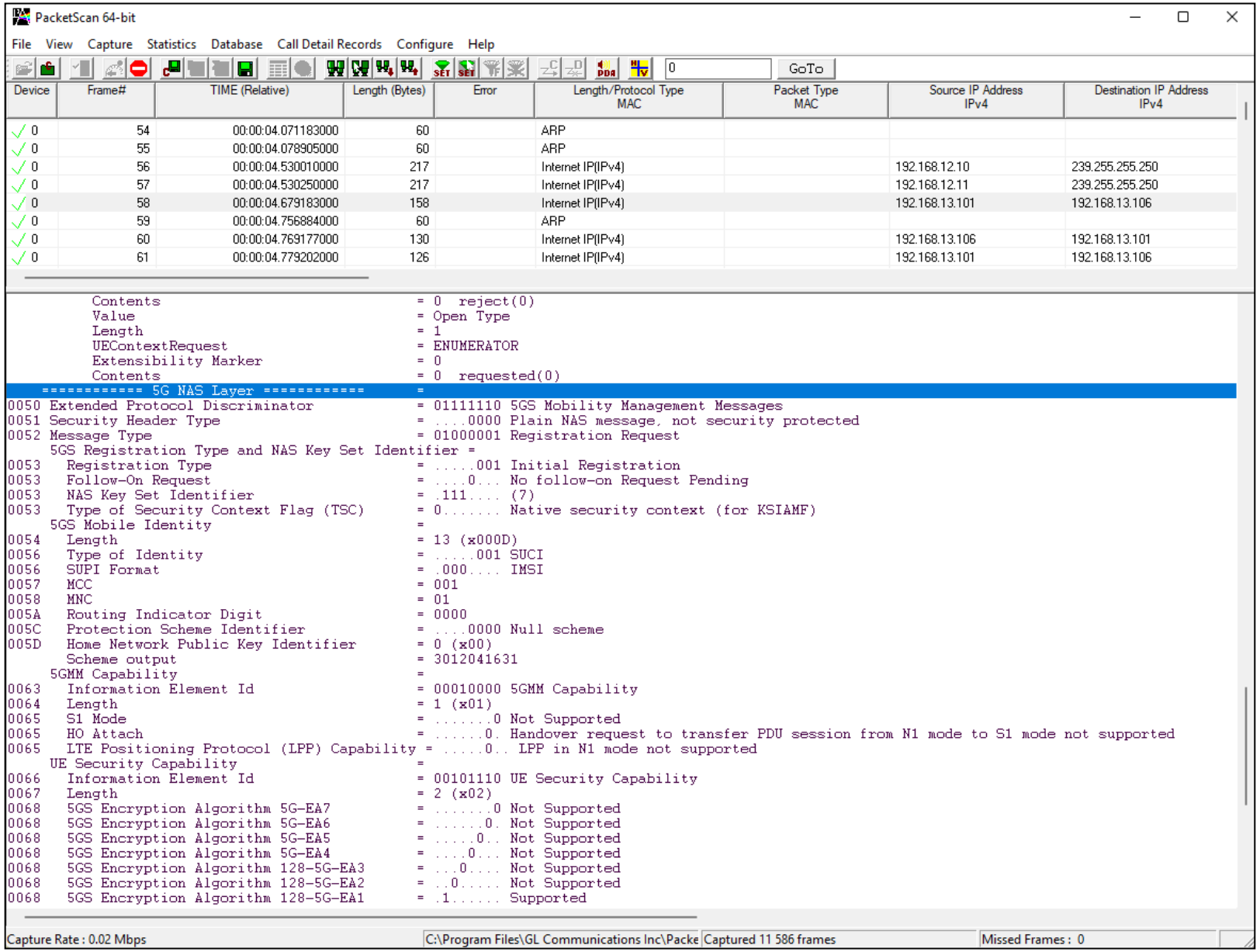
- Default panes - summary, detail, and hex dump of the frame data views
- Optional panes – statistics and call trace views



Detail View of 5G NAS Layer

The detail decode view of NAS Layer displays the following:

- MAC Layer
- IPv4 Layer
- SCTP Layer
- NGAP Layer
- NAS Layer



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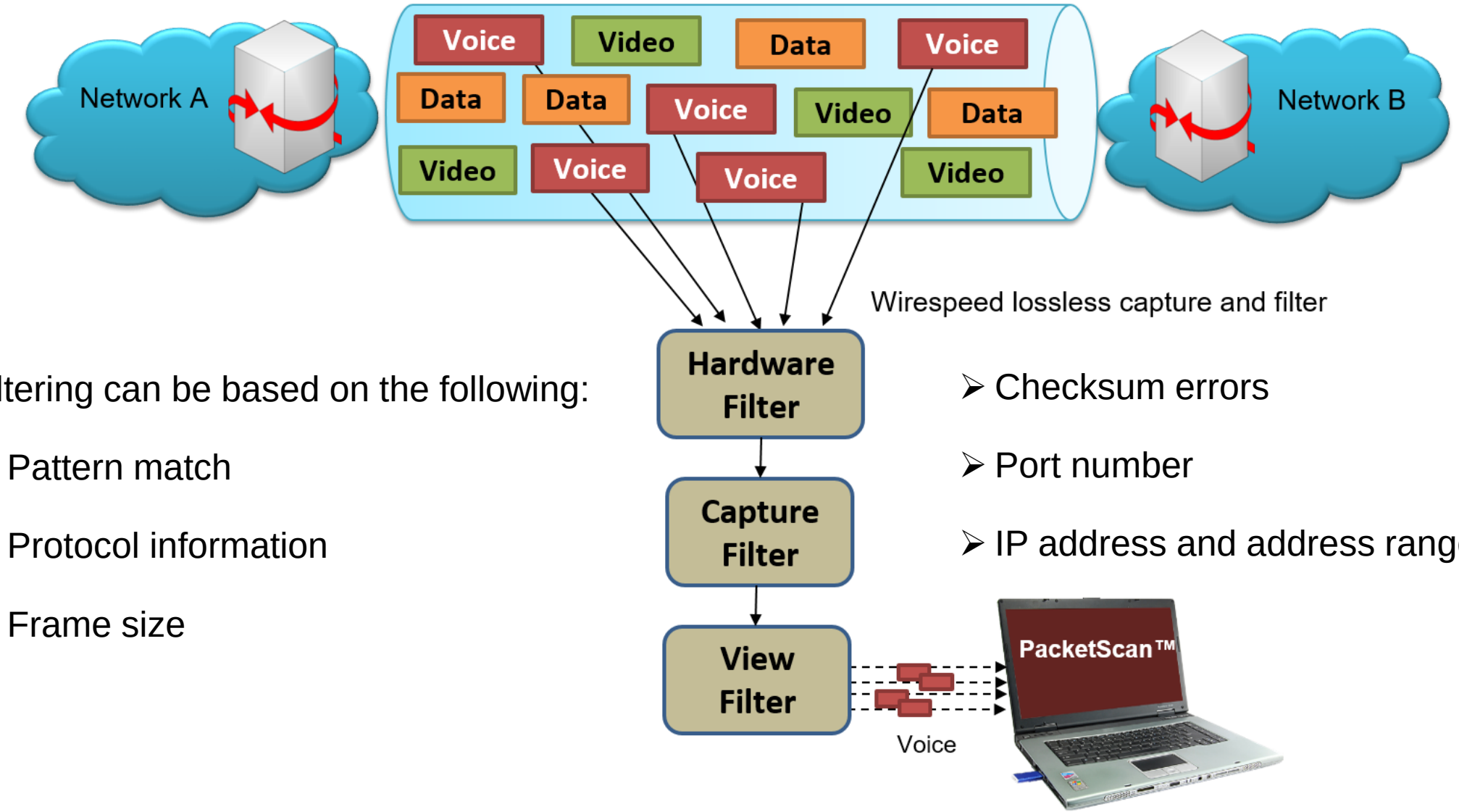
Wirespeed Filtering



- Filtering can be based on the following:
  - ➢ Pattern match
  - ➢ Protocol information
  - ➢ Frame size
  - ➢ Checksum errors
  - ➢ Port number
  - ➢ IP address and address ranges

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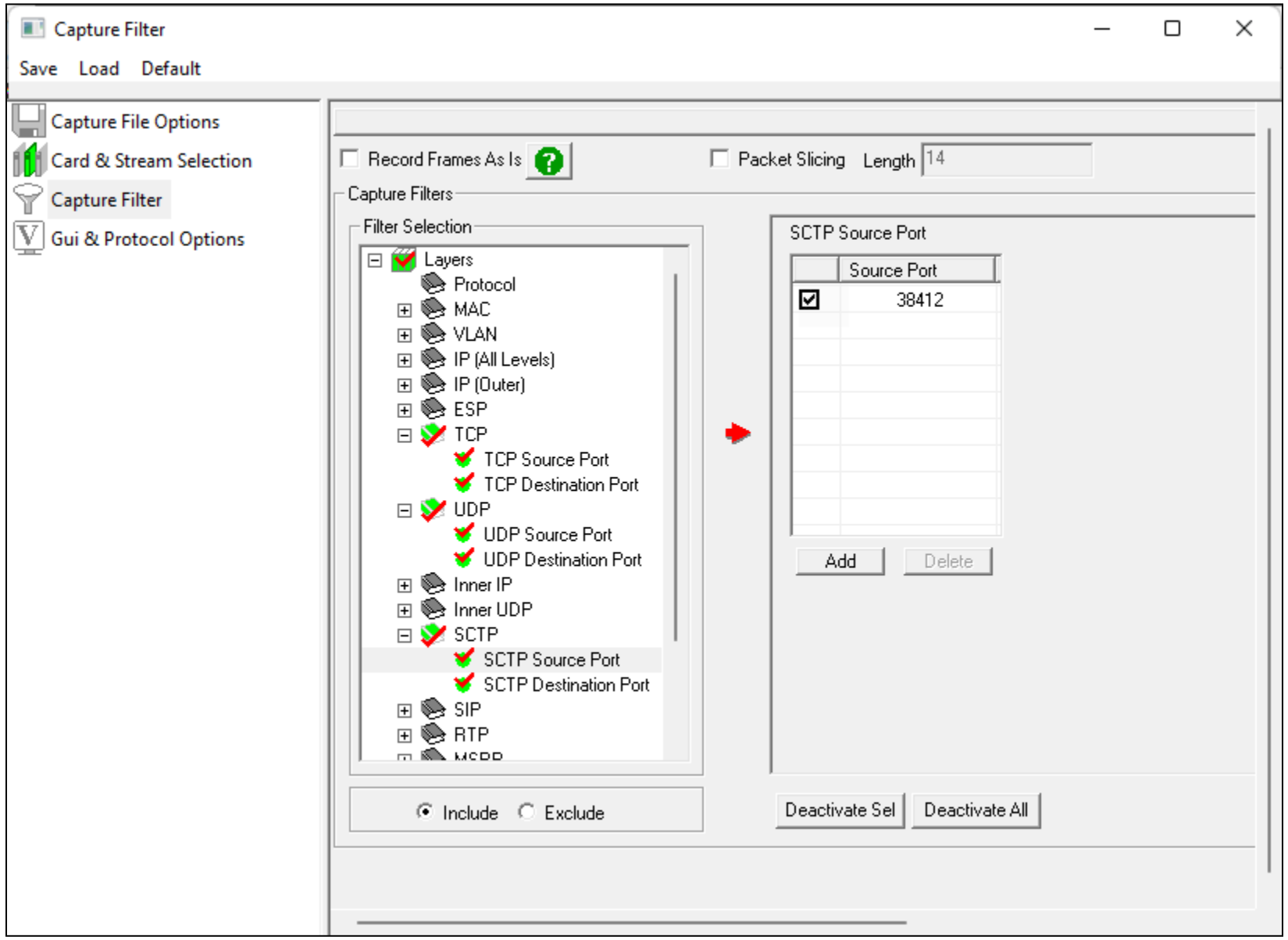
Real-time Capture Filter



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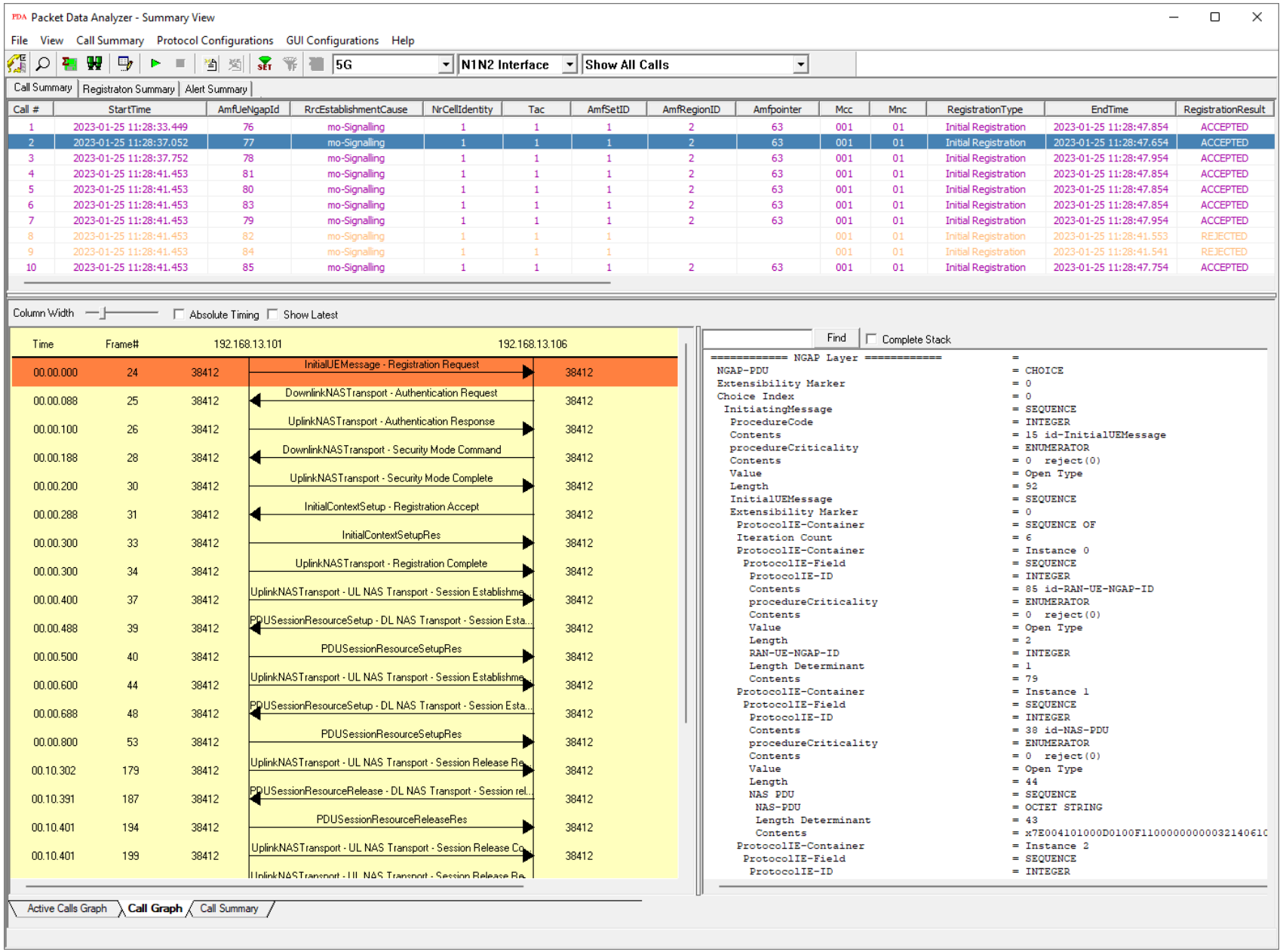
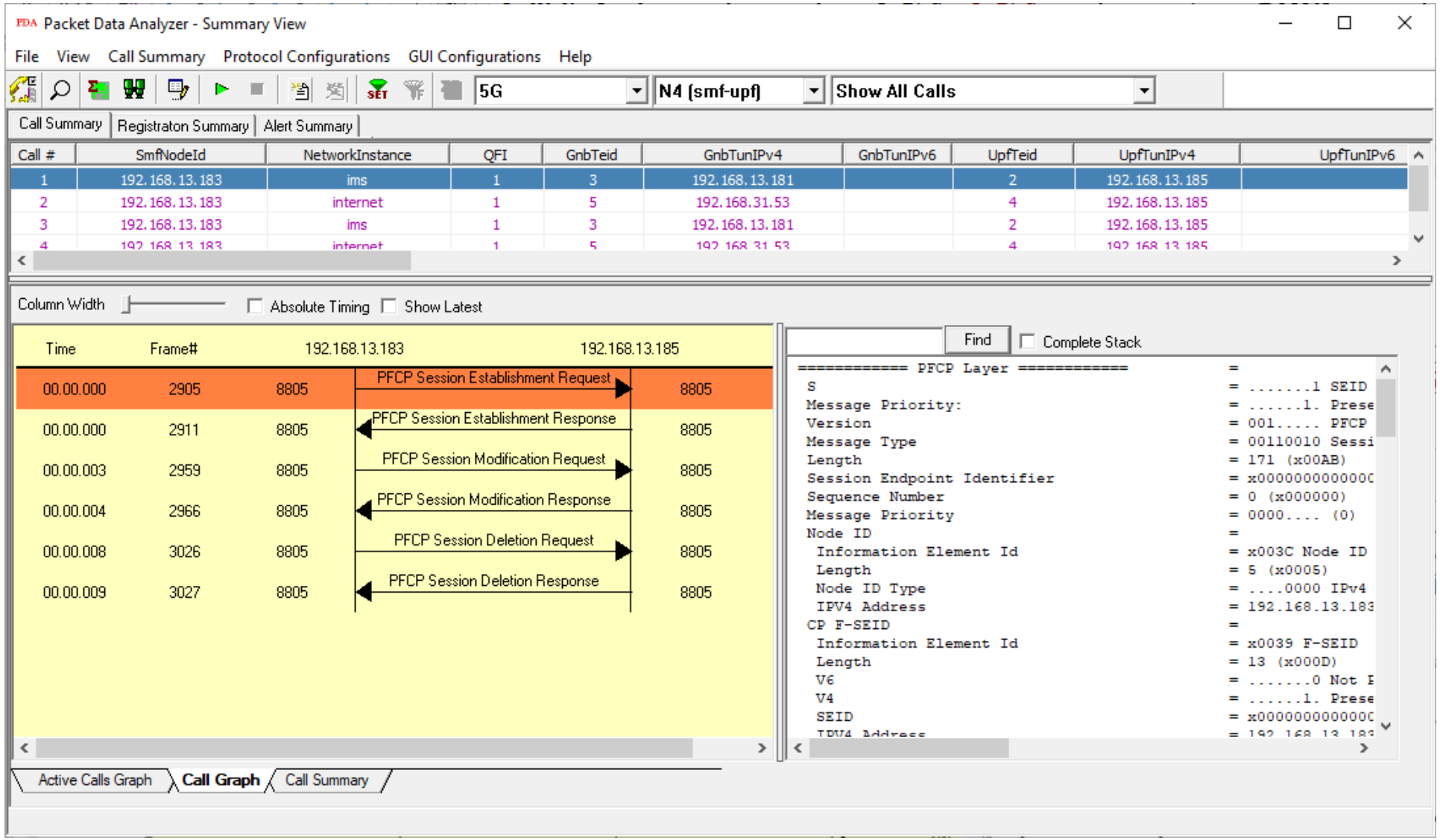
Packet Data Analyzer (PDA) – 5G N1N2 Call Graph

- Displays the message sequences of captured 5G calls
- Decodes of the selected N1N2 message is displayed on the right pane



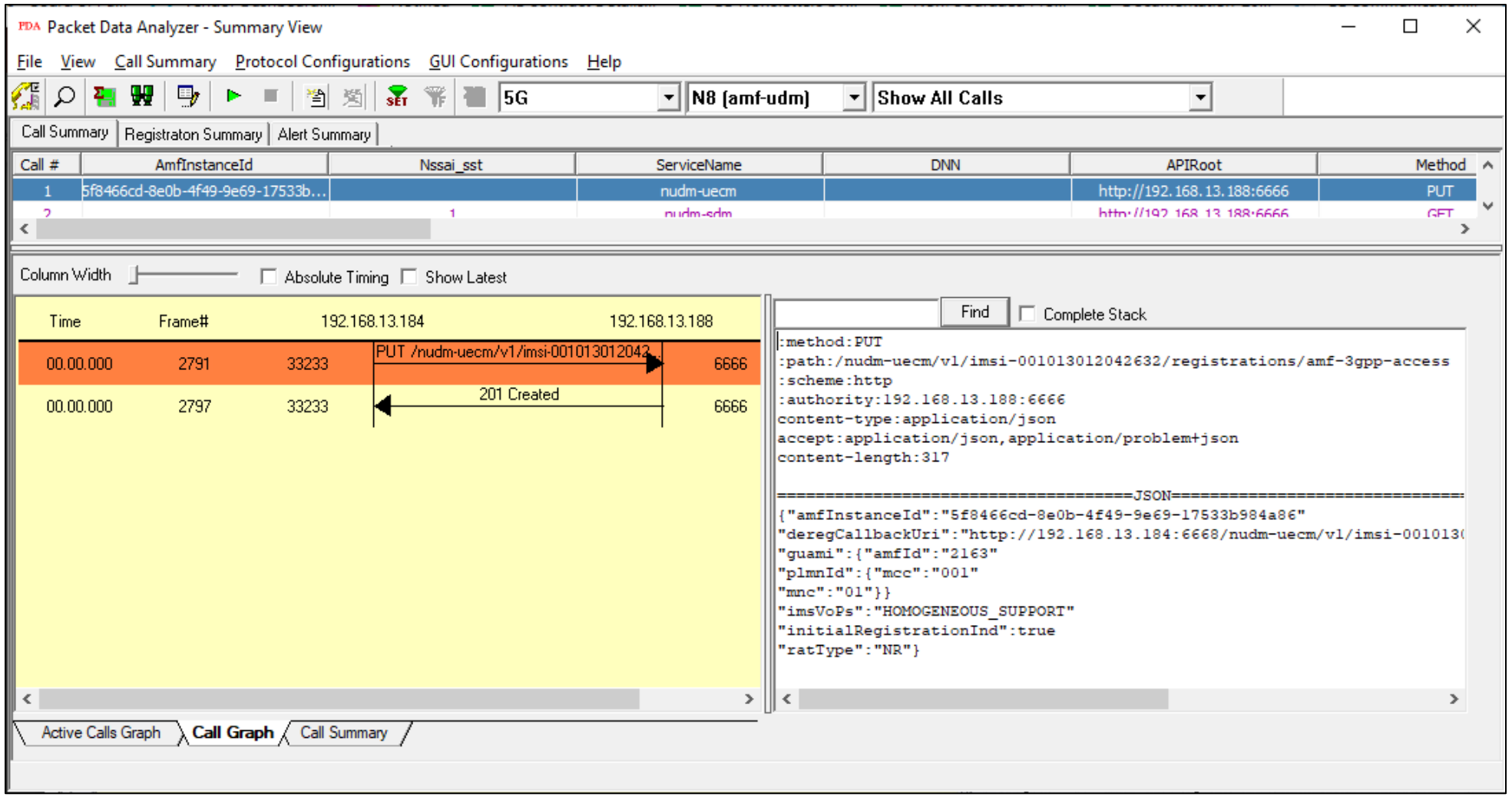
Packet Data Analyzer (PDA) – 5G N4 Call Graph

- Decodes of the selected N4 message is displayed on the right pane



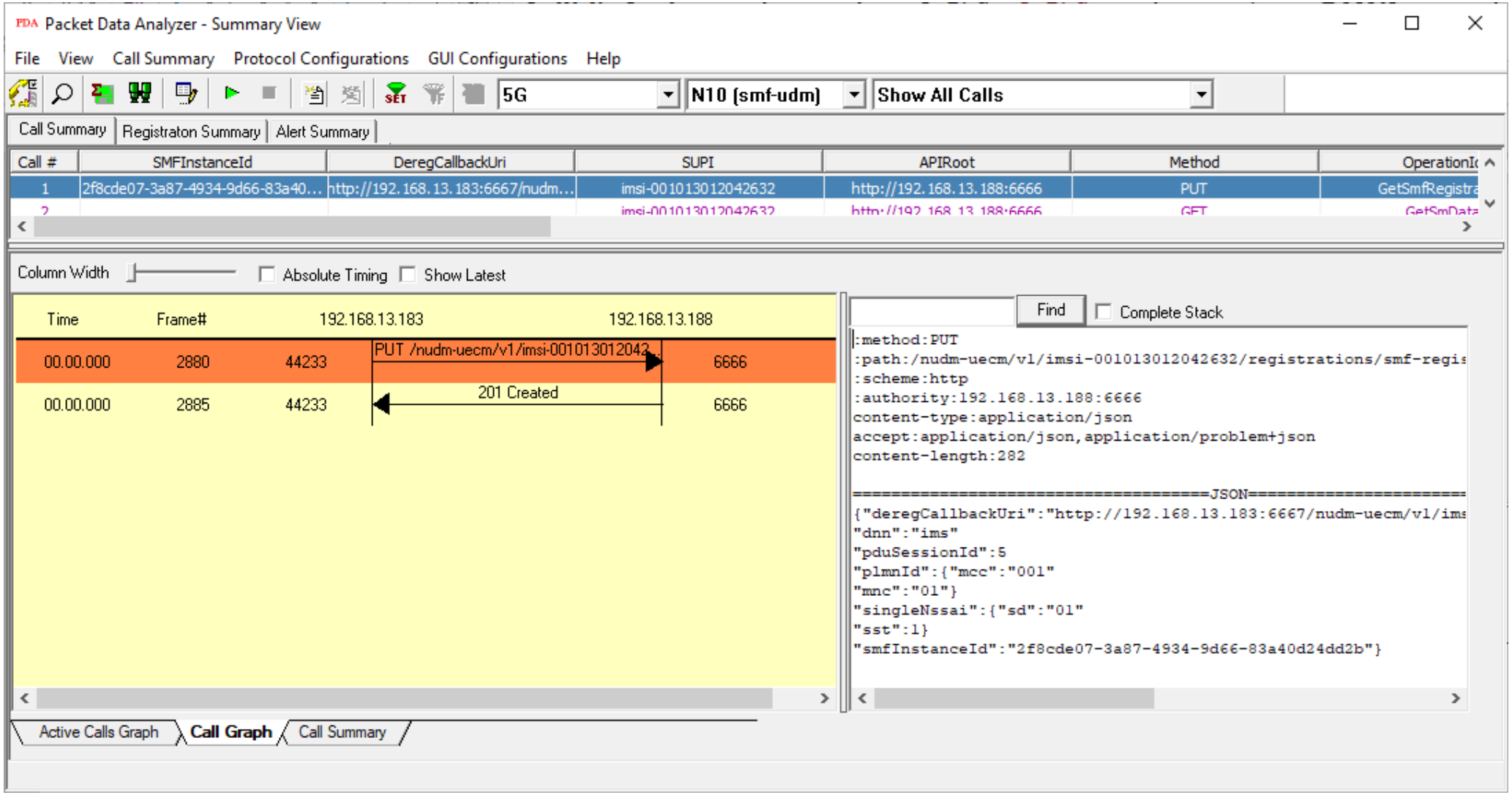
Packet Data Analyzer (PDA) – 5G N8 Call Graph

- Decodes of the selected N8 message is displayed on the right pane



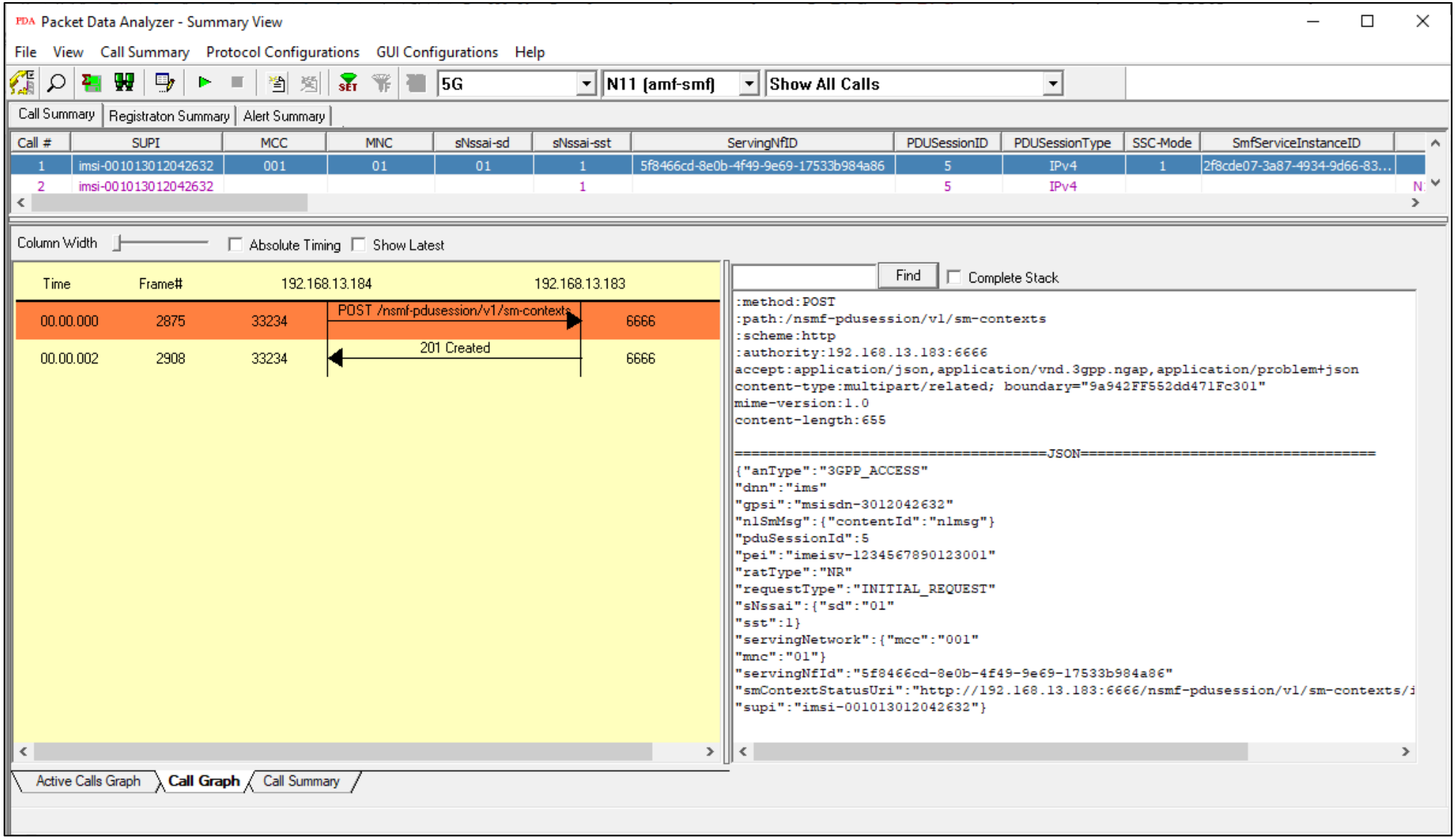
Packet Data Analyzer (PDA) – 5G N10 Call Graph

- Decodes of the selected N10 message is displayed on the right pane



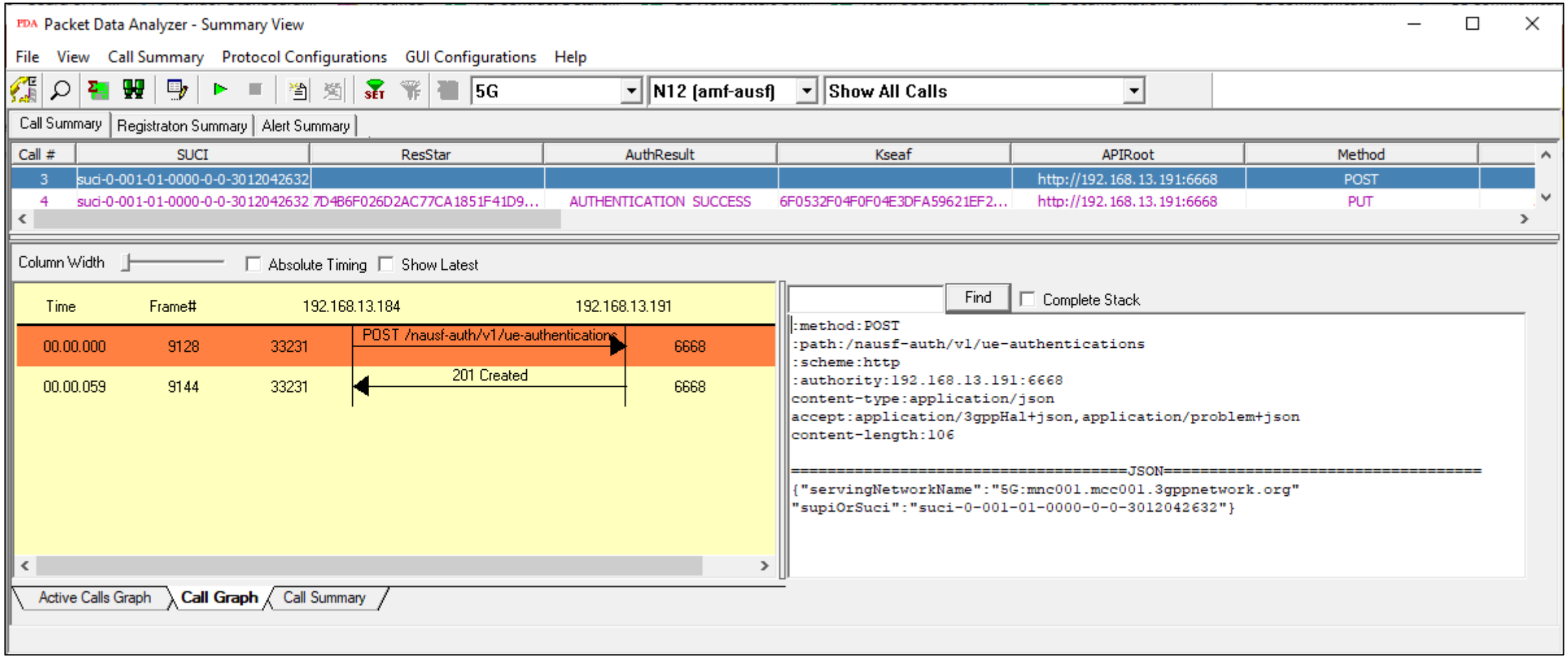
Packet Data Analyzer (PDA) – 5G N11 Call Graph

- Decodes of the selected N11 message is displayed on the right pane



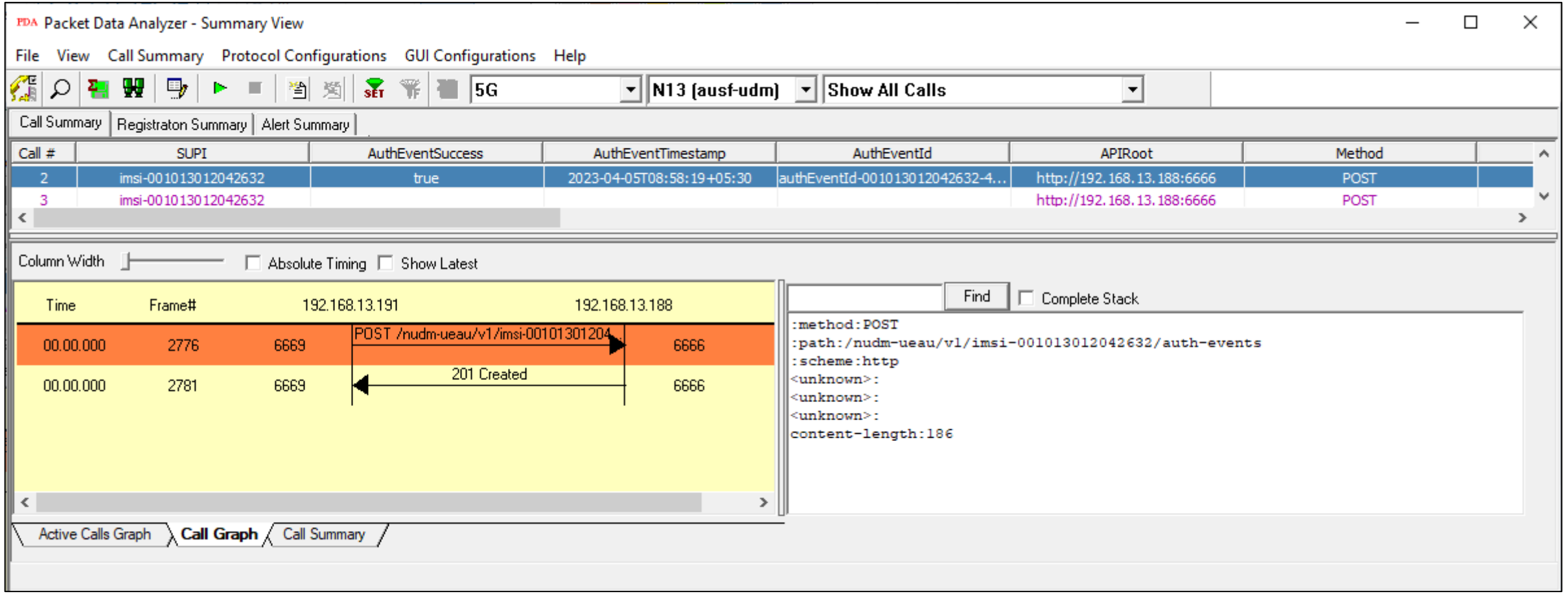
Packet Data Analyzer (PDA) – 5G N12 Call Graph

- Decodes of the selected N12 message is displayed on the right pane



Packet Data Analyzer (PDA) – 5G N13 Call Graph

- Decodes of the selected N13 message is displayed on the right pane



Thank you