Implementation of a Security Operations Center (SOC) Using Wazuh Tool

This repository contains the implementation details, configurations, and documentation for building a functional Security Operations Center (SOC) using open-source tools. The project integrates **Wazuh (SIEM)**, **AbuseIPDB (Threat Intelligence Platform)**, and **IRIS (Ticketing System)** to provide a comprehensive framework for detecting, analyzing, and responding to security incidents.

Features

- **Comprehensive SOC Setup**: Fully functional Security Operations Center utilizing open-source tools.
- **SIEM Integration**: Wazuh tool for security event management and log analysis.
- **Threat Intelligence**: AbuseIPDB integration for enriched threat data and automated incident handling.
- **Incident Management**: IRIS configuration for case management and response automation.
- **Active Response Mechanisms**: Automated responses to common security threats like brute force attacks and malware detection.

Project Structure

Goal

The objective of this project is to enhance the capabilities of detecting, analyzing, and responding to security incidents using a combination of open-source tools and automated workflows.

Key Tasks and Contributions

- **Infrastructure Setup**: Environment setup and Wazuh configuration.
- **Threat Intelligence**: Integration with AbuseIPDB for enriching security data.
- **Incident Automation**: Automated workflows and responses for detected incidents.
- **Case Management**: IRIS setup for incident ticketing and tracking.
- **Testing & Documentation**: Simulated attacks and consolidated reporting.

Tools and Technologies Used

1. **Wazuh**: Security Information and Event Management (SIEM) platform for monitoring, alerting, and responding to threats.
2. **AbuseIPDB**: A threat intelligence platform for identifying malicious IP addresses.
3. **IRIS**: Ticketing system for managing security incidents.
4. **Docker**: For deploying IRIS and other services in a containerized environment.
5. **Linux Systems**: Ubuntu 22.04 and 20.04 for hosting and configuring tools.

Repository Contents

- **Documentation**:
  - Detailed setup and configuration instructions.
  - Integration processes for Wazuh, AbuseIPDB, and IRIS.
  - Troubleshooting steps and challenges faced during the implementation.
- **Scripts**:
  - Python and configuration scripts for AbuseIPDB and IRIS integration.
  - Automation workflows and active response setups.
- **Testing**:
  - Scenarios for brute force attack simulation and response validation.
  - Logs and screenshots demonstrating successful implementation.
- **Report**:
  - Project Analysis Report.

Getting Started

Prerequisites

- Virtual machines or Docker setup.
- Linux-based operating system (Ubuntu 20.04/22.04).
- Access to AbuseIPDB API and IRIS configuration.

Installation

1. **Wazuh Setup**:
   Follow the official installation guide.

2. **AbuseIPDB Integration**:
   Refer to the custom script and configuration steps.

3. **IRIS Setup**:
   Install and configure IRIS using Docker. See the IRIS integration section.

Usage

Detection and Alerting

- Configure Wazuh to monitor security events.
- Use AbuseIPDB for threat intelligence enrichment.
- Trigger alerts for incidents like brute force attacks or malware detection.

Automated Response

- Enable Wazuh's active response mechanisms (e.g., IP blocking, account disabling).
- Automatically log incidents into IRIS for tracking and escalation.

Challenges and Insights

- Resolved issues with API compatibility during tool integration.
- Overcame networking and configuration challenges in a multi-tool environment.
- Gained hands-on experience with incident response automation and SOC tools.

Future Improvements

- Expand the SOC with additional tools like MISP for advanced threat intelligence.
- Optimize active response mechanisms for faster incident handling.
- Enhance documentation and scripts for seamless integration.

Contributing

Contributions are welcome! Please fork the repository, create a feature branch, and submit a pull request for review.

License

This project is licensed under the MIT License.

For detailed steps and implementation, refer to the Project Documentation. For any queries, please contact the contributors listed in the documentation.