NEOX NETWORKS
NEXT GENERATION NETWORK VISIBILITY

Feature Brief

Mobile Network Visibility with GTP Correlation

In the era of 5G and IoT, mobile network traffic is exploding—and so are the security risks. GPRS Tunneling Protocol (GTP) is the backbone of mobile data, but its complexity creates blind spots for threats, performance issues, and compliance risks. Traditional monitoring tools struggle to track GTP sessions across multiple tunnels, leaving networks vulnerable to attacks, fraud, and service degradation. GTP Correlation solves this challenge by reconstructing end-to-end mobile sessions in real time, providing unmatched visibility into subscriber activity, security threats, and network performance. At NEOX, we go beyond basic GTP parsing—we deliver intelligent session-aware analysis that empowers operators to secure, optimize, and monetize their mobile infrastructure.

What is GTP Correlation

GTP Correlation is the real-time stitching of GTP-C (control plane) and GTP-U (user plane) traffic to reconstruct complete mobile sessions, providing far deeper insights than basic GTP parsing, which only examines individual packets. This advanced capability delivers end-to-end session visibility, tracking subscriber activity across multiple tunnels, cells, and Access Point Names (APNs), while also enabling robust threat detection by identifying GTP-based attacks such as tunneling exploits, fraud, and DDoS. Additionally, it supports performance monitoring by detecting latency, packet loss, and QoS violations in the user plane, as well as compliance and fraud prevention by flagging unauthorized roaming, IMSI catching, and bypass attacks. By seamlessly correlating control and user plane traffic, NEOX enables true mobile network intelligence, empowering operators with the visibility needed to secure, optimize, and monetize their networks.

Why GTP Correlation Matters

Mobile networks demand session-aware visibility to combat fraud, ensure performance, and meet regulatory requirements. Here's why GTP Correlation is critical:

1. **Advanced Threat Detection & Fraud Prevention**
   GTP Correlation enables advanced threat detection and fraud prevention by identifying sophisticated security risks in mobile networks. It detects GTP tunneling exploits, including firewall bypass attempts and covert data exfiltration, while also uncovering roaming fraud such as ghost subscribers and unauthorized APN access.

2. **Subscriber Experience & SLA Assurance**
   GTP Correlation plays a vital role in enhancing subscriber experience and SLA assurance by continuously monitoring key QoS metrics—including latency, jitter, and packet loss—for each individual subscriber. This granular visibility enables operators to quickly identify and resolve performance bottlenecks in backhaul or core networks before they impact service quality. Additionally, by precisely tracking data consumption patterns, GTP Correlation helps enforce fair usage policies, ensuring optimal network resource allocation while maintaining compliance with subscriber SLAs. This proactive approach to network performance management translates to superior quality of experience for end users while protecting operator revenue streams.

3. **Regulatory Compliance & Roaming Transparency**
   GTP Correlation ensures regulatory compliance and roaming transparency by auditing lawful interception requirements in accordance with GDPR and ETSI standards, helping operators meet critical legal obligations. The system enhances security by detecting IMSI catchers and fake base stations that threaten subscriber privacy and network integrity.

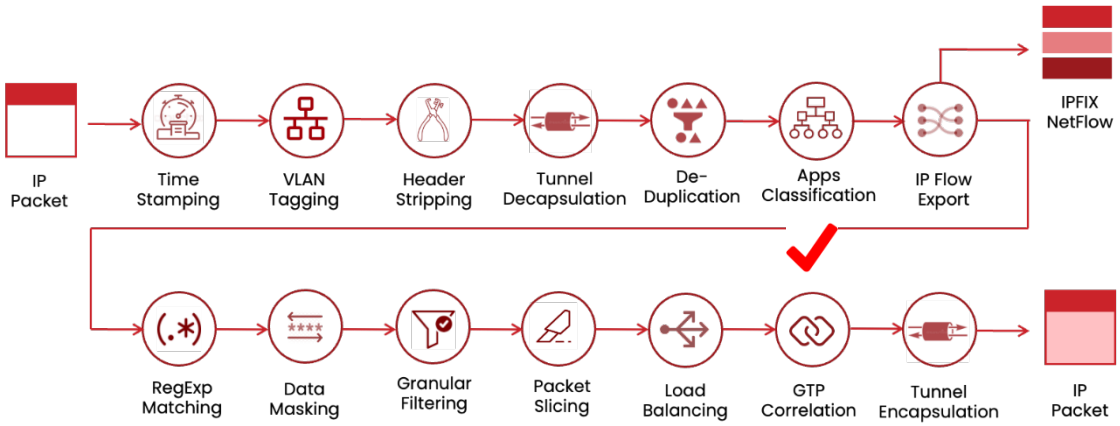
How NEOX Delivers GTP Correlation

NEOX's PacketTiger series of Packet Brokers integrate real-time GTP Correlation to secure sensitive data without disrupting network monitoring workflows.

1. **Wire-Speed Session Reconstruction**
   The system delivers wire-speed session reconstruction through FPGA/ASIC-accelerated processing that correlates GTP-C and GTP-U traffic with sub-microsecond latency. This hardware-optimized approach maintains flawless performance even while tracking millions of concurrent mobile sessions, eliminating the session drops and processing delays that plague software-based solutions.

2. **Real-Time Security Analytics**
   The system enables real-time security analytics by actively detecting malicious GTP tunnels, including sophisticated GTPv1-v2 downgrade attacks that exploit protocol vulnerabilities. Through deep packet inspection, it extracts critical subscriber metadata - including IMSI, MSISDN, APN, and QoS parameters - to enrich threat detection capabilities.

3. **Smart Forwarding to Mobile Probes**
   The solution implements intelligent traffic filtering through smart forwarding to mobile probes, dynamically selecting only security-relevant GTP sessions for PCRF, DPI, and fraud detection systems. By eliminating irrelevant traffic upstream, this capability reduces processing workload by over 80% on downstream analytics tools while simultaneously improving threat detection accuracy.



Feature	PacketWolf	PacketLion	PacketTiger	PacketTigerVirtual
GTP Correlation			✓	✓

Best Practices for GTP Correlation with NEOX

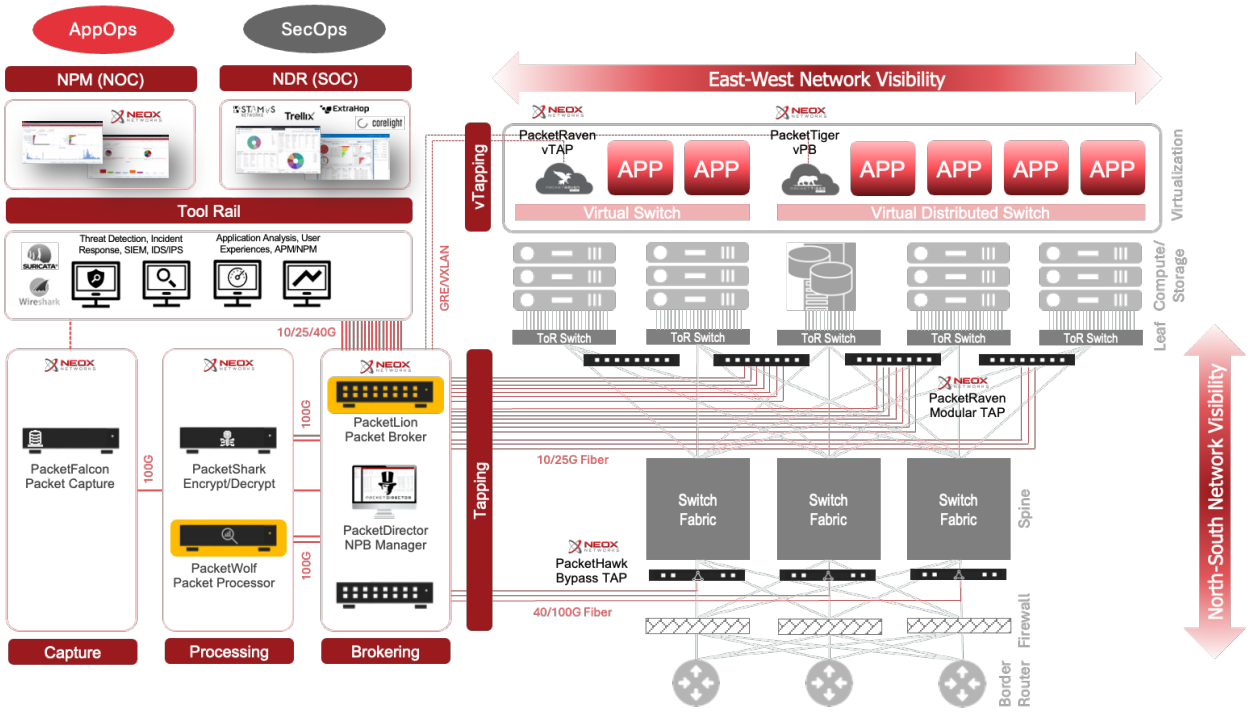
To help you maximize security and performance, we recommend the following best practices:

- ✓ Deploy NEOX Packet Brokers at Gi/SGi, Gn, and N6 interfaces to gain full mobile network visibility. This strategic placement captures all critical traffic – user plane data, core signaling, and 5G UPF connections – while maintaining line-rate performance.
- ✓ Deploy PacketTigerVirtual to optimize cloud-based 5G core monitoring, ensuring efficient traffic aggregation and filtering before forwarding to analytics tools. Its scalable architecture handles high-throughput 5G data flows while minimizing cloud egress costs.

To help you get the most out of your network, we recommend the following best practices to funnel, consolidate, and process all network traffic to be monitored through one of the two NEOX Packet Broker approaches:

- For better hardware performance, lower latency network, or for a future-proofed scalable visibility approach, deploy a **two-tier visibility architecture**. Use NEOX PacketLion Packet Broker for high-density TAP and tool aggregation, and use NEOX PacketTiger, for GTP Correlation and other packet services operations.

- For a lighter or software-driven approach, consolidate all network traffic to be monitored through a NEOX PacketTiger, and then from there to the tool rail. Same can be achieved in the cloud with PacketTigerVirtual before forwarding traffic to cloud-native monitoring or security tools.



The Future of Network Traffic Brokering Starts Here

As networks grow in complexity and speed, the importance of GTP Correlation will only continue to rise. At NEOX we're committed to helping you stay ahead of the curve with innovative solutions that deliver precision, reliability, and performance

Ready to Transform Your Network?

Discover how NEOX can elevate your Network Traffic Brokering with advanced GTP Correlation technology. Contact Us today or Request a Demo to learn more about our solutions and take the first step toward a smarter, faster, and more secure network.

NEOX – Precision. Performance. Perfected.

About NEOX Networks

NEOX Networks provides Next Generation Network Visibility for IT & OT Observability and Security. The result is strengthened cybersecurity, hybrid-cloud application observability, and business continuity, by integrating the network intelligence and real-time data-in-motion. Learn more at neoxnetworks.com