5G Security Test Bed:
2024 Key Accomplishments

THE SECURITY TEST BED IS DESIGNED TO:

DELIVER A COLLABORATIVE, HANDS-ON APPROACH TO SECURITY.

ENHANCE 5G SECURITY AND INDUSTRY PREPAREDNESS.

CONTRIBUTE TO GOVERNMENT AND INDUSTRY RESEARCH PROGRAMS AND PRIORITIES.

The 5G Security Test Bed is a collaborative security testing and validation initiative dedicated to ensuring highly secure commercial 5G networks. Founded in 2022 as a unique partnership between wireless providers, equipment manufacturers, cybersecurity experts, academia, and government agencies, the initiative uses commercial-grade 5G networks to demonstrate and validate 5G security features in real-world conditions.

The following highlights the Test Bed's key accomplishments in 2024.

Network Slicing Tests Advance and Strengthen Global 5G Security Standards

This report addressed network slicing security on 5G networks, adding to three previous test cases conducted in the Phase 1 network slicing report released in 2023. This second round of tests investigated and verified network slicing security features outlined in the 2021 AdaptiveMobile Security report "A Slice in Time: Slicing Security in 5G Core Networks." Some of the findings of this Phase 2 effort were reported to 3GPP, the international 5G standards body, to help strengthen 5G network slicing security.

Test Bed Confirms mTLS Mitigates Security Vulnerabilities in HTTP/2 Protocol

The 5G Security Test Bed assessed the FCC's Communications Security, Reliability, and Interoperability Council (CSRIC) findings and recommendations, and determined that the use of mutual Transport Layer Security (mTLS) encryption enhances network security. Leveraging results from prior tests, the Test Bed provided relevant evidence supporting mitigations to potential HTTP/2 vulnerabilities on the 5G Service-Based Architecture (SBA).

Confirmed SUPI Privacy Protects 5G UE from False Base Station Attacks

The 5G Security Test Bed confirmed that the 5G Subscriber Permanent Identifier (SUPI) is not revealed to the False Base Station while establishing a radio connection with it, and only the Global Unique Temporary Identifier (GUTI) is exposed. Further, due to call setup failure for authentication reasons, the 5G UE data stays protected from the False Base Station, as expected with 5G. This validates that encryption of the Subscriber Permanent Identifier (SUPI) protects user privacy and obscures their identity from potential eavesdroppers.

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Transitioned the Test Bed's 5G Radio Access Network from University of Maryland to Virginia Tech Applied Research Corporation

The 5G Security Test Bed initiated the transition of its RAN from the University of Maryland (UMD) to the new Test Bed Administrator, the Virginia Tech Applied Research Corporation (VT-ARC), in the first quarter of 2024. As a highly respected academic institution focused on cybersecurity, VT-ARC brings invaluable expertise and academic knowledge that strengthens the Test Bed's ability to enhance the wireless security ecosystem and ensure strong protections across 5G networks.

5G Security Test Bed Membership and Expansion

The 5G Security Test Bed is continuing its work to expand with potential new members. Current members include wireless providers, industry, and academia.

Wireless Providers

AT&T T-Mobile uscellular

Industry

ERICSSON MITRE SECURE syniverse

Academia

VT-ARC Virginia Tech Applied Research Corporation

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