BlackHorse Solutions, Inc.

Technical Operations Group (TOG)

Operational Training and Support

Catalog of Services

2020

BLACK HORSE

Operational Training and Support

Introduction

BlackHorse Solutions, Inc.is a veteran founded small business providing comprehensive, full-spectrum operational training and support solutions to a wide mission set across the Intelligence, Defense, Federal, and commercial communities.The services and training that we offer are white-glove tailored to each customer's needs; providing real-world scenario-based support designed to empower customers with implementable solutions for operational challenges. We specialize in technical operations, intelligence gathering and analysis, identity management, and tradecraft operations. Our philosophy entails creating and leveraging technology combined with many years of security and intelligence expertise to deliver solutions that meet our customers' business needs. Our specific capabilities include technical surveillance, counter surveillance, data discovery and analysis, training and tradecraft, and distribution of publicly available information. We can fully support requirements in the electronic warfare, traditional signals intelligence, human intelligence, ASO/AFO, offensive and defensive cyber operations and cyber intelligence areas.

Our Subject Matter Experts have developed operational solutions for various aspects of HUMINT and Technical Collection Operations supporting Title 10 and Title 50 customers. We created, developed and provided basic, intermediate, and advanced technical training programs for thousands of graduates coming from more than 25 different commands and organizations, including but not limited to the following: NSW, CTTSO, FBI, DHS, ARCYBER, MARFORCYBER, USAF HQA2, Army OSINT Office, JSOC, SOCOM, AFRICOM, EUCOM, SOCAF, SOCEUR, 1st IO Command, USASOC SFGs, and various Silicon Valley private organizations. Two of our developed training programs have matured into current or planned programs of record within USASOC and SOCOM.

Problem

The new "normal" for SOF will be to operate in denied/disrupted environments, where the cyber and EW domains are contested, and any opponent possesses potential for overmatching capabilities. USSOCOM must be able to identify and characterize threats in a near-peer, contested environment, without airborne ISR assets. The prevalence of commercial technology for electromagnetic and cyber effects, among others, will hinder operations. As such, USSOCOM seeks new capabilities and technologies in the tactical cyber and electronic warfare domain; among these are the application of machine learning to the RF spectrum to provide:

- Understanding and identification of the signals being intercepted
- Feature learning for improved attention and salience
- Autonomous RF-sensor configuration and automatic waveform synthesis
- The ability to detect, characterize, and defeat RF signals from a few Hz up to 6GHz in austere environments, with limited to low signature while providing geolocation and exploitation of such signals in near real-time.

Technology Objective

- Adapt, develop, and test advanced digital signal processing, machine learning (ML), and cognitive radio techniques to improve USSOCOM operational capabilities for automated RF spectrum sensing and signal exploitation
- Specifically improve and/or develop new capabilities against modern, near- peer, communications and control link emitters employing advanced, frequency-hopping and spread spectrum protocols.
- Implement new capabilities that incorporate:
    - Autonomous visibility to accurately observe and characterize RF emitters
    - Ability to sense and characterize signals on-the-fly, without a-priori knowledge of target signal characteristics or libraries

Operational Training and Support

- High cognition and automation to lower operator workload, and minimize requirements for specialized expertise and training
- Automatically synthesize defeat waveforms in near real time to speed reaction time and allow precision electronic attack
- Low operational signature to avoid detection

- Design, fabricate, integrate ML-based software into, demonstrate, and deliver a TRL-6 level plug-and-play prototype device that meets Threshold performance parameters and targets Objective parameters.
- Deliver open, well-documented software framework, capable of interfacing with standard SDR construct and able to execute steps required to safely conduct EW activities using COTS based solutions.

Main Components

SDR (Software Defined Radio)

- USRP E320 (Universal Software Radio Peripheral) from Ettus Research
- Much more extensive FPGA resources relative to other small SDRs

GPP (General Purpose Processor)

- NUC8i7HVK from SimplyNuc
- 8th Gen Intel® Core i7-8809G processor

Summary of Services

BlackHorse's cadre of Subject Matter Experts can support your organization and teams in the following areas:

- Theory (PTT, GSM, UMTS, CDMA, LTE, 802.11)
- Collection (PTT, GSM, CDMA, and Wi-Fi)
- Electronic Man Hunting / Precise Geo-Location (PTT, GSM, UMTS, CDMA, LTE, Wi-Fi)
- Technical Surveillance
- Physical Surveillance
- Surveillance Detection
- Commercial Signature Reduction (CSR) Level 1
- CSR Level 2 (Non-Standard Communications)
- CSR Level 3 (Capstone)
- Close Access Operator Training
- Virtual Operations Course
- Exercise Development and Support

Operational Training and Support

Theory (PTT, GSM, UMTS, CDMA, LTE, 802.11)

Theory courses are designed to instruct each protocol at a high level based around re-selection requirements and collection optimization. These courses are designed to take students from protocol introduction to NGW certification exam ready in one week (per protocol).

Collection (PTT, GSM, CDMA, and Wi-Fi)

This course begins with theory refreshers and network characterization. Following network characterization, the course focuses on the placement and configuration of collection systems to maximize collection efficiency. We teach attendees how to best utilize their systems for both defensive force protection and offensive collection from static sites and while mobile. This course can be taught based around ground and/or air operations.

Electronic Man Hunting / Precision Geo Location (PTT, GSM, UMTS, CDMA, LTE, Wi-Fi)

This course begins with theory refreshers regarding re-selection parameters and surveys. We then begin iterative training to ensure each attendee is proficient, comfortable, and confident with the methodology of actively targeting each protocol. Attendees learn the basics of DC power including amperage, wattage, and voltage. We discuss how to determine the power requirements of individual equipment and then walk through designing and building power sources for each piece of equipment. We also teach attendees vehicle-based power solutions.The courses are equipment agnostic. We have relationships with many vendors allowing us to instruct based on customer deployment load outs. This course can be taught based around ground and/or air operations.

Technical Surveillance

This course begins by introducing Tagging, Tracking, and Locating (TTL) devices. We discuss the various types of equipment (Line of Sight, Over the Horizon). Attendees are introduced to the basics of radio frequency (RF) theory and antenna engineering. We cover the physics and mathematics of RF and antenna theory and design at a high level. We then jump into iterations of antenna builds for different frequencies and explore different materials for antenna construction. Our goal is to ensure that each attendee is proficient in building and testing antennas customer designed for their needs. We then discuss placement, power, and concealment of these devices. The course then pivots into photography, videography, and audio collection, storage, and exfiltration.

Physical Surveillance

This course begins with classroom-based surveillance operation theory, communication techniques, and planning exercises regarding fixed, foot, and mobile surveillance. We then begin iteration training providing the attendees with as many repetitions as possible. The practical exercises will require the students to participate in a series of scenario-driven fixed, foot, and vehicle surveillance iterations. Instructors are embedded into the Command and Control (known as the desk) element and on each surveillance team to ensure attendees are mentored into proficiency and are grasping required concepts to conduct successful surveillance operations while maintain discretion.

Operational Training and Support

Surveillance Detection

This course is designed to teach attendees how to discreetly detect surveillance activities. We begin in the classroom teaching students how to design Surveillance DetectionRoutes (SDRs) and the differences in aggression levels of the various types of routes. We discuss probe, in pattern, out of pattern, and extended out of pattern routes spanning foot, mobile, and multi-modal methods. We then begin iterative training having the students execute their routes where their objective is to determine whether they were being surveilled. We also discuss methods for flattening out routes used when students determine they do have coverage.

Commercial Signature Reduction (CSR) Level 1

Commercial Signature Reduction (CSR) focuses on best practices for Digital Data Protection, facilitating safe on-line operations. CSR is designed to enable attendees to meet operational requirements for Electronic Security (ES), Signature Reduction (SIGREDUX), Digital Identity Management (D-IDM) and Digital-Operational Preparation of the Environment (D-OPE). CSR courses utilize hands-on practical scenarios and instruction of various tactics, techniques, and procedures where methodology and tradecraft are the focus, as opposed to the technology or tool.

CSR Level 2 (Non-Standard Communications)

Level 2 focuses on taking the trained CSR Level 1 graduate to the next level and challenges students to find opportunities to employ non-standard communication methods on-line and turn those opportunities into recommendations for action, stressing concept of operations development.

CSR Level 3 (Capstone)

Level 3 is a 5-day fully immersed scenario-based exercise course for students who are ready to test their capabilities in a live environment conducting a Full Mission Profile(FMP).

Close Access Operator Training

This course prepares personnel for close access operations where the focus is gaining unauthorized access to physical spaces, equipment, and information. The core focuses are team coordination, reconnaissance, social engineering, cover story development and defense, and method of entry/escape. Students will gain a working knowledge of various mechanical lock designs and proficiency with tools and techniques to covertly and surreptitiously manipulate and/or defeat locking mechanisms. Instructors provide scenario-based training exercises specifically designed to reinforce the attendee's proficiency with basic/advanced entry tools and methods for lock manipulation and defeat. This course is three weeks long. Due to the amount of resources required for each student's individual success, the maximum capacity is 8 students.

Virtual Operations Course (VOC)

This course is an intense immersion into the world of open source research, with a focus on targeting and analysis. We begin by building profiles for our own usage, and end by building profiles of our targets. We introduce attendees to a mixture of methodology and tools designed for online investigators.

Operational Training and Support

Vendor Equipment Testing, Training, Evaluation & Operational Employment

We provide services to various vendors to test their equipment before they present it to potential clients helping them save time and money by catching bugs, technical, or operational shortfalls before releasing a product.

Exercise Development and Support Services

We specialize in script and scenario development based on current and emerging real-world threats based around customer requirements. We begin the engagement with a series of detailed planning meetings to ensure that we understand each stakeholder's requirements and desired outcomes of the exercise. Detailed backside planning is accomplished so that scenario-based events occur smoothly and without detection by students or outside parties. Scenario Development. Our experienced and diversified professionals use their experiences, extensive knowledge and skills to custom develop scenarios specific to the customer's needs. We are able to secure training sites, manage role player, and site management customized to each customer's requests.

Special Activities (non-training customer specific needs)

Please contact directly for additional details. For customers with sensitive requirements, we will work with and develop programs for mentorship, sensitive operations based on geographic deployment locations, as well as push forward to OCONUS locations for operational support and training. Type and duration of course and/or operational support are based solely on customer needs.

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