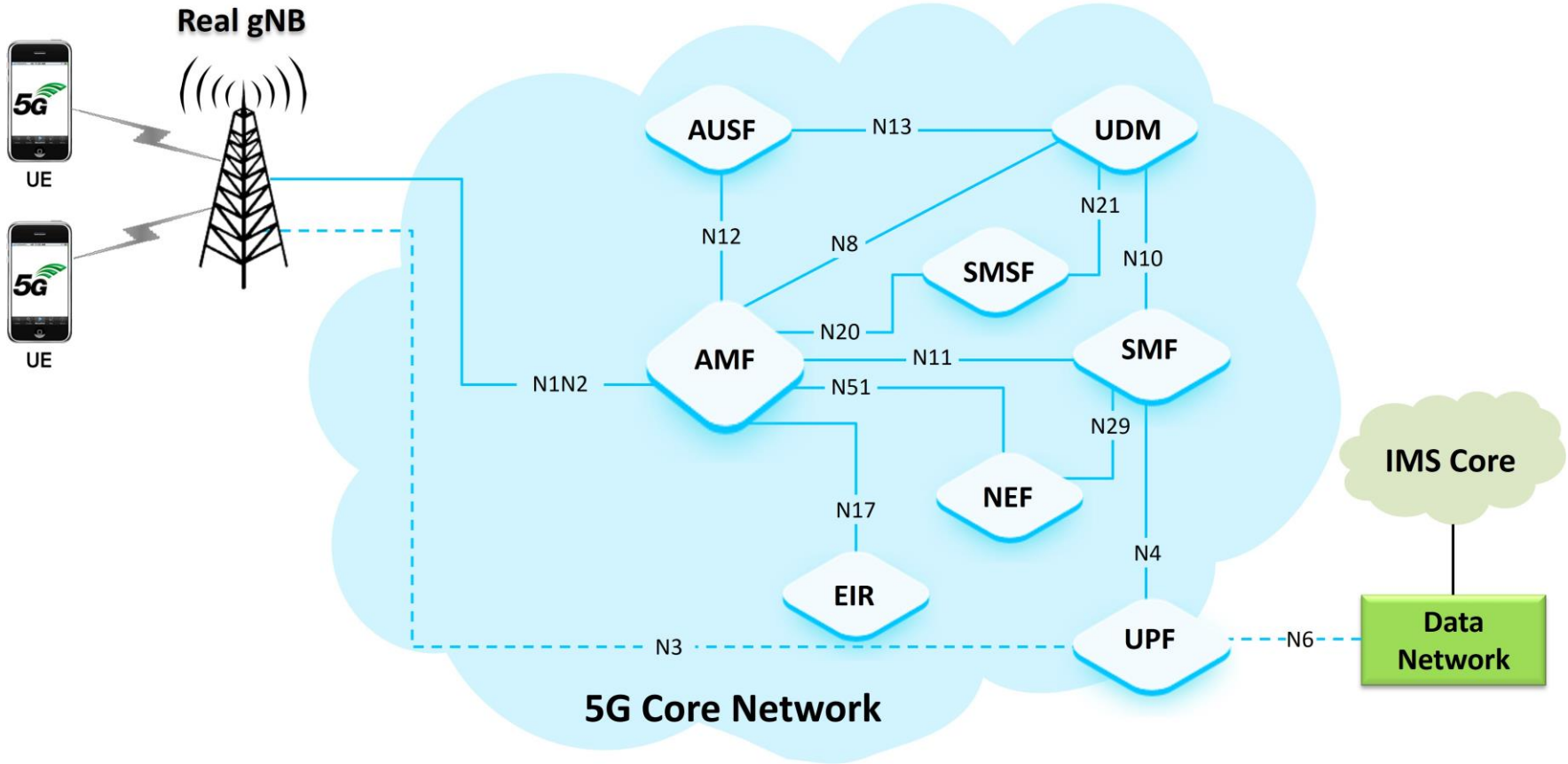
# PacketScan™ 5G Protocol Analyzer

GL Communications Inc.
818 West Diamond Avenue - Third Floor, Gaithersburg, MD 20878
Phone: (301) 670-4784 Fax: (301) 670-9187 Email: info@gl.com
Website: https://www.gl.com

# Introduction

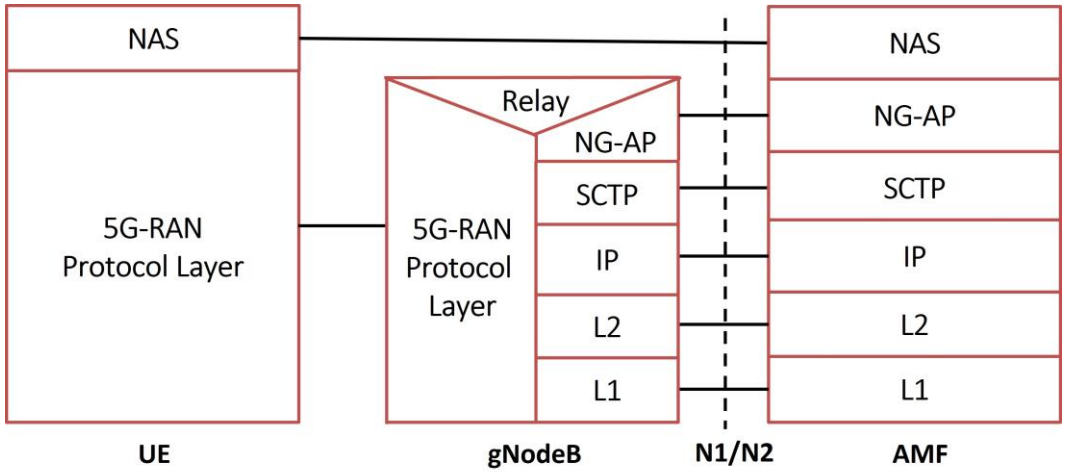


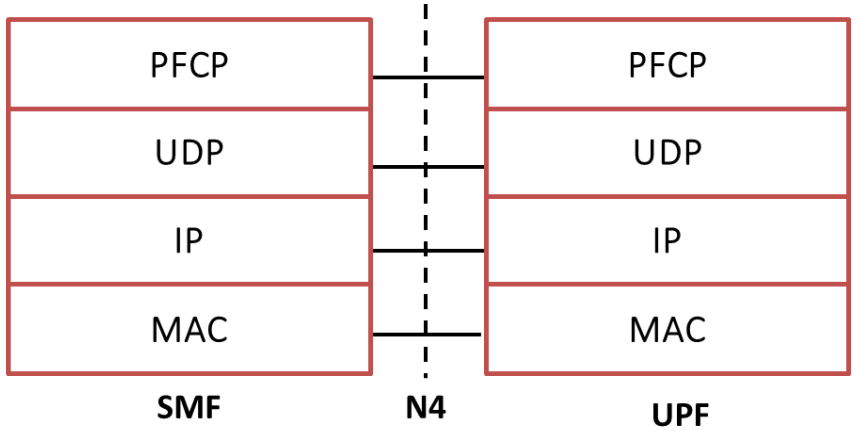

- PacketScan™ 5G protocol analyzer supports monitoring of 5G networks
- Captures, segregates, monitors and collects statistics on all calls over N1/N2, N4, N8, N12 and N13 interfaces of the 5G network

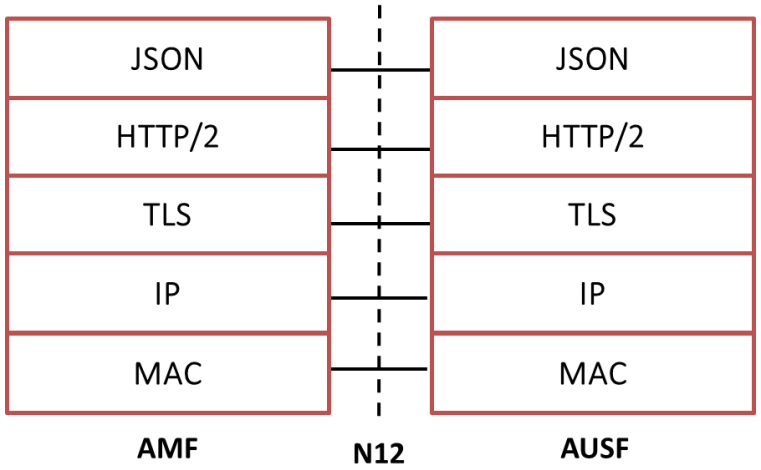
# Main Features

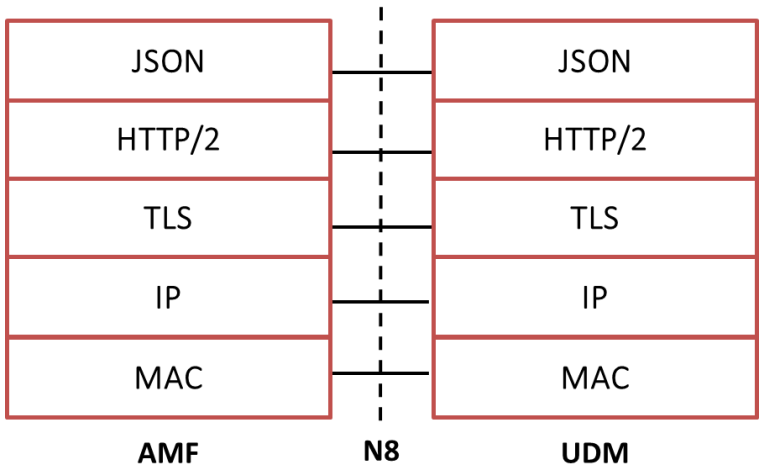
- Capture, Decode, and Analysis of Calls in 5G Network
- Supported protocols – Non-Access Stratum (NAS), Next Generation Application Protocol (NGAP), Packet Forwarding Control Protocol (PFCP)
- Supported interfaces – N1N2, N4, N8, N12, and N13
- Provides VoNR call statistics such as caller, callee, MOS scores, discarded packets and voice storage
- Interested calls can be saved to PCAP and as well as GL's HDL 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
- Statistics View displays statistics based on frame count, byte count, frames/sec, bytes/sec etc. for the entire capture data
- Provides a consolidated interface for all the important settings required in the analyzer. All the configuration settings done in any of these options can be saved to a file, loaded from a configuration file

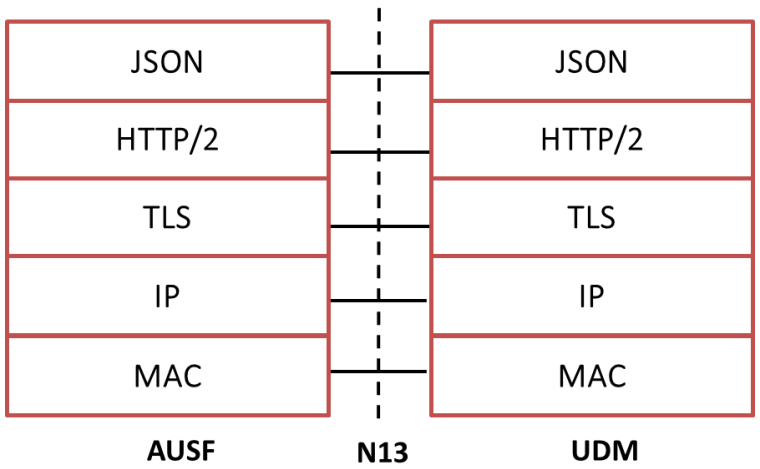
# Protocol Stack



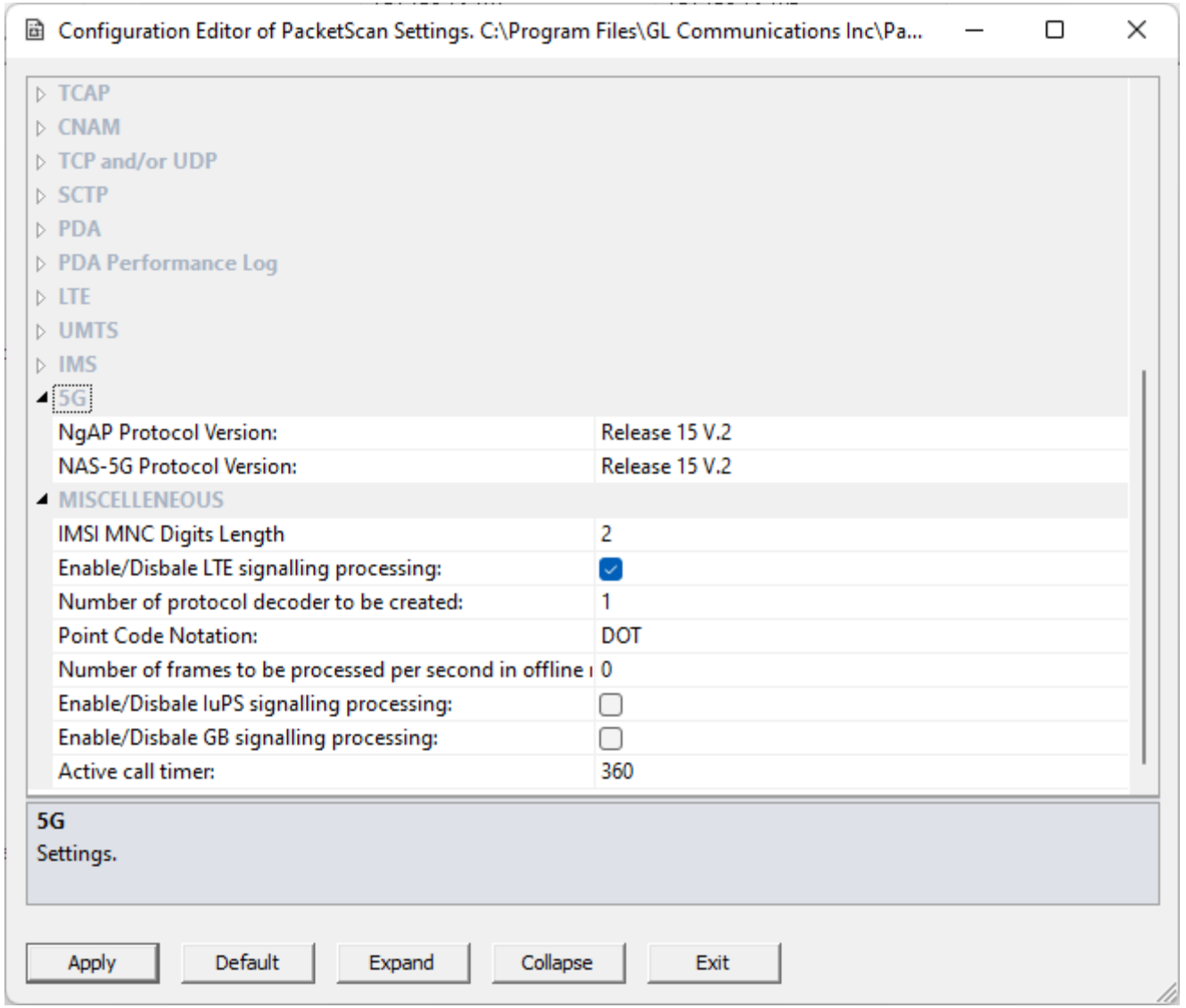




GL Communications

# Protocol Specifications

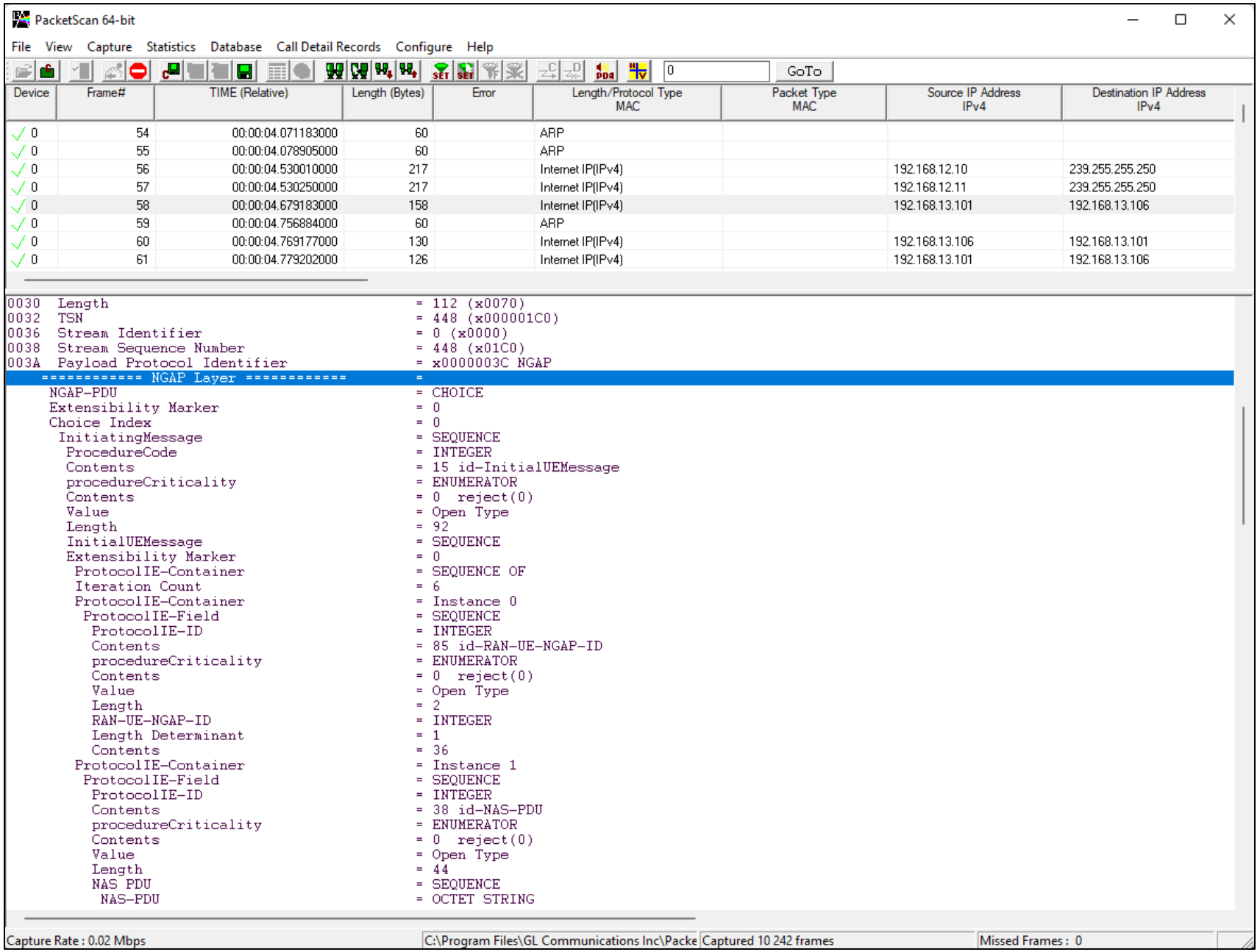
| Supported Protocols | Standard / Specification |
|---|---|
| System Architecture for the 5G | 3GPP TS 23.501 |
| NG Application Protocol (NGAP) | 3GPP TS 38.413 |
| Non-Access-Stratum (NAS) | 3GPP TS 24.501 |
| GPRS Tunneling Protocol for User Plane (GTP-U) | 3GPP TS 29.281 |
| NR and NG-RAN Overall 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<br>IETF RFC 7540/RFC 7541 |
| TLS | IETF RFC 8446 |
| TCP | IETF RFC 793 |

# Configuration Editor Settings



# Real-time Analysis

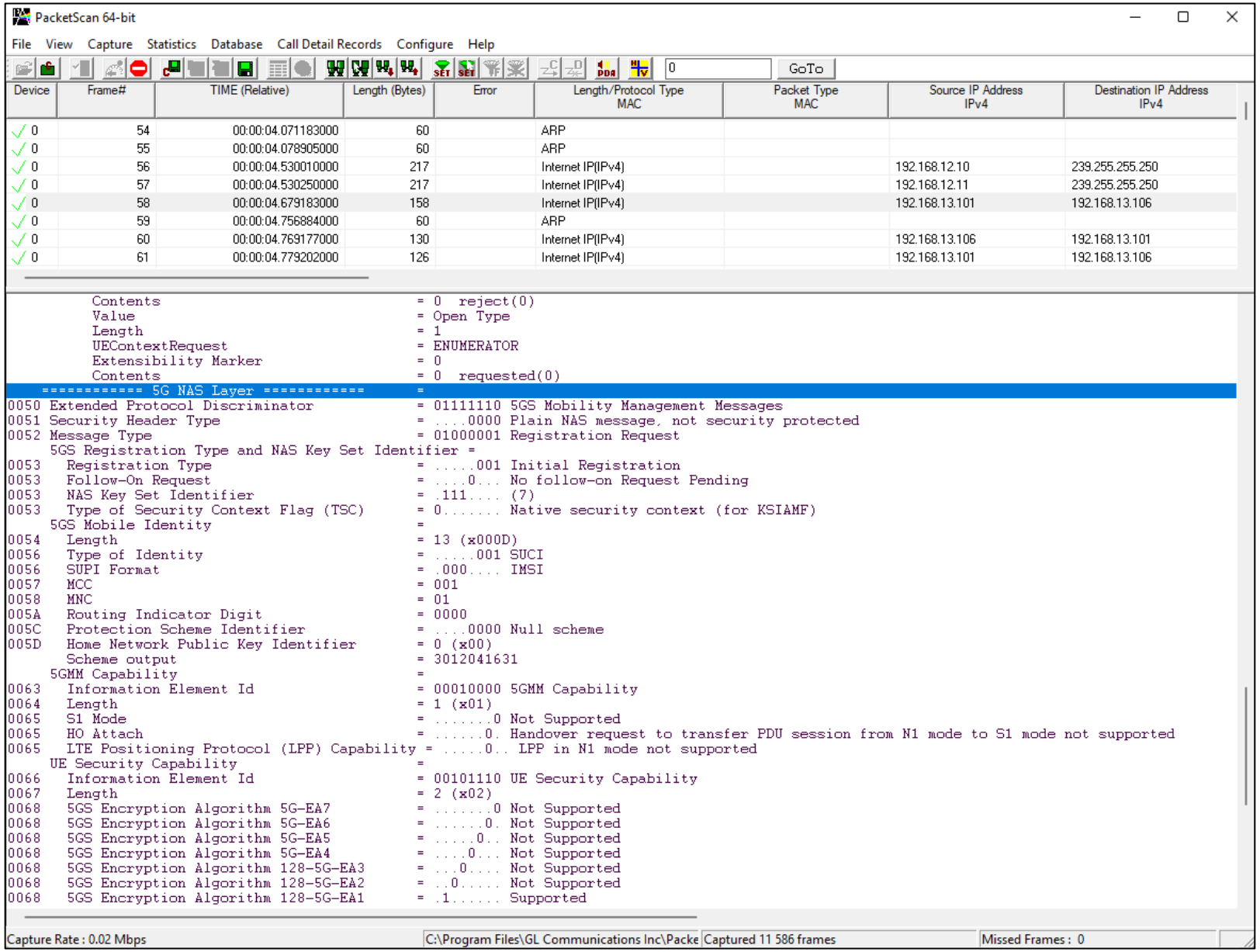
- Default panes - summary, detail, and hex dump of the frame data views
- Optional panes – statistics and call trace views



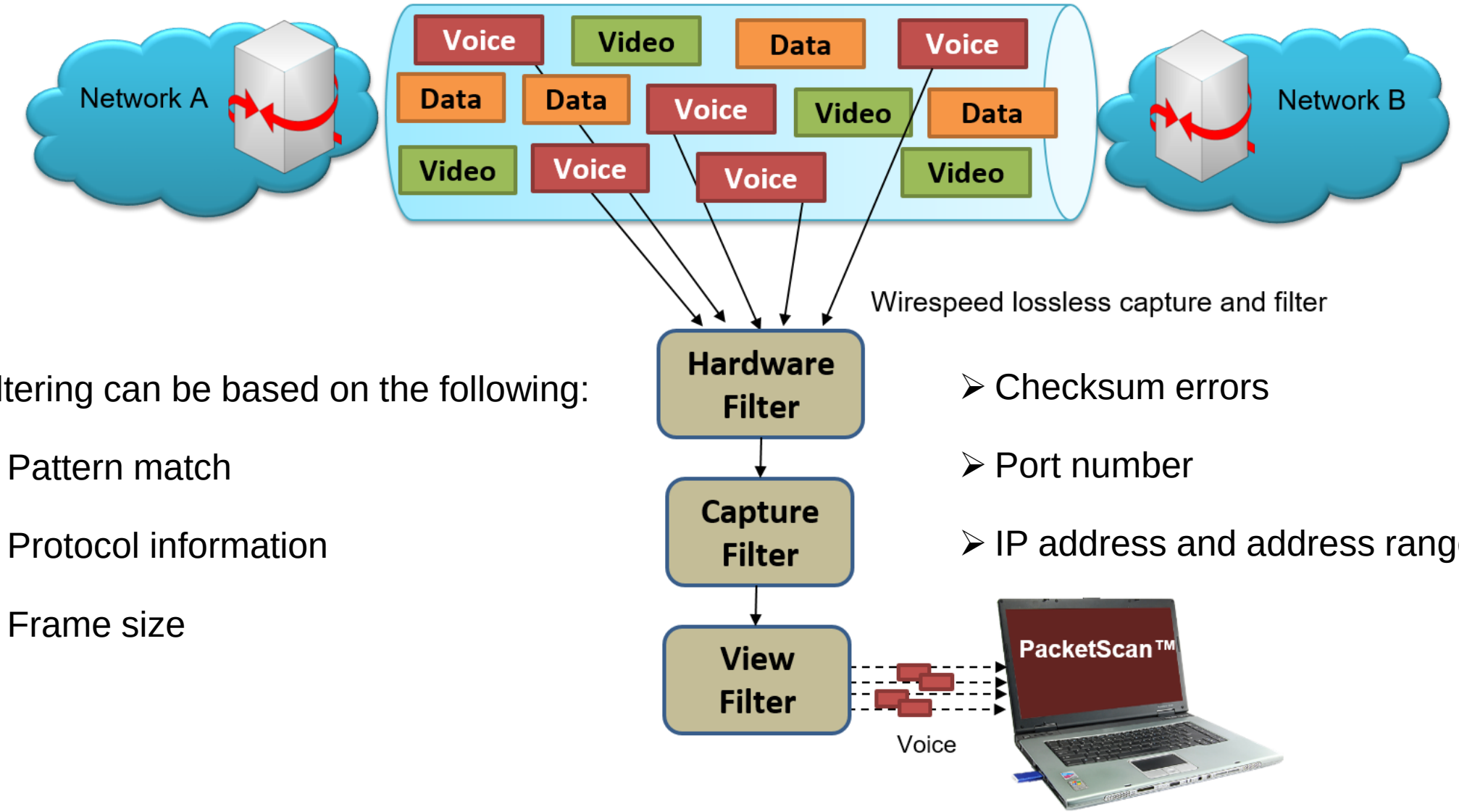
# Detail View of 5G NAS Layer

The detail decode view of NAS Layer displays the following:

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



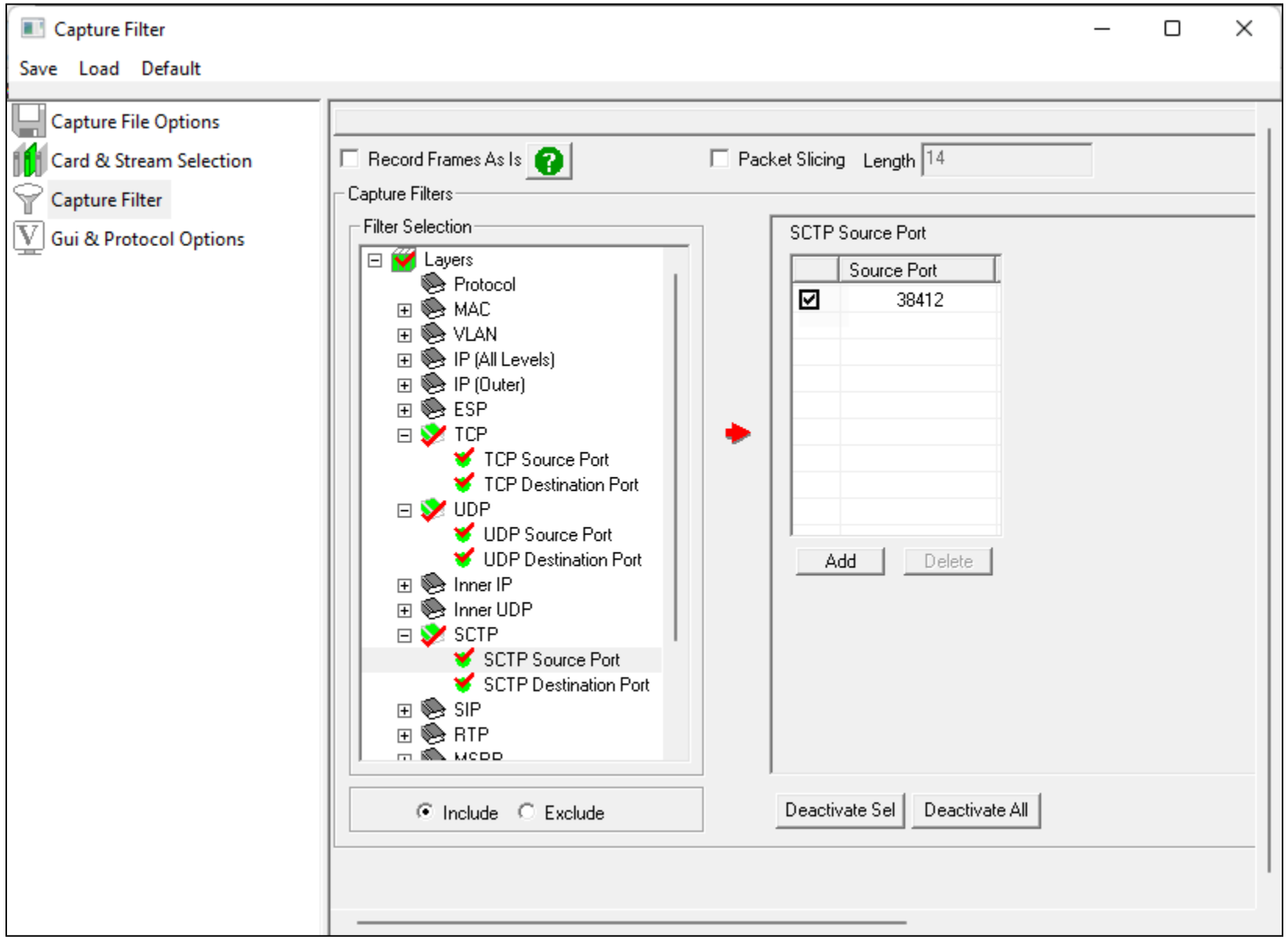
# Wirespeed Filtering




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

GL Communications

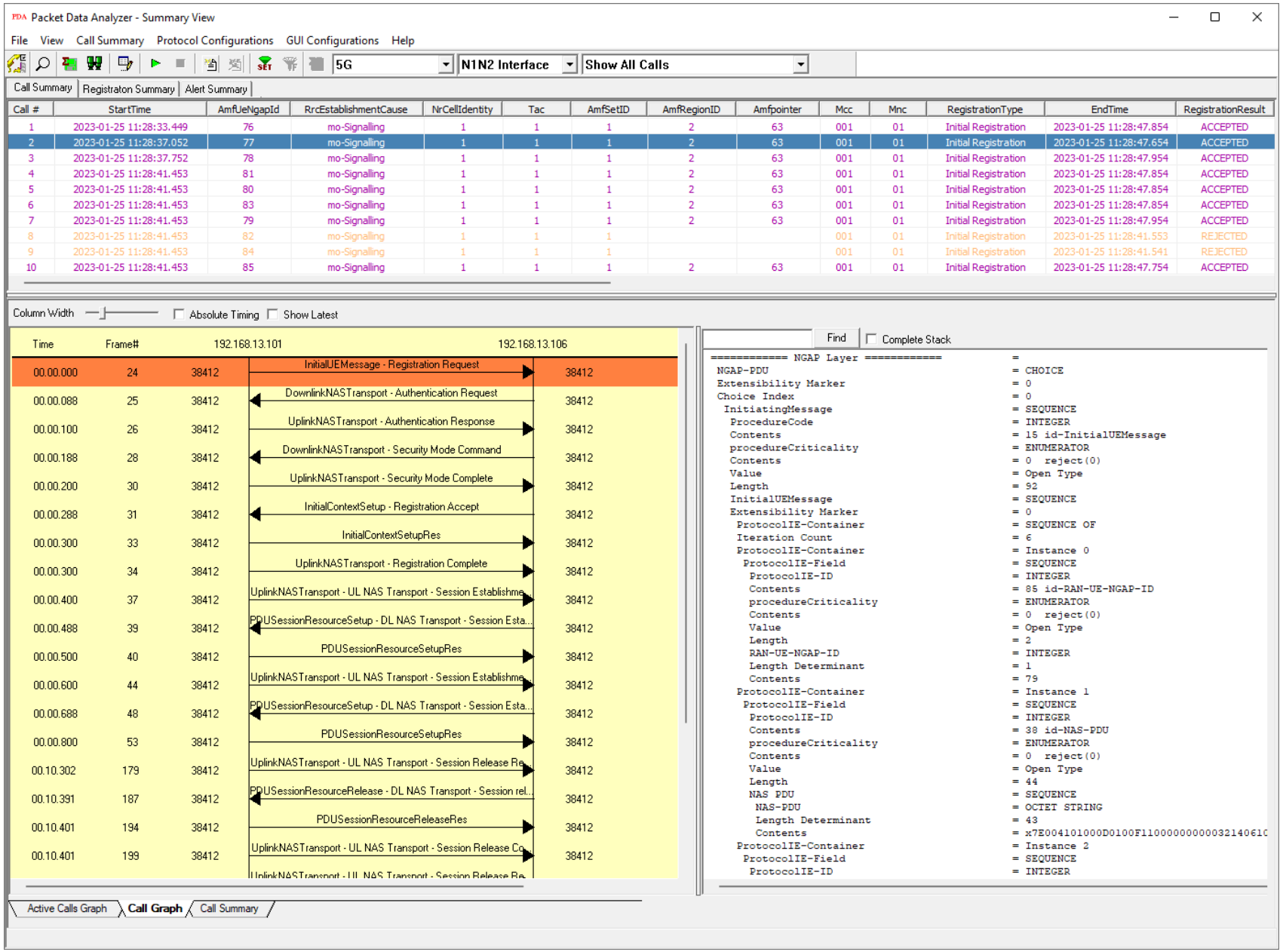
# Real-time Capture Filter




GL Communications

# 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



# Thank you