Trend Micro

CLOUD ONE™ – CONTAINER SECURITY

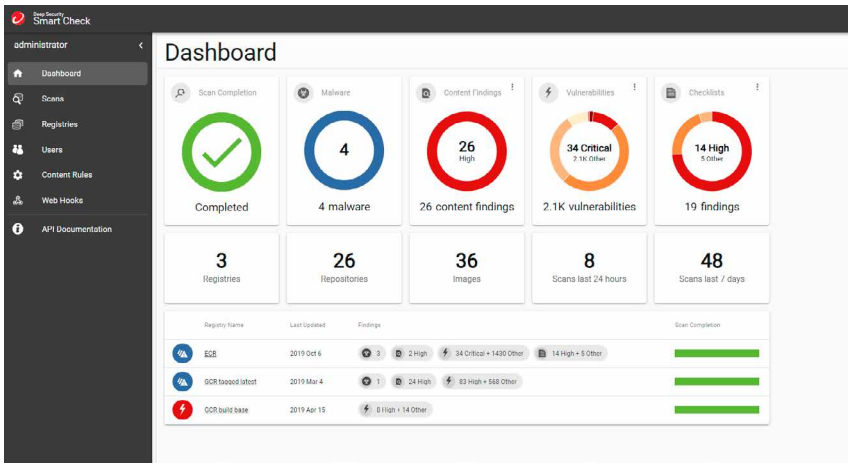
Continuous protection for your container images and registries, automated within your CI/CD pipeline

Cloud-first application development strategies are becoming more prevalent amongst companies looking to improve the speed of deployment and cohesive application ecosystems. However, today's organizations find it hard to manage traditional security solutions with those required by DevOps teams and business units, as they operate with different resources and priorities. On top of that, monolithic approaches to application development are changing how organizations look to transition to cloud, container, and serverless platforms.

The IT analyst and research firm, ESG, recently conducted a survey that indicated 39% of companies are deploying a cloud-first strategy, whereby new applications are only to be built using public cloud services—unless there is a compelling case to deploy on-premises.

With production workloads shifting to cloud-native platforms and DevOps teams adopting security best practices across their build pipelines and cloud-native applications, security solutions need to be designed to succeed across environments (physical, virtual, cloud, containers, and serverless). This provides synergy between IT security and DevOps practices. It also promotes tool consolidation and collaboration of security and compliance requirements, without interfering in continuous implementation/continuous delivery (CI/CD) development cycles.

Trend Micro Cloud One™ – Container Security* delivers automated build pipeline container image and registry scanning. Designed for developers and operations teams, Container Security enables earlier and faster detection of malware, secrets/keys, compliance violations, and vulnerabilities, including those found in open-source code dependencies. Additionally, Container Security provides the ability to detect threats in package manager installed apps, as well as direct installed apps, using Trend Micro's industry-leading rules feed. Container Security helps developers extend even further to the left with Snyk's open-source vulnerability database, offering early detection and mitigation of vulnerabilities in open-source code dependencies. With Container Security, DevOps teams are enabled to continuously deliver production-ready applications and meet the needs of the business—without impacting build cycles.



Key Advantages

Prevent exploits prior to runtime

- Protect against malware, vulnerabilities, and secrets with build-time and registry scanning of container images. Ensure threats are detected before applications are deployed.

Protection optimized for DevOps

- Implement frictionless security early in the CI/CD workflow with security as code and automated protection that won't slow down your DevOps processes.

Full life cycle container protection

- Trend Micro Cloud One™ – Workload Security complements Container Security, providing leading runtime container protection for full life cycle security of you container.

Continuous scanning optimized for DevOps

Container Security helps DevOps teams adopt frictionless security with immediate, continuous scanning for threats, vulnerabilities, secrets, and compliance violations. Container Security also provides dashboard visibility, notifications, and scanning logs for compliance assistance. Optimized for leading container platforms, Container Security can be seamlessly integrated into your existing toolchain.

Automate processes with APIs

Container Security provides complete automated product functionality using a comprehensive catalog of APIs, purposely built to integrate into your CI/CD pipeline. Container Security allows application architects and developers to bake security as code into their build pipeline for container image and registry scanning. Implementing effective security earlier in the software build pipeline helps to achieve consistent results faster in the development cycle and reduces manual security steps and application downtime.

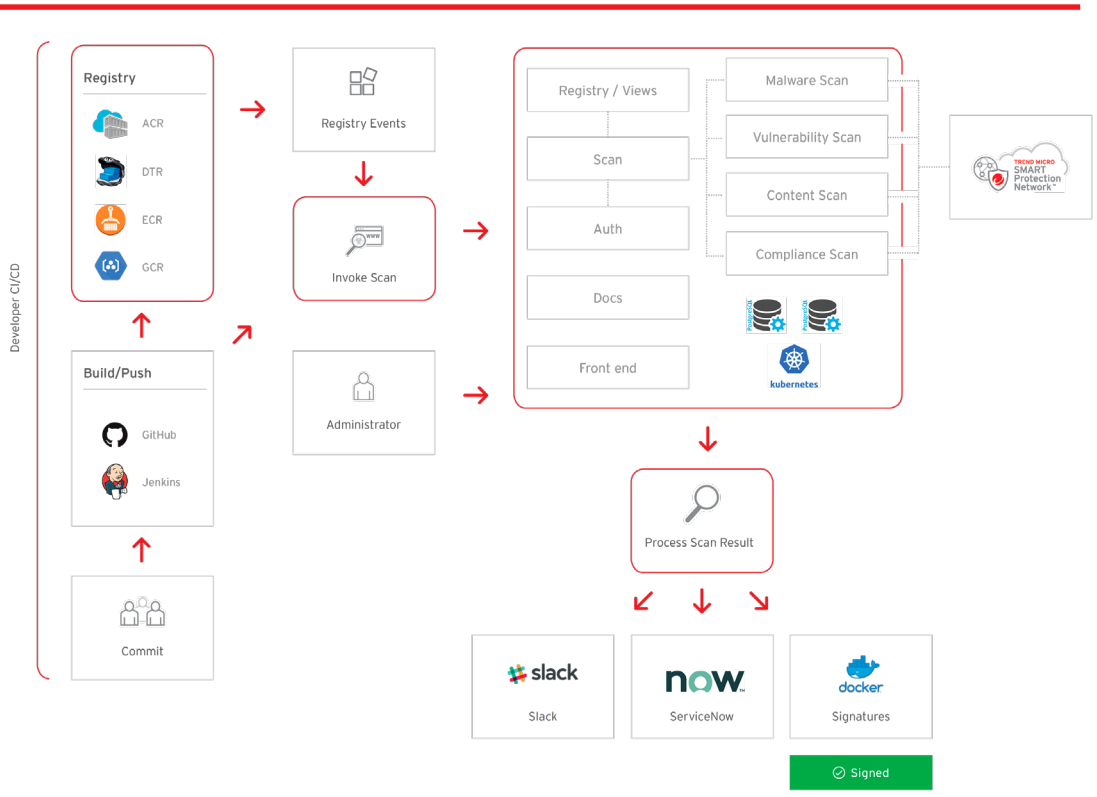
Smart protection

Container Security reduces disruption of development schedules and workflows with unmatched research and detection of threats, as well as non-intrusive security for the CI/CD pipeline. Container Security eliminates the complexity and volume of threats with detection of vulnerabilities, secrets, and zero-day malware using Trend Micro™ Smart Protection Network™.

Compliance-ready protection

Container Security allows security engineers to meet compliance requirements without impacting productivity and interfering in the CI/CD pipeline. What's more, it delivers policy compliance scanning, with customizable policies to meet compliance and governance needs. Container Security also offers detailed log history, allowing for easy reporting and auditing.

Container Security Architecture



CONTAINER SECURITY CAPABILITIES

Advanced image scanning

When scanning, Container Security unpacks each layer of the image and performs detailed scans on the content. Ensure issues are fixed early on and filter out false positives by correlating patch layers with packages that are vulnerable in the same image. Container Security will scan images for:

- Malware detection
- Vulnerability assessment
- Secrets, such as private keys and passwords
- Policy compliance
- Source-code vulnerabilities , utilizing Snyk detection

Continuous protection

Container Security scans can be invoked when images are first built and will continually scan in the registry for new malware and vulnerabilities in production ready images. This ensures your images are secured from the first build and remain protected from future unknown threats. What's more, you can scan your images across multiple cloud environments from a single Container Security deployment.

Automated pipeline security

The full functionality of Container Security is available via APIs for fully-automated integration with your CI/CD pipeline.

- Add registries and target repositories with tags for scanning
- Automatically initiate subsequent image re-scans to check against new vulnerabilities when updates are received
- Invoke scans at any stage of the pipeline using the Container Security API
- Ensure that only clean images proceed through the pipeline and block bad images using image assertion
- Derive results from Container Security, via webhooks, to accommodate specific automated workflows. For example, a Docker® image signing service could be written to sign and promote images based on scan results

Enforce compliance

Container Security provides advanced compliance scanning, with customizable policies to ensure you meet both internal and external requirements. Container Security scan logs support business and audit needs with detailed scan history and results.

Console management and access control

Container Security provides an extensive graphical user interface (GUI) management console that includes a scan coverage dashboard, scan results, and scan target (view) configuration, as well as user and view management for role-based access control (RBAC).

- Content sources: Shows a list of configured registries that are being scanned/monitored
- Active scans: Shows the status of any scan in progress
- Protection coverage: Shows what portion of the total images in a target registry that have been scanned
- Scan alarms: Shows results that include detections of malware, vulnerabilities, and secrets

Scanned image details

Container Security provides DevOps with security details and output, allowing for immediate response to any issues.

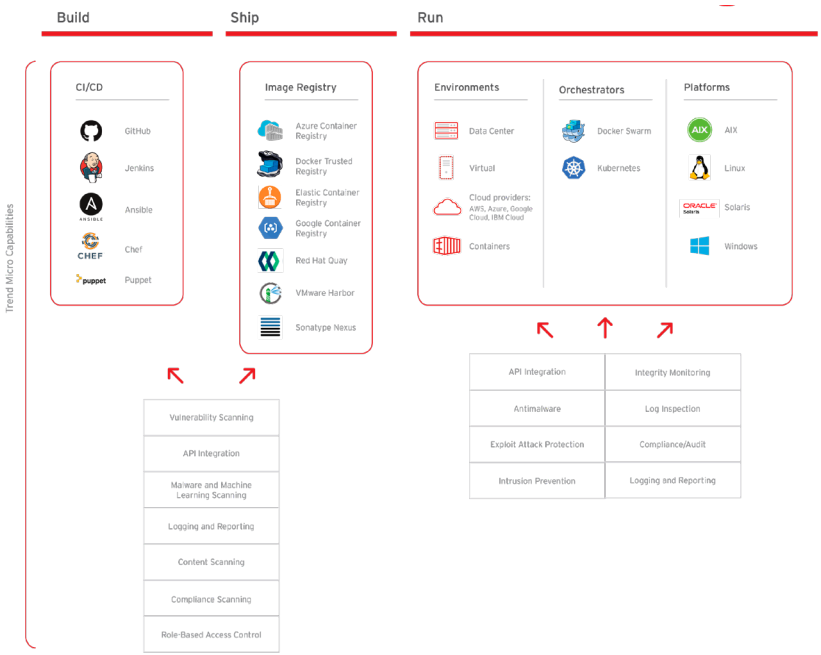
- List of image layers that have been scanned
- Malware flag, including file name and location
- Content findings, including secrets or indicators of compromise (IOCs)
- Vulnerability details, including:
  - The number of common vulnerabilities and exposures (CVEs) by L/M/H CVSS rating
  - Layer and package information for each CVE
  - CVE and link to CVE file
  - Fix/patch version

World-class threat feed

Container Security receives up-to-date threat feeds from both private Trend Micro sources and public sources for scanning performance.

- Provided by Trend Micro via the Trend Micro™ Smart Protection Network™ infrastructure for malware detection
- Machine learning algorithms to detect zero-day threats

WORKLOAD SECURITY COMPLEMENTS CONTAINER SECURITY BY PROVIDING LEADING CONTAINER HOST PROTECTION OF THE OPERATING SYSTEM



Protection across the container life cycle

Complementing Container Security image scanning capabilities, Workload Security provides advanced protection for runtime containers, with real-time malware protection, container vulnerability shielding, container traffic inspection, as well as protection for your container host, Kubernetes® layers, and more.

CONTAINER SECURITY ARCHITECTURE

Installation

Container Security is supported on the Kubernetes platform within a Kubernetes cluster.

- Public: https://github.com/deep-security/smartcheck-helm

Container Security users are given access to a shell script and a suite of Kubernetes resources in the Container Security GitHub® repository. The images that comprise the application are available in Docker Hub.

DEPLOYMENT AND INTEGRATION

Container Security provides a valuable step in your CI/CD pipeline.

It scans your container images and your preferred registry, such as Docker. All Container Security operations are available through a documented collection of APIs to simplify integration into your CI/CD pipeline. Its APIs can be invoked automatically by your CI/CD system to start scans when an image is pushed to a private Docker registry, for example. Scan results are also available through the API.

The Container Security API includes a webhook facility that allows CI/CD components to register. This lets you to receive notifications of scan events, such as "scan completed", giving you the ability to automate workflows.

System requirements:

- Kubernetes 1.8.7 or higher
- Helm/Tiller 2.8.1 or higher
- Docker 17.06 or higher
- OpenShift 3.11.82

Supported registries

Container Security supports scanning in any registry that supports the Docker V2 API and allows catalog listing.

- Amazon Elastic Container Registry (ECR)
- Azure Container Registry (ACR)
- Docker Trusted Registry (DTR)
- Google Container Registry (GCR)
- VMware Harbor
- JFrog Artifactory
- Sonatype Nexus
- Red Hat Quay Container Registry

For more information visit trendmicro.com/containersecurity

Container Security includes an administrator console that provides:

- A dashboard (system-wide summary of scan information, including metrics)
- A view summary (including scan results and metrics for the view)
- User management
- Registry and view configuration
- Access to scan results
- Scan history

BUILD SECURE. SHIP FAST. RUN ANYWHERE.

Ready on:

Kubernetes and Docker: Container Security deploys as a helm chart for easy installation within a Kubernetes cluster, and provides advanced build-time, as well as registry image scanning for malware, vulnerabilities, secrets, and policy compliance. Workload Security will provide additional protection for containers at runtime, as well as monitor for changes in container platforms, orchestration tools, files, and processes, ensuring full protection across the container life cycle.

Amazon Web Services (AWS): Container Security deploys to Amazon Elastic Container Service for Kubernetes (EKS) for container image scanning, and with the addition of Workload Security, you get runtime container and Amazon Machine Image (AMI) workload protection across your AWS environment.

Microsoft® Azure™: Container Security deploys to Azure Kubernetes Service (AKS) for container image scanning, with additional runtime container and Azure virtual machine (VM) protection available through Workload Security.

Google Cloud™: Deploy Container Security to your Google Kubernetes Engine (GKE) for build pipeline image scanning, with additional runtime container and VM instance protection available through Workload Security. Deploy Container Security in GKE to provision scanning across multiple cloud environments.

Red Hat® OpenShift: Container Security can be deployed into your OpenShift environments and secure your applications with advanced scanning during the software build pipeline. Runtime containers can be secured through Container Security (on supported hosts) to ensure full life cycle container protection.

VMware® Cloud™: Workload Security's strong integration across VMware® services ensures consistent protection across your virtual and cloud-based workloads, including containers, with broad platform and kernel support, automated policy management, and hypervisor-based security.

File Storage Security is part of Trend Micro Cloud One™, a security services platform for organizations building in the cloud, which also includes:

- **Trend Micro Cloud One™ – Workload Security:** Runtime protection for workloads (virtual, physical, cloud, and containers)
- **Trend Micro Cloud One™ – File Storage Security:** Security for cloud file and object storage services
- **Trend Micro Cloud One™ – Application Security:** Security for serverless functions, APIs, and applications
- **Trend Micro Cloud One™ – Network Security:** Cloud network layer IPS security
- **Trend Micro Cloud One™ – Conformity:** Cloud security and compliance posture management

**Trend Micro's container security offering integrates with Snyk and includes both Deep Security™ Smart Check™ – Container Image Security and Trend Micro Cloud One™ - Container Security.*

TREND MICRO™

Securing Your Connected World

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