SOC - Security Operations Centre Framework Project

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Agenda

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- Modals & Strategies of SOCs
- Processes
- People & Skills

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- Centralized
- Distributed
- In-hose
- Constituency
- Managed
- Hybrid

Centralized

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- One Team
- One Central Location
- Close to HQ
- Most Common
- Most Feasible
- 24x7

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- Multiple Teams
- May have Multiple sets of Dashboards
- Small Team in SOC & rest outside the SOC
- Follow the Sun vs 24x7

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- Within the organization
- **Pros:**
  - Dedicated staff
  - Knows environment better
  - Correlations between internal groups
  - Logs stored locally
- **Cons:**
  - Larger up-front investment
  - Pressure to show ROI
  - Hard to find competent staff

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- External SOC
  - UnManaged
    - No write access to security devices
  - Managed
    - Has write access to security devices

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- Active Access on Security Appliances as well
- **Pros:**
  - quick start with less Capex
  - reduced staff requirement including for managing Security Appliances
- **Cons:**
  - less environment knowledge
  - external data mishandling
  - external device mishandling
  - lack of archiving

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- High level Centralized
- Focused Distributed
- **Pros:**
  - Sufficient Visibility across the environment
  - Quickest detection & Response Time
  - Reduced backlog
  - Intel sharing
- **Cons:**
  - Most costly
  - 3rd party handling

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- No authority
- Shared authority
- Full authority
- Situations of Containment
- Pre-agreements
- Reactive
- Proactive (pushing emergency patches)

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1. Monitoring and Detection
   I. Identification
   II. Correlation
   III. Aggregation
   IV. Retention
   V. Scanning
   VI. Monitoring
2. Incident response
   I. Alerting
   II. Incident management
   III. Communication
3. Threat Intelligence
   I. Threat hunting
   II. Intelligence collection
   III. Vulnerability management
4. Quality Assurance
   I. Optimization
   II. Tuning and Maintenance
   III. Metrics

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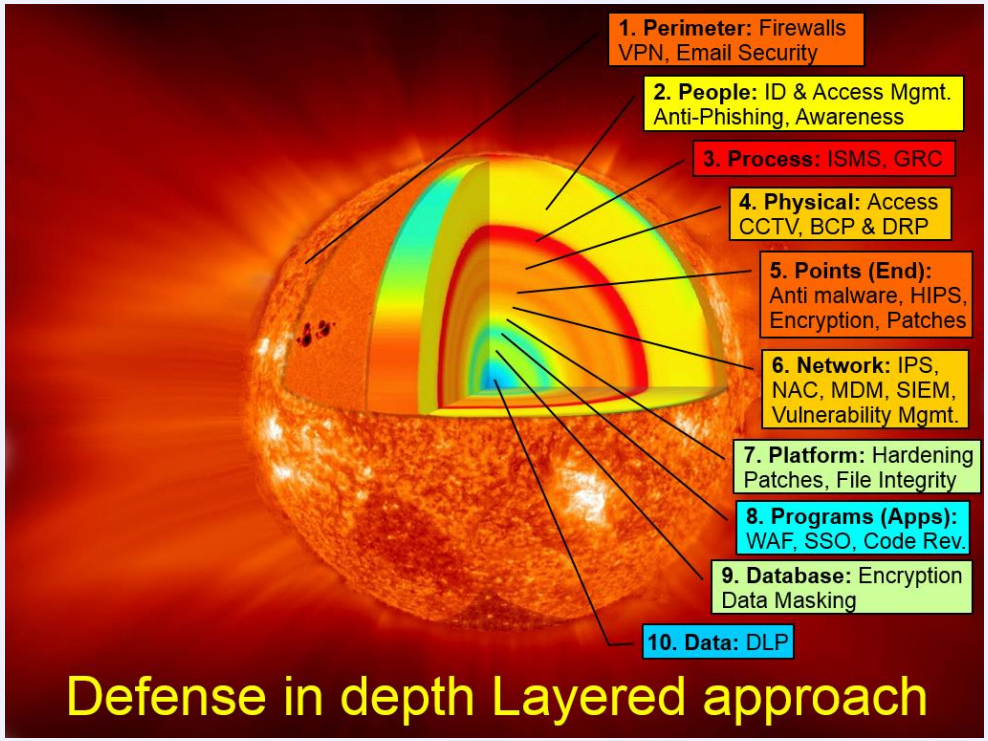
- What, Where, How much
- Asset Management
- Risk Management
- Supported Devices
- Licenses, EPS
- Storage



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- Prime objective - Incident tracking
- Timestamp
- Time synchronization
- Real-time correlation
- Includes:
  - Filtering
  - Aggregation
  - De-duplication
- Custom Rules

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- Normalization
- Storage Usage
- Evidence preservation
- Deduplication

- Active data for analysis
- Archived data
- Investigation
- Compliance requirements
- Storage Capacity Management
- Access especially Admin

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- Subscription to other SoCs
- Automated
- Manual Advisories
- Collections
  - IOC, IOA,TTP
- Analysis & Assessment
- Applicability
- Distribution
- Creation
- External Feed
- OSINT

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- Network Mapping (size, shape, makeup, and perimeter interfaces)
  - Automated & Manual
- Vulnerabilities
- Passive Fingerprinting (to avoid disruptions due to scanning)
- Correlation of events related to Vulnerable Services

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- Real-time
- Network Monitoring - Net Flows
- Perimeter
- Configuration
- Critical Files changes
- Privileged use
- IDS/IPS
- 24/7 Shift Schedules
- Follow the sun
- UBA/UEBA

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- For Prompt Action
- Focused teams involvement
- Rules building
- Actions against alerts
- Ticketing system integration
- Workflow management

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a) Detection
b) Analysis
c) Prioritization
d) Response
e) Containment
f) Eradication
g) Recovery
h) Forensic Investigation
i) Learning

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- What, Where, How much
- IDS/IPS, SIEM, log management tools, AV
- Misuse or signature-based detection
- Anomaly detection
- IOCs, IOAs & TTP

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- Who, what, when, where, and why of an intrusion
- Must be time constrained
- How to limit damage
- How to recover
- Malware Implant (Reversing)
  - De-compilation (Static code)
  - Detonation (thru runtime execution)
- Documented
- Recommendation for further action

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- Based on Impact
- For Example:
  - Level 1 Incidents that could cause significant harm
  - Level 2 Compromise of or unauthorized access to noncritical systems or information
  - Level 3 Situations that can be contained and resolved by the information system custodian, data/process owner, or HR personnel

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- Action to deter, block, or cut off
- Eradication/ Remediation
- Manual
- Automated
- Active
- Passive
- On-site & Remote
- E.g. firewall blocks, DNS black holes, IP blocks, patch deployment, and account deactivation.
- Creation of signature

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- 1st Action
- Isolation of incident so it doesn't spread & cause further damage
- Disconnection of affected devices from Network & Internet
- Short term & long term containment Strategies
- **Questions to address**
  - What's been done to contain the breach short term?
  - What's been done to contain the breach long term?
  - Has discovered malware been quarantined from the environment?
  - What sort of backups are in place?

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- Eliminate the root cause of incident
- E.g. removal of Malware
- Complete removal of malware
- **Questions to address**
  - Have malware been securely removed?
  - Has the system be hardened, patched, and updates applied?
  - Can the system be re-imaged?

- to a known good state
- Based on priority
- Need of Evidence Preservation
- Systems up and running again without the fear of another breach
- **Questions to address:**
  - When systems can be returned to production?
  - Have systems been patched, hardened and tested?
  - Can the system be restored from a trusted back-up?
  - How long will the affected systems be monitored and what will you look for when monitoring?
  - What tools will ensure similar attacks will not reoccur? (File integrity monitoring, intrusion detection/protection, etc)

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- Unearthing ground truth of an incident
- Establishing a detailed timeline of events
- Gathering and storing artifacts e.g. storage media
- For legal proceedings
- Jurisdiction
- Documenting chain of custody
- bit-by-bit copies of evidence

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- Root cause analysis
- Preventive controls to avoid reoccurrence
- Post incident meeting with all Team members
- Documented
- what worked well, and were there some holes
- Custom Signature Creation, Validation and Distribuition
- **Questions to address:**
  - What changes need to be made to the security?
  - How should employee be trained differently?
  - What weakness did the breach exploit?
  - How will you ensure a similar breach doesn't happen again?

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- KPIs
- SLA
- MTTD
- MTTR
- E.g.:
  - Response Time
  - No of Incidents
  - Pro Active – Lead Time to Patch Vulnerabilities
  - No of False Positives

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- Within SOC
- Internal
- External
- Alternative Channels
- Call centre, Email messages, Phone calls, Walk-in reports
- SOC website
- Cyber tip feeds (from other SOCs)
- SOC can’t afford to miss tips
- Post incident communication

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- Segregation of Duties
- Access to Admins
- Artificial Intelligence is not a substitute
- SOC Analyst
- Incident Handler
- SOC Expert
- SOC Manager

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For more information, queries, feedback and updates:

[OWASP Security Operations Center (SOC) Framework Project]

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