

SOAR Platform Architecture and Integration

Executive Summary

The SOAR (Security Orchestration, Automation and Response) platform integrates SIEM tools, Threat Intelligence feeds, and vulnerability scanners through specialized TIP and CSAM services. The platform provides centralized orchestration, automated workflows, and unified dashboards for comprehensive security operations.

Table of Contents

- [1. Platform Architecture](#)
 - [2. SIEM Integration](#)
 - [3. Threat Intelligence Feeds](#)
 - [4. Vulnerability Management](#)
 - [5. Service Communication](#)
-

Platform Architecture

System Overview

```
graph TB
    subgraph "SOAR Core Platform"
        SOAR[SOAR Platform<br/>Port: 443<br/>MongoDB Database]
        PLAYBOOKS[Playbook Engine<br/>Automated Workflows]
        DASHBOARD[Unified Dashboard<br/>Security Operations]
    end

    subgraph "TIP Service - Port 7000"
        TIP_API[TIP REST API<br/>zona_tip_batch/tip_services]
        TIP_ES["Elasticsearch<br/>Threat Intelligence DB"]
    end

    subgraph "CSAM Service - Port 8229"
        CSAM_API[CSAM REST API<br/>securaa_csam/services]
        CSAM_ES["Elasticsearch<br/>Asset & Vulnerability DB"]
    end

    subgraph "External Integrations"
        SIEM_TOOLS[SIEM Tools<br/>QRadar, Splunk, ArcSight<br/>Sentinel, RSA Net]
        TI_FEEDS[TI Feed Sources<br/>Recorded Future, VirusTotal<br/>Shodan, Pas]
        VULN_SCANNERS[Vulnerability Scanners<br/>Nessus, Nexpose<br/>AWS, Azure]
    end

    %% Service Communication
    SOAR -.->|HTTPS tipHost:7000| TIP_API
    SOAR -.->|HTTPS csamHost:8229| CSAM_API

    %% Data Storage
    TIP_API --> TIP_ES
    CSAM_API --> CSAM_ES

    %% External Data Sources
    SIEM_TOOLS --> SOAR
    TI_FEEDS --> TIP_API
    VULN_SCANNERS --> CSAM_API

    %% Dashboard Integration
    TIP_ES -.-> DASHBOARD
    CSAM_ES -.-> DASHBOARD

    classDef soarCore fill:#e8f5e8
```

```
classDef services fill:#fff2e8
classDef databases fill:#e8f2ff
classDef external fill:#ffe8e8

class SOAR,PLAYBOOKS,DASHBOARD soarCore
class TIP_API,CSAM_API services
class TIP_ES,CSAM_ES databases
class SIEM_T00LS,TI_FEEDS,VULN_SCANNERS external
```

Core Components

Component	Port	Database	Purpose
SOAR Platform	443	MongoDB	Central orchestration, case management, playbook execution
TIP Service	7000	Elasticsearch	Threat intelligence processing and API
CSAM Service	8229	Elasticsearch	Asset management and vulnerability tracking

SIEM Integration

Supported SIEM Platforms

The SOAR platform integrates with various SIEM tools for security event ingestion and incident management:

Enterprise SIEM Solutions

- **IBM QRadar:** Enterprise SIEM with threat detection
- **IBM QRadar on Cloud:** Cloud-based QRadar instances
- **Splunk:** Data platform for security monitoring
- **ArcSight ESM:** Enterprise security management
- **Microsoft Sentinel:** Cloud-native SIEM solution
- **RSA NetWitness:** Network detection and response
- **Chronicle Security:** Google Cloud SIEM
- **Elastic Security:** Elasticsearch-based security analytics

Integration Methods

- **REST API:** Direct API integration for event ingestion
- **Webhooks:** Real-time event notifications
- **Log Forwarding:** Syslog and structured log ingestion
- **Database Connections:** Direct database queries

SIEM Data Flow

```
sequenceDiagram
    participant SIEM as SIEM Platform
    participant SOAR as SOAR Platform
    participant TIP as TIP Service
    participant ANALYST as Security Analyst

    Note over SIEM,ANALYST: Security Event Processing

    SIEM->>SOAR: Security Alert/Event
    SOAR->>SOAR: Create Incident
    SOAR->>TIP: Enrich with TI Data
    TIP->>SOAR: Threat Context
    SOAR->>SOAR: Execute Playbook
    SOAR->>ANALYST: Prioritized Alert

    Note over SIEM,ANALYST: Investigation Flow

    ANALYST->>SOAR: Investigation Request
    SOAR->>SIEM: Query Historical Data
    SIEM->>SOAR: Log/Event Data
    SOAR->>ANALYST: Investigation Results
```

SIEM Configuration Examples

QRadar Integration:

```
Connection_Type: "REST API"
Endpoint: "https://qradar.company.com/api/siem"
Authentication: "SEC Token"
Data_Format: "JSON"
Offenses: "Auto-import high severity offenses"
```

Splunk Integration:

```
Connection_Type: "REST API"  
Endpoint: "https://splunk.company.com:8089/services"  
Authentication: "Bearer Token"  
Data_Format: "JSON"  
Search_Queries: "SPL-based threat hunting"
```

Threat Intelligence Feeds

TI Feed Processing Architecture

The TIP service processes multiple threat intelligence sources through dedicated batch processors:

```

graph LR
    subgraph "Commercial TI Feeds"
        RF[Recorded Future<br/>tip_batch_rf]
    end

    subgraph "Open Source Feeds"
        MISP[MISP Platform<br/>tip_batch_local]
        ABUSE[Abuse.ch<br/>tip_batch_abuse.ch]
        BAMBENEK[Bambenek<br/>tip_batch_bambenek]
        BLOCKLIST[Blocklist.de<br/>tip_batch_blocklist.de]
        BOGONS[Team Cymru Bogons<br/>tip_batch_bogons]
    end

    subgraph "Specialized Feeds"
        FIREBOG[Firebog<br/>tip_batch_firebog]
        BOTSCOUT[BotScout<br/>tip_batch_botscout]
        DANGER[Danger.rulez<br/>tip_batch_danger.rulez]
    end

    subgraph "External Intelligence APIs"
        VIRUSTOTAL[VirusTotal<br/>API Integration]
        SHODAN[Shodan<br/>API Integration]
        PASSIVETOTAL[PassiveTotal<br/>API Integration]
        ALIENVAULT[AlienVault OTX<br/>API Integration]
        IBMXFORCE[IBM X-Force<br/>API Integration]
        THREATMINER[ThreatMiner<br/>API Integration]
        ABUSEIPDB[AbuseIPDB<br/>API Integration]
        URLSCAN[URLScan.io<br/>API Integration]
        HYBRIDANALYSIS[Hybrid Analysis<br/>API Integration]
    end

    subgraph "TIP Service Processing"
        NORMALIZER[Data Normalizer]
        STORAGE[("Elasticsearch<br/>Indicator Storage")]
        API[TIP REST API<br/>Port 7000]
    end

    RF --> NORMALIZER
    MISP --> NORMALIZER
    ABUSE --> NORMALIZER
    BAMBENEK --> NORMALIZER
    BLOCKLIST --> NORMALIZER
    BOGONS --> NORMALIZER
    FIREBOG --> NORMALIZER
    BOTSCOUT --> NORMALIZER
    DANGER --> NORMALIZER
    VIRUSTOTAL --> NORMALIZER

```

```
SHODAN --> NORMALIZER
PASSIVETOTAL --> NORMALIZER
ALIENVAULT --> NORMALIZER
IBMXFORCE --> NORMALIZER
THREATMINER --> NORMALIZER
ABUSEIPDB --> NORMALIZER
URLSCAN --> NORMALIZER
HYBRIDANALYSIS --> NORMALIZER

NORMALIZER --> STORAGE
STORAGE --> API
```

Supported Indicator Types

Indicator Type	Description	Sources
IP Addresses	Malicious IPs, C2 servers	Recorded Future, Abuse.ch, Blocklist.de, AbuseIPDB
Domain Names	Malicious domains, DGA domains	Recorded Future, MISP, Bambenek, Firebog
URLs	Malicious URLs, phishing sites	Recorded Future, MISP, URLScan.io, PhishTank
File Hashes	Malware hashes (MD5, SHA1, SHA256)	Recorded Future, MISP, Abuse.ch, VirusTotal, Hybrid Analysis
Email Addresses	Phishing/spam email addresses	Recorded Future, MISP, BotScout, HaveIBeenPwned

TI Feed Configuration

Batch Processing Schedule:

```
Recorded_Future:
  interval: 60 # minutes
  enabled: true
  endpoint: "RF API"

MISP_Local:
  interval: 30 # minutes
  enabled: true
  format: "STIX"

Abuse_ch:
  interval: 120 # minutes
  enabled: true
  feeds: ["malware", "botnet", "c2"]
```

TI Service API Endpoints

Endpoint	Method	Purpose
/search/{userid}/{indicator}/{tiptype}/	GET	Search indicators
/datalist/	POST	Retrieve indicator tables
/importindicators/	POST	Import custom indicators
/addassociates/	POST	Manage associations
/exportindicator/	POST	Export indicator data

Vulnerability Management

CSAM Service Architecture

The CSAM service integrates with various vulnerability scanners and cloud platforms for comprehensive asset management:


```

graph TB
    subgraph "Vulnerability Scanners"
        NESSUS[Nessus<br/>Tenable Scanner]
        NEXPOSE[Nexpose<br/>Rapid7 Scanner]
    end

    subgraph "Cloud Platforms"
        AWS[AWS Security<br/>EC2, S3 Integration]
        AZURE[Azure Security<br/>Compute Integration]
    end

    subgraph "Network Security"
        PALOALTO[Palo Alto<br/>Firewall Management]
        CHECKPOINT[Check Point<br/>Security Gateway]
        FORTINET[Fortinet<br/>FortiGate]
    end

    subgraph "Endpoint Security"
        SYMANTEC[Symantec<br/>Endpoint Protection]
        TRENDMICRO[Trend Micro<br/>Deep Security]
        DEFENDER[Microsoft Defender<br/>Endpoint Security]
    end

    subgraph "CSAM Service - Port 8229"
        ASSET_CTRL[Asset Controller<br/>Data Processing]
        CSAM_DB[("Elasticsearch<br/>csam_{tenant}")]
        DASHBOARD_API[Dashboard API<br/>Metrics & Reports]
    end

    subgraph "Vulnerability Database"
        NVD[National Vulnerability DB<br/>CVE Data]
        VENDOR_FEEDS[Vendor Security Feeds<br/>Security Advisories]
    end

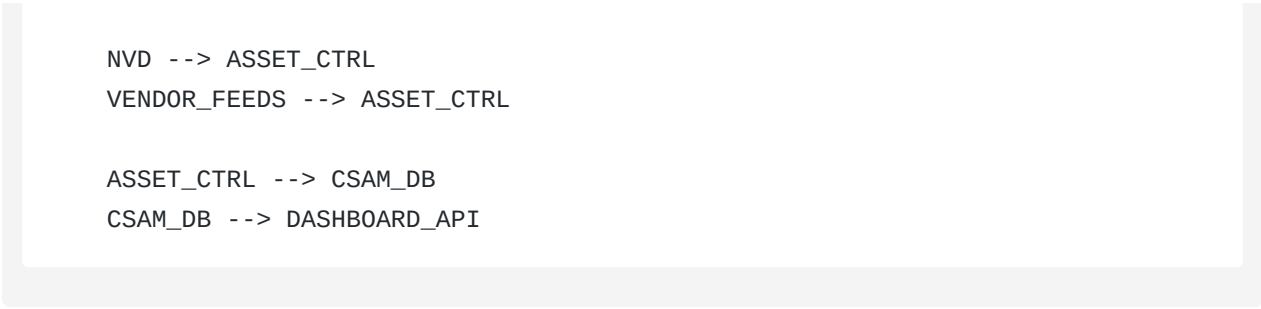
    NESSUS --> ASSET_CTRL
    NEXPOSE --> ASSET_CTRL

    AWS --> ASSET_CTRL
    AZURE --> ASSET_CTRL

    PALOALTO --> ASSET_CTRL
    CHECKPOINT --> ASSET_CTRL
    FORTINET --> ASSET_CTRL

    SYMANTEC --> ASSET_CTRL
    TRENDMICRO --> ASSET_CTRL
    DEFENDER --> ASSET_CTRL

```



Asset Management Features

Cloud Asset Discovery:

- **AWS:** EC2 instances, S3 buckets
- **Azure:** Virtual machines, compute resources

Vulnerability Assessment:

- **Nessus:** Comprehensive vulnerability scanning
- **Nexpose:** Rapid7 vulnerability management
- **CVE Database:** National Vulnerability Database integration
- **Asset Criticality:** Business impact assessment
- **Patch Management:** Vulnerability remediation tracking
- **Compliance Mapping:** Regulatory compliance status

CSAM Service API Endpoints

Endpoint	Method	Purpose
/assets	GET	Retrieve asset information
/vulnerability-details/{cve-id}	GET	CVE vulnerability details
/tasks/asset-info	POST	Asset information tasks
/assets/export	POST	Export asset data
/dashboarddata	GET	Dashboard metrics

Comprehensive Integration Matrix

SIEM & Security Analytics (8 Platforms)

Platform	Category	Capabilities
IBM QRadar	Enterprise SIEM	Event correlation, offense management, search queries
IBM QRadar on Cloud	Cloud SIEM	Cloud-based threat detection and response
Splunk Enterprise	Data Analytics	Log analysis, dashboards, alert management
ArcSight ESM	Enterprise SIEM	Real-time correlation, case management
Microsoft Sentinel	Cloud SIEM	Azure-native security operations
RSA NetWitness	NDR Platform	Network detection and response
Chronicle Security	Cloud SIEM	Google Cloud security analytics
Elastic Security	Open Source	Elasticsearch-based security monitoring

Threat Intelligence Sources (19 Sources)

Source	Type	Feed Content
Recorded Future	Commercial	Comprehensive threat intelligence
VirusTotal	Freemium	File/URL reputation analysis
Shodan	Freemium	Internet-connected device intelligence
PassiveTotal	Commercial	DNS/WHOIS historical data
AlienVault OTX	Open Source	Community threat intelligence
IBM X-Force	Commercial	Enterprise threat intelligence
ThreatMiner	Open Source	Threat data mining
AbuseIPDB	Community	IP address reputation
URLScan.io	Freemium	URL analysis and screenshots
Hybrid Analysis	Freemium	Malware analysis sandbox
PhishTank	Open Source	Phishing URL database
HavelBeenPwned	Freemium	Breach notification service
MISP Platform	Open Source	Structured threat sharing
Abuse.ch	Open Source	Malware and botnet feeds
Bambenek	Open Source	Domain and IP intelligence
Blocklist.de	Open Source	Attack source tracking
Team Cymru Bogons	Open Source	Invalid IP space tracking
Firebog	Open Source	DNS blocking lists
BotScout	Open Source	Bot and spam detection

Vulnerability Management (8 Tools)

Tool	Category	Capabilities
Nessus	Vulnerability Scanner	Comprehensive vulnerability assessment
Nexpose	Vulnerability Scanner	Rapid7 vulnerability management
CVE Database	Vulnerability DB	National Vulnerability Database
AWS EC2	Cloud Security	EC2 instance vulnerability scanning
AWS S3	Cloud Security	S3 bucket security assessment
Azure Compute	Cloud Security	Azure VM vulnerability management
Azure Security Center	Cloud Security	Azure security posture management
Neutrino API	IP Intelligence	IP geolocation and threat data

Network Security (3 Platforms)

Platform	Category	Capabilities
Palo Alto Networks	Next-Gen Firewall	Traffic analysis, policy management
Check Point	Security Gateway	Firewall management, threat prevention
Fortinet FortiGate	UTM Platform	Unified threat management

Endpoint Security (3 Solutions)

Solution	Category	Capabilities
Symantec Endpoint	Endpoint Protection	Antivirus, threat detection
Trend Micro Deep Security	Endpoint Security	Server and workstation protection
Microsoft Defender	Endpoint Detection	Windows endpoint security

Identity & Access Management (4 Systems)

System	Category	Capabilities
Active Directory	Identity Provider	User authentication, directory services
Microsoft Outlook	Email Security	Email threat detection
Azure Active Directory	Cloud Identity	Cloud-based identity management
Security Token Service	Authentication	Token-based authentication

Communication & Collaboration (1 Platform)

Platform	Category	Capabilities
Slack	Team Communication	Alert notifications, incident collaboration

ITSM Integration (1 Platform)

Platform	Category	Capabilities
ServiceNow	ITSM Platform	Ticket creation, workflow automation

Specialized Security Tools (12 Tools)

Tool	Category	Purpose
IPInfo	IP Intelligence	IP geolocation and ASN data
Cymon	Threat Intelligence	IP and domain reputation
DNSDB	DNS Intelligence	Historical DNS data
MXToolbox	Email Security	Email server analysis
StackPath IP Info	IP Intelligence	Enhanced IP data
URLVoid	URL Analysis	URL reputation checking
IPVoid	IP Analysis	IP reputation analysis
MalShare	Malware Samples	Malware sample sharing
Safe Browsing	Web Security	Google Safe Browsing API
Phishing Initiative	Anti-Phishing	Phishing URL detection
WhatIsMyBrowser	Browser Analysis	Browser fingerprinting
Alexa Traffic	Web Analytics	Website traffic analysis

Vulnerability Data Structure

```
Asset_Schema:
  asset_id: "unique identifier"
  ip_address: "asset IP"
  hostname: "asset hostname"
  os_type: "operating system"
  business_hierarchy: "organizational unit"
  vulnerabilities:
    - cve_id: "CVE-2023-XXXX"
      cvss_score: 9.8
      severity: "Critical"
      patch_available: true
      scanner_source: "Nessus"
```

Service Communication

Integration Architecture

```
sequenceDiagram
    participant USER as Security Analyst
    participant SOAR as SOAR Platform
    participant TIP as TIP Service
    participant CSAM as CSAM Service
    participant SIEM as SIEM Platform

    Note over USER,SIEM: Investigation Workflow

    USER->>SOAR: Create Investigation
    SOAR->>TIP: Query Threat Intelligence
    TIP->>SOAR: Indicator Information
    SOAR->>CSAM: Query Asset Information
    CSAM->>SOAR: Asset & Vulnerability Data
    SOAR->>SIEM: Query Historical Events
    SIEM->>SOAR: Security Events
    SOAR->>USER: Comprehensive Investigation Report
```

Configuration Parameters

Service Endpoints:


```
TIP_Service:
  host: "${tipHost}"
  port: 7000
  protocol: "HTTPS"
  elasticsearch: "${ESHostURL}"

CSAM_Service:
  host: "${csamHost}"
  port: 8229
  protocol: "HTTPS"
  elasticsearch: "https://${csamHost}:9200"

SOAR_Platform:
  port: 443
  database: "MongoDB"
  protocol: "HTTPS"
```

Authentication:

- **Service-to-Service:** HTTPS with TLS certificates
- **Elasticsearch:** Basic authentication (username/password)
- **External APIs:** Token-based authentication

Data Flow Patterns

1. **Real-time Integration:** Webhook-based event notifications
2. **Scheduled Polling:** Periodic data synchronization
3. **On-demand Queries:** User-initiated data retrieval
4. **Batch Processing:** Bulk data import and processing

Conclusion

The SOAR platform provides comprehensive security orchestration through:

- **SIEM Integration:** Multi-platform security event management
- **Threat Intelligence:** Automated TI feed processing and correlation
- **Vulnerability Management:** Cloud-native asset and vulnerability tracking
- **Unified Operations:** Centralized dashboard and workflow automation

This architecture enables organizations to achieve integrated security operations with automated threat detection, investigation, and response capabilities.

Document reflects actual implementation based on zona_tip_batch and securaa_csam codebase analysis.

TIP and CSAM Service Integration

Integration Architecture

The SOAR platform integrates with TIP and CSAM services via HTTPS REST API calls. The integration configuration is managed through host configuration parameters.

```
sequenceDiagram
    participant SOAR as SOAR Platform
    participant TIP as TIP Service (Port 7000)
    participant CSAM as CSAM Service (Port 8229)
    participant ELASTIC_TIP as Elasticsearch (TIP)
    participant ELASTIC_CSAM as Elasticsearch (CSAM)

    Note over SOAR,ELASTIC_CSAM: Threat Intelligence Flow

    SOAR->>TIP: HTTPS tipHost:7000/search/{userid}/{indicator}/{tiptype}/
    TIP->>ELASTIC_TIP: Query TI Database
    ELASTIC_TIP->>TIP: Indicator Data Response
    TIP->>SOAR: Structured TI Information

    Note over SOAR,ELASTIC_CSAM: Asset Information Flow

    SOAR->>CSAM: HTTPS csamHost:8229/assets?filterquery=...
    CSAM->>ELASTIC_CSAM: Query Asset Database
    ELASTIC_CSAM->>CSAM: Asset & Vulnerability Data
    CSAM->>SOAR: Asset Information Response

    Note over SOAR,ELASTIC_CSAM: Playbook Task Execution

    SOAR->>SOAR: Execute Playbook Task
    SOAR->>TIP: HTTPS tipHost:7000/[task endpoint]
    SOAR->>CSAM: HTTPS csamHost:8229/tasks/asset-info
```

Configuration Parameters

TIP Service Configuration:

- **Host:** Configured via `tipHost` parameter
- **Port:** 7000 (hardcoded in main.go)
- **Protocol:** HTTPS with TLS certificates
- **Elasticsearch:** Configurable ESHostURL (host:port)

CSAM Service Configuration:

- **Host:** Configured via `csamHost` parameter
- **Port:** 8229 (hardcoded in main.go)
- **Protocol:** HTTPS with TLS certificates
- **Elasticsearch:** <https://csamHost:9200> (port 9200)

Service Integration Points

TIP Service Endpoints (Port 7000):

- `/search/{userid}/{indicator}/{tiptype}/` - Indicator search
- `/datalist/` - Table data retrieval
- `/settags/{indicator}/{tiptype}/` - Tag management
- `/gethistory/{userid}` - Search history
- `/importindicators/` - Indicator import
- `/addassociates/` - Association management
- `/exportindicator/` - Data export

CSAM Service Endpoints (Port 8229):

- `/assets` - Asset data retrieval
 - `/assets/{asset-id}/attribute/{attribute-type}` - Asset attributes
 - `/tasks/asset-info` - Asset information tasks
 - `/assets/export` - Asset data export
 - `/vulnerability-details/{cve-id}` - Vulnerability information
 - `/dashboarddata` - Dashboard metrics
-

Threat Intelligence Processing

TIP Service Architecture

The TIP service (`zona_tip_batch/tip_services`) processes threat intelligence from multiple sources and stores data in Elasticsearch.

```
graph LR
    subgraph "TI Batch Processors"
        RF_BATCH[tip_batch_rf<br/>Recorded Future]
        ABUSE_BATCH[tip_batch_abuse.ch<br/>Abuse.ch Feeds]
        MISP_BATCH[tip_batch_local<br/>MISP/Local Feeds]
        BAMBENEK_BATCH[tip_batch_bambenek<br/>Bambenek Feeds]
    end

    subgraph "TIP Service (Port 7000)"
        TIP_API[TIP REST API<br/>Search & Management]
        TIP_STORAGE["Elasticsearch<br/>Indicator Storage"]
        BATCH_CONFIG[Batch Configuration<br/>Timing & Sources]
    end

    subgraph "SOAR Integration"
        SEARCH_API[Search Controller<br/>GetIndicatorInfo]
        TASK_EXEC[Task Execution<br/>Playbook Integration]
        EXPORT_API[Export Controller<br/>Data Export]
    end

    RF_BATCH --> TIP_STORAGE
    ABUSE_BATCH --> TIP_STORAGE
    MISP_BATCH --> TIP_STORAGE
    BAMBENEK_BATCH --> TIP_STORAGE

    TIP_STORAGE --> TIP_API
    TIP_API --> SEARCH_API
    TIP_API --> TASK_EXEC
    TIP_API --> EXPORT_API

    BATCH_CONFIG --> RF_BATCH
    BATCH_CONFIG --> ABUSE_BATCH
```

Elasticsearch Schema

TIP Elasticsearch Configuration:

- **Connection:** HTTP/HTTPS configurable via ESHostURL
- **Authentication:** Basic auth with ESUsername/ESPassword
- **Index:** Configurable index name (ESIndex constant)
- **Data Structure:** Indicator data with sources, timestamps, associations

Key Data Fields:

- `indicator` : The actual indicator value
- `source` : Source of the intelligence (rf, misp, etc.)
- `indicator_type` : Type (ip, domain, url, hash, email)
- `updatedts` : Last update timestamp
- `firstseen` : First seen timestamp
- `othersources` : Array of additional sources for same indicator

Asset and Vulnerability Management

CSAM Service Architecture

The CSAM service (`securaa_csam/services`) manages cloud assets and vulnerability data with Elasticsearch storage.

```

graph TB
    subgraph "Asset Data Sources"
        CLOUD_SCANNERS[Cloud Scanners<br/>AWS, Azure, GCP]
        VULN_SCANNERS[Vulnerability Scanners<br/>Nessus, Qualys]
        IMPORT_DATA[Import Data<br/>CSV/JSON Import]
    end

    subgraph "CSAM Service (Port 8229)"
        DATA_CONTROLLER[Data Controller<br/>Asset Management]
        CSAM_ELASTIC[("Elasticsearch<br/>https://csamHost:9200")]
        DASHBOARD_CTRL[Dashboard Controller<br/>Metrics & Reporting]
        EXPORT_CTRL[Export Controller<br/>Data Export]
    end

    subgraph "Asset Management Features"
        ASSET_QUERY[Asset Queries<br/>Filter & Search]
        VULN_MGMT[Vulnerability Management<br/>CVE Details]
        BH_ANALYTICS[Business Hierarchy<br/>Risk Analytics]
        ALERT_INTEGRATION[Alert Integration<br/>SOAR Cases]
    end

    CLOUD_SCANNERS --> DATA_CONTROLLER
    VULN_SCANNERS --> DATA_CONTROLLER
    IMPORT_DATA --> DATA_CONTROLLER

    DATA_CONTROLLER --> CSAM_ELASTIC
    CSAM_ELASTIC --> DASHBOARD_CTRL
    CSAM_ELASTIC --> EXPORT_CTRL

    CSAM_ELASTIC --> ASSET_QUERY
    CSAM_ELASTIC --> VULN_MGMT
    CSAM_ELASTIC --> BH_ANALYTICS
    CSAM_ELASTIC --> ALERT_INTEGRATION

```

CSAM Elasticsearch Configuration

Database Setup:

- **Connection:** <https://csamHost:9200>
- **Authentication:** Basic auth (ESUsername/ESPassword)
- **Index Pattern:** `csam_{tenantcode}` for tenant isolation
- **Configuration Index:** `csam_config_{tenantcode}`

Asset Data Structure:

- **Asset Information:** IP, hostname, OS, business hierarchy
 - **Vulnerability Data:** CVE details, CVSS scores, scan results
 - **History Tracking:** Change history in `csam_{tenantcode}_history`
 - **Compliance Data:** Security compliance and risk ratings
-

Integration Patterns

SOAR-TIP Integration

Search Integration:

```
Endpoint: "https://{tipHost}:7000/search/{userid}/{indicator}/{tiptype}/"
Method: GET
Purpose: Real-time indicator lookups from SOAR platform
Response: Structured indicator data with sources and metadata
```

Playbook Task Integration:

```
URL_Construction: "https://" + configobj["tipHost"] + ":7000" + task.RestURL
Validation: URL must contain ":7000/" for TIP service identification
Task_Types: Search, import, export, association management
```

SOAR-CSAM Integration

Asset Query Integration:

```
Endpoint: "https://{csamHost}:8229/assets"
Method: GET
Parameters: filterquery for asset filtering
Purpose: Asset discovery and vulnerability assessment
Response: Asset data with vulnerability information
```

Task Execution Integration:

```
URL_Construction: "https://" + configobj["csamHost"] + ":8229" + task.RestURL
Task_Endpoint: "/tasks/asset-info"
Purpose: Asset information retrieval for playbook tasks
Response: Structured asset and vulnerability data
```

Service Communication Patterns

Authentication:

- HTTPS with TLS certificates
- Basic authentication for Elasticsearch
- API key management for external integrations

Data Flow:

- Pull-based integration (SOAR queries services)
- RESTful API communication
- JSON data format
- Error handling and retry mechanisms

Configuration Management:

- Host configuration via config files
- Port configuration hardcoded in main.go files
- Elasticsearch connection strings configurable
- Service discovery via host:port patterns

Conclusion

The SOAR platform provides a centralized orchestration layer that integrates with specialized TIP and CSAM services. The architecture supports:

Key Benefits

- **Service Separation:** TIP and CSAM services run independently with dedicated databases
- **Scalable Architecture:** Services can be deployed on same or different machines
- **RESTful Integration:** HTTPS API-based communication between services
- **Data Isolation:** Elasticsearch databases provide service-specific data storage

- **Flexible Configuration:** Configurable host settings for different deployment scenarios

This document reflects the actual implementation based on codebase analysis of zona_tip_batch and securaa_csam services.

Supported SIEM and Security Platforms

The SOAR platform provides native connectors and integration capabilities for a wide range of SIEM and security tools:

SIEM Platforms

- **Graylog:** Open-source log management with powerful search capabilities
- **Splunk:** Industry-leading data platform for search, monitoring, and analysis
- **IBM QRadar:** AI-powered SIEM with advanced threat detection
- **Microsoft Sentinel:** Cloud-native SIEM and SOAR solution
- **ArcSight ESM:** Enterprise security management with real-time correlation
- **LogRhythm:** Unified security analytics and incident response
- **AlienVault OSSIM:** Open-source security information management
- **Elastic Security:** Built on Elastic Stack for security analytics
- **RSA NetWitness:** Network and endpoint analysis platform
- **McAfee ESM:** Enterprise security manager with threat intelligence

Threat Intelligence Platforms

- **ThreatMon:** Real-time threat intelligence and IOC feeds
- **ThreatConnect:** Threat intelligence platform with automation
- **Anomali:** Threat intelligence management and analytics
- **MISP:** Open-source threat intelligence sharing platform
- **OpenCTI:** Open cyber threat intelligence platform
- **VirusTotal:** File and URL analysis with malware detection
- **ThreatQuotient:** Threat intelligence platform with data lake
- **Recorded Future:** Real-time threat intelligence and analytics
- **Intel 471:** Underground threat intelligence and monitoring
- **Digital Shadows:** Digital risk protection with threat intelligence

Endpoint Detection and Response (EDR/XDR)

- **CrowdStrike Falcon:** Cloud-native endpoint protection platform

- **SentinelOne:** AI-powered endpoint security and response
- **Carbon Black:** Advanced endpoint detection and response
- **Palo Alto Cortex XDR:** Extended detection and response platform
- **Microsoft Defender:** Integrated endpoint and cloud security
- **Trend Micro:** Endpoint security with machine learning
- **Symantec Endpoint Protection:** Enterprise endpoint security
- **FireEye HX:** Endpoint security and forensic analysis

Vulnerability Management Platforms

- **Tenable Nessus:** Comprehensive vulnerability assessment
- **Qualys VMDR:** Cloud-based vulnerability management
- **Rapid7 InsightVM:** Real-time vulnerability management
- **OpenVAS:** Open-source vulnerability scanner
- **Greenbone:** Enterprise vulnerability management

Network Security Tools

- **Palo Alto Firewalls:** Next-generation firewall with threat prevention
- **Cisco ASA/Firepower:** Network security and threat detection
- **Fortinet FortiGate:** Unified threat management platform
- **Check Point:** Advanced threat prevention and security management
- **Juniper SRX:** High-performance network security platform

Universal Integration Model

The SOAR platform employs a universal integration model that supports multiple communication protocols and data formats, enabling seamless connectivity with diverse security tools.

```

graph LR
    subgraph "Integration Framework"
        subgraph "Protocol Support"
            REST[REST APIs<br/>HTTP/HTTPS]
            WEBHOOK[Webhooks<br/>Event-driven]
            SSH[SSH/SFTP<br/>Secure File Transfer]
            DATABASE[Database Connections<br/>Direct DB Access]
        end

        subgraph "Data Formats"
            JSON[JSON<br/>Structured Data]
            XML[XML<br/>Legacy Systems]
            CSV[CSV<br/>Bulk Data Import]
            SYSLOG[Syslog<br/>Standard Logging]
        end

        subgraph "Authentication Methods"
            TOKEN[API Tokens<br/>Bearer Authentication]
            OAUTH[OAuth 2.0<br/>Delegated Authorization]
            BASIC[Basic Auth<br/>Username/Password]
            CERT[Certificate-based<br/>Mutual TLS]
        end

        subgraph "Integration Patterns"
            PULL[Pull Model<br/>Scheduled Polling]
            PUSH[Push Model<br/>Real-time Events]
            HYBRID[Hybrid Model<br/>Bidirectional Sync]
            BATCH[Batch Processing<br/>Bulk Operations]
        end
    end

    subgraph "Integration Engine"
        PARSER[Data Parser<br/>Format Conversion]
        MAPPER[Field Mapping<br/>Schema Translation]
        VALIDATOR[Data Validator<br/>Quality Assurance]
        TRANSFORMER[Data Transformer<br/>Enrichment & Normalization]
    end

    %% Protocol to Engine
    REST --> PARSER
    WEBHOOK --> PARSER
    SSH --> PARSER
    DATABASE --> PARSER

    %% Engine Flow
    PARSER --> MAPPER
    MAPPER --> VALIDATOR

```

```
VALIDATOR --> TRANSFORMER
```

```
%% Data Format Support
```

```
JSON --> PARSER
```

```
XML --> PARSER
```

```
CSV --> PARSER
```

```
SYSLOG --> PARSER
```

```
%% Authentication Integration
```

```
TOKEN --> REST
```

```
OAuth --> REST
```

```
BASIC --> DATABASE
```

```
CERT --> SSH
```

```
%% Pattern Support
```

```
PULL --> REST
```

```
PUSH --> WEBHOOK
```

```
HYBRID --> REST
```

```
BATCH --> SSH
```

Integration Lifecycle Management

1. Discovery Phase

- Automatic detection of available endpoints
- Capability assessment and feature mapping
- Security requirement analysis
- Performance baseline establishment

2. Configuration Phase

- Connection parameter setup
- Authentication credential management
- Data mapping and field correlation
- Polling interval and threshold configuration

3. Testing and Validation

- Connectivity testing with health checks
- Data flow validation and integrity testing
- Performance benchmarking
- Error handling and retry mechanism testing

4. Deployment and Monitoring

- Production deployment with monitoring
- Real-time performance metrics
- Alert configuration for integration failures
- Automated failover and recovery procedures

Graylog SIEM Integration

Overview

Graylog integration enables comprehensive log management, security event correlation, and incident response automation. The platform connects with Graylog's REST API to ingest security events, perform searches, and automate response actions.

Integration Architecture

sequenceDiagram

participant GL as Graylog SIEM
participant RIS as Remote Integration Server
participant SOAR as SOAR Platform
participant DB as MongoDB
participant UI as Securaa UI

Note over GL,UI: Event Ingestion Flow

GL->>RIS: Security Events via REST API
RIS->>RIS: Event Normalization
RIS->>SOAR: Structured Incident Data
SOAR->>DB: Store Incident
SOAR->>UI: Real-time Dashboard Update

Note over GL,UI: Search and Investigation

UI->>SOAR: Investigation Request
SOAR->>RIS: Query Graylog Logs
RIS->>GL: Search API Call
GL->>RIS: Search Results
RIS->>SOAR: Formatted Results
SOAR->>UI: Investigation Data

Note over GL,UI: Automated Response

SOAR->>SOAR: Trigger Playbook
SOAR->>RIS: Execute Response Action
RIS->>GL: Update Alert Status
GL->>RIS: Confirmation
RIS->>SOAR: Action Complete
SOAR->>DB: Update Case Status

Technical Integration Details

Configuration Parameters

Parameter	Type	Description	Example
Base URL	String	Graylog server endpoint	https://graylog.company.com:9000
Access Token	String	API authentication token	2bnv8hu34l89sd6fghjk...
Instance Name	String	Unique identifier for integration	GraylogProduction
Query Field	String	Custom search queries	source:firewall AND level:error
Incidents Fetch Limit	Integer	Maximum events per poll	50
Ingest Offense	Boolean	Auto-create cases from events	true

Supported Capabilities

1. Event Ingestion

- Real-time security event collection
- Automated incident creation from Graylog alerts
- Custom query-based event filtering
- Multi-stream support for different log sources

2. Log Search and Analysis

- Advanced search capabilities using Graylog's query language
- Historical log analysis for forensic investigations
- Pattern recognition and anomaly detection
- Cross-correlation with other security tools

3. Alert Management

- Bi-directional alert synchronization
- Alert status updates and acknowledgments
- Custom alert routing based on severity and type
- Escalation workflows for unresolved alerts

4. Dashboards and Reporting

- Integration with SOAR dashboard widgets
- Custom report generation using Graylog data
- Real-time metrics and KPI tracking
- Executive summary reports with visual analytics

Data Flow and Processing

```
graph TD
    subgraph "Graylog SIEM Environment"
        LOG_SOURCES[Log Sources<br/>Firewalls, IDS/IPS<br/>Servers, Applications]
        GRAYLOG_SERVER[Graylog Server<br/>Log Processing<br/>Alert Generation]
        GRAYLOG_DB[Graylog Database<br/>Elasticsearch<br/>Log Storage]
    end

    subgraph "SOAR Integration Layer"
        CONNECTOR[Graylog Connector<br/>REST API Client]
        NORMALIZER[Event Normalizer<br/>Data Standardization]
        ENRICHER[Data Enricher<br/>Context Addition]
    end

    subgraph "SOAR Core Platform"
        INCIDENT_MGT[Incident Management<br/>Case Creation<br/>Workflow Processi]
        PLAYBOOK_ENGINE[Playbook Engine<br/>Automated Response<br/>Task Executio]
        ANALYTICS[Analytics Engine<br/>Pattern Recognition<br/>Threat Correlatio]
    end

    %% Data Flow
    LOG_SOURCES --> GRAYLOG_SERVER
    GRAYLOG_SERVER --> GRAYLOG_DB
    GRAYLOG_SERVER --> CONNECTOR

    CONNECTOR --> NORMALIZER
    NORMALIZER --> ENRICHER
    ENRICHER --> INCIDENT_MGT

    INCIDENT_MGT --> PLAYBOOK_ENGINE
    INCIDENT_MGT --> ANALYTICS

    %% Bidirectional Communication
    PLAYBOOK_ENGINE -.->|Response Actions| CONNECTOR
    ANALYTICS -.->|Search Queries| CONNECTOR

    %% Styling
    classDef graylogComponent fill:#ff9999
    classDef integrationComponent fill:#99ccff
    classDef soarComponent fill:#99ff99

    class LOG_SOURCES,GRAYLOG_SERVER,GRAYLOG_DB graylogComponent
    class CONNECTOR,NORMALIZER,ENRICHER integrationComponent
    class INCIDENT_MGT,PLAYBOOK_ENGINE,ANALYTICS soarComponent
```

ThreatMon Threat Intelligence Integration

Overview

ThreatMon integration provides advanced threat intelligence capabilities, enabling the SOAR platform to leverage real-time threat feeds, IOC analysis, and contextual threat information for enhanced security decision-making.

Integration Architecture

sequenceDiagram

participant TM as ThreatMon Platform
participant API as ThreatMon API
participant RIS as Remote Integration Server
participant SOAR as SOAR Platform
participant TI_DB as Threat Intel Database
participant ANALYST as Security Analyst

Note over TM,ANALYST: Threat Intelligence Feed

TM->>API: Real-time Threat Updates
RIS->>API: Poll for New Intelligence
API->>RIS: Threat Data (IOCs, TTPs)
RIS->>SOAR: Structured TI Data
SOAR->>TI_DB: Store Threat Intelligence

Note over TM,ANALYST: IOC Analysis Request

ANALYST->>SOAR: Submit IOC for Analysis
SOAR->>RIS: ThreatMon Lookup Request
RIS->>API: Query Threat Database
API->>TM: Search IOC Database
TM->>API: Threat Context & Attribution
API->>RIS: Enriched IOC Data
RIS->>SOAR: Threat Assessment
SOAR->>ANALYST: Analysis Results

Note over TM,ANALYST: Automated Threat Hunting

SOAR->>SOAR: Detect Potential Threat
SOAR->>RIS: Bulk IOC Validation
RIS->>API: Batch Threat Lookup
API->>TM: Mass IOC Analysis
TM->>API: Threat Correlation Results
API->>RIS: Prioritized Threats
RIS->>SOAR: Risk Assessment
SOAR->>SOAR: Trigger Response Playbook

Threat Intelligence Capabilities

IOC (Indicators of Compromise) Management

1. Multi-Type IOC Support

- **IP Addresses:** Malicious IP reputation and geolocation data
- **Domain Names:** Suspicious domains and DNS analysis
- **URL Analysis:** Malicious URL detection and categorization
- **File Hashes:** Malware signature matching (MD5, SHA1, SHA256)
- **Email Addresses:** Threat actor identification and phishing detection

2. Threat Attribution and Context

- **Threat Actor Mapping:** Attribution to known threat groups
- **Campaign Tracking:** Connection to active threat campaigns
- **TTP Analysis:** Tactics, Techniques, and Procedures correlation
- **Timeline Correlation:** Historical threat activity patterns

Advanced Threat Analysis Features

```
graph TB
    subgraph "Threat Intelligence Processing"
        subgraph "Data Ingestion"
            FEEDS[ThreatMon Feeds<br/>Real-time Updates<br/>Historical Data]
            IOC_SOURCES[IOC Sources<br/>Global Threat Intelligence<br/>Community]
        end

        subgraph "Analysis Engine"
            CORRELATION[Threat Correlation<br/>Pattern Matching<br/>Behavioral A]
            ENRICHMENT[Context Enrichment<br/>Geolocation<br/>Attribution]
            SCORING[Risk Scoring<br/>Confidence Levels<br/>Severity Assessment]
        end

        subgraph "Intelligence Products"
            REPORTS[Threat Reports<br/>Executive Summaries<br/>Technical Analysis]
            INDICATORS[IOC Collections<br/>Structured Feeds<br/>Machine Readable]
            ALERTS[Threat Alerts<br/>Real-time Warnings<br/>Proactive Notificati]
        end

        subgraph "Integration Outputs"
            SIEM_FEED[SIEM Integration<br/>Alert Enrichment<br/>Context Addition]
            HUNT_DATA[Threat Hunting<br/>Proactive Search<br/>IOC Matching]
            RESPONSE[Automated Response<br/>Blocking Actions<br/>Mitigation Step]
        end
    end

    %% Data Flow
    FEEDS --> CORRELATION
    IOC_SOURCES --> CORRELATION
    CORRELATION --> ENRICHMENT
    ENRICHMENT --> SCORING

    SCORING --> REPORTS
    SCORING --> INDICATORS
    SCORING --> ALERTS

    REPORTS --> SIEM_FEED
    INDICATORS --> HUNT_DATA
    ALERTS --> RESPONSE

    %% Styling
    classDef inputLayer fill:#ffeb9c
    classDef processingLayer fill:#9fcfff
    classDef outputLayer fill:#c2f0c2
    classDef integrationLayer fill:#ffc09f
```

```
class FEEDS,IOC_SOURCES inputLayer
class CORRELATION,ENRICHMENT,SCORING processingLayer
class REPORTS,INDICATORS,ALERTS outputLayer
class SIEM_FEED,HUNT_DATA,RESPONSE integrationLayer
```

Configuration and API Integration

ThreatMon Configuration Parameters

Parameter	Type	Description	Security Notes
API Base URL	String	ThreatMon API endpoint	<code>https://api.threatmon.io/v1/</code>
API Key	String	Authentication token	Encrypted storage required
Access ID	String	Account identifier	Multi-tenant support
Feed Types	Array	Selected intelligence feeds	<code>["indicators", "reports", "alerts"]</code>
Update Frequency	Integer	Polling interval (minutes)	<code>15</code> (minimum recommended)
IOC Types	Array	Supported indicator types	<code>["ip", "domain", "url", "hash"]</code>

Supported API Operations

1. Intelligence Retrieval

- **Get Latest Threats:** Retrieve recent threat intelligence updates
- **IOC Lookup:** Single and batch IOC validation
- **Threat Reports:** Detailed threat analysis documents
- **Campaign Information:** Active threat campaign details

2. Search and Query

- **Advanced Search:** Complex queries across threat database
- **Historical Analysis:** Time-based threat pattern analysis
- **Correlation Queries:** Related threat indicator discovery
- **Attribution Search:** Threat actor and group identification

3. Real-time Feeds

- **Streaming Updates:** Real-time threat intelligence feeds
 - **Webhook Integration:** Event-driven threat notifications
 - **Custom Alerts:** Tailored threat monitoring rules
 - **Priority Feeds:** High-confidence, actionable intelligence
-

Data Flow and Processing

Unified Security Data Pipeline

The SOAR platform implements a sophisticated data processing pipeline that normalizes, enriches, and correlates security data from multiple sources including SIEM and threat intelligence platforms.

```

graph TD
    subgraph "Data Sources"
        GRAYLOG_SRC[Graylog SIEM<br/>Security Events<br/>Log Data]
        THREATMON_SRC[ThreatMon TI<br/>Threat Intelligence<br/>IOC Data]
        SPLUNK_SRC[Splunk Enterprise<br/>Machine Data Analytics<br/>Security Eve]
        QRADAR_SRC[IBM QRadar<br/>Network Flow Data<br/>Security Events]
        SENTINEL_SRC[Microsoft Sentinel<br/>Cloud Security Events<br/>Azure Logs]
        EDR_SRC[EDR Platforms<br/>CrowdStrike, SentinelOne<br/>Endpoint Telemetr]
        TI_FEEDS_SRC[TI Feed Sources<br/>VirusTotal, MISP<br/>Anomali, ThreatCon]
        VULN_SRC[Vulnerability Scanners<br/>Nessus, Qualys<br/>OpenVAS, Rapid7]
    end

    subgraph "Data Ingestion Layer"
        API_GATEWAY[API Gateway<br/>Rate Limiting<br/>Authentication]
        EVENT_COLLECTOR[Event Collector<br/>Multi-Protocol Support<br/>Data Buff]
        STREAM_PROCESSOR[Stream Processor<br/>Real-time Processing<br/>Event Rou]
    end

    subgraph "Data Processing Engine"
        NORMALIZER[Data Normalizer<br/>Schema Standardization<br/>Field Mapping]
        ENRICHER[Data Enricher<br/>Context Addition<br/>Geo/DNS Lookup]
        CORRELATOR[Event Correlator<br/>Pattern Matching<br/>Threat Detection]
    end

    subgraph "Intelligence Integration"
        TI_LOOKUP[TI Lookup Service<br/>IOC Validation<br/>Threat Scoring]
        CONTEXT_ENGINE[Context Engine<br/>Attribution Analysis<br/>Campaign Trac]
        RISK_CALCULATOR[Risk Calculator<br/>Severity Assessment<br/>Impact Analy]
    end

    subgraph "Storage and Analytics"
        INCIDENT_DB[Incident Database<br/>MongoDB<br/>Case Management]
        TI_CACHE[TI Cache<br/>Redis<br/>Fast Lookups]
        ANALYTICS_DB[Analytics Database<br/>ElasticSearch<br/>Time-series Data]
    end

    subgraph "Output and Actions"
        DASHBOARD[Security Dashboard<br/>Real-time Monitoring<br/>Alert Manageme]
        PLAYBOOKS[Automated Playbooks<br/>Response Actions<br/>Workflow Executio]
        NOTIFICATIONS[Notifications<br/>Email, SMS, Slack<br/>Escalation Rules]
    end

    %% Data Flow
    GRAYLOG_SRC --> API_GATEWAY
    THREATMON_SRC --> API_GATEWAY
    SPLUNK_SRC --> API_GATEWAY
    QRADAR_SRC --> API_GATEWAY

```



```
SENTINEL_SRC --> API_GATEWAY
EDR_SRC --> API_GATEWAY
TI_FEEDS_SRC --> API_GATEWAY
VULN_SRC --> API_GATEWAY
```

```
API_GATEWAY --> EVENT_COLLECTOR
EVENT_COLLECTOR --> STREAM_PROCESSOR
STREAM_PROCESSOR --> NORMALIZER
```

```
NORMALIZER --> ENRICHER
ENRICHER --> CORRELATOR
CORRELATOR --> TI_LOOKUP
```

```
TI_LOOKUP --> CONTEXT_ENGINE
CONTEXT_ENGINE --> RISK_CALCULATOR
RISK_CALCULATOR --> INCIDENT_DB
```

```
INCIDENT_DB --> DASHBOARD
INCIDENT_DB --> PLAYBOOKS
INCIDENT_DB --> NOTIFICATIONS
```

```
%% Cache Integration
TI_LOOKUP --> TI_CACHE
TI_CACHE --> TI_LOOKUP
```

```
%% Analytics Flow
CORRELATOR --> ANALYTICS_DB
ANALYTICS_DB --> DASHBOARD
```

```
%% Styling
classDef sourceLayer fill:#ffcccb
classDef ingestionLayer fill:#ffffcc
classDef processingLayer fill:#ccffcc
classDef intelligenceLayer fill:#ccccff
classDef storageLayer fill:#ffccff
classDef outputLayer fill:#ccffff
```

```
class GRAYLOG_SRC, THREATMON_SRC, SPLUNK_SRC, QRADAR_SRC, SENTINEL_SRC, EDR_SRC, T
class API_GATEWAY, EVENT_COLLECTOR, STREAM_PROCESSOR ingestionLayer
class NORMALIZER, ENRICHER, CORRELATOR processingLayer
class TI_LOOKUP, CONTEXT_ENGINE, RISK_CALCULATOR intelligenceLayer
class INCIDENT_DB, TI_CACHE, ANALYTICS_DB storageLayer
class DASHBOARD, PLAYBOOKS, NOTIFICATIONS outputLayer
```

Event Processing Workflow

1. Event Ingestion and Normalization

Graylog Event Processing:

```
Input: Raw Graylog Alert
↓
Schema Validation → Field Mapping → Data Type Conversion
↓
Normalized Event: {
  "event_id": "unique_identifier",
  "timestamp": "ISO8601_datetime",
  "source": "graylog",
  "event_type": "security_alert",
  "severity": "high|medium|low",
  "description": "human_readable_text",
  "source_ip": "ip_address",
  "destination_ip": "ip_address",
  "indicators": ["ioc1", "ioc2"],
  "metadata": {...}
}
```

ThreatMon Intelligence Processing:

```
Input: ThreatMon IOC Data
↓
IOC Validation → Threat Scoring → Context Enrichment
↓
Processed Intelligence: {
  "ioc_id": "threat_indicator_id",
  "ioc_type": "ip|domain|url|hash",
  "ioc_value": "actual_indicator_value",
  "threat_type": "malware|phishing|c2",
  "confidence": "high|medium|low",
  "threat_actor": "apt_group_name",
  "campaign": "campaign_identifier",
  "first_seen": "timestamp",
  "last_seen": "timestamp",
  "references": ["url1", "url2"]
}
```

2. Correlation and Enrichment

Multi-Source Correlation:

- **Temporal Correlation:** Events occurring within time windows
- **Spatial Correlation:** Events from same network segments
- **IOC Correlation:** Matching indicators across sources
- **Behavioral Correlation:** Similar attack patterns and TTPs

Enrichment Process:

- **Geolocation Data:** IP address to country/region mapping
- **DNS Resolution:** Domain to IP resolution and vice versa
- **Threat Intelligence:** IOC reputation and threat context
- **Asset Information:** Internal asset identification and criticality

3. Incident Creation and Prioritization

Automated Incident Creation Rules:

Incident_Creation_Rules:

- Rule: "High Severity TI Match"
Condition: "TI_confidence >= 0.8 AND event_severity == 'high'"
Action: "create_incident"
Priority: "critical"
- Rule: "Multiple IOC Correlation"
Condition: "matched_iocs >= 3 AND time_window <= '1h'"
Action: "create_incident"
Priority: "high"
- Rule: "Known Campaign Activity"
Condition: "campaign_match == true AND threat_actor != 'unknown'"
Action: "create_incident"
Priority: "high"

Integration Examples and Use Cases

Multi-SIEM Environment Support

Enterprise Scenario: Hybrid SIEM Deployment

Integration_Configuration:

Primary_SIEM: "Splunk Enterprise (On-Premises)"
Secondary_SIEM: "Microsoft Sentinel (Cloud)"
Legacy_SIEM: "IBM QRadar (Legacy Systems)"
Log_Management: "Graylog (Cost-Effective Logs)"

Data_Flow_Strategy:

Critical_Assets: "Splunk + Sentinel (Dual Processing)"
Cloud_Workloads: "Microsoft Sentinel (Native Integration)"
Legacy_Systems: "QRadar (Existing Investment)"
High_Volume_Logs: "Graylog (Cost Optimization)"

Threat Intelligence Orchestration

Multi-Feed Intelligence Fusion

TI_Feed_Hierarchy:

Commercial_Feeds:

- "ThreatMon (Primary IOC Source)"
- "Recorded Future (Contextual Intelligence)"
- "ThreatConnect (Campaign Tracking)"

Open_Source_Feeds:

- "MISP (Community Intelligence)"
- "OpenCTI (Structured Threat Data)"
- "VirusTotal (File/URL Analysis)"

Government_Feeds:

- "US-CERT Feeds (Government Alerts)"
- "NCSC Feeds (National Cyber Security)"
- "Industry ISAC Feeds (Sector-Specific)"

Processing_Logic:

High_Confidence: "Commercial feeds take precedence"
Volume_Processing: "Open source for bulk validation"
Specialized_Intel: "Government feeds for APT attribution"

Security and Authentication

Multi-Layered Security Architecture

The SOAR platform implements comprehensive security measures to protect sensitive security data and ensure secure integration with external systems.

```

graph TB
    subgraph "Security Layers"
        subgraph "Network Security"
            FIREWALL[Network Firewall<br/>Port Control<br/>IP Whitelisting]
            SSL[SSL/TLS Encryption<br/>End-to-End Encryption<br/>Certificate Man]
            VPN[VPN Connectivity<br/>Site-to-Site Tunnels<br/>Encrypted Channels]
        end

        subgraph "Application Security"
            AUTH[Authentication<br/>Multi-Factor Auth<br/>SSO Integration]
            AUTHZ[Authorization<br/>RBAC Model<br/>Permission Management]
            SESSION[Session Management<br/>Token-based Auth<br/>Session Timeout]
        end

        subgraph "Data Security"
            ENCRYPT[Data Encryption<br/>AES-256 Encryption<br/>Key Management]
            MASKING[Data Masking<br/>PII Protection<br/>Sensitive Data Handling]
            AUDIT[Audit Logging<br/>Activity Tracking<br/>Compliance Monitoring]
        end

        subgraph "Integration Security"
            API_SEC[API Security<br/>Rate Limiting<br/>Input Validation]
            CRED_MGT[Credential Management<br/>Secure Storage<br/>Rotation Polic]
            MONITOR[Security Monitoring<br/>Intrusion Detection<br/>Anomaly Dete]
        end
    end

    subgraph "External Integrations"
        GRAYLOG_SEC[Graylog Integration<br/>Token-based Auth<br/>Encrypted Commu]
        THREATMON_SEC[ThreatMon Integration<br/>API Key Management<br/>Secure Ch]
        THIRD_PARTY[Third-party Tools<br/>OAuth/SAML<br/>Certificate Auth]
    end

    %% Security Flow
    FIREWALL --> SSL
    SSL --> VPN
    VPN --> AUTH
    AUTH --> AUTHZ
    AUTHZ --> SESSION

    SESSION --> ENCRYPT
    ENCRYPT --> MASKING
    MASKING --> AUDIT

    AUDIT --> API_SEC
    API_SEC --> CRED_MGT
    CRED_MGT --> MONITOR

```

```
%% Integration Security
API_SEC --> GRAYLOG_SEC
API_SEC --> THREATMON_SEC
API_SEC --> THIRD_PARTY

%% Styling
classDef networkSecurity fill:#ffb3b3
classDef appSecurity fill:#b3d9ff
classDef dataSecurity fill:#b3ffb3
classDef integrationSecurity fill:#ffb3ff
classDef externalSecurity fill:#ffffb3

class FIREWALL,SSL,VPN networkSecurity
class AUTH,AUTHZ,SESSION appSecurity
class ENCRYPT,MASKING,AUDIT dataSecurity
class API_SEC,CRED_MGT,MONITOR integrationSecurity
class GRAYLOG_SEC,THREATMON_SEC,THIRD_PARTY externalSecurity
```

Authentication and Authorization Framework

1. Multi-Factor Authentication (MFA)

Supported Authentication Methods:

- **Primary:** Username/Password with complexity requirements
- **Secondary:** SMS OTP, Email OTP, TOTP (Google Authenticator)
- **Advanced:** Hardware tokens, Biometric authentication
- **Enterprise:** SAML 2.0, OAuth 2.0, LDAP/Active Directory

2. Role-Based Access Control (RBAC)

Predefined Roles:

Security_Roles:

- Role: "Security Administrator"
Permissions:
 - "full_system_access"
 - "user_management"
 - "integration_configuration"
 - "playbook_modification"

- Role: "Security Analyst"
Permissions:
 - "incident_management"
 - "investigation_tools"
 - "report_generation"
 - "dashboard_access"

- Role: "SOC Manager"
Permissions:
 - "team_management"
 - "report_access"
 - "metrics_dashboard"
 - "audit_trail_access"

- Role: "Integration Specialist"
Permissions:
 - "integration_testing"
 - "connector_configuration"
 - "data_mapping"
 - "health_monitoring"

3. API Security and Rate Limiting

API Protection Mechanisms:

- **Rate Limiting:** Configurable limits per user/integration
- **Input Validation:** Schema validation and sanitization
- **Output Filtering:** Sensitive data redaction
- **Audit Logging:** Complete API access logging

Integration-Specific Security:

Graylog_Integration_Security:

Authentication: "Bearer Token"

Encryption: "TLS 1.3"

Rate_Limit: "100 requests/minute"

Timeout: "30 seconds"

Retry_Policy: "Exponential backoff"

ThreatMon_Integration_Security:

Authentication: "API Key + Secret"

Encryption: "TLS 1.3 + Certificate Pinning"

Rate_Limit: "500 requests/hour"

Timeout: "15 seconds"

Data_Validation: "JSON Schema validation"

Scalability and Performance

Horizontal Scaling Architecture

The SOAR platform is designed for enterprise-scale deployments with support for high-volume security data processing and integration with multiple SIEM and TI sources.

```

graph TB
    subgraph "Load Balancing Tier"
        LB[Load Balancer<br/>HAProxy/Nginx<br/>SSL Termination]
        CDN[Content Delivery Network<br/>Static Asset Caching<br/>Global Distrib
    end

    subgraph "Application Tier (Auto-Scaling)"
        APP1[SOAR Instance 1<br/>API Server<br/>Playbook Engine]
        APP2[SOAR Instance 2<br/>API Server<br/>Playbook Engine]
        APP3[SOAR Instance N<br/>API Server<br/>Playbook Engine]
    end

    subgraph "Integration Tier (Distributed)"
        INT1[Integration Node 1<br/>Graylog Connector<br/>Data Processing]
        INT2[Integration Node 2<br/>ThreatMon Connector<br/>TI Processing]
        INT3[Integration Node N<br/>Other Connectors<br/>Specialized Processing]
    end

    subgraph "Message Queue (Kafka Cluster)"
        KAFKA1[Kafka Broker 1<br/>Partition Leader]
        KAFKA2[Kafka Broker 2<br/>Partition Replica]
        KAFKA3[Kafka Broker 3<br/>Partition Replica]
    end

    subgraph "Caching Layer (Redis Cluster)"
        REDIS1[Redis Master<br/>Primary Cache]
        REDIS2[Redis Slave 1<br/>Read Replica]
        REDIS3[Redis Slave 2<br/>Read Replica]
    end

    subgraph "Database Tier (Sharded)"
        MONGO1[MongoDB Shard 1<br/>Tenant Range A-G]
        MONGO2[MongoDB Shard 2<br/>Tenant Range H-N]
        MONGO3[MongoDB Shard 3<br/>Tenant Range O-Z]
    end

    %% Traffic Flow
    CDN --> LB
    LB --> APP1
    LB --> APP2
    LB --> APP3

    APP1 --> INT1
    APP2 --> INT2
    APP3 --> INT3

    %% Message Queue Integration

```

```
INT1 --> KAFKA1
INT2 --> KAFKA2
INT3 --> KAFKA3

%% Cache Integration
APP1 --> REDIS1
APP2 --> REDIS2
APP3 --> REDIS3

%% Database Sharding
APP1 --> MONG01
APP2 --> MONG02
APP3 --> MONG03

%% Styling
classDef loadBalancer fill:#ff9999
classDef application fill:#99ccff
classDef integration fill:#99ff99
classDef messageQueue fill:#ffcc99
classDef cache fill:#cc99ff
classDef database fill:#ffff99

class LB,CDN loadBalancer
class APP1,APP2,APP3 application
class INT1,INT2,INT3 integration
class KAFKA1,KAFKA2,KAFKA3 messageQueue
class REDIS1,REDIS2,REDIS3 cache
class MONG01,MONG02,MONG03 database
```

Performance Optimization Strategies

1. Data Processing Optimization

Stream Processing Architecture:

- **Apache Kafka:** High-throughput message streaming
- **Event Partitioning:** Parallel processing across topics
- **Consumer Groups:** Distributed event consumption
- **Backpressure Handling:** Flow control for high-volume data

Caching Strategy:

- **Multi-Level Caching:** Application, database, and CDN caching
- **Intelligent Cache Warming:** Predictive cache population

- **Cache Invalidation:** Event-driven cache updates
- **Distributed Caching:** Redis cluster for session and data caching

2. Auto-Scaling Configuration

Scaling Triggers:

```
Auto_Scaling_Rules:  
  CPU_Utilization:  
    Scale_Up: "> 70% for 5 minutes"  
    Scale_Down: "< 30% for 10 minutes"  
  
  Memory_Utilization:  
    Scale_Up: "> 80% for 3 minutes"  
    Scale_Down: "< 40% for 15 minutes"  
  
  Queue_Depth:  
    Scale_Up: "> 1000 messages"  
    Scale_Down: "< 100 messages for 10 minutes"  
  
  API_Request_Rate:  
    Scale_Up: "> 500 requests/second"  
    Scale_Down: "< 100 requests/second for 10 minutes"
```

Use Cases and Benefits

1. Automated Incident Response

Graylog-Triggered Automation

Use Case: Malware Detection and Response

sequenceDiagram

participant GL as Graylog SIEM
participant SOAR as SOAR Platform
participant TM as ThreatMon TI
participant FW as Firewall
participant EMAIL as Email Server
participant ANALYST as Security Analyst

Note over GL,ANALYST: Malware Detection Workflow

GL->>SOAR: Malware Alert (File Hash)
SOAR->>TM: Validate File Hash
TM->>SOAR: Confirmed Malware (High Confidence)
SOAR->>SOAR: Create High Priority Incident

Note over GL,ANALYST: Automated Response Actions

SOAR->>FW: Block Source IP
FW->>SOAR: Blocking Confirmed
SOAR->>EMAIL: Quarantine Related Emails
EMAIL->>SOAR: Quarantine Complete

Note over GL,ANALYST: Analyst Notification

SOAR->>ANALYST: Urgent Alert + Investigation Package
ANALYST->>SOAR: Acknowledge and Investigate
SOAR->>GL: Request Related Logs
GL->>SOAR: Forensic Data
SOAR->>ANALYST: Complete Investigation Report

Business Benefits:

- **Faster Response:** Automated response reduces manual intervention time
- **Consistency:** Standardized response procedures across all incidents
- **Documentation:** Comprehensive incident documentation and audit trails
- **Intelligent Escalation:** Context-aware escalation based on threat severity

ThreatMon-Enhanced Threat Hunting

Use Case: Proactive Threat Hunting

```

graph LR
    subgraph "Daily Threat Hunting Workflow"
        START[Daily TI Update] --> INGEST[Ingest New IOCs]
        INGEST --> MATCH[Match Against Logs]
        MATCH --> SCORE[Risk Scoring]
        SCORE --> PRIORITIZE[Prioritize Threats]
        PRIORITIZE --> INVESTIGATE[Auto Investigation]
        INVESTIGATE --> RESPOND[Automated Response]
        RESPOND --> REPORT[Generate Report]
    end

    subgraph "ThreatMon Integration Points"
        IOC_FEED[IOC Feed Updates]
        CONTEXT[Threat Context]
        ATTRIBUTION[Actor Attribution]
        CAMPAIGN[Campaign Tracking]
    end

    subgraph "SOAR Automation Actions"
        BLOCK[Network Blocking]
        ISOLATE[Host Isolation]
        COLLECT[Evidence Collection]
        NOTIFY[Stakeholder Notification]
    end

    %% Integration Flow
    IOC_FEED --> INGEST
    CONTEXT --> SCORE
    ATTRIBUTION --> PRIORITIZE
    CAMPAIGN --> INVESTIGATE

    %% Response Actions
    INVESTIGATE --> BLOCK
    INVESTIGATE --> ISOLATE
    INVESTIGATE --> COLLECT
    INVESTIGATE --> NOTIFY

```

2. Security Operations Center (SOC) Enhancement

Unified Security Dashboard

Dashboard Capabilities:

- **Real-time Threat Landscape:** Combined SIEM and TI intelligence

- **Incident Management:** Centralized case tracking and workflow
- **Performance Metrics:** SOC efficiency and response time analytics
- **Threat Intelligence Visualization:** IOC trends and threat actor activity

Analytics and Reporting

Executive Reporting Features:

- **Monthly Security Posture Reports:** Combined metrics from all integrated tools
- **Threat Intelligence Briefings:** ThreatMon-sourced executive summaries
- **Incident Response Effectiveness:** SOAR automation impact analysis
- **Compliance Reporting:** Automated compliance documentation

3. Cost Reduction and Efficiency Gains

Enhanced Security Operations

The integrated SOAR platform provides significant operational improvements through automation and centralized management:

Key Operational Benefits:

- **Automated Threat Detection:** Continuous monitoring and analysis across all integrated tools
- **Streamlined Incident Response:** Coordinated response workflows with minimal manual intervention
- **Reduced False Positives:** Intelligent correlation reduces alert fatigue
- **Enhanced Analyst Productivity:** Automation handles routine tasks, allowing focus on complex investigations
- **Simplified Tool Management:** Single platform reduces complexity and training requirements

Return on Investment (ROI)

Cost Savings Areas:

- **Personnel Efficiency:** Significant reduction in manual investigation and response time
- **Tool Consolidation:** Single integrated platform reduces licensing and maintenance costs
- **Operational Efficiency:** Automated workflows reduce human error and accelerate response
- **Training Costs:** Unified platform reduces training complexity across multiple tools

Business Value:

- **Faster Threat Detection:** Proactive identification reduces potential business impact
 - **Improved Security Posture:** Enhanced visibility and response capabilities
 - **Regulatory Compliance:** Automated documentation and reporting streamlines compliance
 - **Risk Mitigation:** Comprehensive threat intelligence reduces exposure to advanced threats
-

Conclusion

The SOAR platform's integration with Graylog SIEM and ThreatMon TI represents a comprehensive approach to modern security operations. By combining automated event processing, intelligent threat analysis, and orchestrated response capabilities, organizations can achieve:

Key Platform Strengths

1. **Unified Security Operations:** Single platform for SIEM, TI, and response automation
2. **Advanced Threat Intelligence:** Real-time IOC validation and threat context
3. **Automated Response:** Rapid, consistent response to security threats
4. **Scalable Architecture:** Enterprise-ready platform with horizontal scaling
5. **Comprehensive Integration:** Support for industry-leading security tools

Strategic Business Value

- **Enhanced Security Posture:** Proactive threat detection and response
- **Operational Efficiency:** Automated workflows reduce manual effort
- **Cost Optimization:** Consolidated platform reduces tool sprawl
- **Compliance Readiness:** Automated documentation and reporting
- **Future-Proof Architecture:** Extensible platform for emerging threats

The combination of Graylog's comprehensive log management capabilities with ThreatMon's advanced threat intelligence, orchestrated through the SOAR platform, provides organizations with a powerful, integrated security operations solution that scales with business needs while maintaining the highest levels of security and performance.

This document provides a comprehensive overview of the SOAR platform's integration capabilities. For detailed implementation guidance, API documentation, or specific configuration

assistance, please refer to the technical implementation guides or contact the integration support team.