

TeraVM Core Test IPsec

The VIAVI TeraVM Core Test solution, enables comprehensive, full wrap-around testing of multi-generation core networks, including 5G SA, 5G NSA, 4G, 3G, and 2G. It is purpose-built to address the complexities of validating evolving 3GPP-compliant mobile core networks in a secure, scalable, and repeatable manner.

In 5G Core deployments, the N2 (signalling) and N3 (user data) interfaces between the Access Network (gNB) and Core Network (AMF/UPF) are critical. These interfaces often require IPsec encryption to secure the communication in compliance with operator or regional regulatory demands.

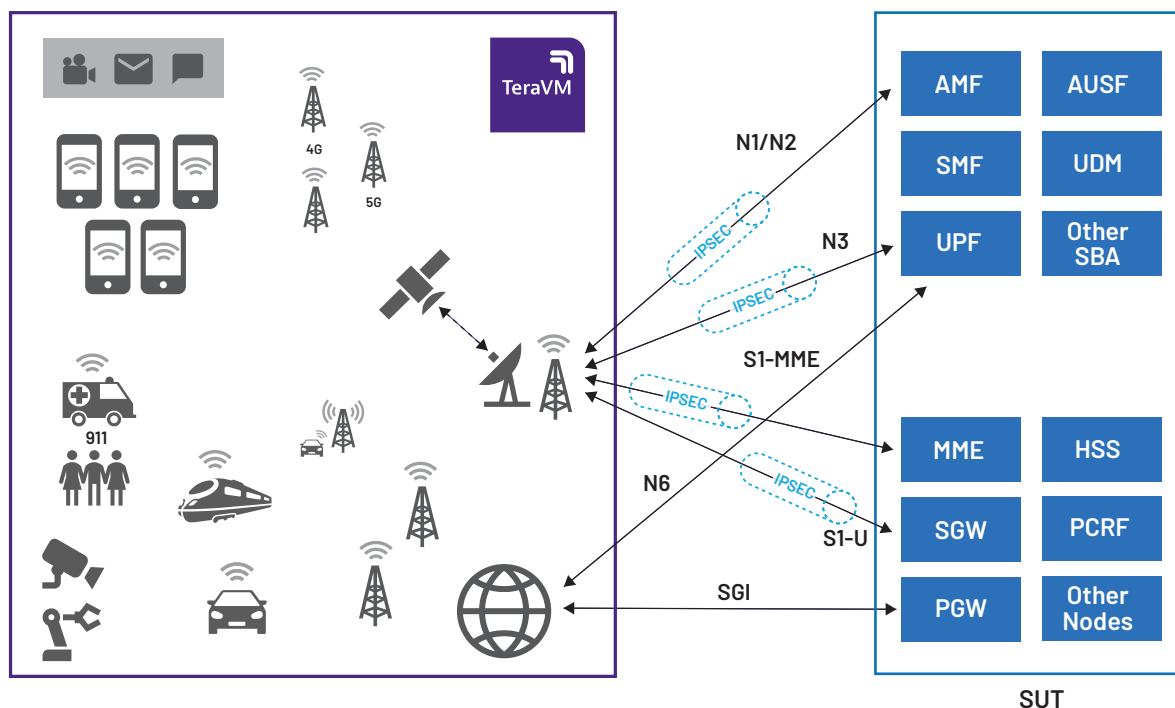
This application note describes how TeraVM Core Test supports IPsec-based security, including IKE negotiation and encryption configurations for both the N2 and N3 interfaces.

Key Benefits

- **Field-to-Lab Testing:** TeraVM brings field-like production testing into a controlled lab environment, enabling comprehensive debugging and optimization before deployment.
- **Minimized Downtime:** Proactively resolves issues, reducing operational disruptions and service downtime during live deployments.
- **Versatility:** Simulates millions of UEs, Thousands of base stations and real-world mobility scenarios.

Use Case Scenarios for Core Testing with IPsec

- **N2 Security Testing:** Validate NGAP signalling over IPsec tunnels.
- **N3 User Plane Encryption Validation:** Secure GTP-U sessions over IPsec tunnels.
- **Compliance Testing:** Ensure encryption configurations match Compliance test cases defined by 3Gpp (SCAS Testing).
- **Performance Benchmarking:** Measure throughput, latency, and encryption impact on data plane.
- **3GPP Standards Alignment:** Early compliance with latest 3GPP standards for quick market entry.
- **Lightweight VM Deployment:** Runs efficiently on x86 hardware.
- **Cloud Compatibility:** Supports GCP, Azure, AWS. Kubernetes and container-ready.
- **CI/CD Integration:** Seamless automation with VAMOS.
- **Voice Testing:** Supports voice testing including Emergency call across 4G and 5G.
- **NTN and Non-3GPP Access:** Tests for NTN and interworking with non-3GPP.
- **Core Network Testing:** Includes 4G+5G NTN and IPsec backhaul tests.
- **Robust Security:** Fuzzing and negative testing on 3GPP interfaces.
- **Flexible Core Network Testing:** For both physical and virtual networks.
- **Legacy Support:** Compatibility with 2G/3G for all-in-one testing.



Supported Interfaces:

- N2: NGAP over SCTP (signalling)
- N3: GTP-U over UDP/IP (user data)

Supported IKE Parameters

| Category | Supported Options |
|-------------------------------|--|
| Encryption Algorithms | ENCR-NULL, DES-CBC, 3DES-CBC, AES-CBC-128/192/256, BLOWFISH-128/192/256 |
| Integrity Algorithms | None, HMAC-SHA1-96, HMAC-SHA2-256/384/512, HMAC-MD5-96, AES-XCBC-96 |
| PRF (Pseudo Random Functions) | PRF-HMAC-SHA1, PRF-HMAC-MD5, PRF-AES-XCBC-128, HMAC-SHA384 |
| Diffie-Hellman Groups | Group 1 (768-bit), Group 2 (1024-bit), Group 5 (1536-bit), Group 14 (2048-bit) |

Supported IPSec (ESP) Parameters

| Category | Supported Options |
|-----------------------|--|
| Encryption Algorithms | ENCR-NULL, DES-CBC, 3DES-CBC, AES-CBC-128/192/256 |
| Integrity Algorithms | None, HMAC-MD5-96, HMAC-SHA1, HMAC-SHA1-96, HMAC-SHA2-256, AES-XCBC-96 |
| IPSec Modes | Tunnel Mode |
| Key Management | PreShared Keys, IKEv2 and Tunnel mode |



Contact Us: +1 844 GO VIAVI | (+1 844 468 4284). To reach the VIAVI office nearest you, visit viavisolutions.com/contact

© 2025 VIAVI Solutions Inc. Product specifications and descriptions in this document are subject to change without notice. Patented as described at viavisolutions.com/patents

teravmcoretest-ipsec-an-wir-nse-ae
30194617 900 1025

viavisolutions.com