Google Cloud

Google Cloud Whitepaper
December 2019

Take command of your security in the cloud

How to use Cloud Security Command Center to prevent, detect, and respond to threats in your Google Cloud environment

Google Cloud

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Introduction

How to use Cloud Security Command Center to prevent, detect, and respond to threats in your GCP environment

Traditionally, organizations have looked to the public cloud for cost savings, or to augment private data center capacity. However, with the cost of data breaches and the complexity of managing heterogeneous infrastructure constantly on the rise, organizations are now looking to the public cloud for security. After all, providers can invest more in people and processes to deliver secure infrastructure and applications than most individual organizations currently can.

Google Cloud provides a modern security infrastructure from the user, to the device, to the application, to the platform. This includes:

- A secure global platform to build and run applications with GCP
- Applications to collaborate in a secure environment and protect data with GSuite
- A single console to easily manage users, devices, and apps with Cloud Identity
- Secure endpoints and access platforms with Chrome and Android

At Google Cloud, we're committed to doing our part in keeping your data secure, but security is a shared responsibility and requires collaboration. Part of how we help you manage your portion of that responsibility is by providing best practices, templates, products, and solutions. This eBook will focus on Cloud Security Command Center (Cloud SCC), a built-in security control that can help you prevent, detect, and respond to threats in your GCP resources.

In this eBook, you'll find in-depth explanations of how to use Cloud Security Command Center and the security products that integrate into it. We take you step-by-step through important security issues—like how you can identify security misconfigurations or respond to threats in your logs—so you can take action before these issues result in business damage, data loss, or worse. We hope you enjoy this eBook, and look forward to talking with you about how Cloud Security Command Center can help you improve your cloud security posture.

-**Jess Leroy**, Director of Product Management

Improve your cloud security posture with Cloud Security Command Center

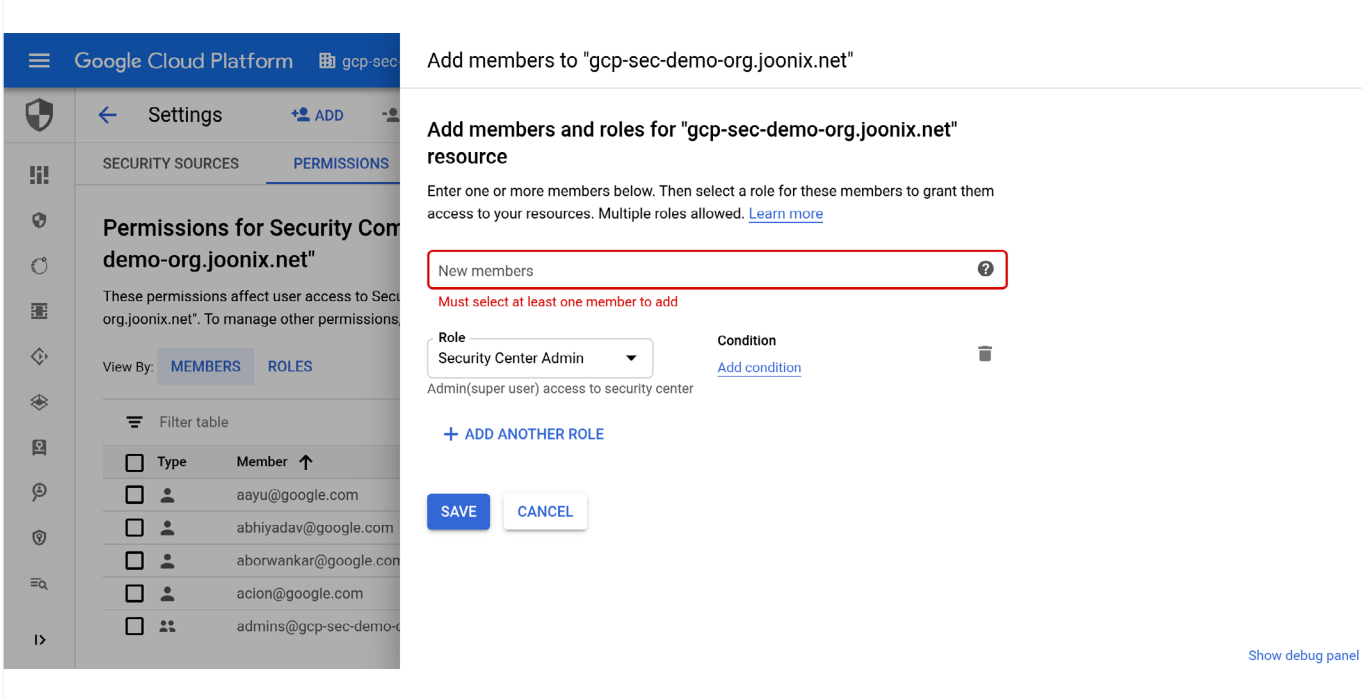
One of the great benefits of cloud-based services is how easy they are to deploy. However, this ease of deployment can make it so your organization isn't always aware of exactly what services you're running.

When you combine this with the increasing volume of cyber attacks, it becomes clear that you need to be able to see what resources you're running, the vulnerabilities and threats present, and how to fix them before they can result in damage or loss.

Cloud Security Command Center (Cloud SCC) helps you with all of these tasks by providing a centralized dashboard to help you prevent, detect, and respond to threats in your GCP environment. Once you've installed Cloud SCC, there are a number of great features available that you can use to improve your security posture in many ways, as we'll see in the other chapters of this book. Let's first get Cloud SCC ready to go, in five easy steps.

Step 1 / Set up Cloud IAM permissions

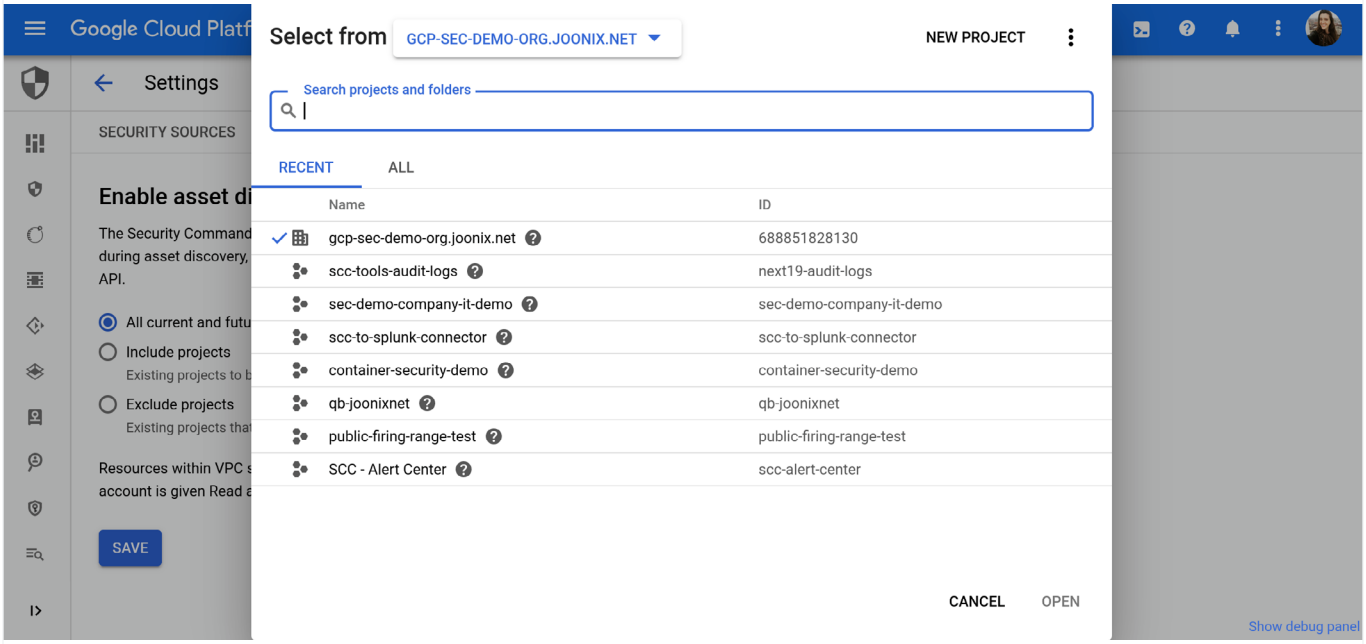
To use Cloud Security Command Center, someone in your organization needs to have the Security Center IAM role. This role provides access to Cloud SCC and ensures that users with the role assigned have the right level of permissions to complete their tasks.



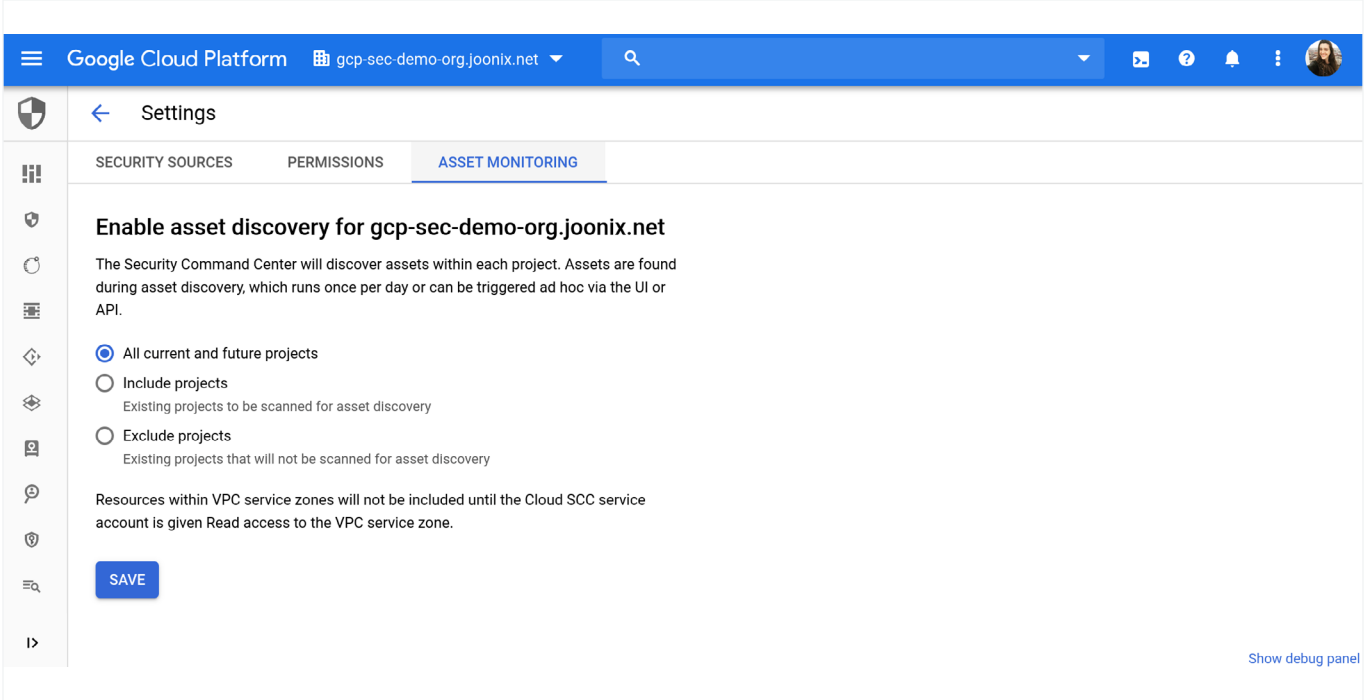
Set up Cloud IAM permissions

Step 2 / Enable Cloud Security Command Center

Cloud Security Command Center is not enabled by default, giving you the flexibility to choose where you want to use it. We recommend that you enable Cloud SCC for organizations running development, testing, and production workloads.



To enable Cloud SCC, you'll also need to turn on Asset Monitoring. This allows Cloud SCC to discover what GCP assets—our term for resources—you're running in Google Cloud.

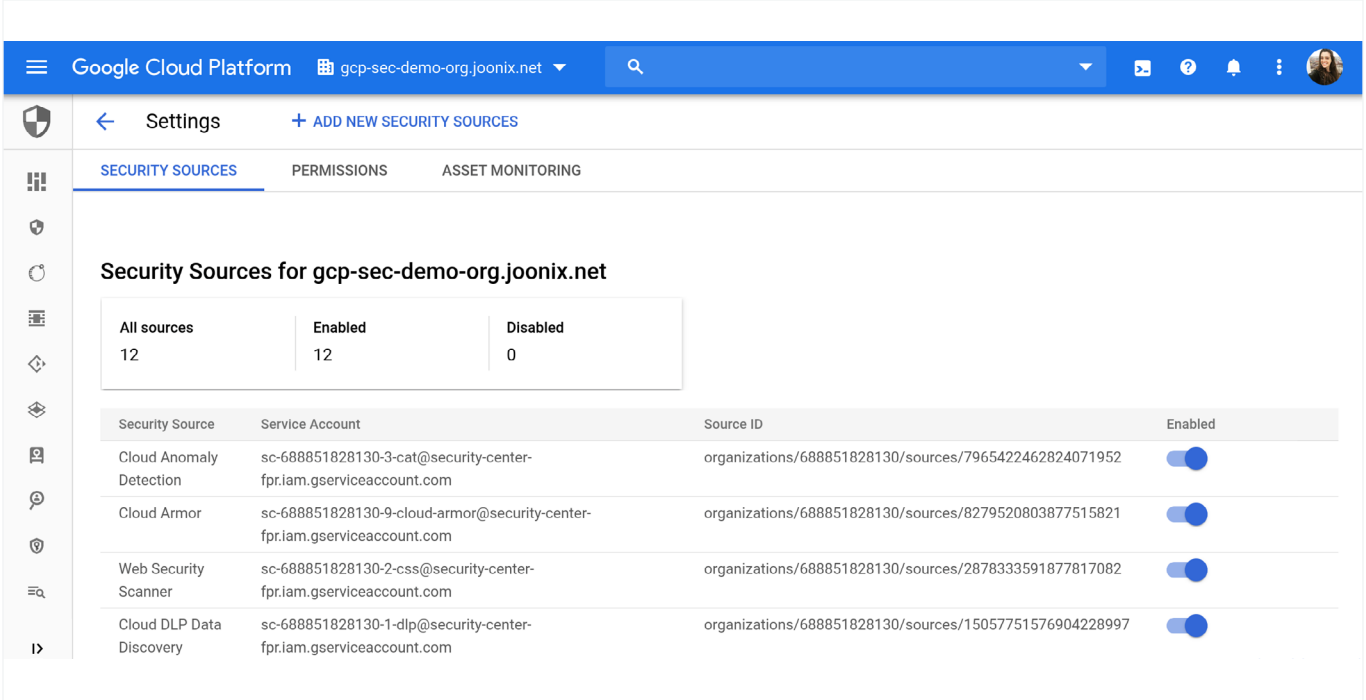


Turn on Asset Monitoring

Step 3 / Turn on Security Sources

Once you've enabled Cloud SCC, you can toggle on our built-in features and products to see the security state of your GCP assets. These features and products can surface information such as misconfigured identity and access management policies, leaked credentials, or what storage buckets contain sensitive and regulated data.

We recommend that you turn on all our built-in capabilities and products to increase your visibility into misconfigurations, vulnerabilities, and threats in your environment.

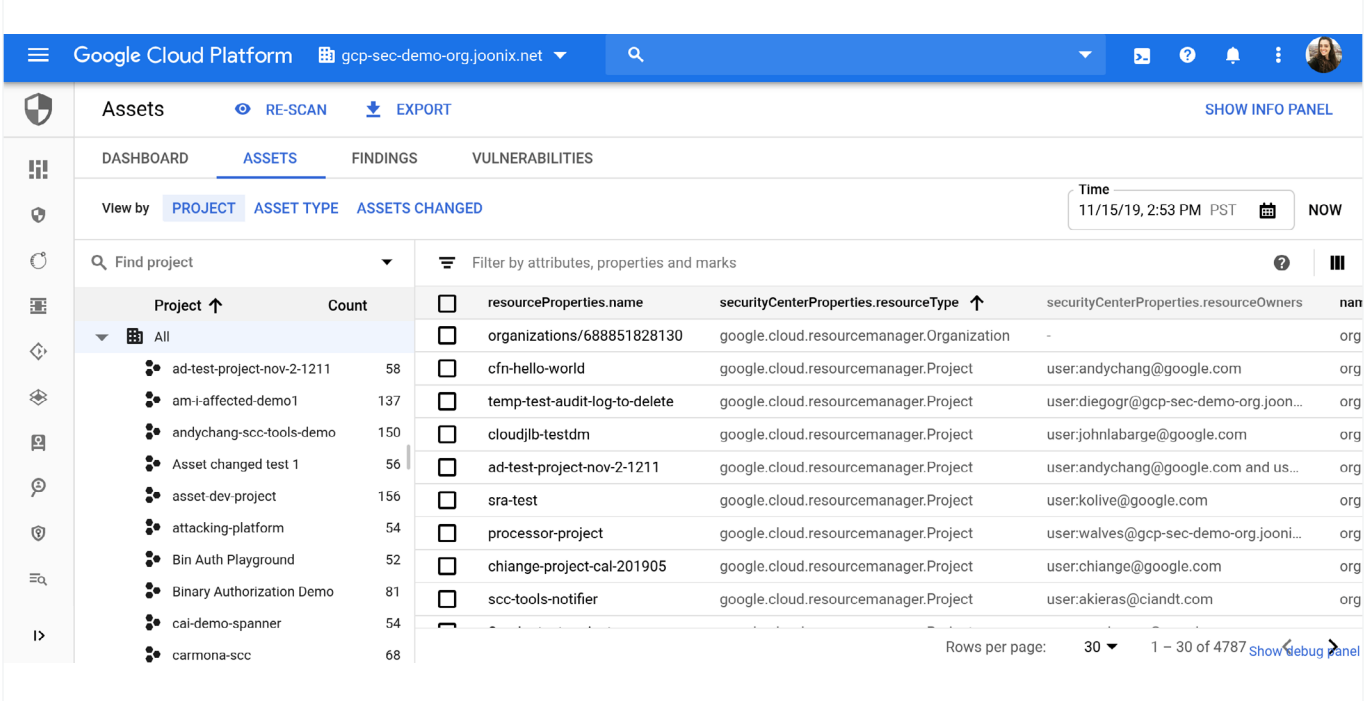


Enable Cloud SCC

Step 4 / View your security state by Assets

Now that you've turned on Cloud Security Command Center, Asset Monitoring, and Security Sources, you can see the security state of your GCP assets. Looking at your security state by project within Assets lets you see issues related to a specific project.

You can also view your security state by asset type. This lets you see the state of your organization at a specific time, or check out which assets have changed, so you can look for unauthorized modifications.

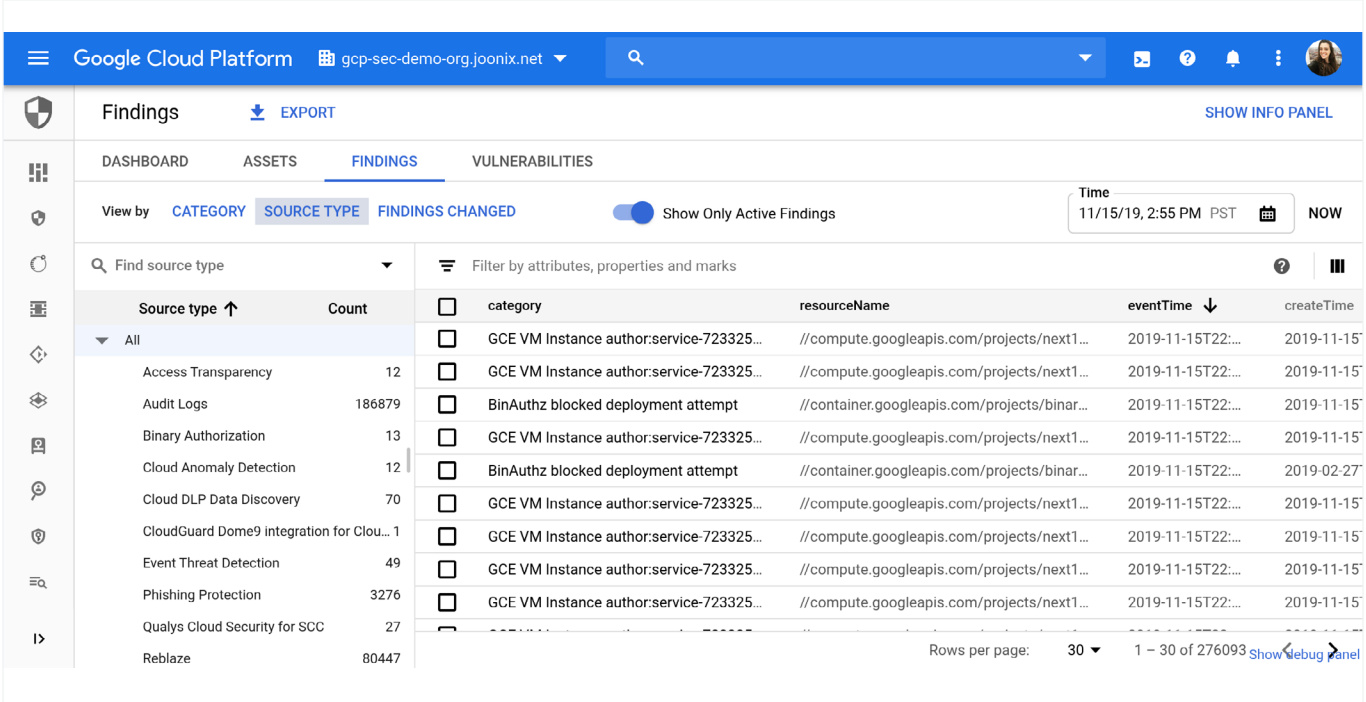


View your security state by asset type

Step 5 / View your security state by Findings

Findings are what Cloud SCC has discovered about your assets or resources.

You can filter your findings by type, the issue Cloud SCC discovered with your resource, or by source (the feature or product that found the issue). You can also filter findings based on time, so you can quickly gain insight into all the security issues surfaced at a particular time.



View your security state by findings

How to use Cloud SCC

Watch the video now.

Find and fix misconfigurations in your Google Cloud resources with Security Health Analytics

When you deploy new Google Cloud services, you need visibility into what's running and how you can improve their security. If you don't have that visibility, your organization might not be aware of risky misconfigurations that leave you susceptible to attacks.

To help you find misconfigurations, and respond quickly to them, we developed Security Health Analytics, and built it into Cloud SCC. Security Health Analytics gives you visibility into misconfigurations in your GCP resources and provides actionable recommendations for how to fix them. In this chapter, and the accompanying video, we'll take a closer look at Security Health Analytics.

Step 1 / Enable Security Health Analytics

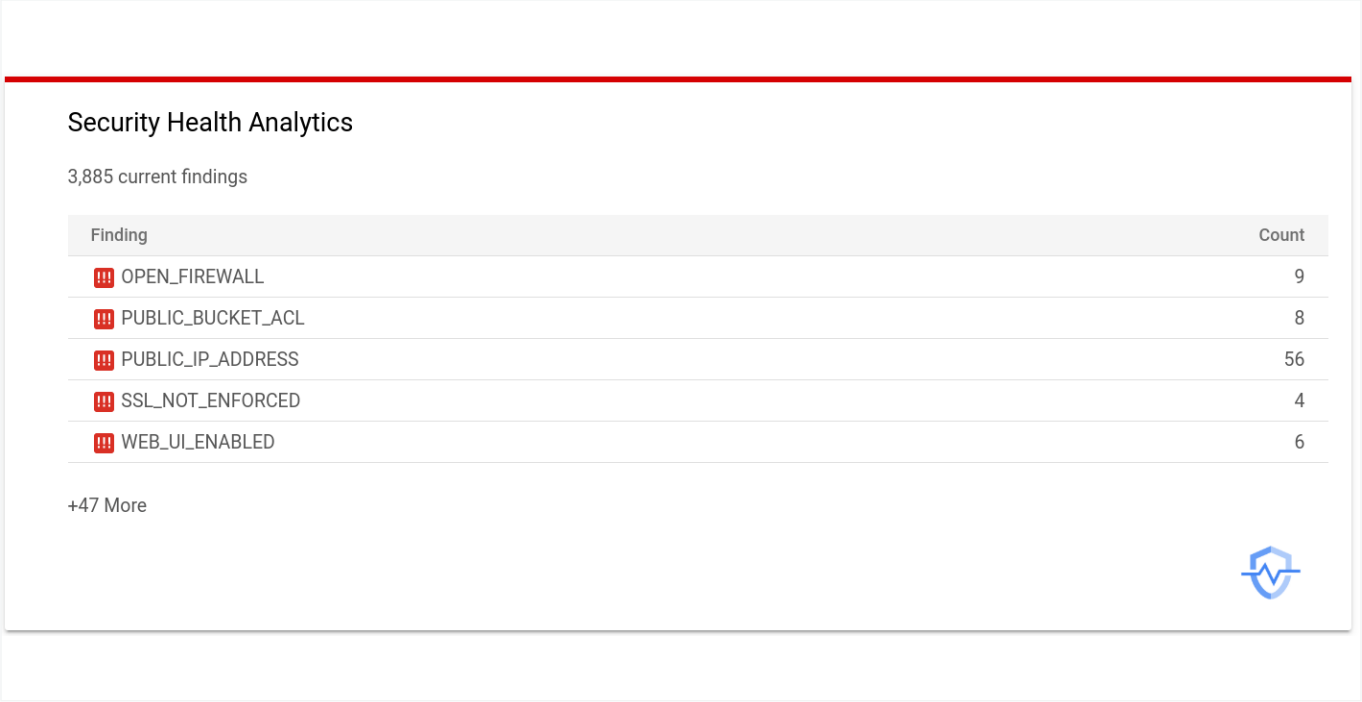
Since Security Health Analytics is built in to Cloud SCC, to use it you just need to have one of two roles: the Organization Administrator Cloud Identity and Access Management (Cloud IAM) role or the Security Center IAM role.

Step 2 / View different types of misconfigurations

The Security Health Analytics card lists its findings and the types of misconfigurations present in your environment, and can be accessed directly from the Vulnerabilities dashboard in Cloud SCC. And there is a long list of vulnerabilities Security Health Analytics can identify, including:

- Firewall rules that are configured to be open to public access
- Cloud Storage buckets that are publicly accessible
- Instances configured with public IP addresses
- Instances with SSL not being enforced
- Resources where the Web UI isn't enabled

You can find the full list of potential findings in the documentation.

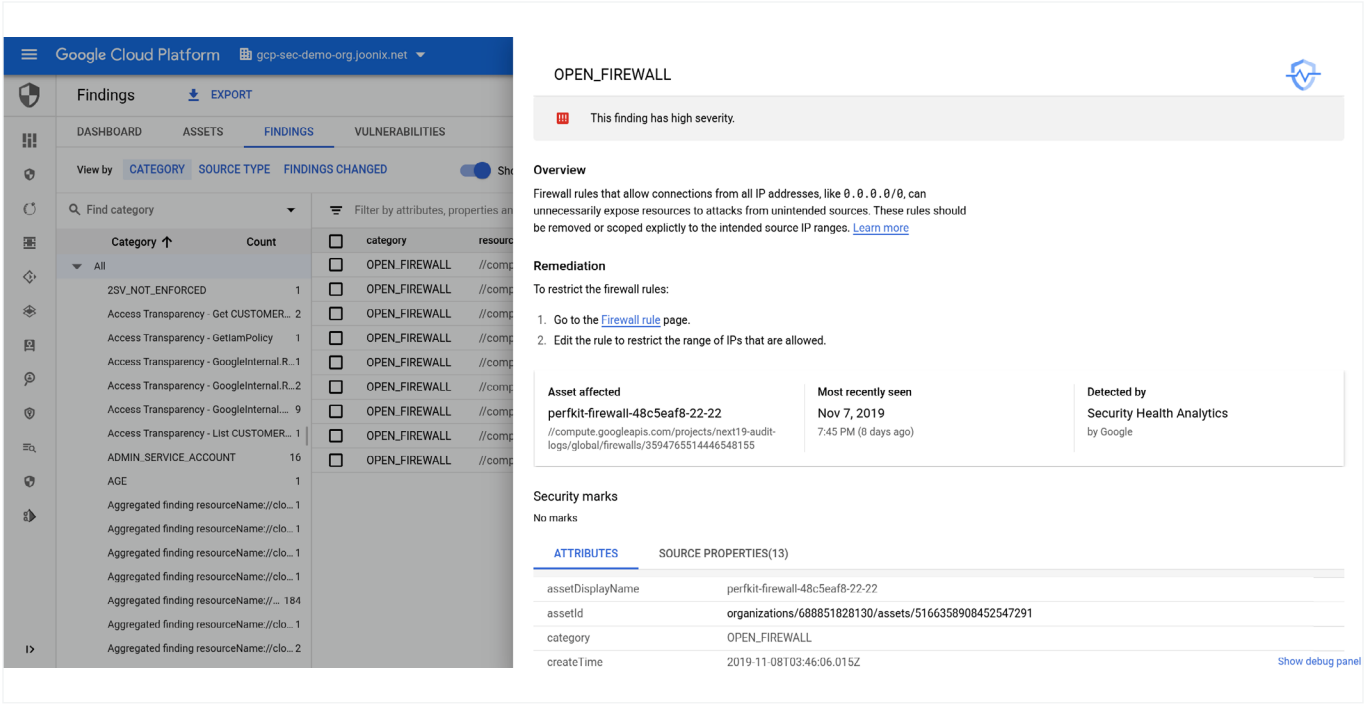


View different types of misconfigurations

Step 3 / Take action on a misconfiguration

When you click on a finding, you get a short description of the issue, as shown in the diagram below. This description includes the GCP asset or resource impacted, how it was detected, an overview of the issue, and even a step-by-step recommendation on how to fix it.

The recommendation, under the “Remediation” heading, provides a link to the impacted resource. Once there, all you need to do is follow the recommendations and click save.



Take action on a misconfiguration

How to use Security Health Analytics

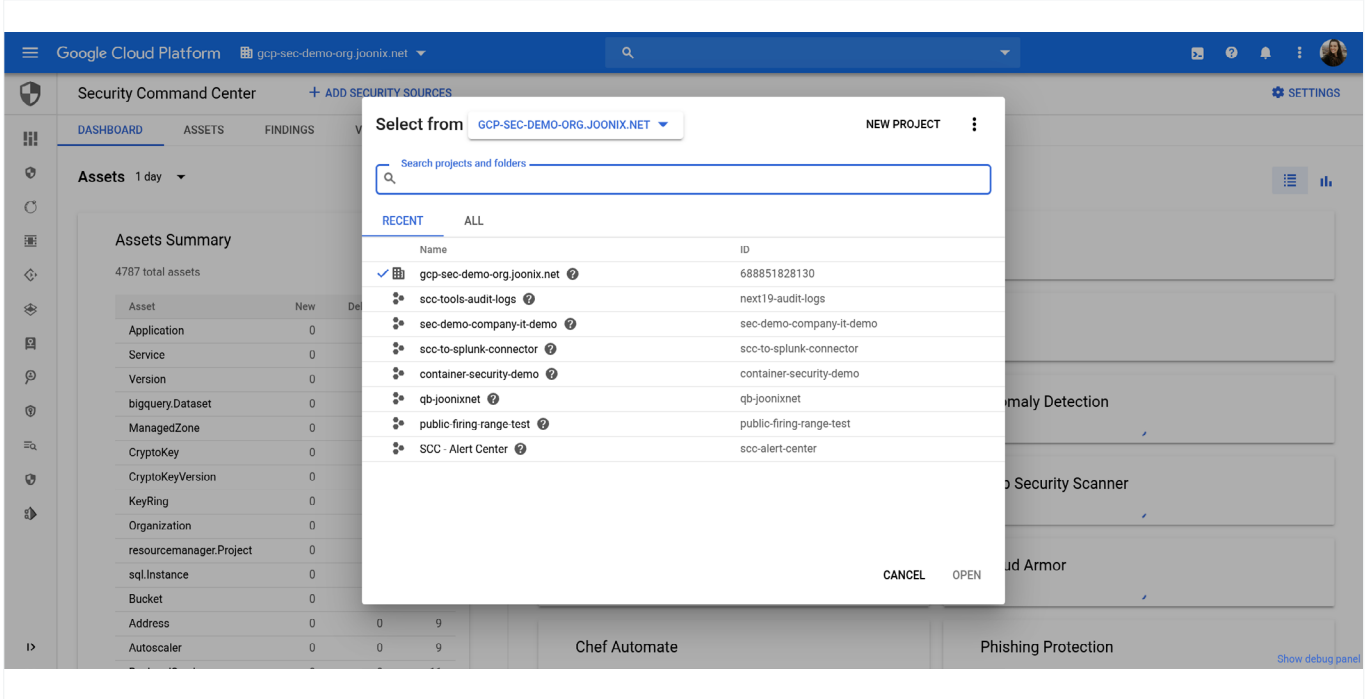
Watch the video now.

Catch web app vulnerabilities before they hit production with Cloud Web Security Scanner

Today's web applications are developed at a rapid pace, and that pace is only getting faster. This makes it difficult to know if your web apps have vulnerabilities and how to fix them before they hit production. We recognize this problem, and it's why we developed Cloud Web Security Scanner, a built-in feature in Cloud SCC that allows you to detect vulnerabilities—including cross-site scripting or outdated libraries—in GKE, Compute Engine, and App Engine. In this chapter, we'll walk through how to get started with Cloud Web Security Scanner so you can start reducing your web app vulnerabilities.

Step 1 / Enable Cloud Web Security Scanner

Cloud Web Security Scanner isn't turned on by default, so the first step is to enable it. In the Google Cloud Platform Console, visit the Cloud Security Command Center page, choose an organization for Cloud Web Security Scanner, and select the project within that organization that you want to use it on. If you haven't already enabled the Cloud Web Security Scanner API, you'll be prompted to do it here.



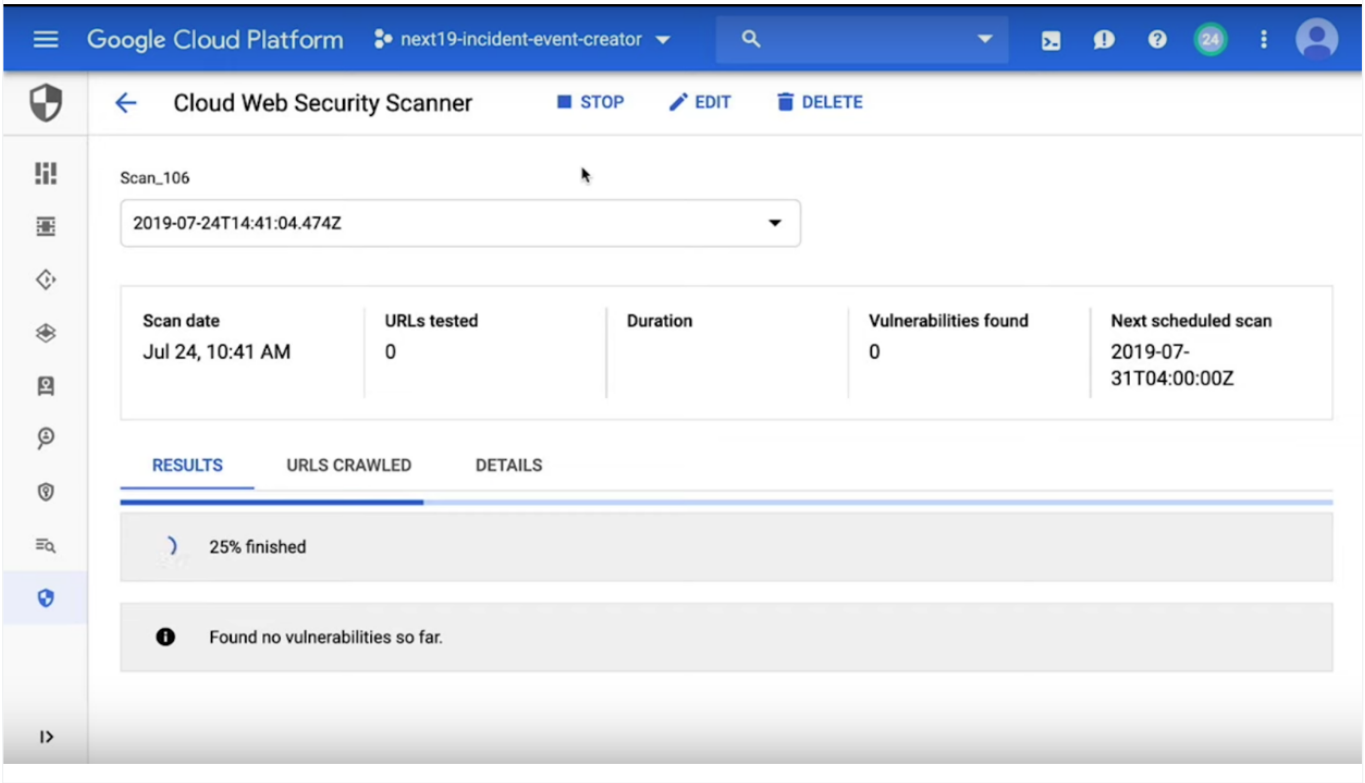
Enable Cloud Web Security Scanner

Step 2 / Create, save, and run scans

Cloud Web Security Scanner allows you to create, save, and run scans to detect key vulnerabilities in development before they're pushed to production.

To create a scan, add the url of the application you'd like to test, then save it by visiting the scan's configuration page—where you can also find out more information about the scan, its history, and the controls for editing it. When you want to run a scan, just schedule the time you want it to run from the Cloud Web Security Scanner page.

Once you've completed these steps, Cloud Web Security Scanner will automatically crawl your application—following all the links within the scope of your starting URLs—and attempt to exercise as many user inputs and event handlers as possible. When the scan is done, it will show any vulnerabilities it detected.

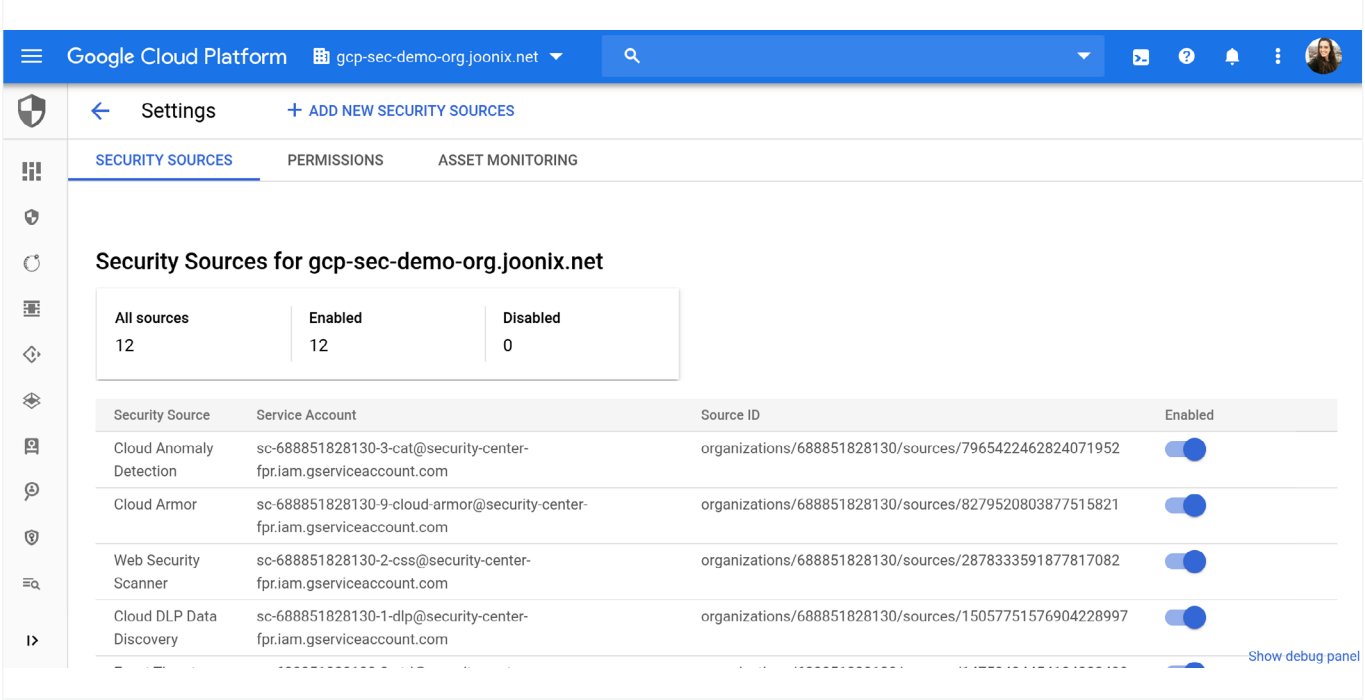


View your findings and fix them

Step 3 / View your findings and fix them

After you've turned on Cloud Web Security Scanner and run your scans, you can also use it to explore the findings (results). It can identify many common web vulnerabilities on these pages, including Flash injection and mixed content.

In addition to using the Cloud Web Security Scanner page, you can enable Cloud Web Security Scanner under Security Sources and view your findings directly on the Cloud Security Command Center dashboard. This lets you see findings from Cloud Web Security Scanner, and other built-in security features, in one place to get a holistic look into your security posture in GCP. Just click on a finding to bring up more information about the issue and how to fix it.



View your findings and fix them

How to use Cloud Web Security Scanner

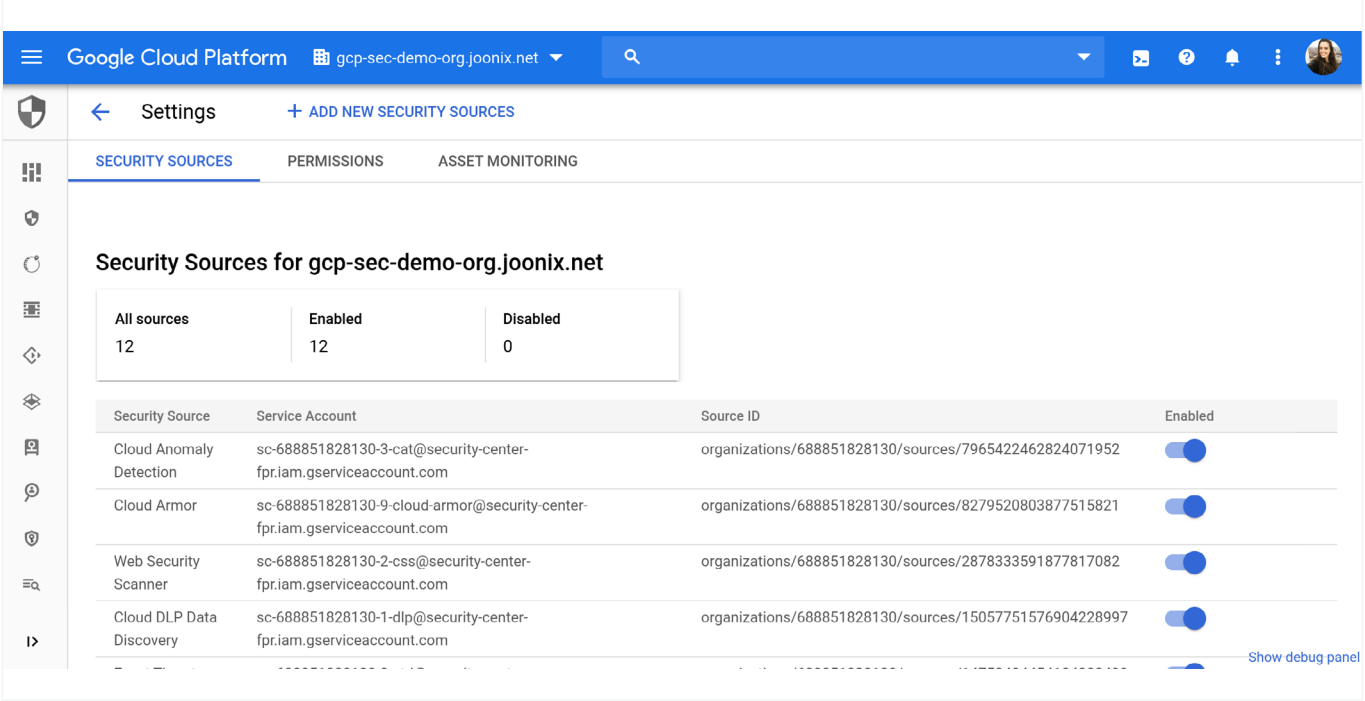
Watch video now.

Detect and remediate security anomalies with Cloud Anomaly Detection

When a threat is detected, every second counts. But, sometimes it can be difficult to know if a threat is present or how to respond. Cloud Anomaly Detection is another built-in Cloud SCC feature that uses behavioral signals to detect security abnormalities, such as leaked credentials or unusual activity, in your GCP projects and virtual machines. In this chapter, we'll look at how to enable Cloud Anomaly Detection and quickly respond to threats.

Step 1 / Enable Cloud Anomaly Detection from Cloud Security Command Center

Cloud Anomaly Detection is not turned on by default. You need to go to Security Sources from the Cloud SCC dashboard and activate it. Keep in mind, to enable a security source, you need to have the Organization Administrator Cloud IAM role. Once its turned on, findings will automatically be surfaced and displayed in the Cloud Anomaly Detection card on the Cloud Security Command Center dashboard.



Enable Cloud Anomaly Detection from Cloud Security Command Center

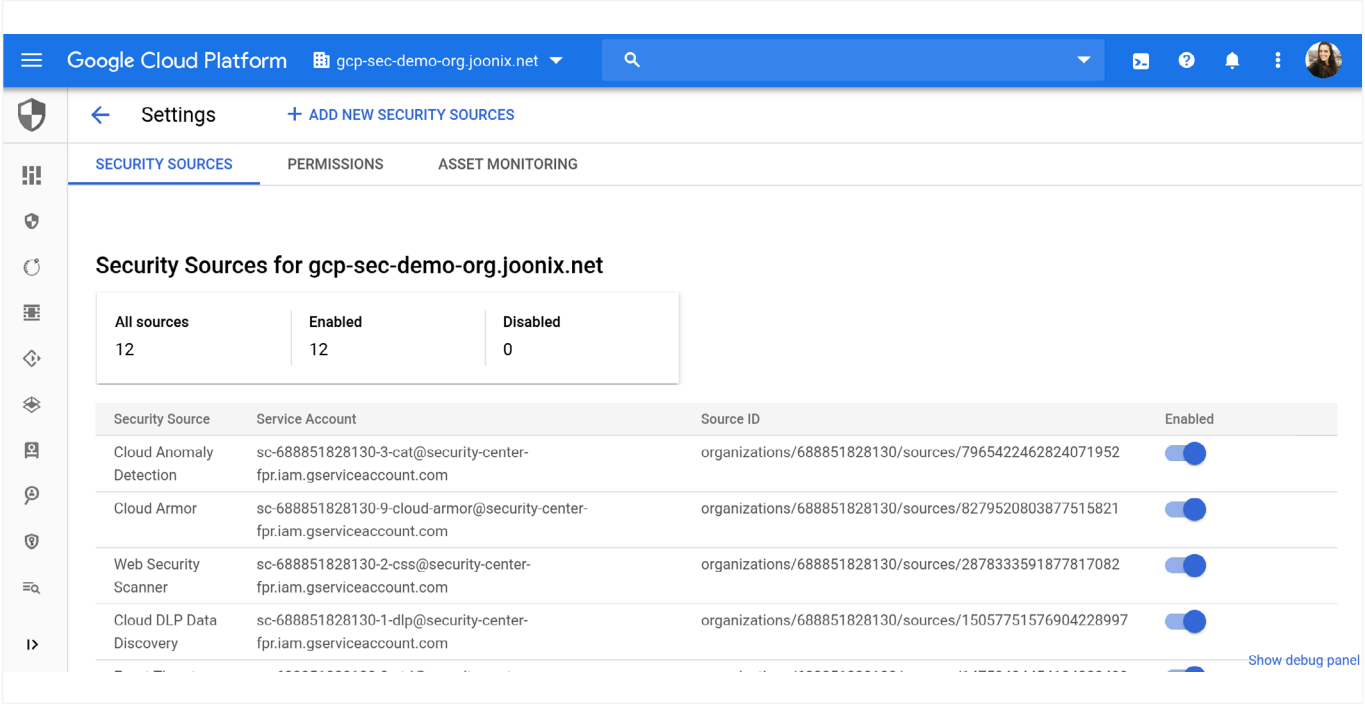
Step 2 / View findings in Cloud Security Command Center

Cloud Anomaly Detection can surface a variety of anomalous findings, including:

- **Leaked service account credentials:** GCP service account credentials that are accidentally leaked online or compromised.
- **Resource used for outbound intrusion:** One of the resources or GCP services in your organization is being used for intrusion activities, like an attempt to break in to or compromise a target system. These include SSH brute force attacks, Port scans, and FTP brute force attacks.
- **Potential compromised machine:** A potential compromise of a resource in your organization.
- **Resource used for crypto mining:** Behavioral signals around a VM in your organization indicate that it might have been compromised and could be getting used for crypto mining.
- **Unusual Activity/Connection:** Unusual activity from a resource in your organization.
- **Resource used for phishing:** One of the resources or GCP services in your organization is being used for phishing.

Step 3 / Remediate findings from Cloud Security Command Center

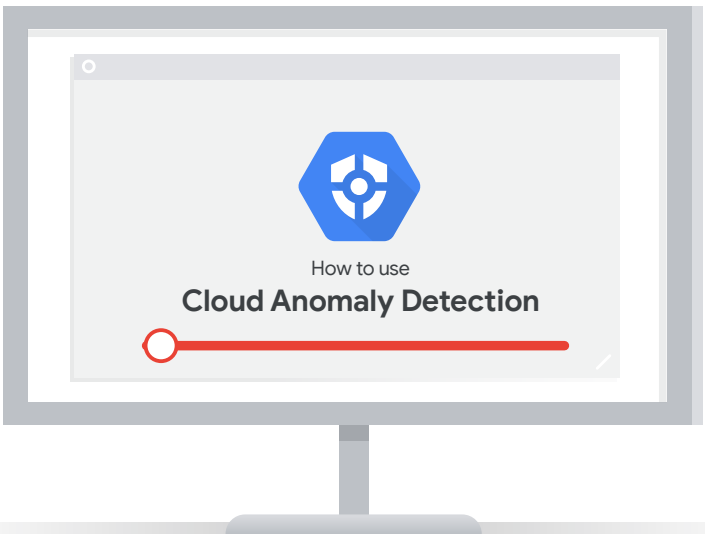
After Cloud Anomaly Detection generates a finding, you can click on the finding for more information about what happened and use that information to fix the security issue.



View your findings and fix them

How to use Cloud Anomaly Detection

Watch the video now.



Detect and respond to high-risk threats in your logs with Event Threat Detection

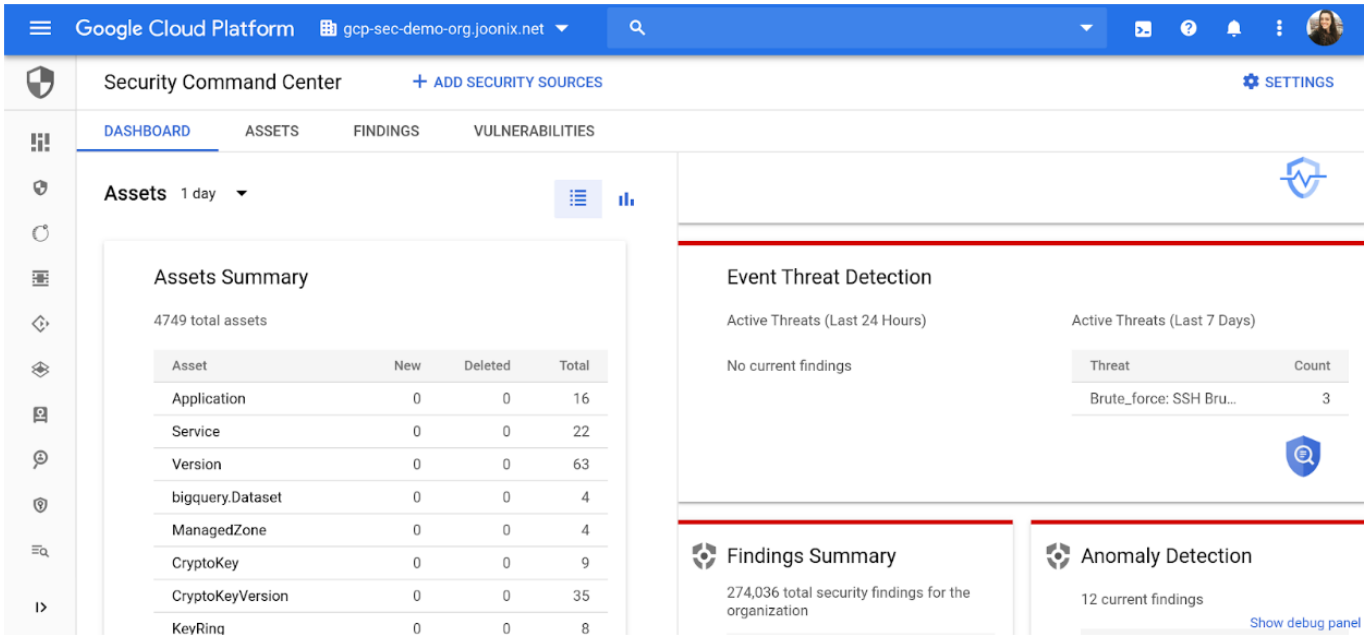
Data breaches aren't only getting more frequent, they're getting more expensive. With regulatory and compliance fines, and business resources being allocated to remediation, the costs from a data breach can quickly add up. In fact, the average total cost of a data breach in the U.S. has risen to $3.92 million, 1.5% more expensive than in 2018, and 12% more expensive than five years ago, according to IBM.

Event Threat Detection, another built-in feature of Cloud SCC, can notify you of high-risk and costly threats in your logs and help you respond. Let's learn more about it.

Step 1 / Enable Event Threat Detection

Once you're onboard, Event Threat Detection will appear as a card on the Cloud SCC dashboard.

Event Threat Detection works by consuming Cloud Audit, VPC flow, Cloud DNS, and Syslog via fluentd logs and analyzing them with our threat detection logic and Google's threat intelligence. When it detects a threat, Event Threat Detection writes findings (results) to Cloud SCC and to a logging project. For this blog and video, we'll focus on the ETD findings available in Cloud SCC.



Enable Cloud Anomaly Detection from Cloud Security Command Center

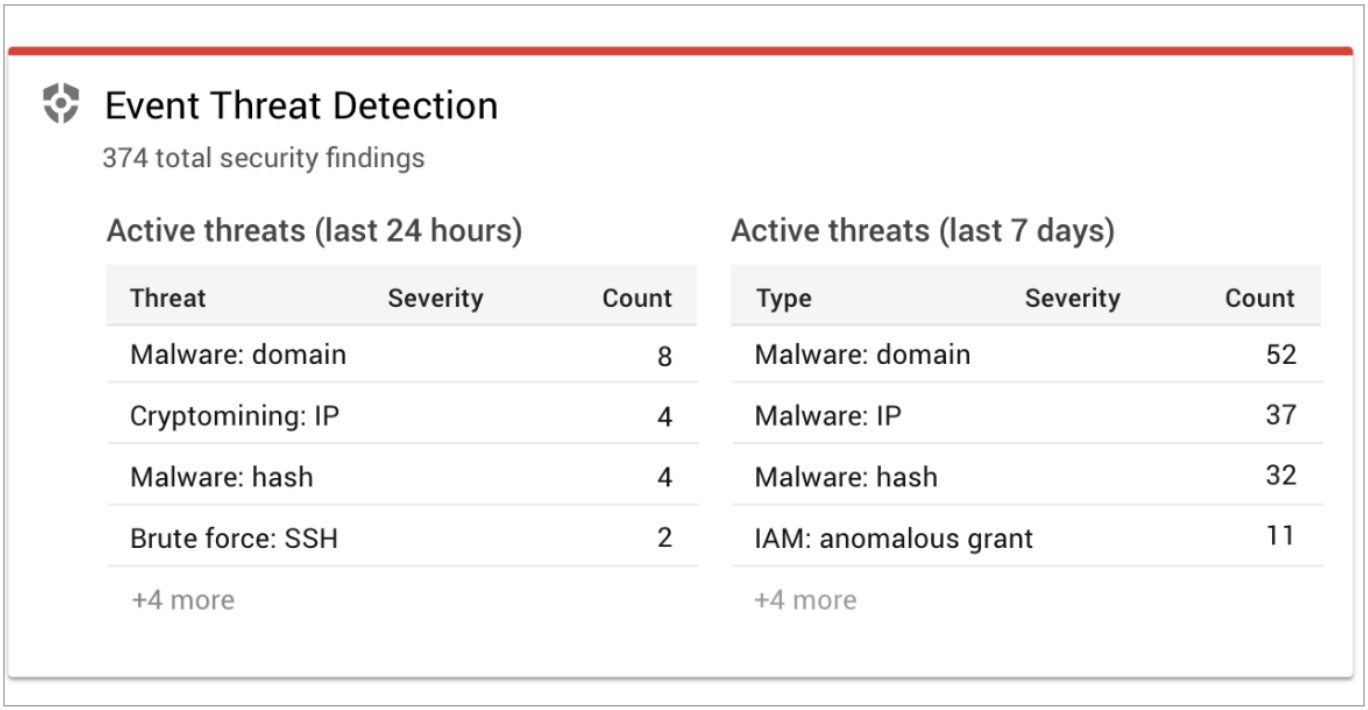
Step 2 / Detecting threats

Here are the threats ETD can detect in your logs, and how they work:

- **Brute force SSH**: ETD detects the brute force of SSH by examining Linux Auth logs for repeated failures followed by success.
- **Cryptomining**: ETD detects coin mining malware by examining VPC logs for connections to known bad domains for mining pools and other log data.
- **Cloud IAM abuse Malicious grants**: ETD detects the addition of accounts from outside of your organization's domain that are given Owner or Editor permission at the organization or project level.
- **Malware**: ETD detects Malware in a similar fashion to crypto mining, as it examines VPC logs for connections to known bad domains and other log data.
- **Phishing**: ETD detects Phishing by examining VPC logs for connections and other log data.
- **Outgoing DDoS, port-scanning**: ETD detects DDoS attacks originating inside your organization by looking at the sizes, types, and numbers of VPC flow logs. Outgoing DDoS is a common use of compromised instances and projects by attackers. Port scanning is a common indication of an attacker getting ready for lateral movement in a project.

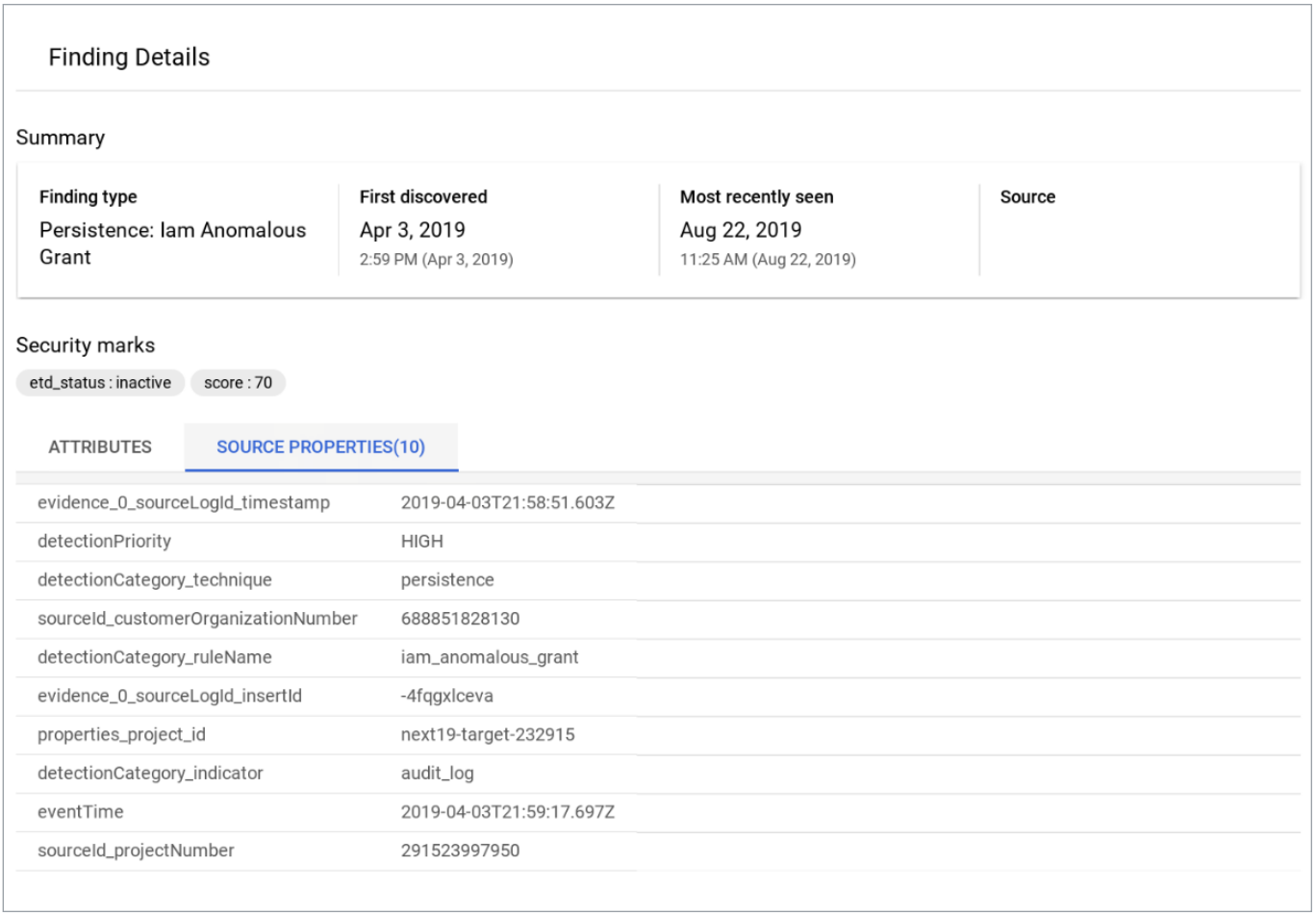
Step 3 / Respond to threats

When a threat is detected, you can see when it happened—either in the last 24 hours or last 7 days—and how many times it was detected, via the count.



Respond to threats

When you click on a finding, you can see what the event was, when it occurred, and what source the data came from. This information saves time and lets you focus on remediation.



Event Threat Detection

To further investigate a threat detected by Event Threat Detection, you can send your logs to a SIEM. Because Event Threat Detection has already processed your logs, you can send only high value incidents to your SIEM, saving time and money.

You can use a Splunk connector to export these logs. Splunk automatically sorts your key issues—you can see events and categories—so you can investigate further and follow the prescribed steps.

How to use Event Threat Detection

Watch the video now.

Stop data exfiltration with Cloud Data Loss Prevention

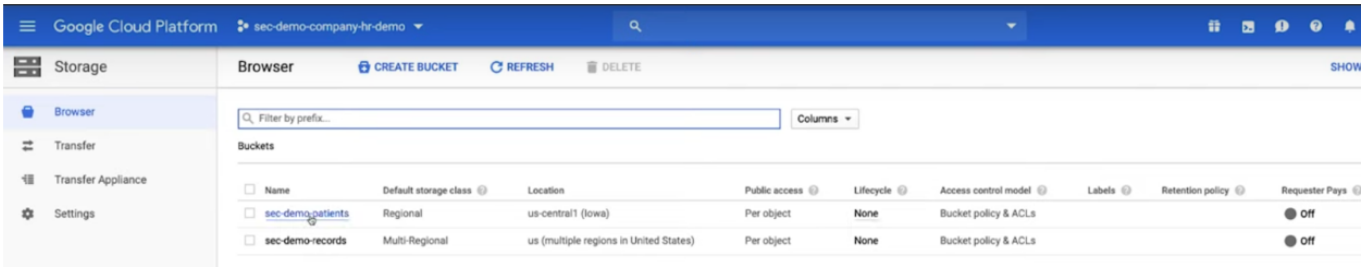
Compliance is a complex, ever changing issue that can put a real strain on your IT department—and your bottom line. As the cost of data breaches and compliance violations continues to rise, it's never been more important to prevent sensitive data from being exposed.

Cloud Data Loss Prevention (Cloud DLP) helps you better understand and manage sensitive data and personally identifiable information (PII) to meet your specific compliance requirements. It does this by providing fast, scalable classification and redaction of information like credit card numbers, names, social security numbers, US and selected international identifier numbers, phone numbers, and GCP credentials. With just a few clicks directly from the Cloud Storage interface, Cloud DLP scans Cloud Storage buckets, folders, and objects for sensitive data, helping you stay in compliance with regulations and keep your data safe.

For the final chapter, we'll look at how you can get started protecting sensitive data with Cloud DLP, and then send the results directly to Cloud SCC.

Step 1 / Select your storage repositories

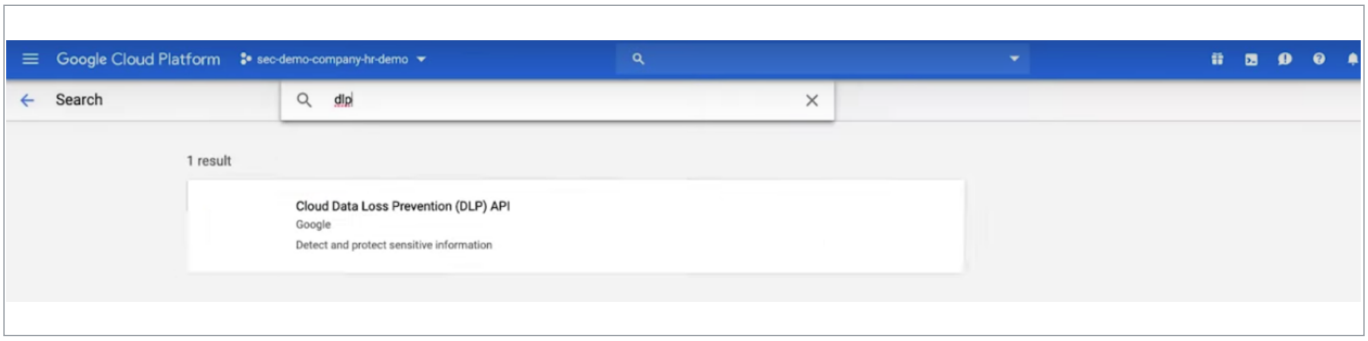
The first step is to choose the storage repository you want Cloud DLP to scan. If you want to scan your own existing Cloud Storage bucket, BigQuery table, or Cloud Datastore kind, simply open the project that the repository is in.



Step 2 / Enable Cloud DLP

For Cloud DLP to scan a project, that project must be in the same organization where you enable Cloud SCC, and must contain the Cloud Storage bucket, BigQuery table, or Cloud Datastore kind you want to scan.

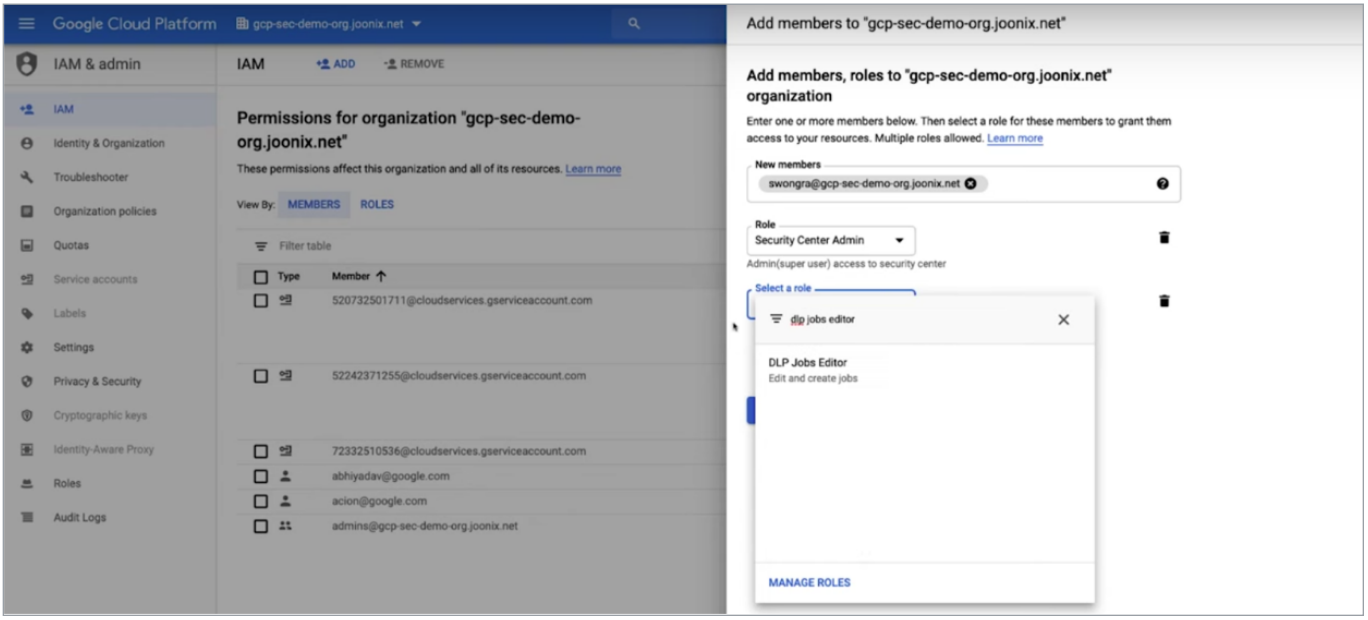
Once you've confirmed this information, go to APIs and Services in the menu on the left, then Library. Then all you have to do is search for the Cloud DLP API and enable it.



Enable Cloud DLP API

Step 3 / Choose the Organization Administrator IAM role

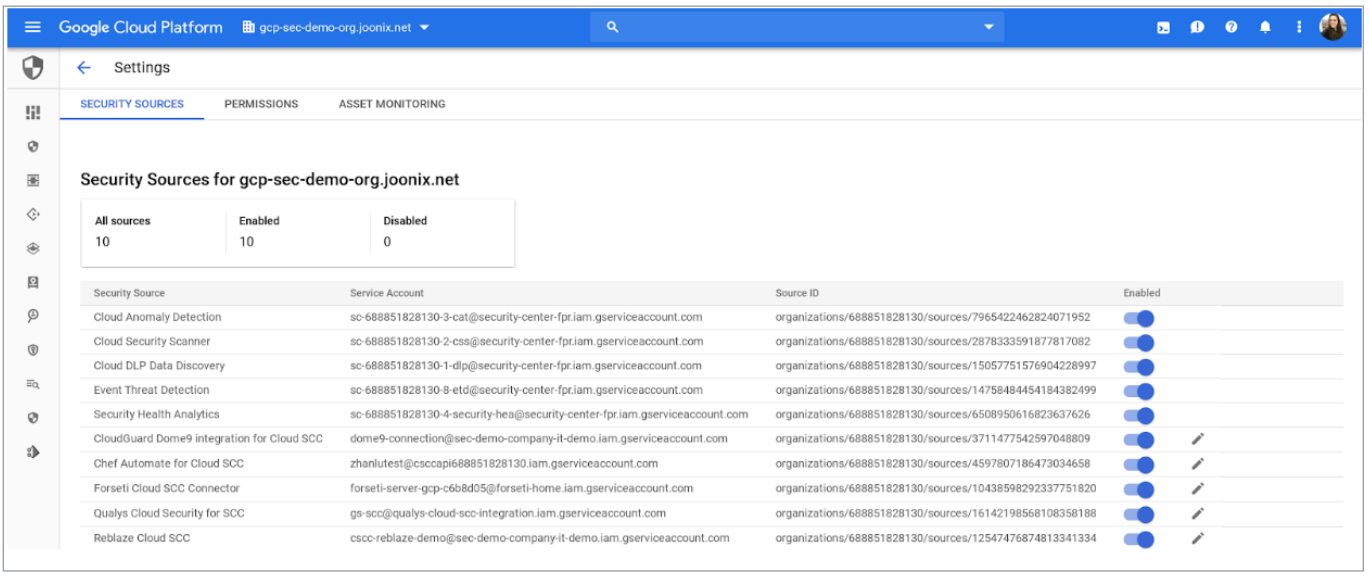
Before you can use Cloud DLP to send the results of your scans to Cloud SCC, you need to first ensure that you have the Organization Administrator IAM role before you can enable additional Cloud IAM roles. To set this up, click on the Organization drop down list and select the organization for which you want to enable Cloud SCC. Find the username in the Member column or add a new user, then add the Security Center Admin and DLP Jobs roles.



Choose the Organization Administrator IAM role

Step 4 / Enable Cloud DLP as a Security Source for Cloud SCC

From Cloud Security Command Center, go to Security Sources and toggle on Cloud DLP. Findings for Cloud DLP will display in the Findings cards on the Cloud SCC dashboard—which lets you view security information from Cloud DLP and other security products in one centralized location.



Select your storage repositories

Cloud DLP uses information types—or infoTypes—to define what it scans for. An infoType is a type of sensitive data, such as a name, email address, telephone number, identification number, credit card number, and so on. You can find out more about infoTypes in the Cloud DLP documentation.

How to use Cloud DLP

Watch the video now.