

Table of Contents

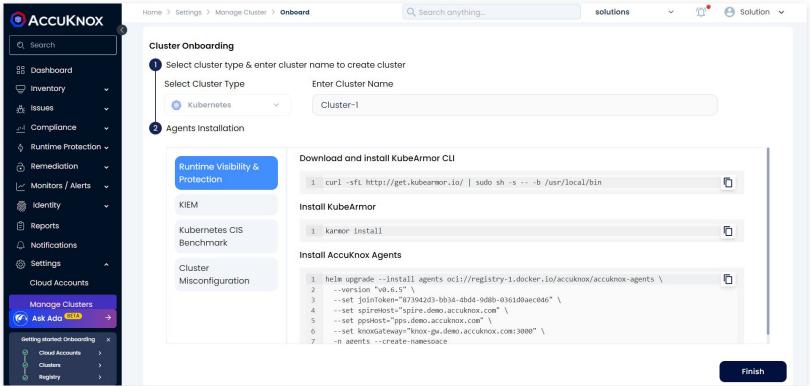


- Realtime Protection for K8s Shared Network
 - Onboarding
 - App Behavior Monitoring
 - Policies
 - Pod Security Admission (PSA)
- Container Registry Scanning
- Forensics

Cluster Onboarding (Agent Based)



- Navigate to Settings → Manage Cluster and click on Onboard Now
- Provide a name for the cluster and install the agents via the commands on screen



View Clusters

O Search

Inventory

Clusters

Identity

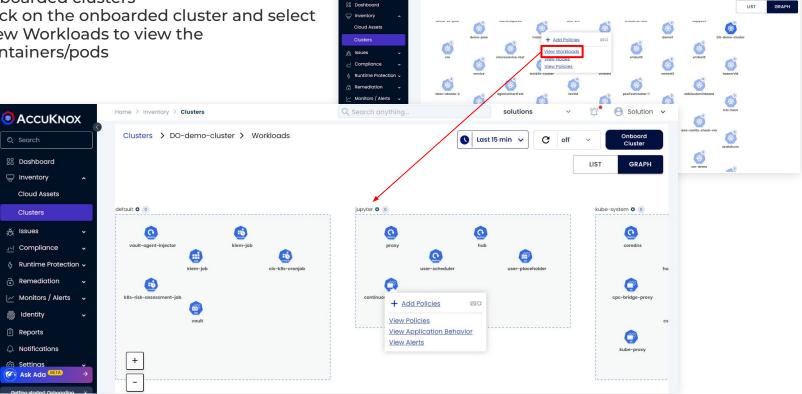
Reports

ැති Settings



■ Last 15 min ∨

- Navigate to Inventory → Clusters to view the onboarded clusters
- Click on the onboarded cluster and select View Workloads to view the containers/pods



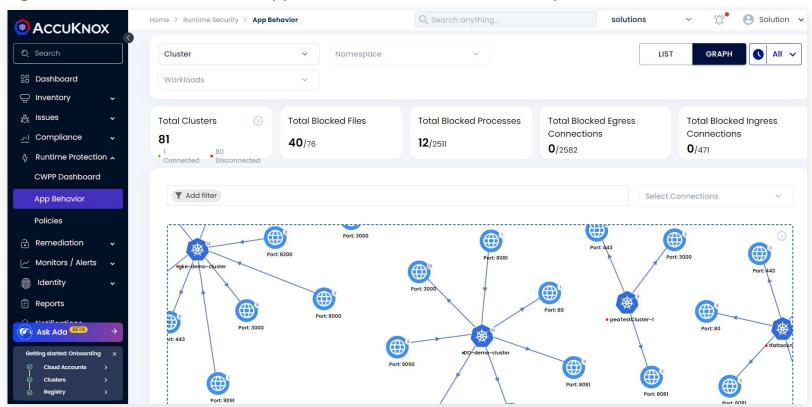
Clusters

ACCUKNOX

Application Behavior - Graph view



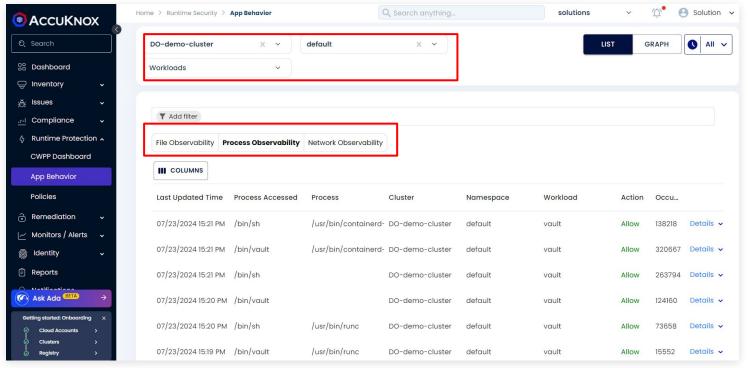
Navigate to Runtime Protection → App Behavior to view a Network Graph



Application Behavior - List view



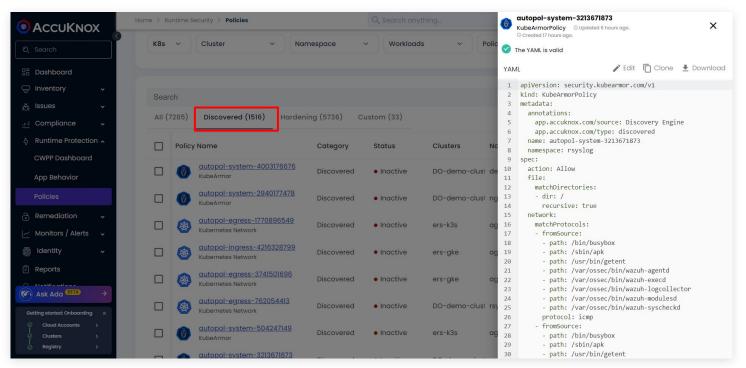
The behavior can be filtered for particular workloads by selecting a specific cluster, namespace or workload. The data can also be provided in a list view including the network, file access and process execution observability.



Policies - Discovered



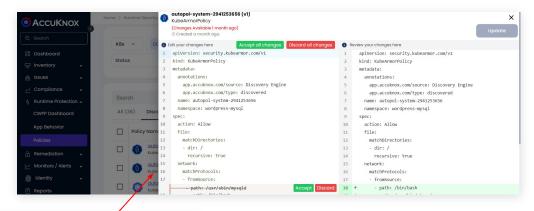
- Navigate to Runtime Protection → Policies and click on Discovered tab
- These discovered policies are generated based on the app behavior identified and whitelist the detected behavior. Click on any of the policies to view the whitelisted behavior

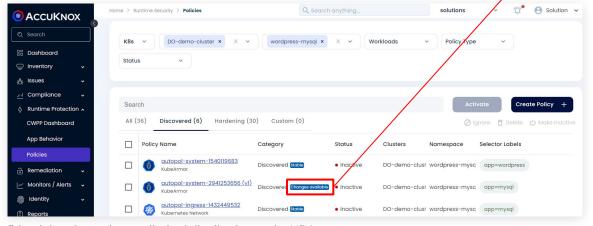


Policies - Zero Trust Journey



- The discovered policies will be applied in a learning/audit mode by default and will only alert for any violations
- Update the policy as required by selecting the Changes Available



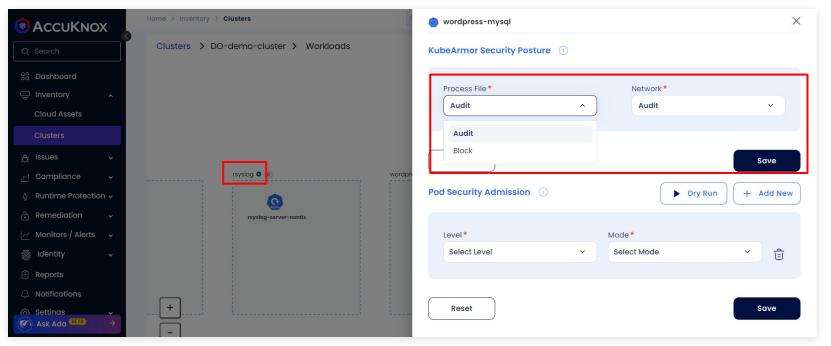


- The discovered policies will be marked stable if no deviation is detected from the policy
- When the policies have become stable, they can be enforced in block mode

Policies - Enforce Zero Trust



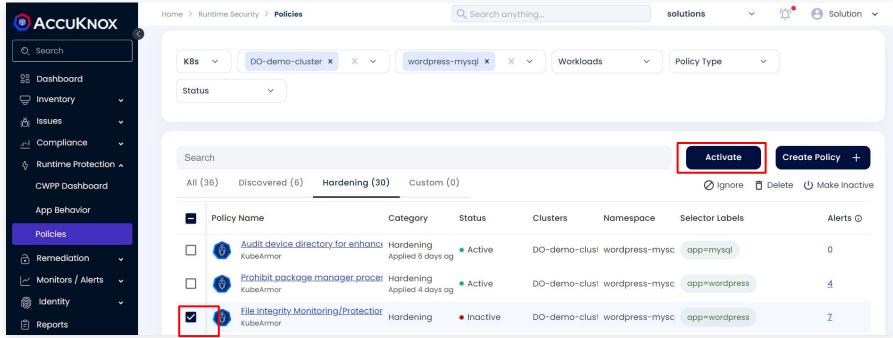
- After applying the stable discovered policies for a namespace, navigate to Inventory → Clusters. Click on the Cluster → View Workloads
- Click on the Cog Icon next to the namespace, set the KubeArmor posture to Block
- When the application is updated, change back to Audit to learn new behavior



Policies - Hardening



- Navigate to Runtime Protection → Policies and click on Hardening tab
- These discovered policies are based on frameworks like MITRE, CIS, NIST, etc... to improve security and compliance
- Select the Policy and click on Activate to apply it



Pod Security Admission (PSA)



 Pod Security admission places requirements on a Pod's Security Context and other related fields according to the three levels defined by the Pod Security Standards:

Level	Description
Privileged	Unrestricted policy, allows for known privilege escalations.
Baseline	Minimally restrictive policy. Allows the default (minimally specified) Pod configuration.
Restricted	Heavily restricted policy, following current Pod hardening best practices.

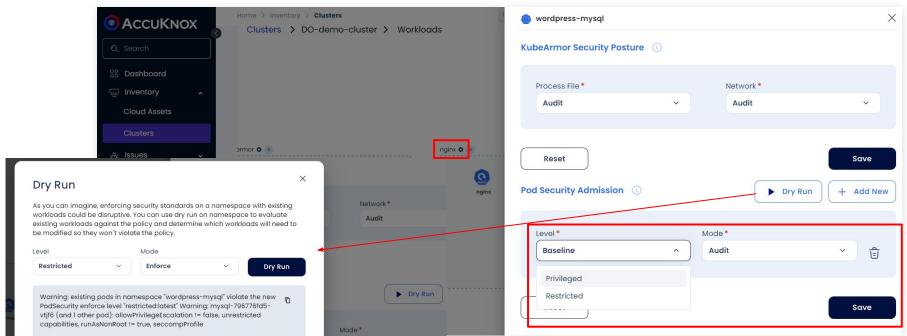
• PSA can be enabled in two modes:

Mode	Description
enforce	Policy violations will cause the pod to be rejected.
audit	Policy violations will trigger an alert but will otherwise be allowed

Enabling Pod Security Admission (PSA)



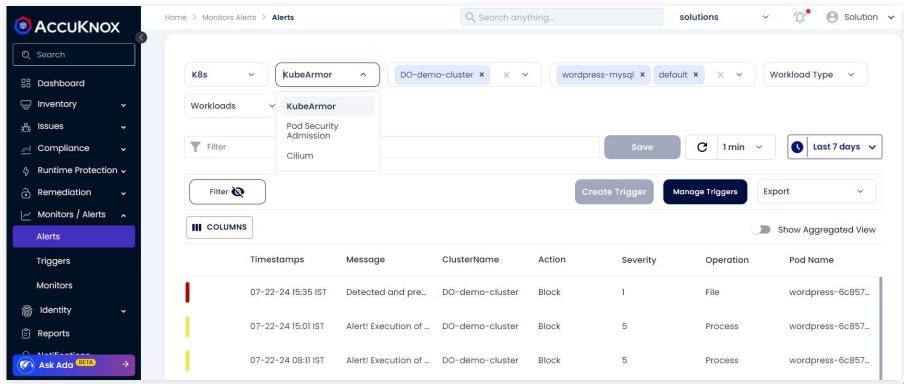
- Navigate to Inventory → Clusters and click on the cluster, select View Workloads
- Click on the cog icon next to the namespace
- Select a Level and Mode for the PSA. In case of Enforce mode, click on Dry Run to view potential effects before applying



Logs and Alerts for Policy Violation



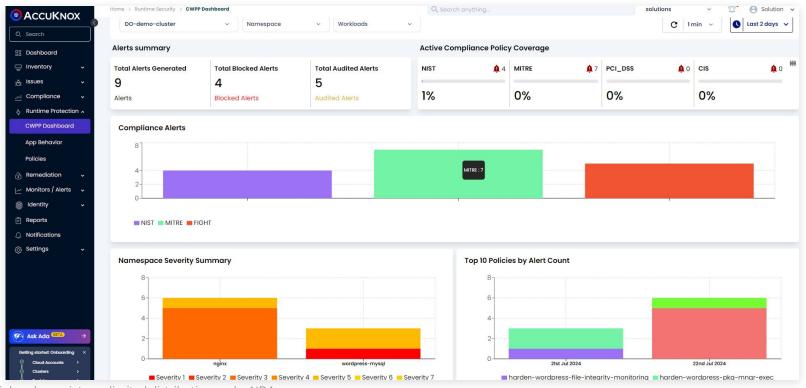
- Navigate to Monitors/Alerts → Alerts to view the alerts generated for policy violations
- Custom Filtering can be performed on this screen and saved for quick filtering



CWPP Dashboard



After applying policies and some alerts have been triggered, navigate to Runtime Protection → CWPP Dashboard and select the cluster for a comprehensive view



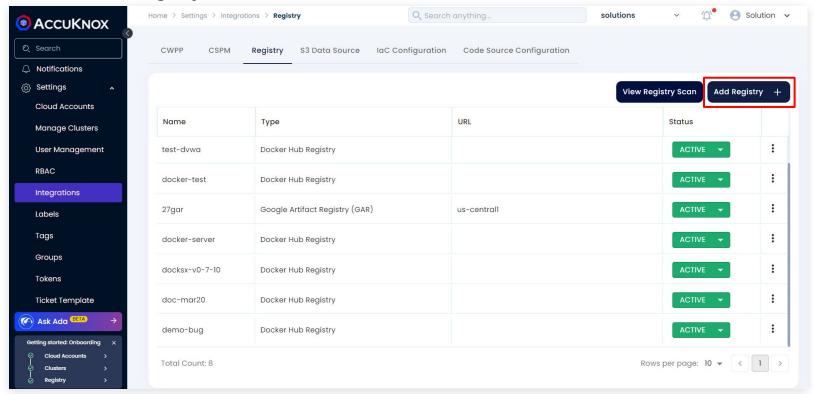


Vulnerability Management for Containers

Onboard Container Image Registries



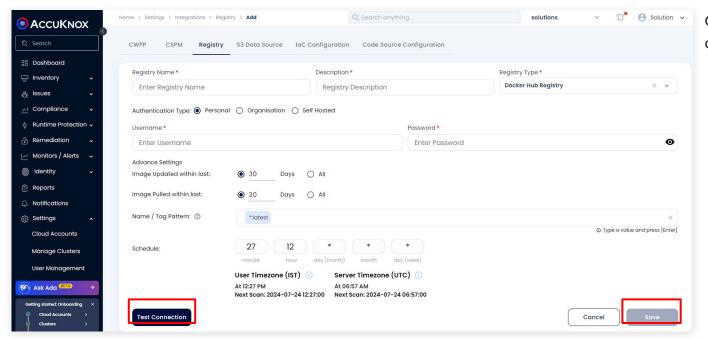
- Navigate to Settings → Integrations → Registry tab
- Click on Add Registry



Onboard Container Image Registries



- Input a Name and Description of the registry. Select the Registry Type
- Provide Auth Credentials as per the selected registry



Optionally, the following can be configured:

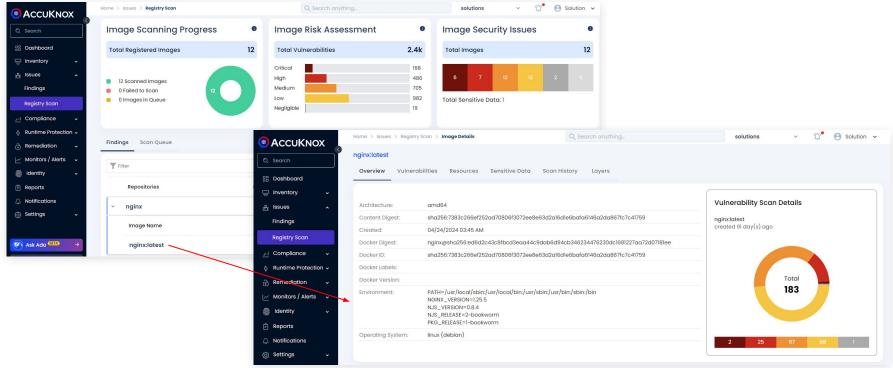
- Images to be scanned via
 - Regex
 - Update date
 - Pull date
- Scan schedule

Click on Test Connection to verify and then Save

View Results



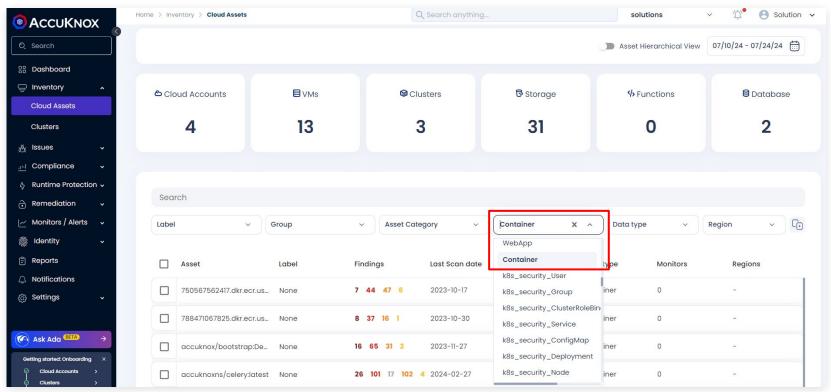
- Navigate to Issues → Registry Scan to view the scanned registries
- Click on any of the images to view detailed scan results



Inventory of Container Images



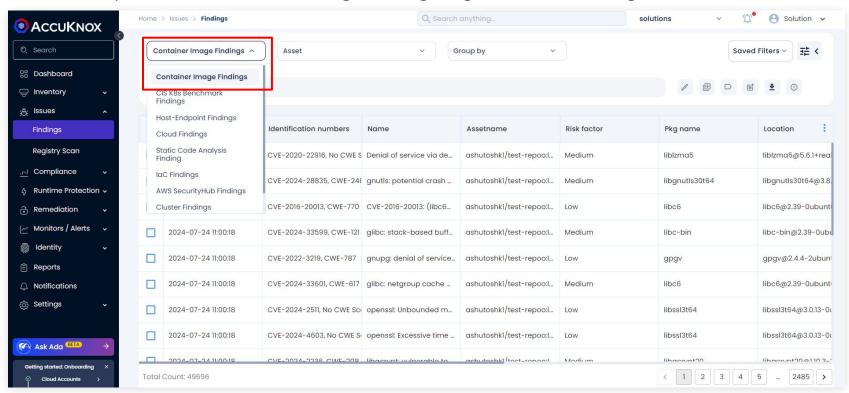
- Navigate to Inventory → Cloud Assets
- Filter Asset Type as Container to view list of all scanned images and associated findings



View all Findings in Container Images



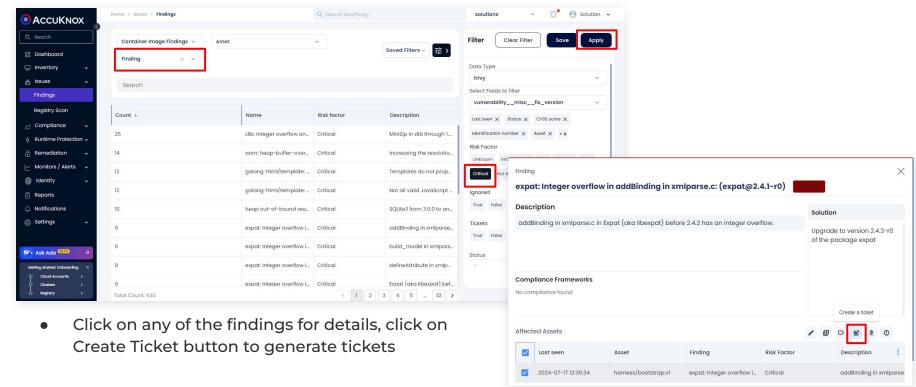
- Navigate to Issues → Findings
- Select top-left filter as Container Image Findings to get a list of all findings



Work on Critical Findings in Container Images



- Select Group By as Findings
- In the Filters tab, select Critical under Risk Factor and click on Apply



ACCUKNOX

Forensics

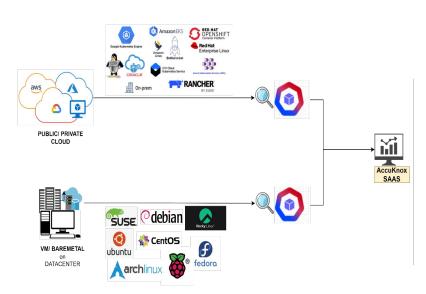
How to perform Enhanced Forensics with eBPF and Splunk? [1]



1- Telemetry Data Collection:

eBPF Instrumentation:

- KubeArmor uses eBPF (Extended Berkeley Packet Filter) to collect real-time data.
- It Captures detailed telemetry, including:
 - File Access Logs: Records of all file interactions (reads, writes, modifications).
 - Network Connections: Details of network traffic, connections, and communications.
 - **Process Execution Logs:** Information about process start, stop, and activity.
- It can generate:
 - Audit based Alerts
 - **Block** based Alerts
 - Drift Detection and Alerts



Telemetry Data Collection



Sample policies for aggregating telemetry events:

1- Process Based Telemetry

```
apiVersion: security.kubearmor.com/v1
kind: KubeArmorPolicy
metadata:
  name: ksp-discovery-process-discovery
  namespace: wordpress-mysql
spec:
  tags: ["MITRE", "Discovery"]
 message: "Someone accessed running
process"
  selector:
    matchLabels:
      app: wordpress
  process:
    matchPaths:
      - path: /bin/ps
      - path: /usr/bin/ps
      - path: /usr/bin/pgrep
      - path: /usr/bin/top
      - path: /usr/bin/htop
   action: Audit
   severity: 5
```

2- File Based Telemetry

```
apiVersion: security.kubearmor.com/v1
kind: KubeArmorPolicy
metadata:
 name: audit-for-system-paths
 namespace: wordpress-mysal
 action: Allow
 file:
    matchDirectories:
    - dir: /bin/
     readOnly: true
      recursive: true
      action: Audit
    - dir: /sbin/
      readOnly: true
      recursive: true
      action: Audit
    - dir: /usr/sbin/
     readOnly: true
      action: Audit
      recursive: true
    - dir: /usr/bin/
      readOnly: true
     recursive: true
      action: Audit
    - dir: /etc/
     readOnly: true
     recursive: true
     action: Audit
  severity: 5
  - NTST
 message: Access to network files detected. Possible
violation of NIST Controls
 selector.
   matchLabels:
      app: mysql
```

3- Network Based Telemetry

```
apiVersion: security.kubearmor.com/v1
kind: KubeArmorPolicv
metadata:
  name: ksp-nist-ac-18-1-network-audit
  namespace: wordpress-mysql
  severity: 3
  tags: ["NIST-800", "AC-18(1)", "Networking",
"Access", "NIST_SA", "NIST_SA-20",
"NIST SA-20-Customized Development of Critical
Components", "SA"]
  message: "Access to network files detected.
Possible violation of NIST Controls"
  selector:
    matchLabels:
      app: wordpress
  file:
    matchPaths:
      - path: /proc/net/tcp
      - path: /proc/net/udp
      - path: /proc/net/icmp
      - path: /proc/net/snmp
      - path: /proc/net/route
      - path: /proc/net/dev
      - path: /var/log/syslog
      - path: /var/log/audit/audit.log
      - path: /etc/hostapd/hostapd.conf
      - path: /etc/network/if-up.d
  action: Audit
```

Telemetry Data Collection



Sample forensics data generated by the policies:

```
ClusterName: default
HostName: gke-cluster-1-default-pool-37f4c896-8cn6
NamespaceName: wordpress-mysql
PodName: wordpress-7c966b5d85-wvtln
Labels: app=wordpress
ContainerName: wordpress
ContainerID: 6d09394a988c5cf6b9fe260d28fdd57d6ff281618869a173965ecd94a3efac44
ContainerImage: docker.io/library/wordpress:4.8-apache@sha256:6216f64ab88fc51d311e38c7f69ca3f9aaba621492b4f1fa93ddf63093768845
Type: MatchedPolicy
PolicyName: ksp-nist-ac-18-1-network-audit
Severity: 3
Message: Access to network files detected. Possible violation of NIST Controls
Source: /bin/ls
Resource: /etc/network/if-up.d
Operation: File
Action: Audit
Data: syscall=SYS OPENAT fd=-100 flags=0 RDONLY|O NONBLOCK|O DIRECTORY|O CLOEXEC
Enforcer: eBPF Monitor
Result: Passed
ATags: [NIST-800 AC-18(1) Networking Access NIST SA NIST SA-20 NIST SA-20-Customized Development of Critical Components SA]
HostPID: 1.275441e+06
HostPPID: 1.275298e+06
Owner: map[Name:wordpress Namespace:wordpress-mysql Ref:Deployment]
PID: 342
PPID: 336
ParentProcessName: /bin/bash
ProcessName: /bin/ls
Tags: NIST-800,AC-18(1), Networking, Access, NIST_SA, NIST_SA-20, NIST_SA-20-Customized Development of Critical Components, SA
```

How to perform Enhanced Forensics with eBPF and Splunk? [2]



2- Data Ingestion into Splunk:

• Data Integration:

 By integrating splunk to Accuknox,
 eBPF-collected telemetry data is feeded into Splunk.

3- Reporting and Response:

• Generate Reports:

 User can create detailed forensic reports highlighting findings and incident impacts.

• Alert Configuration:

 User can set up alerts for immediate notification of suspicious activities or anomalies

