### Network Modernization Experiment (Net Mod X)

### Novel private communication protocols integrated into Google Play apps

The Net Mod X IRAD program aims to develop novel private communication protocols under a CRADA with C5ISR Army. While under this CRADA, the Riverside Research team has developed a chat app in which the networking solely exists via an internally developed private communication protocol.

The unique capabilities of this tool have come to offer 128 baud over the protocol without comprising the privacy of the user. Its highly adaptive nature allows for this protocol to operate within a multitude of unmodified applications from the Google Play store.

### **Procedure**

Work performed on another program has been repurposed to fit the needs of the C5ISR transition partner. The repurposing process has included the development of a surrounding chat application internal to Riverside. This chat app is then used in instrumenting a CI/CD workflow for finding new bugs and increasing the reliability of our private communication protocol.

Along with the instrumentation of a chat app, the team has worked to further expand the protocol's capabilities to be integrated with a myriad of applications from the Google Play store.



#### **Key Features**

- Highly adaptable
- COTS compatible
- Software-only solutions providing novel private communication



We've shown that GM can be applied to a wide variety of underlying network traffic and is not limited to direct connections. Multi-hop channels, such as Mumble, are possible.

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The underlying protocol relies on the existence of packets generated by unmodified applications from the Google Play store. This leads to the issue of limited baud as the unmodified application's packets may not be resilient to the introduction of latency. Since the protocol operates by introducing small amounts of latency into the streams of packets, the underlying application packet stream must be resilient. An ongoing effort by the team has been underway to identify applications and their abilities to operate in the conditions created by the protocol.

### **Next Steps**

The next steps include the addition of integrating Net Mod X into applications that better focus the transition partner's use case.

One example of this case is to use the developed protocol to send and receive data from the application CIVTAK without utilizing the current CITAK networking capabilities.

Along with focusing the use case to the transition partner, the team will be working to further the capabilities of the protocol beyond the current 128-symbols-per-second rate.

This research will also include a discovery period for more underlying applications with which to operate.



### **Critical Tech Areas**



# itegrated microele



געדיל trusted AI and autonomy

### **DoD Priorities**



- 1. Southwest Border Activities
- Combating Transnational Criminal Organizations in the Western Hemisphere Audit
- 3. Audi
- I. Nuclear Modernization (including NC3)
- 5. Collaborative Combat Aircraft (CCA
- 6. Virginia-class Submarines
- 7. Executable Surface Ships
- 8. Homeland Missile Defense
- 9. One-way Attack/Autonomous Syste
- 11 Priority Critical Cybersecurity
- 12. Munitions
- 13. Core Readiness, including full DRT funding
- 14. Munitions and Energetics Organic
- 15. Executable INDOPACOM MILCON
- Combatant Command support agency funding for INDOPACOM, NORTHCOM, SPACECOM, STRATCOM, CYBERCOM, and TRANSCOM
- 17. Medical Private-Sector Care