praetorian

DATASHEET

CI/CD
Security Assessment

Your Challenge

As developers push the limits of speed and agility, they increasingly rely on Continuous Integration and Continuous Delivery (CI/CD) pipelines. These CI/CD pipelines often require access to your most sensitive assets — your cloud environments, source code, service account credentials, and secrets necessary to deploy production applications.

Sophisticated attackers increasingly recognize CI/CD pipelines as vulnerable links in an organization's supply chain. To stay ahead, you need a security partner leading the charge in CI/CD security — someone who can identify and address vulnerabilities in your pipelines before attackers exploit them.

Our Solution: Capabilities Overview

To address this challenge, we have harnessed our extensive experience from advanced Red Team assessments, CI/CD vulnerability research, and cloud/application security to emulate attackers performing the highest CI/CD exploitation levels.

Praetorian's CI/CD security experts excel at discovering material risk. They turn seemingly benign vulnerabilities into real-world attack paths, demonstrating how attackers or malicious insiders could execute large-scale internal or external supply chain attacks by exploiting your CI/CD pipelines.

We offer two assessment approaches tailored to meet your specific needs:

CI/CD Attack Path Mapping

We collaborate with you to identify the assets in your CI/CD environment that pose the greatest risk to your organization if compromised. From there, we perform hands-on testing across various user roles, revealing pathways attackers could exploit to compromise your critical assets through CI/CD abuse.

Targeted CI/CD Security Assessment

If you are concerned about a specific class of users being able to compromise a certain critical asset, we use a targeted approach to identify risks related to your concerns. Leveraging access as one of the specified user roles, we test whether they can exploit your CI/CD pipelines to compromise your highest-valued assets.

We will work as a strategic partner during the scoping process to determine which approach is right for you.

Both approaches are objective-driven. A simplified example CI/CD environment and attack path is depicted below. (Lucid link)

Example CI/CD Process

Source

Source code of Critical Asset Stored in GitHub

Build

Builds and Tests Run o Container in AWS EKS via GitHub Actions Workflow

Test

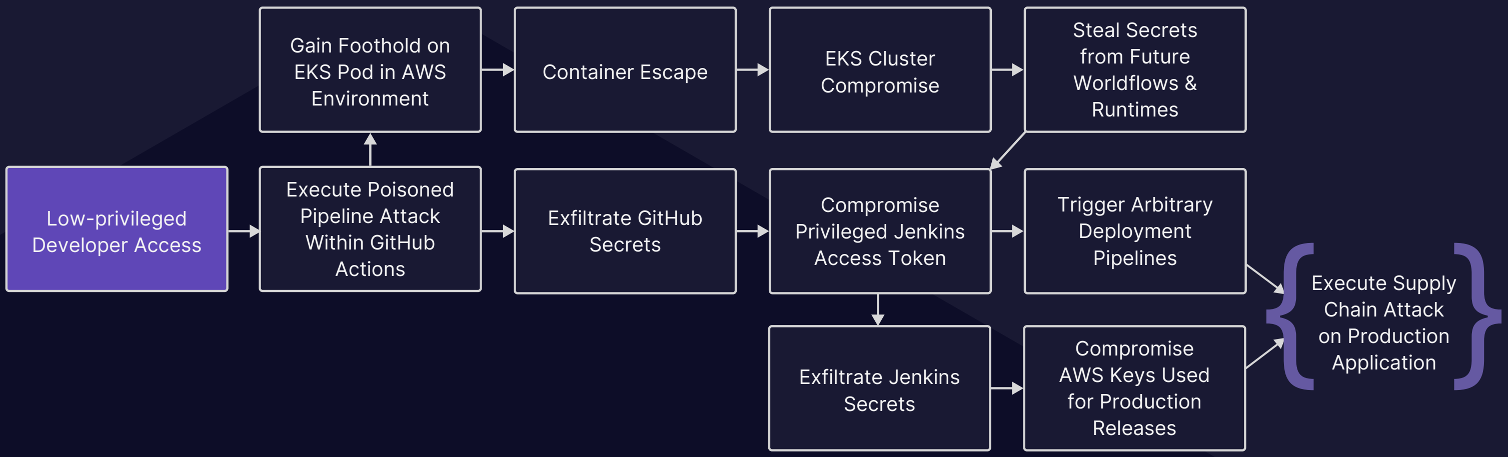
PRs are Submitted From Feature Branches, Reviewed, and Merged to Master

Deploy

Merging to Master Triggers Jenkins Pipeline Which Performs Production Application Deployment to AWS

Example Attack Path (Simplified)

Client Objective: As a low-privileged developer, demonstrate paths to execute a supply chain attack on our public-facing production application


Low-privileged Developer Access
Execute Poisoned Pipeline Attack Within GitHub Actions
Gain Foothold on EKS Pod in AWS Environment
Container Escape
EKS Cluster Compromise
Steal Secrets from Future Worldflows & Runtimes
Exfiltrate GitHub Secrets
Compromise Privileged Jenkins Access Token
Trigger Arbitrary Deployment Pipelines
Exfiltrate Jenkins Secrets
Compromise AWS Keys Used for Production Releases
Execute Supply Chain Attack on Production Application

Potential Areas of Exposure

Secrets in Source Code

Poisoned Pipeline Attack

GitHub Secrets Exfiltration

Foothold on Pod in AWS EKS

Compromise Jenkins Token

Container Escape

Steal Secrets From Future Workflow at Runtime

EKS Cluster Compromise

Other examples of past objectives include:

Risk-Informed

Identify potential pathways to initiate a supply chain attack targeting core, public-facing applications.

Exploit CI/CD pipelines to compromise privileged cloud environments or Active Directory domains.

Customer-Informed

With write access to a specific repository, escalate privileges to platform administrator to compromise the main infrastructure-as-code repository.

Leverage developer access to a repository in the staging DevOps environment to infiltrate the production environment.

Why Praetorian

Praetorian brings over a decade of experience conducting offensive security engagements, and the resulting adversarial perspective underpins everything we do. Our highly technical CI/CD security engineers stem from our Advanced Red Team practice and have a background in multiple security aspects, which is essential to understanding the complex ecosystem of an organization's CI/CD environment. Armed with this understanding, these engineers analyze discrete components of the supply chain to determine which attack vectors an advanced attacker could realistically exploit.

Our engineers understand the specific business risks each of our clients faces and explore the business risk potential of every vulnerability they find. By combining unique vectors we identify from CI/CD pipelines with traditional offensive security, we can thoroughly test the entire CI/CD lifecycle.

Our CI/CD services are set apart from fully automated or commercial tool-dependent competitors. We focus on our clients' specific needs and critical assets to help them achieve their goals and securely realize the benefits of CI/CD at scale. We test your organization's security assumptions and provide factual information regarding the current security posture. We want your developers to maintain their speed and agility without exposing your organization to compromise.

Key Benefits

Learn about cutting-edge TTPs sophisticated threat actors use and where they can impact your

Identify and **demonstrate** key sources of risk in the supply chain to inform future security investment and planning.

Understand the root causes of vulnerabilities and provide recommendations tailored to your business needs.

Who Needs This Service

Organizations concerned about their critical applications being targeted by supply chain attacks.

Enterprises seeking to learn about CI/CD security, identify gaps in their CI/CD security posture, and uncover the associated risks.

Security teams looking for a demonstration of material risk to justify new security initiatives, budget cycles, or recent security investments.

Mature organizations who have locked down traditional attack surfaces and are seeking to protect their organization from sophisticated attackers.

Deliverables

Executive Summary

Concise explanation of engagement goals, significant findings, business impacts, and strategic recommendations

Upon request, a letter of attestation

Engagement Outbrief Presentation

Similar to the executive summary, presented to the audience of your choosing

Technical Findings Report

Detailed description of issues and the methodology used to identify them, as well as an impact assessment for each