Gain insight into data privacy

Cloud Manager

NetApp
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Table of Contents

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Learn about Cloud Data Sense

Cloud Data Sense is a data governance service for Cloud Manager that scans your corporate on-premises and cloud data sources and working environments to map and classify data, and to identify private information. This can help reduce your security and compliance risk, decrease storage costs, and assist with your data migration projects.

Cloud Compliance was renamed to **Cloud Data Sense** in June 2021.

Learn about the use cases for Cloud Data Sense.

Features

Cloud Data Sense provides several tools that can help you with your compliance efforts. You can use Data Sense to:

- Identify Personal Identifiable Information (PII)
- Identify a wide scope of sensitive information as required by GDPR, CCPA, PCI, and HIPAA privacy regulations
- Respond to Data Subject Access Requests (DSAR)
- Notify Cloud Manager users through email when files contain certain PII (you define this criteria using Policies)
- View and modify Azure Information Protection (AIP) labels in your files
- Add a custom status to files (for example, "needs to be moved") and assign a Cloud Manager user so that person can own the change to the files
- Move and delete files

Cloud Data Sense also provides tools that can help with your governance efforts. You can use Cloud Data Sense to:

- Identify the stale data, non-business data, duplicate files, and very large files in your systems.

  You can use this information to decide whether you want to move, delete, or tier some files to less expensive object storage.

- View the size of data and whether any of the data contains sensitive information prior to moving it.

  This is useful if you are planning to migrate data from on-premises locations to the cloud.

Supported working environments and data sources

Cloud Data Sense can scan data from the following types of working environments and data sources:

- Cloud Volumes ONTAP in AWS
- Cloud Volumes ONTAP in Azure

- On-premises ONTAP clusters
- Azure NetApp Files
- Amazon FSx for ONTAP
- Amazon S3
- Non-NetApp file shares
- Object storage (that uses S3 protocol)
- Databases
- OneDrive accounts

A Beta feature released in January 2021 allows you to run compliance scans *for free* on the backup files created from your on-prem ONTAP volumes (created using Cloud Backup). This gives you a choice whether you want to have Cloud Data Sense scan your on-prem ONTAP volumes directly, or scan the backup files made from those volumes.

Cost

- The cost to use Cloud Data Sense depends on the amount of data that you're scanning. The first 1 TB of data that Data Sense scans in a Cloud Manager workspace is free. This includes all data from all working environments and data sources. A subscription to the AWS or Azure Marketplace is required to continue scanning data after that point. See pricing for details.

  Learn how to subscribe.

  Note: This subscription is not needed to scan backup files created from your on-prem ONTAP systems.

- Installing Cloud Data Sense in the cloud requires deploying a cloud instance, which results in charges from the cloud provider where it is deployed. See the type of instance that is deployed for each cloud provider. There is no cost if you install Data Sense on an on-premises system.
- Cloud Data Sense requires that you have deployed a Connector. In many cases you already have a Connector because of other storage and services you are using in Cloud Manager. The Connector instance results in charges from the cloud provider where it is deployed. See the type of instance that is deployed for each cloud provider.

Data transfer costs

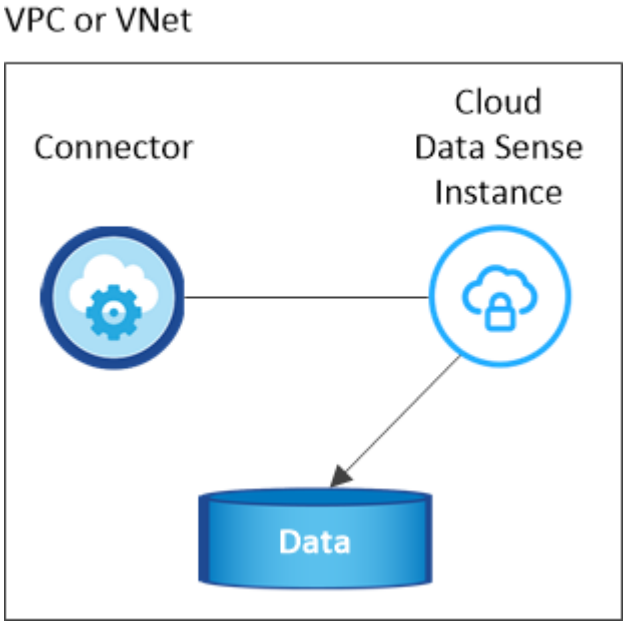
Data transfer costs depend on your setup. If the Cloud Data Sense instance and data source are in the same Availability Zone and region, then there are no data transfer costs. But if the data source, such as a Cloud Volumes ONTAP cluster or S3 Bucket, is in a *different* Availability Zone or region, then you'll be charged by your cloud provider for data transfer costs. See these links for more details:

- AWS: Amazon EC2 Pricing
- Microsoft Azure: Bandwidth Pricing Details

The Cloud Data Sense instance

When you deploy Data Sense in the cloud, Cloud Manager deploys the instance in the same subnet as the Connector. Learn more about Connectors.

If the Connector is installed on-prem, it deploys the Cloud Data Sense instance in same VPC or VNet as the first Cloud Volumes ONTAP system in the request.



Note the following about the default instance:

- In Azure, Cloud Data Sense runs on a Standard_D16s_v3 VM with a 512 GB disk.
- In AWS, Cloud Data Sense runs on an m5.4xlarge instance with a 500 GB GP2 disk.

  In regions where m5.4xlarge isn't available, Data Sense runs on an m4.4xlarge instance instead.

- The instance is named *CloudCompliance* with a generated hash (UUID) concatenated to it. For example: *CloudCompliance-16bb6564-38ad-4080-9a92-36f5fd2f71c7*
- Only one Data Sense instance is deployed per Connector.
- Upgrades of Data Sense software is automated—you don't need to worry about it.

The instance should remain running at all times because Cloud Data Sense continuously scans the data.

Using a smaller instance type

You can deploy Data Sense on a system with fewer CPUs and less RAM, but there are some limitations when using these less powerful systems.

System size	Specs	Limitations
Extra Large (default)	16 CPUs, 64 GB RAM	None
Medium	8 CPUs, 32 GB RAM	Slower scanning, and can only scan up to 1 million files.
Small	8 CPUs, 16 GB RAM	Same limitations as "Medium", plus the ability to identify data subject names inside files is disabled.

When deploying Data Sense in the cloud, email ng-contact-data-sense@netapp.com for assistance if you want to use one of these smaller systems.

When deploying Data Sense on-premises, just use a Linux host with these specifications.

How Cloud Data Sense works

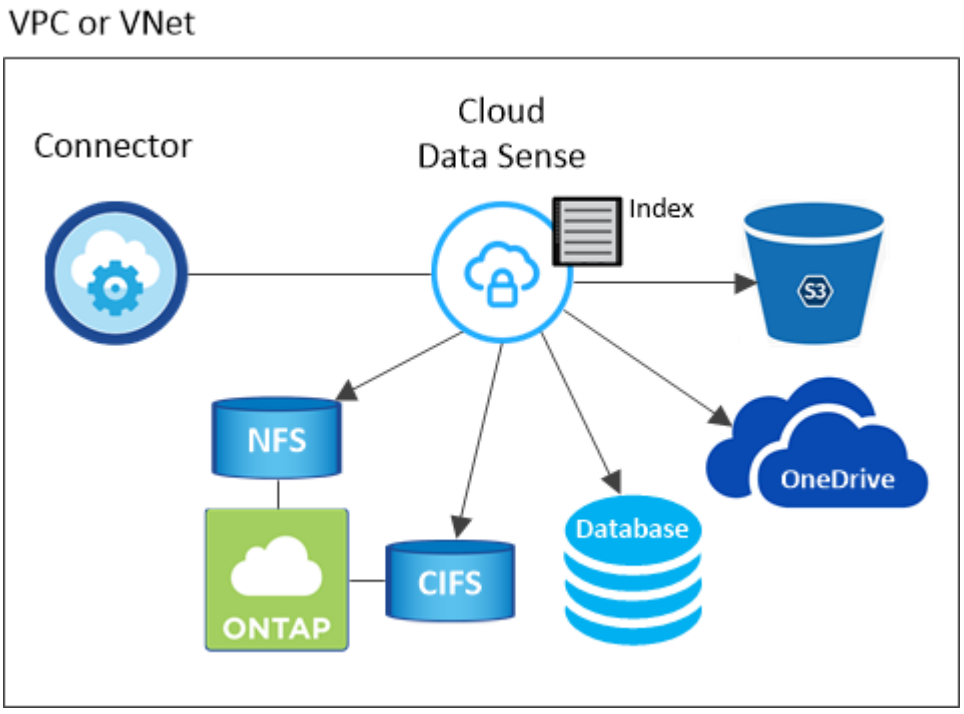
At a high-level, Cloud Data Sense works like this:

1. You deploy an instance of Data Sense in Cloud Manager.
2. You enable high-level mapping or deep-level scanning on one or more working environments or data sources.
3. Data Sense scans the data using an AI learning process.
4. You click **Data Sense** and use the provided dashboards and reporting tools to help in your compliance efforts.

How scans work

After you enable Cloud Data Sense and select the volumes, buckets, database schemas, or OneDrive users you want to scan, it immediately starts scanning the data to identify personal and sensitive data. It maps your organizational data, categorizes each file, and identifies and extracts entities and predefined patterns in the data. The result of the scan is an index of personal information, sensitive personal information, data categories, and file types.

Data Sense connects to the data like any other client by mounting NFS and CIFS volumes. NFS volumes are automatically accessed as read-only, while you need to provide Active Directory credentials to scan CIFS volumes.



After the initial scan, Data Sense continuously scans your data to detect incremental changes (this is why it's important to keep the instance running).

You can enable and disable scans at the volume level, at the bucket level, at the database schema level, and at the OneDrive user level.

What's the difference between Mapping and Classification scans

Cloud Data Sense enables you to run a general "mapping" scan on selected working environments and data sources. Mapping provides only a high-level overview of your data, whereas Classification provides deep-level scanning of your data. Mapping can be done on your data sources very quickly because it does not access files to see the data inside.

Many users like this functionality because they want to quickly scan their data to identify the data sources that require more research - and then they can enable classification scans only on those required data sources.

The table below shows some of the differences:

Feature	Classification	Mapping
Scan speed	Slow	Fast
List of file types and used capacity	Yes	Yes
Number of files and used capacity	Yes	Yes
Age and size of files	Yes	Yes
Ability to run a Data Mapping Report	Yes	Yes
Data Investigation page to view file details	Yes	No
Search for names within files	Yes	No
Create policies that provide custom search results	Yes	No
Categorize data using AIP labels and Status tags	Yes	No
Delete and move source files	Yes	No
Ability to run other reports	Yes	No

Information that Cloud Data Sense indexes

Data Sense collects, indexes, and assigns categories to your data (files). The data that Data Sense indexes includes the following:

Standard metadata

Cloud Data Sense collects standard metadata about files: the file type, its size, creation and modification dates, and so on.

Personal data

Personally identifiable information such as email addresses, identification numbers, or credit card numbers. Learn more about personal data.

Sensitive personal data

Special types of sensitive information, such as health data, ethnic origin, or political opinions, as defined by GDPR and other privacy regulations. Learn more about sensitive personal data.

Categories

Cloud Data Sense takes the data that it scanned and divides it into different types of categories. Categories are topics based on AI analysis of the content and metadata of each file. Learn more about categories.

Types

Cloud Data Sense takes the data that it scanned and breaks it down by file type. Learn more about types.

Name entity recognition

Cloud Data Sense uses AI to extract natural persons' names from documents. Learn about responding to Data Subject Access Requests.

Networking overview

Cloud Manager deploys the Cloud Data Sense instance with a security group that enables inbound HTTP connections from the Connector instance.

When using Cloud Manager in SaaS mode, the connection to Cloud Manager is served over HTTPS, and the private data sent between your browser and the Data Sense instance are secured with end-to-end encryption, which means NetApp and third parties can't read it.

If you need to use the local user interface instead of the SaaS user interface for any reason, you can still access the local UI.

Outbound rules are completely open. Internet access is needed to install and upgrade the Data Sense software and to send usage metrics.

If you have strict networking requirements, learn about the endpoints that Cloud Data Sense contacts.

User access to compliance information

The role each user has been assigned provides different capabilities within Cloud Manager and within Cloud Data Sense:

- An **Account Admin** can manage compliance settings and view compliance information for all working environments.
- A **Workspace Admin** can manage compliance settings and view compliance information only for systems that they have permissions to access. If a Workspace Admin can't access a working environment in Cloud Manager, then they can't see any compliance information for the working environment in the Data Sense tab.
- Users with the **Compliance Viewer** role can only view compliance information and generate reports for systems that they have permission to access. These users cannot enable/disable scanning of volumes, buckets, or database schemas.

Learn more about Cloud Manager roles and how to add users with specific roles.

Get started

Deploy Cloud Data Sense

Complete a few steps to deploy Cloud Data Sense in your Cloud Manager workspace. You can deploy Data Sense in the cloud or on an on-premises system.

The on-prem installation may be a good option if you prefer to scan on-premises ONTAP working environments using a Data Sense instance that's also located on premises — but this is not a requirement. The software functions exactly the same way regardless of which installation method you choose.

Quick start

Get started quickly by following these steps, or scroll down to the remaining sections for full details.

Create a Connector

If you don't already have a Connector, create a Connector in Azure or AWS. See creating a Connector in AWS or creating a Connector in Azure.

You can also deploy the Connector on-premises on an existing Linux host in your network or in the cloud.

Review prerequisites

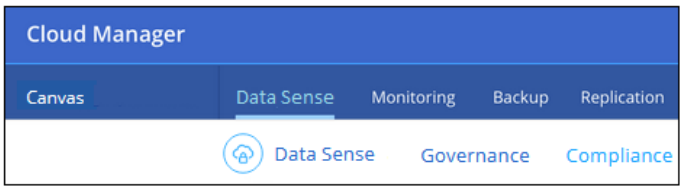
Ensure that your environment can meet the prerequisites. This includes outbound internet access for the instance, connectivity between the Connector and Cloud Data Sense over port 80, and more. See the complete list.

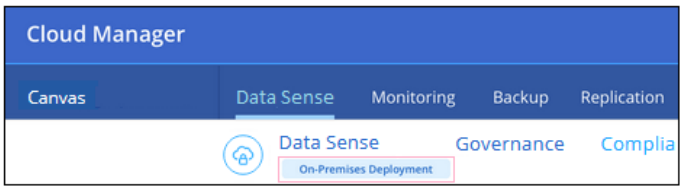
- When installed in the cloud, the default configuration requires 16 vCPUs for the Cloud Data Sense instance. See more details about the instance type.
- When installed on premises, you need a Linux system that meets the following requirements.

Deploy Cloud Data Sense

Launch the installation wizard to deploy the Cloud Data Sense instance.

You can deploy Cloud Data Sense in the cloud or in an on-premises location. The only difference you'll notice in the UI is the words "On-Premises Deployment".





Subscribe to the Cloud Data Sense service

The first 1 TB of data that Cloud Data Sense scans in Cloud Manager is free. A subscription to the AWS or Azure Marketplace is required to continue scanning data after that point.

Creating a Connector

If you don't already have a Connector, create a Connector in Azure or AWS. See creating a Connector in AWS or creating a Connector in Azure. In most cases you will probably have a Connector set up before you attempt

to activate Cloud Data Sense because most Cloud Manager features require a Connector, but there are cases where you'll you need to set one up now.

There are some scenarios where you have to use a Connector that's deployed in AWS or Azure:

- When scanning data in Cloud Volumes ONTAP in AWS, Amazon FSx for ONTAP, or in AWS S3 buckets, you use a connector in AWS.
- When scanning data in Cloud Volumes ONTAP in Azure or in Azure NetApp Files, you use a connector in Azure.

On-prem ONTAP systems, non-NetApp file shares, generic S3 Object storage, databases, and OneDrive folders can be scanned using either Connector.

Note that you can also deploy the Connector on-premises on an existing Linux host in your network or in the cloud. Some users planning to install Data Sense on-prem may also choose to install the Connector on-prem.

As you can see, there may be some situations where you need to use multiple Connectors.

If you're planning on scanning Azure NetApp Files volumes, you need to make sure you're deploying in the same region as the volumes you wish to scan.

Reviewing prerequisites

Review the following prerequisites to make sure that you have a supported configuration before you deploy Cloud Data Sense.

Enable outbound internet access from Cloud Data Sense

Cloud Data Sense requires outbound internet access. If your virtual or physical network uses a proxy server for internet access, ensure that the Data Sense instance has outbound internet access to contact the following endpoints. When you deploy Data Sense in the cloud, it's located in the same subnet as the Connector.

Review the appropriate table below depending on whether you are deploying Cloud Data Sense in AWS, Azure, or on-premises.

Required endpoints for AWS deployments:

Endpoints	Purpose
https://cloudmanager.cloud.netapp.com	Communication with the Cloud Manager service, which includes Cloud Central accounts.
https://netapp-cloud-account.auth0.com https://auth0.com	Communication with NetApp Cloud Central for centralized user authentication.
https://cloud-compliance-support-netapp.s3.us-west-2.amazonaws.com https://hub.docker.com https://auth.docker.io https://registry-1.docker.io https://index.docker.io/ https://dseasb33srnrn.cloudfront.net/ https://production.cloudflare.docker.com/	Provides access to software images, manifests, and templates.
https://kinesis.us-east-1.amazonaws.com	Enables NetApp to stream data from audit records.

Endpoints	Purpose
https://cognito-idp.us-east-1.amazonaws.com https://cognito-identity.us-east-1.amazonaws.com https://user-feedback-store-prod.s3.us-west-2.amazonaws.com https://customer-data-production.s3.us-west-2.amazonaws.com	Enables Cloud Data Sense to access and download manifests and templates, and to send logs and metrics.

Required endpoints for Azure and On-Prem deployments:

Endpoints	Purpose
https://cloudmanager.cloud.netapp.com	Communication with the Cloud Manager service, which includes Cloud Central accounts.
https://netapp-cloud-account.auth0.com https://auth0.com	Communication with NetApp Cloud Central for centralized user authentication.
https://support.compliance.cloudmanager.cloud.netapp.com/ https://hub.docker.com https://auth.docker.io https://registry-1.docker.io https://index.docker.io/ https://dseasb33srnrn.cloudfront.net/ https://production.cloudflare.docker.com/	Provides access to software images, manifests, templates, and to send logs and metrics.
https://support.compliance.cloudmanager.cloud.netapp.com/	Enables NetApp to stream data from audit records.
On-premises installs only: https://github.com/docker https://download.docker.com https://rhui3.us-west-2.aws.ce.redhat.com https://github-production-release-asset-2e65be.s3.amazonaws.com https://pypi.org https://pypi.python.org https://files.pythonhosted.org http://mirror.centos.org http://mirrorlist.centos.org http://mirror.centos.org/centos/7/extras/x86_64/Packages/container-selinux-2.107-3.el7.noarch.rpm	Provides prerequisite packages for installation.

Ensure that Cloud Manager has the required permissions

Ensure that Cloud Manager has permissions to deploy resources and create security groups for the Cloud Data Sense instance. You can find the latest Cloud Manager permissions in the policies provided by NetApp.

Check your vCPU limits

When installed in the cloud, ensure that your cloud provider's vCPU limit allows for the deployment of an instance with 16 cores. You'll need to verify the vCPU limit for the relevant instance family in the region where Cloud Manager is running.

In AWS, the instance family is *On-Demand Standard instances*. In Azure, the instance family is *Standard Dsv3 Family*.

See the following links for more details on vCPU limits:

- AWS documentation: Amazon EC2 Service Limits
- Azure documentation: Virtual machine vCPU quotas

Note that you can deploy Data Sense on a system with fewer CPUs and less RAM, but there are limitations when using these systems. See Using a smaller instance type for details.

Ensure that Cloud Manager can access Cloud Data Sense

Ensure connectivity between the Connector and the Cloud Data Sense instance. The security group for the Connector must allow inbound and outbound traffic over port 80 to and from the Data Sense instance.

This connection enables deployment of the Data Sense instance and enables you to view information in the Compliance and Governance tabs.

Ensure that you can keep Cloud Data Sense running

The Cloud Data Sense instance needs to stay on to continuously scan your data.

Ensure web browser connectivity to Cloud Data Sense

After Cloud Data Sense is enabled, ensure that users access the Cloud Manager interface from a host that has a connection to the Data Sense instance.

The Data Sense instance uses a private IP address to ensure that the indexed data isn't accessible to the internet. As a result, the web browser that you use to access Cloud Manager must have a connection to that private IP address. That connection can come from a direct connection to AWS or Azure (for example, a VPN), or from a host that's inside the same network as the Data Sense instance.

Deploying the Cloud Data Sense instance in the cloud

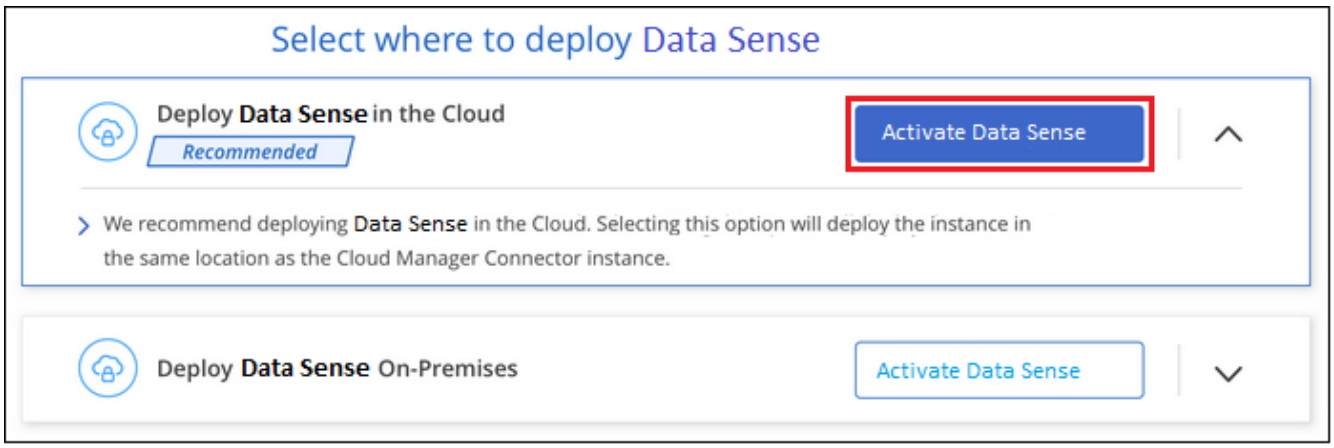
Deploying an instance of Cloud Data Sense in the cloud is the most common deployment model. But you have the option to deploy the Compliance software on a Linux host in your network or in the cloud.

The Data Sense software functions exactly the same way regardless of which installation method you choose.

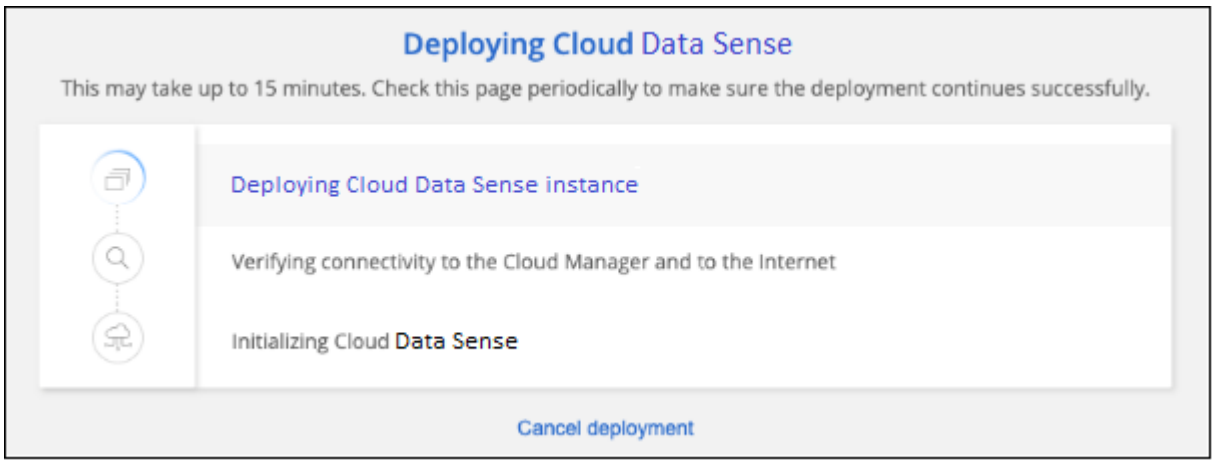
Steps

1. In Cloud Manager, click **Data Sense**.
2. Click **Activate Cloud Data Sense**.

3. Click **Activate Data Sense** to start the cloud deployment wizard.



4. The wizard displays progress as it goes through the deployment steps. It will stop and ask for input if it runs into any issues.



5. When the instance is deployed, click **Continue to configuration** to go to the *Configuration* page.

Result

Cloud Manager deploys the Cloud Data Sense instance in your cloud provider.

What's Next

From the Configuration page you can select the data sources that you want to scan.

You can also subscribe to the Cloud Data Sense service at this time. You will not be charged until the amount of data exceeds 1 TB.

Deploying the Cloud Data Sense instance on premises

You can download and install the Data Sense software on a Linux host in your network if you do not want to deploy it in the cloud.

The Data Sense software functions exactly the same way regardless of which installation method you choose.

For typical configurations you'll install the software on a single host system. For very large configurations where you'll be scanning petabytes of data, you can include additional hosts as *scanner nodes* to provide additional processing power.

Cloud Data Sense is currently unable to scan S3 buckets and Azure NetApp Files when the software is installed on premises. In these cases you'll need to deploy a separate Connector and instance of Data Sense in the cloud and switch between Connectors for your different data sources.

Host requirements

- Operating system: Red Hat Enterprise Linux or CentOS version 8.0 or 8.1
  - Version 7.8 can be used, but the Linux kernel version must be 4.14 or greater
  - The OS must be capable of installing the docker engine (for example, disable the *firewalld* service if needed)
- RAM: 64 GB (swap memory must be disabled on the host)
- CPU: 16 cores
- Disk: 500 GB SSD

  Note that you can deploy Data Sense on a system with fewer CPUs and less RAM, but there are limitations when using these systems. See Using a smaller instance type for details.

- A Red Hat Enterprise Linux system must be registered with Red Hat Subscription Management. If it is not registered, the system cannot access repositories to update required 3rd party software during installation.
- Make sure port 8080 is open so you can see the installation progress in Cloud Manager.
- Root privileges are required to install Cloud Data Sense.

See Reviewing prerequisites for the full list of requirements and endpoints that Cloud Data Sense must be able to reach over the internet.

Single-host installation for typical configurations

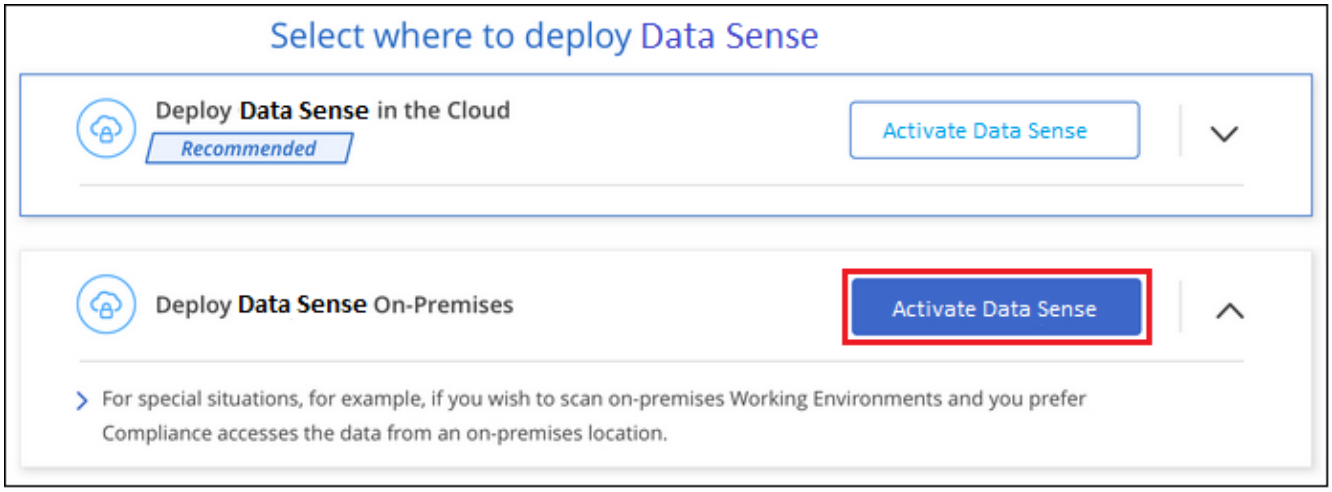
Follow these steps when installing Data Sense software on a single on-premises host.

Steps

1. Download the Cloud Data Sense software from the NetApp Support Site.
2. Copy the installer file to the Linux host you plan to use (using `scp` or some other method).
3. In Cloud Manager, click **Data Sense**.

4. Click **Activate Cloud Data Sense**.

5. Click **Activate Data Sense** to start the on-prem deployment wizard.



6. In the *Deploy Cloud Data Sense On Premises* dialog, copy the provided command and paste it in a text file so you can use it later. For example:

   sudo ./install.sh -a 12345 -c 27AG75 -t 2198qq

7. Unzip the installer file on the host machine:

   ```
   tar -xzf cc_onprem_installer.tar.gz
   ```

8. When prompted by the installer, you can enter the required values in a series of prompts, or you can enter the complete command in the first prompt:

Enter parameters as prompted:	Enter the full command:
1. Paste the information you copied from step 6: `sudo ./install.sh -a <account_id> -c <agent_id> -t <token>` 2. Enter the IP address or host name of the Data Sense host machine so it can be accessed by the Connector instance. 3. Enter the IP address or host name of the Cloud Manager Connector host machine so it can be accessed by the Data Sense instance. 4. Enter proxy details as prompted. If your Cloud Manager already uses a proxy, there is no need to enter this information again here since Data Sense will automatically use the proxy used by Cloud Manager.	Alternatively, you can create the whole command in advance and enter it in the first prompt: `sudo ./install.sh -a <account_id> -c <agent_id> -t <token> --host <ds_host> --cm-host <cm_host> --proxy-host <proxy_host> --proxy-port <proxy_port> --proxy-scheme <proxy_scheme> --proxy -user <proxy_user> --proxy-password <proxy_password>`

Variable values:

- *account_id* = NetApp Account ID
- *agent_id* = Connector ID
- *token* = jwt user token
- *ds_host* = IP address or host name of the Data Sense Linux system.
- *cm_host* = IP address or host name of the Cloud Manager Connector system.
- *proxy_host* = IP or host name of the proxy server if the host is behind a proxy server.
- *proxy_port* = Port to connect to the proxy server (default 80).
- *proxy_scheme* = Connection scheme: https or http (default http).
- *proxy_user* = Authenticated user to connect to the proxy server, if basic authentication is required.
- *proxy_password* = Password for the user name that you specified.

Result

The Cloud Data Sense installer installs packages, installs docker, registers the installation, and installs Data Sense. Installation can take 10 to 20 minutes.

If there is connectivity over port 8080 between the host machine and the Connector instance, you will see the installation progress in the Data Sense tab in Cloud Manager.

What's Next

From the Configuration page you can select the data sources that you want to scan.

You can also subscribe to the Cloud Data Sense service at this time. You will not be charged until the amount of data exceeds 1 TB. A subscription to either the AWS or Azure Marketplace can be used when you have deployed Data Sense on an on-premises system.

Multi-host installation for large configurations

Follow these steps when installing Data Sense software on multiple on-premises hosts.

When using multiple host systems, the primary system is called the *Manager node* and the additional systems that provide extra processing power are call *Scanner nodes*.

Requirements

- See Reviewing prerequisites for the full list of requirements and endpoints that Cloud Data Sense must be able to reach over the internet.
- The host requirements are the same for Scanner nodes as they are for Manager nodes. See Host requirements for details.
- You must have the IP addresses of the scanner node hosts that you plan to use.
- The following ports and protocols must be enabled on all hosts:

Port	Protocols	Description
2377	TCP	Cluster management communications
7946	TCP, UDP	Inter-node communication
4789	UDP	Overlay network traffic
50	ESP	Encrypted IPsec overlay network (ESP) traffic
111	TCP, UDP	NFS Server for sharing files between the hosts (needed from each scanner node to manager node)
2049	TCP, UDP	NFS Server for sharing files between the hosts (needed from each scanner node to manager node)

Steps

1. Follow steps 1 through 7 from the Single-host installation on the manager node.
2. As shown in step 8, when prompted by the installer, you can enter the required values in a series of prompts, or you can enter the complete command in the first prompt.

   In addition to the variables available for a single-host installation, a new option **-n <node_ip>** is used to specify the IP addresses of the scanner nodes. Multiple node IPs are separated by a comma.

   For example, this command adds 3 scanner nodes:
   ```
   sudo ./install.sh -a <account_id> -c <agent_id> -t <token> --host <ds_host>
   --cm-host <cm_host> -n <node_ip1>,<node_ip2>,<node_ip3> --proxy-host
   <proxy_host> --proxy-port <proxy_port> --proxy-scheme <proxy_scheme> --proxy
   -user <proxy_user> --proxy-password <proxy_password>
   ```
3. Before the manager node installation completes, a dialog displays the installation command needed for the scanner nodes. Copy the command and save it in a text file. For example:

   sudo ./node_install.sh -m 10.11.12.13 -t ABCDEF-1-3u69m1-1s35212
4. On **each** scanner node host:
   a. Copy the Data Sense installer file (*cc_onprem_installer.tar.gz*) to the host machine (using `scp` or some other method).
   b. Unzip the installer file.
   c. Paste and execute the command that you copied in step 3.

When the installation finishes on all scanner nodes and they have been joined to the manager node, the manager node installation finishes as well.

Result

The Cloud Data Sense installer finishes installing packages, docker, and registers the installation. Installation can take 10 to 20 minutes.

What's Next

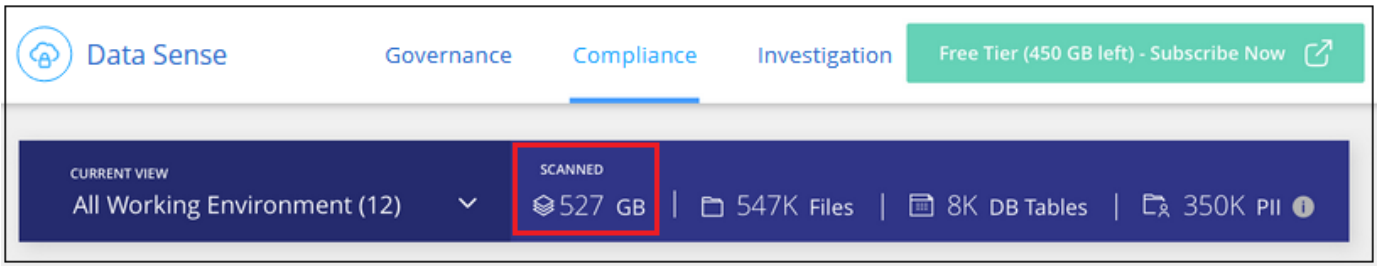
From the Configuration page you can select the data sources that you want to scan.

You can also subscribe to the Cloud Data Sense service at this time. You will not be charged until the amount of data exceeds 1 TB. A subscription to either the AWS or Azure Marketplace can be used when you have deployed Data Sense on an on-premises system.

Subscribing to the Cloud Data Sense service

The first 1 TB of data that Cloud Data Sense scans in a Cloud Manager workspace is free. A subscription to the AWS or Azure Marketplace is required to continue scanning data after that point.

You can subscribe at any time and you will not be charged until the amount of data exceeds 1 TB. You can always see the total amount of data that is being scanned from the Data Sense Dashboard. And the *Subscribe Now* button makes it easy to subscribe when you are ready.



Note: If you are prompted by Cloud Data Sense to subscribe, but you already have an Azure subscription, you're probably using the old **Cloud Manager** subscription and you need to change to the new **NetApp Cloud Manager** subscription. See Changing to the new NetApp Cloud Manager plan in Azure for details.

Steps

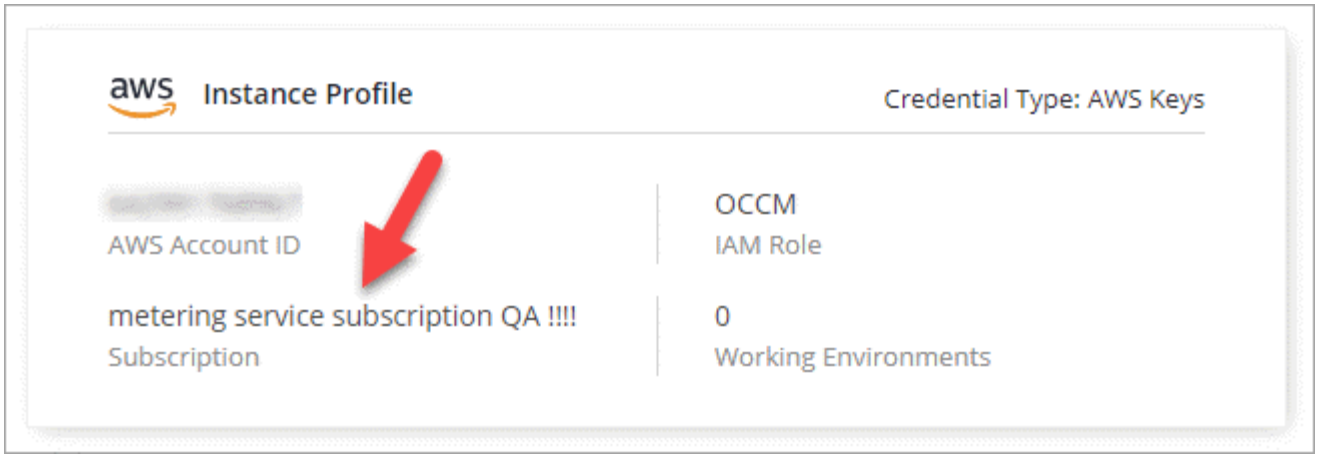
These steps must be completed by a user who has the *Account Admin* role.

1. In the upper right of the Cloud Manager console, click the Settings icon, and select **Credentials**.

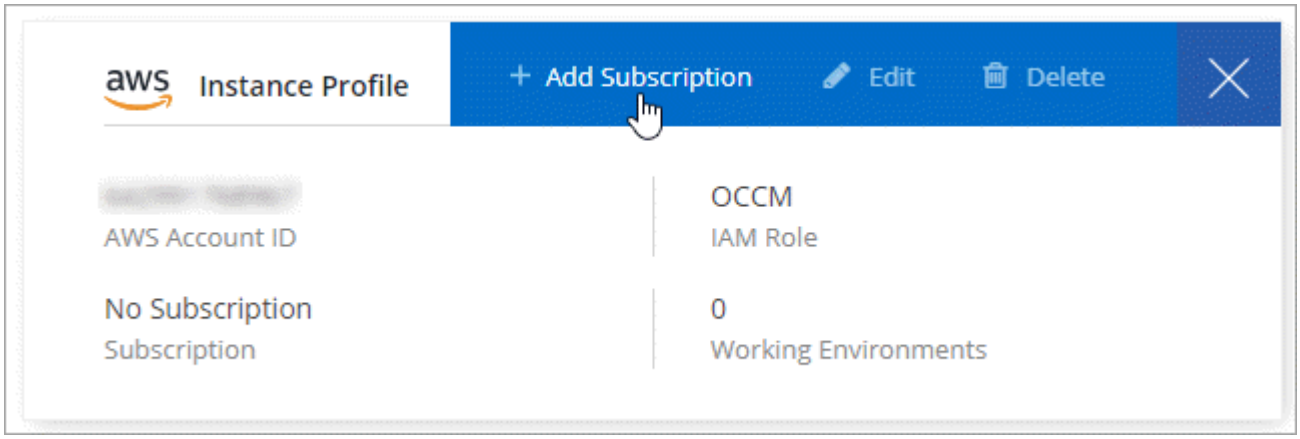
2. Find the credentials for the AWS Instance Profile or Azure Managed Service Identity.

   The subscription must be added to the Instance Profile or Managed Service Identity. Charging won't work otherwise.

   If you already have a subscription, then you're all set—there's nothing else that you need to do.



3. If you don’t have a subscription yet, hover over the credentials and click the action menu.
4. Click **Add Subscription**.



5. Click **Add Subscription**, click **Continue**, and follow the steps.

   The following video shows how to associate a Marketplace subscription to an AWS subscription:

   ► https://docs.netapp.com/us-en/occm//media/video_subscribing_aws.mp4 *(video)*

   The following video shows how to associate a Marketplace subscription to an Azure subscription:

   ► https://docs.netapp.com/us-en/occm//media/video_subscribing_azure.mp4 *(video)*

Changing to the new Cloud Manager plan in Azure

Cloud Data Sense (Cloud Compliance) was added to the Azure Marketplace subscription named **NetApp Cloud Manager** as of October 2020. If you already have the original Azure **Cloud Manager** subscription it will not allow you to use Cloud Data Sense.

You need to follow these steps to change to the new **NetApp Cloud Manager** subscription before you can start using Cloud Data Sense.

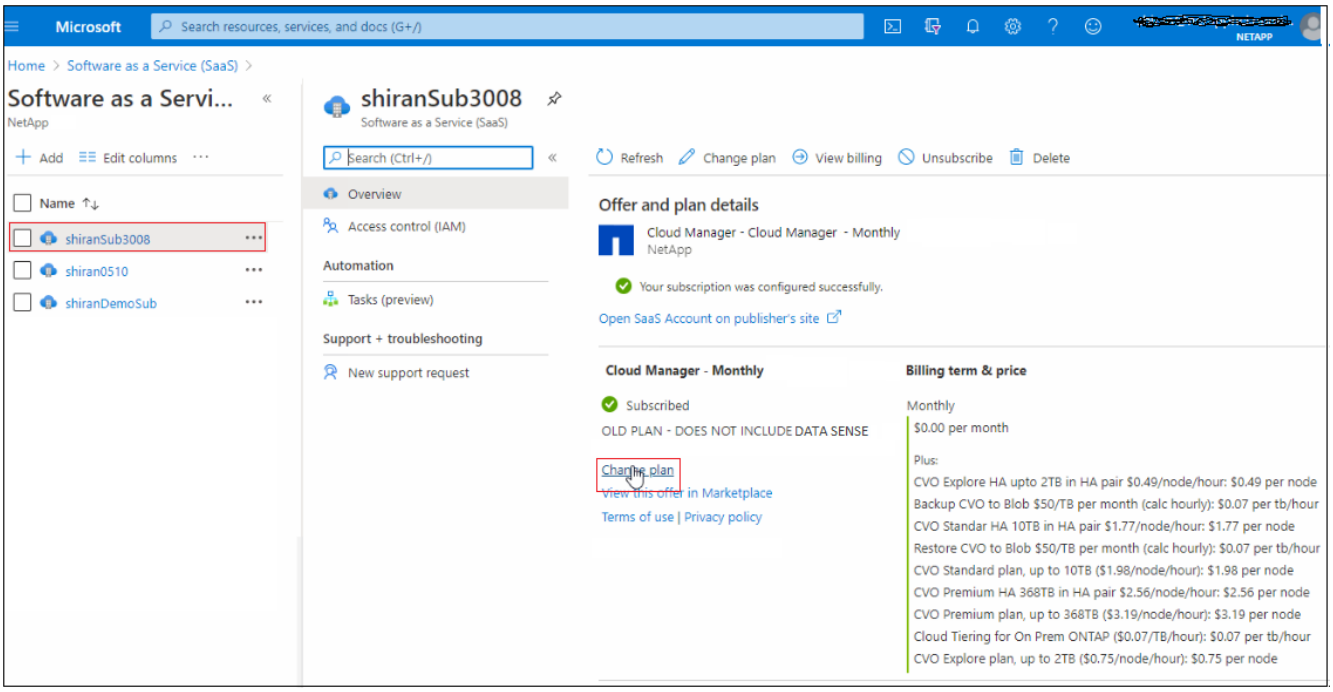
If your existing Subscription was issued with a special private offer, you need to contact NetApp so that we can issue a new special private offer with Data Sense included.

Steps

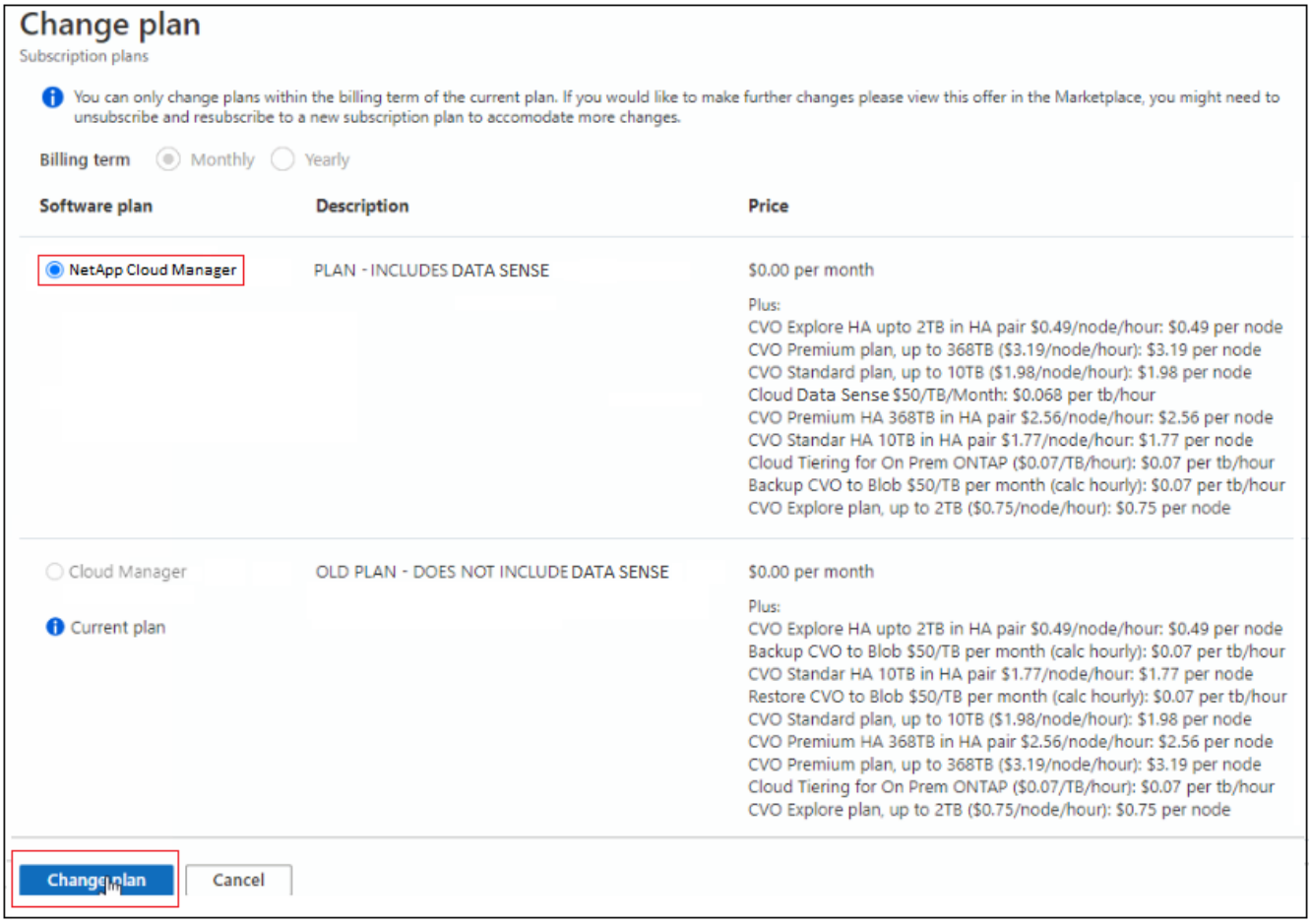
1. In the upper right of the Cloud Manager console, click the Settings icon, and select **Credentials**.
2. Find the credentials for the Azure Managed Service Identity that you want to change the subscription for and hover over the credentials and click **Associate Subscription**.

   The details for your current Marketplace Subscription are displayed.

3. Log in to the Azure portal and select **Software as a Service (SaaS)**.
4. Select the subscription for which you want to change the plan and click **Change Plan**.



5. In the Change Plan page, select the **NetApp Cloud Manager** plan and click the **Change Plan** button.



6. Return to Cloud Manager, select the subscription, and hover over the “i” above subscription in the Credentials card to verify your subscription has changed.

Activate scanning on your data sources

Getting started with Cloud Data Sense for Cloud Volumes ONTAP and on-premises ONTAP

Complete a few steps to get started with Cloud Data Sense for Cloud Volumes ONTAP and on-premises ONTAP systems.

Quick start

Get started quickly by following these steps, or scroll down to the remaining sections for full details.

Discover the data sources that contain the data you want to scan

Before you can scan volumes, you must add the systems as working environments in Cloud Manager:

- For Cloud Volumes ONTAP systems, these working environments should already be available in Cloud Manager
- For on-premises ONTAP systems, Cloud Manager must discover the ONTAP clusters

Deploy the Cloud Data Sense instance

Deploy Cloud Data Sense in Cloud Manager if there isn't already an instance deployed.

Enable Cloud Data Sense and select the volumes to scan

Click **Data Sense**, select the **Configuration** tab, and activate compliance scans for volumes in specific working environments.

Ensure access to volumes

Now that Cloud Data Sense is enabled, ensure that it can access all volumes.

- The Cloud Data Sense instance needs a network connection to each Cloud Volumes ONTAP subnet or on-prem ONTAP system.
- Security groups for Cloud Volumes ONTAP must allow inbound connections from the Data Sense instance.
- Make sure these ports are open to the Data Sense instance:
  - For NFS – ports 111 and 2049.
  - For CIFS – ports 139 and 445.
- NFS volume export policies must allow access from the Data Sense instance.
- Data Sense needs Active Directory credentials to scan CIFS volumes.

  Click **Compliance** > **Configuration** > **Edit CIFS Credentials** and provide the credentials.

Manage the volumes you want to scan

Select or deselect the volumes that you want to scan and Cloud Data Sense will start or stop scanning them.

Discovering the data sources that you want to scan

If the data sources you want to scan are not already in your Cloud Manager environment, you can add them to the canvas at this time.

Your Cloud Volumes ONTAP systems should already be available in the Canvas in Cloud Manager. For on-premises ONTAP systems you need to have Cloud Manager discover these clusters.

Deploying the Cloud Data Sense instance

Deploy Cloud Data Sense if there isn't already an instance deployed.

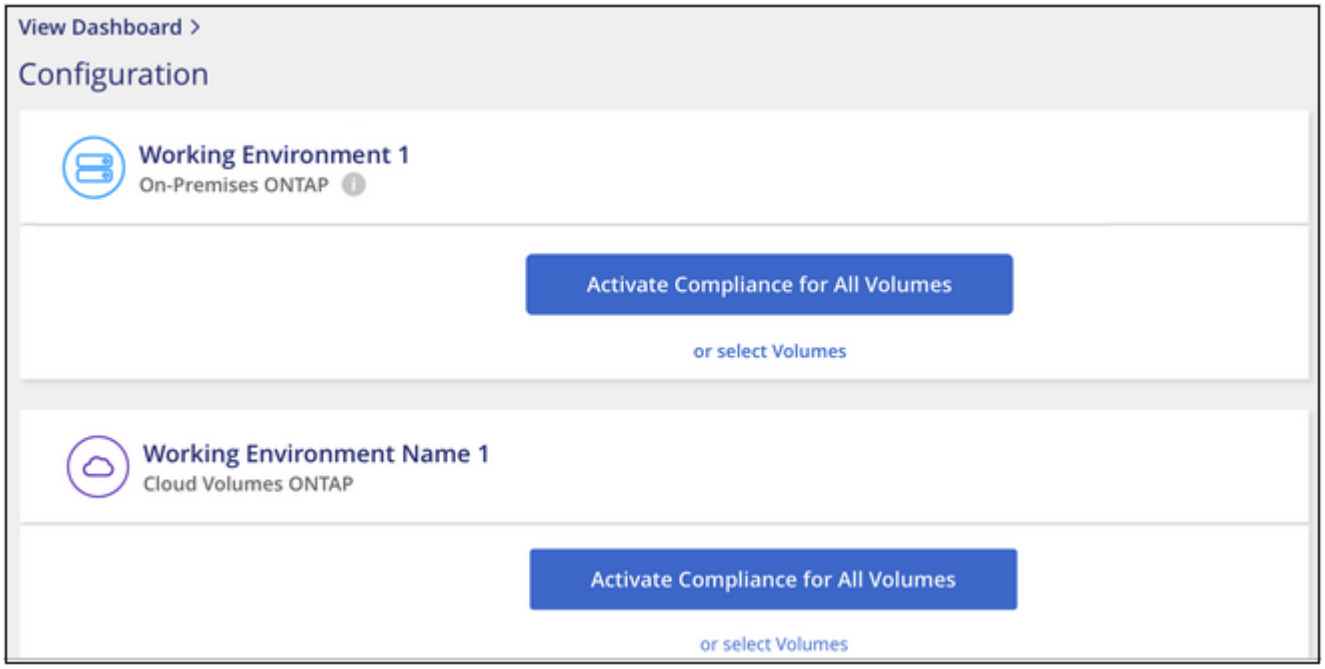
Cloud Data Sense can be deployed in the cloud or in an on-premises location when scanning Cloud Volumes ONTAP or on-premises ONTAP systems.

Enabling Cloud Data Sense in your working environments

You can enable Cloud Data Sense on Cloud Volumes ONTAP systems (in AWS and Azure) and on on-premises ONTAP clusters.

> Following these steps for on-prem ONTAP systems scans the volumes directly on the on-prem ONTAP system. If you are already creating backup files from those on-prem systems using Cloud Backup, you can run compliance scans on the backup files in the cloud instead. Go to Scanning backup files from on-premises ONTAP systems to scan the volumes by scanning the backup files.

1. At the top of Cloud Manager, click **Data Sense** and then select the **Configuration** tab.



2. To scan all volumes in a working environment, click **Activate Scanning for All Volumes**.

   When enabled in this manner, full "mapping and classification" scanning is performed on all volumes.

   If you want to enable scanning only for certain volumes, or if you only want to perform "mapping-only" scanning, click **or select Volumes** and then choose the volumes you want to scan.

See Enabling and disabling compliance scans on volumes for details.

Result

Cloud Data Sense starts scanning the volumes you selected in the working environment. Results will be available in the Compliance dashboard as soon as Cloud Data Sense finishes the initial scans. The time that it takes depends on the amount of data—it could be a few minutes or hours.

Verifying that Cloud Data Sense has access to volumes

Make sure that Cloud Data Sense can access volumes by checking your networking, security groups, and export policies. You'll need to provide Data Sense with CIFS credentials so it can access CIFS volumes.

Steps

1. Make sure that there's a network connection between the Cloud Data Sense instance and each network that includes volumes for Cloud Volumes ONTAP or on-prem ONTAP clusters.
2. Ensure that the security group for Cloud Volumes ONTAP allows inbound traffic from the Data Sense instance.

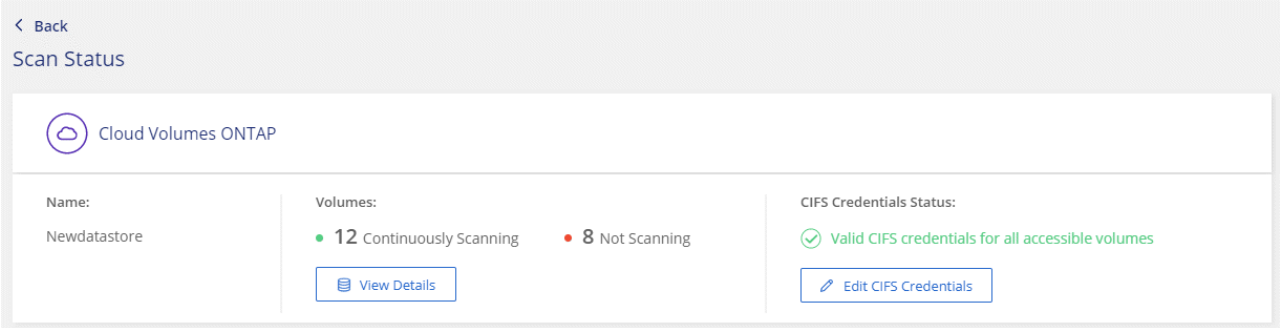
   You can either open the security group for traffic from the IP address of the Data Sense instance, or you can open the security group for all traffic from inside the virtual network.

3. Ensure the following ports are open to the Data Sense instance:
   - For NFS – ports 111 and 2049.
   - For CIFS – ports 139 and 445.
4. Ensure that NFS volume export policies include the IP address of the Data Sense instance so it can access the data on each volume.
5. If you use CIFS, provide Data Sense with Active Directory credentials so it can scan CIFS volumes.
   a. At the top of Cloud Manager, click **Data Sense**.
   b. Click the **Configuration** tab.

   c. For each working environment, click **Edit CIFS Credentials** and enter the user name and password that Data Sense needs to access CIFS volumes on the system.

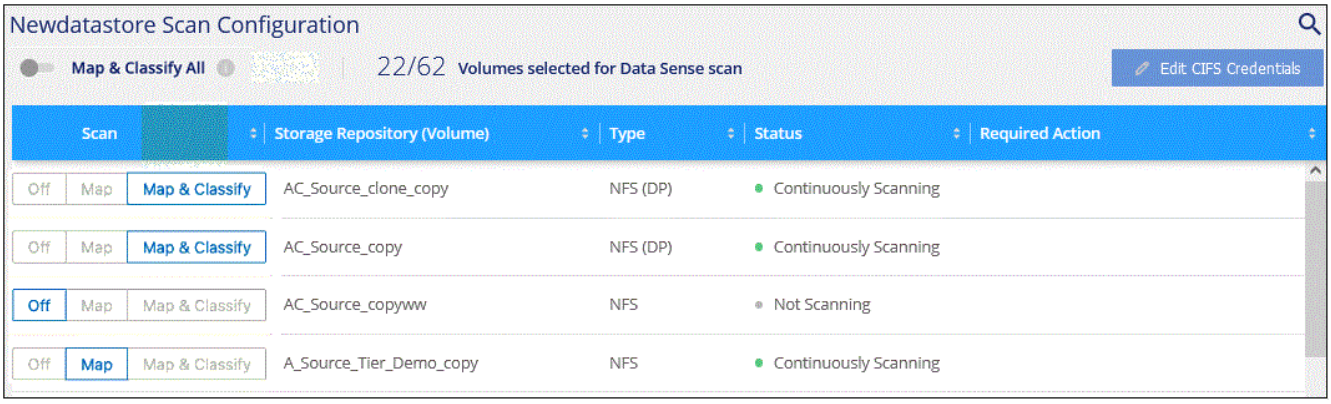
      The credentials can be read-only, but providing admin credentials ensures that Data Sense can read any data that requires elevated permissions. The credentials are stored on the Cloud Data Sense instance.

      After you enter the credentials, you should see a message that all CIFS volumes were authenticated successfully.



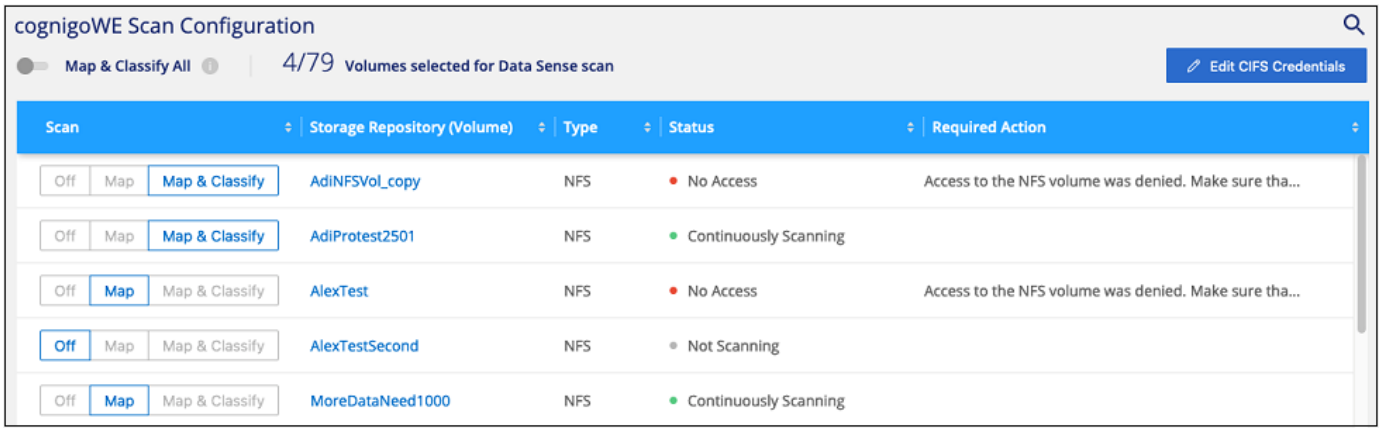
6. On the *Configuration* page, click **View Details** to review the status for each CIFS and NFS volume and correct any errors.

   For example, the following image shows three volumes; one of which Cloud Data Sense can't scan due to network connectivity issues between the Data Sense instance and the volume.



Enabling and disabling compliance scans on volumes

You can stop or start mapping-only scans, or mapping and classification scans, in a working environment at any time from the Configuration page. We recommend that you scan all volumes.



To:	Do this:
Enable mapping-only scans on a volume	Click **Map**
Enable full scanning on a volume	Click **Map & Classify**
Enable full scanning on all volumes	Move the **Map & Classify All** slider to the right
Disable scanning on a volume	Click **Off**
Disable scanning on all volumes	Move the **Map & Classify All** slider to the left

New volumes added to the working environment are automatically scanned only when the **Map & Classify All** setting is enabled. When this setting is disabled, you'll need to activate mapping and/or full scanning on each new volume you create in the working environment.

Scanning backup files from on-premises ONTAP systems

If you don't want Cloud Data Sense to scan volumes directly on your on-prem ONTAP systems, a new Beta feature released in January 2021 allows you to run compliance scans on backup files created from your on-prem ONTAP volumes. So if you're already creating backup files using Cloud Backup, you can use this new feature to run compliance scans on those backup files.

The Compliance scans you run on backup files are **free** - no Cloud Data Sense subscription or license is

needed.

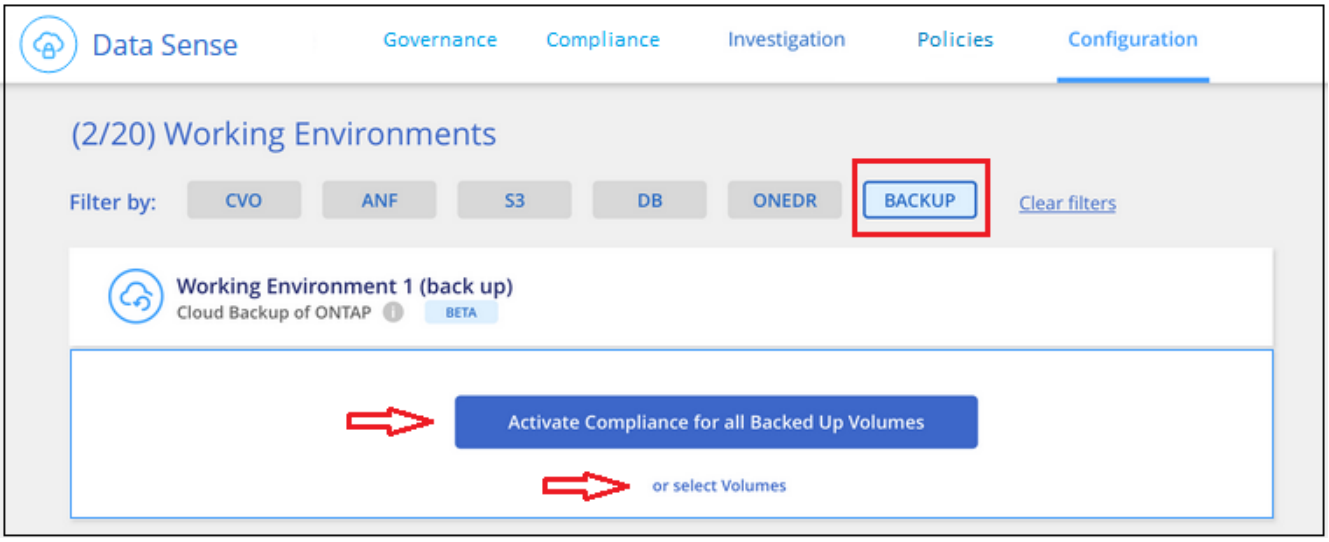
Note: When Data Sense scans backup files it uses permissions granted through the Cloud Restore instance to access the backup files. Typically the Restore instance powers down when not actively restoring files, but it remains **On** when scanning backup files. See more information about the Restore instance.

Steps

If you want to scan the backup files from on-prem ONTAP systems:

1. At the top of Cloud Manager, click **Data Sense** and then select the **Configuration** tab.
2. From the list of working environments, click the **BACKUP** button from the list of filters.

   All the on-premises ONTAP working environments that have backup files are listed. If you don't have any backup files from an on-prem system, then the working environment is not shown.



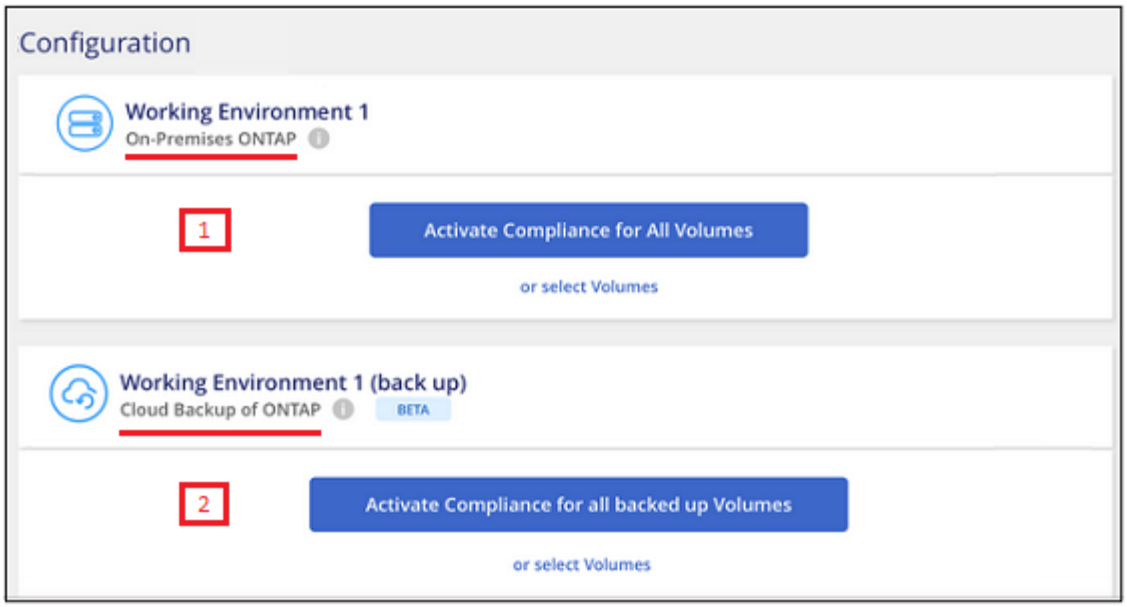
3. To scan all backed up volumes in a working environment, click **Activate Compliance for all backed up Volumes**.

   To scan only certain backed up volumes in a working environment, click **or select Volumes** and then choose the backup files (volumes) that you want to scan.

See Enabling and disabling compliance scans on volumes for details.

Scanning on-prem volumes versus backups of those volumes

When you view the entire list of working environments you will see two listings for each on-prem cluster if they have backed up files.



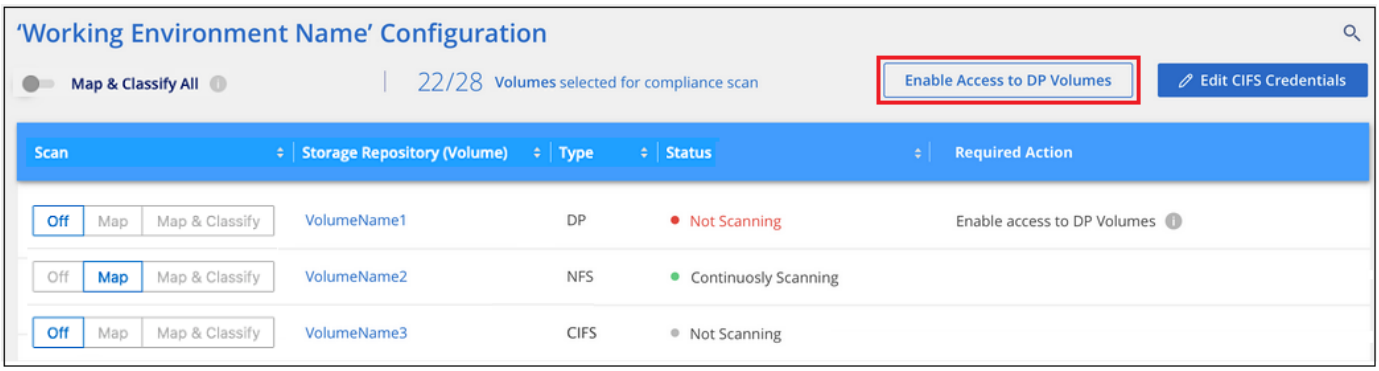
The first item is the on-prem cluster and the actual volumes.
The second item is the backup files of those volumes from that same on-prem cluster.

Choose the first option to scan the volumes on the on-prem system. Choose the second option to scan the backup files from those volumes. Do not scan both on-prem volumes and backup files of the same cluster.

Scanning data protection volumes

By default, data protection (DP) volumes are not scanned because they are not exposed externally and Cloud Data Sense cannot access them. These are the destination volumes for SnapMirror operations from an on-premises ONTAP system or from a Cloud Volumes ONTAP system.

Initially, the volume list identifies these volumes as *Type* **DP** with the *Status* **Not Scanning** and the *Required Action* **Enable Access to DP volumes**.

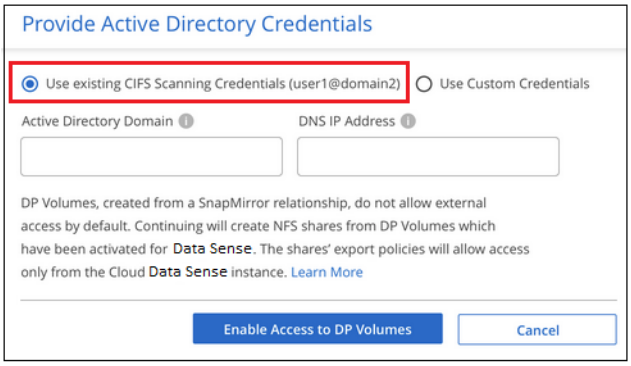


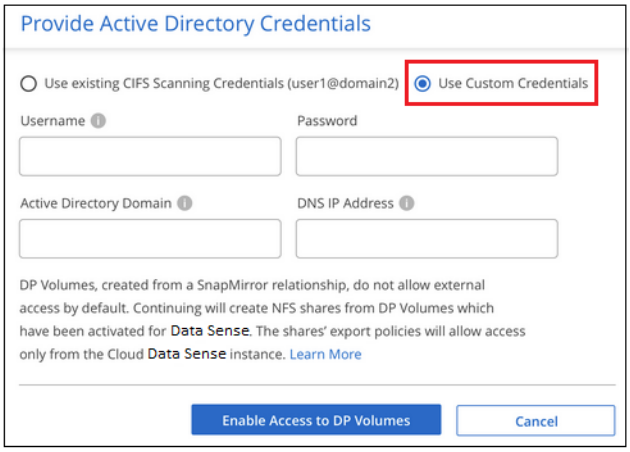
Steps

If you want to scan these data protection volumes:

1. Click **Enable Access to DP volumes** at the top of the page.
2. Review the confirmation message and click **Enable Access to DP volumes** again.
    - Volumes that were initially created as NFS volumes in the source ONTAP system are enabled.
    - Volumes that were initially created as CIFS volumes in the source ONTAP system require that you enter CIFS credentials to scan those DP volumes. If you already entered Active Directory credentials

so that Cloud Data Sense can scan CIFS volumes you can use those credentials, or you can specify a different set of Admin credentials.





3. Activate each DP volume that you want to scan the same way you enabled other volumes, or use the **Activate Compliance for all Volumes** control to enable all volumes, including all DP volumes.

Result

Once enabled, Cloud Data Sense creates an NFS share from each DP volume that was activated for scanning. The share export policies only allow access from the Data Sense instance.

Note: If you had no CIFS data protection volumes when you initially enabled access to DP volumes, and later add some, the button **Enable Access to CIFS DP** appears at the top of the Configuration page. Click this button and add CIFS credentials to enable access to these CIFS DP volumes.

> Active Directory credentials are only registered in the storage VM of the first CIFS DP volume, so all DP volumes on that SVM will be scanned. Any volumes that reside on other SVMs will not have the Active Directory credentials registered, so those DP volumes won't be scanned.

Getting started with Cloud Data Sense for Azure NetApp Files

Complete a few steps to get started with Cloud Data Sense for Azure NetApp Files.

Quick start

Get started quickly by following these steps, or scroll down to the remaining sections for full details.

Discover the data sources that contain the data you want to scan

Before you can scan Azure NetApp Files volumes, Cloud Manager must be set up to discover the configuration.

Deploy the Cloud Data Sense instance

Deploy Cloud Data Sense in Cloud Manager if there isn't already an instance deployed.

Enable Cloud Data Sense and select the volumes to scan

Click **Compliance**, select the **Configuration** tab, and activate compliance scans for volumes in specific working environments.

Ensure access to volumes

Now that Cloud Data Sense is enabled, ensure that it can access all volumes.

- The Cloud Data Sense instance needs a network connection to each Azure NetApp Files subnet.
- Make sure these ports are open to the Data Sense instance:
  - For NFS – ports 111 and 2049.
  - For CIFS – ports 139 and 445.
- NFS volume export policies must allow access from the Data Sense instance.
- Data Sense needs Active Directory credentials to scan CIFS volumes.

  Click **Compliance** > **Configuration** > **Edit CIFS Credentials** and provide the credentials.

Manage the volumes you want to scan

Select or deselect the volumes that you want to scan and Cloud Data Sense will start or stop scanning them.

Discovering the data sources that you want to scan

If the data sources you want to scan are not already in your Cloud Manager environment, you can add them to the canvas at this time.

For Azure NetApp Files, Cloud Manager must be set up to discover the configuration.

Deploying the Cloud Data Sense instance

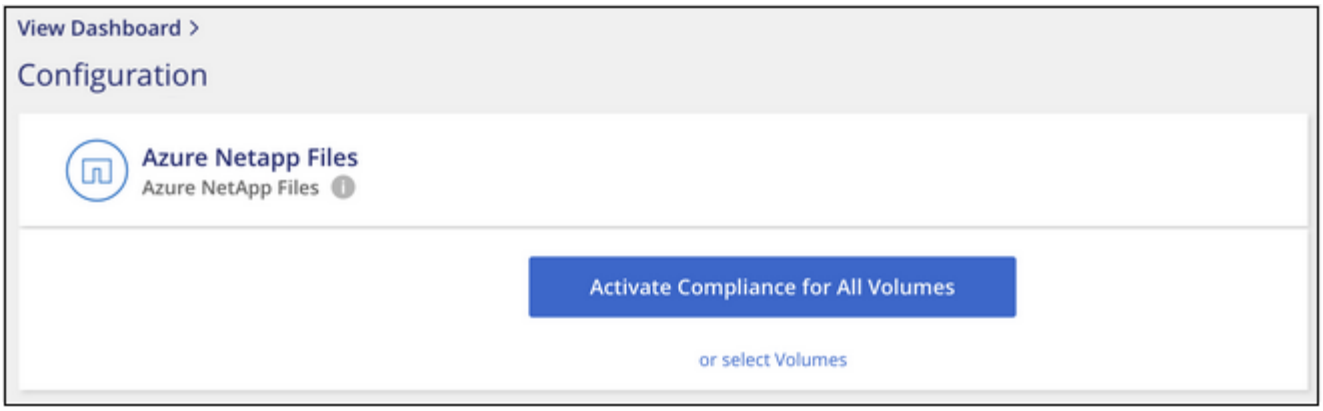
Deploy Cloud Data Sense if there isn't already an instance deployed.

Data Sense must be deployed in the cloud when scanning Azure NetApp Files volumes, and it must be deployed in the same region as the volumes you wish to scan.

Enabling Cloud Data Sense in your working environments

You can enable Cloud Data Sense on your Azure NetApp Files volumes.

1. At the top of Cloud Manager, click **Data Sense** and then select the **Configuration** tab.



2. To scan all volumes in a working environment, click **Activate Scanning for All Volumes**.

   When enabled in this manner, full "mapping and classification" scanning is performed on all volumes.

   If you want to enable scanning only for certain volumes, or if you only want to perform "mapping-only" scanning, click **or select Volumes** and then choose the volumes you want to scan.

See Enabling and disabling compliance scans on volumes for details.

Result

Cloud Data Sense starts scanning the volumes you selected in the working environment. Results will be available in the Compliance dashboard as soon as Cloud Data Sense finishes the initial scans. The time that it takes depends on the amount of data—it could be a few minutes or hours.

Verifying that Cloud Data Sense has access to volumes

Make sure that Cloud Data Sense can access volumes by checking your networking, security groups, and export policies. You'll need to provide Data Sense with CIFS credentials so it can access CIFS volumes.

Steps

1. Make sure that there's a network connection between the Cloud Data Sense instance and each network that includes volumes for Azure NetApp Files.

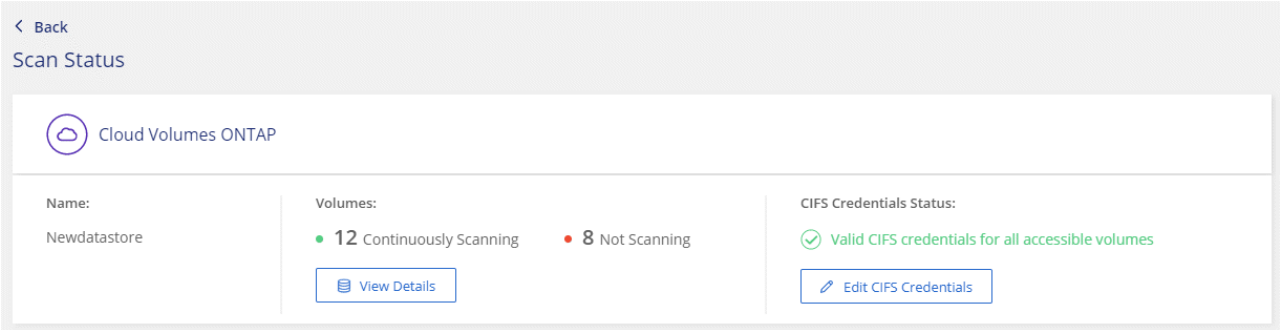
   For Azure NetApp Files, Cloud Data Sense can only scan volumes that are in the same region as Cloud Manager.

2. Ensure the following ports are open to the Data Sense instance:
   - For NFS – ports 111 and 2049.
   - For CIFS – ports 139 and 445.
3. Ensure that NFS volume export policies include the IP address of the Data Sense instance so it can access the data on each volume.
4. If you use CIFS, provide Data Sense with Active Directory credentials so it can scan CIFS volumes.
   a. At the top of Cloud Manager, click **Data Sense**.
   b. Click the **Configuration** tab.

c. For each working environment, click **Edit CIFS Credentials** and enter the user name and password that Data Sense needs to access CIFS volumes on the system.

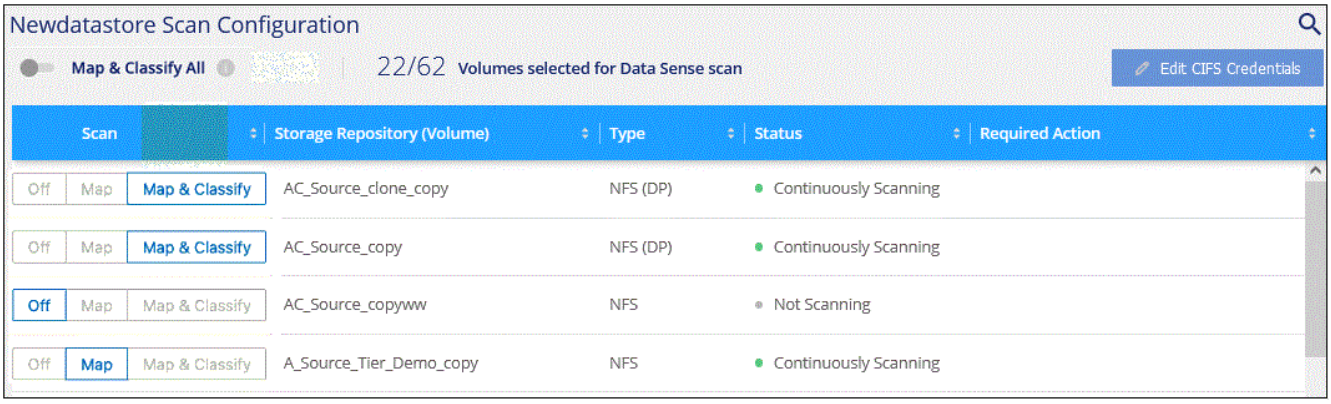
   The credentials can be read-only, but providing admin credentials ensures that Data Sense can read any data that requires elevated permissions. The credentials are stored on the Cloud Data Sense instance.

   After you enter the credentials, you should see a message that all CIFS volumes were authenticated successfully.



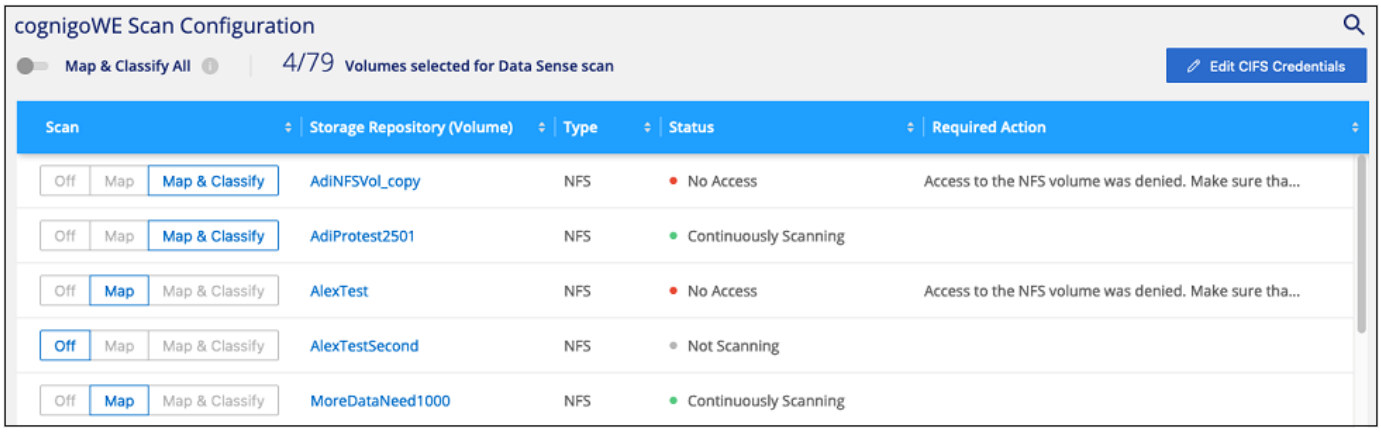
5. On the *Configuration* page, click **View Details** to review the status for each CIFS and NFS volume and correct any errors.

   For example, the following image shows three volumes; one of which Cloud Data Sense can't scan due to network connectivity issues between the Data Sense instance and the volume.



Enabling and disabling compliance scans on volumes

You can stop or start mapping scans, or mapping and classification scans, in a working environment at any time from the Configuration page. We recommend that you scan all volumes.



To:	Do this:
Enable mapping-only scans on a volume	Click **Map**
Enable full scanning on a volume	Click **Map & Classify**
Enable full scanning on all volumes	Move the **Map & Classify All** slider to the right
Disable scanning on a volume	Click **Off**
Disable scanning on all volumes	Move the **Map & Classify All** slider to the left

New volumes added to the working environment are automatically scanned only when the **Activate Compliance for all Volumes** setting is enabled. When this setting is disabled, you'll need to activate scanning on each new volume you create in the working environment.

Get started with Cloud Data Sense for Amazon FSx for ONTAP

Complete a few steps to get started with Cloud Data Sense for FSx for ONTAP.

Before you begin

- You need an active Connector in AWS to deploy and manage Data Sense.
- The security group you selected when creating the working environment must allow traffic from the Cloud Data Sense instance. You can find the associated security group using the ENI connected to the FSx for ONTAP file system and edit it using the AWS Management Console.

  AWS security groups for Linux instances

  AWS security groups for Windows instances

  AWS elastic network interfaces (ENI)

At this time, you can scan NFS volumes only.

Quick start

Get started quickly by following these steps or scroll down for full details.

Discover the data sources that contain the data you want to scan

Before you can scan FSx for ONTAP volumes, you must have an FSx working environment with volumes configured.

Deploy the Cloud Data Sense instance

Deploy Cloud Data Sense in Cloud Manager if there isn't already an instance deployed.

Enable Cloud Data Sense and select the volumes to scan

Click **Data Sense**, select the **Configuration** tab, and activate compliance scans for volumes in specific working environments.

Ensure access to volumes

Now that Cloud Data Sense is enabled, ensure that it can access all volumes.

- The Cloud Data Sense instance needs a network connection to each FSx for ONTAP subnet.
- Make sure NFS ports 111 and 2049 are open to the Data Sense instance.
- NFS volume export policies must allow access from the Data Sense instance.

Manage the volumes you want to scan

Select or deselect the volumes you want to scan and Cloud Data Sense will start or stop scanning them.

Discovering the data sources that you want to scan

If the data sources you want to scan are not already in your Cloud Manager environment, you can add them to the canvas at this time.

For FSx for ONTAP, Cloud Manager must be set up to discover the configuration.

Deploying the Cloud Data Sense instance

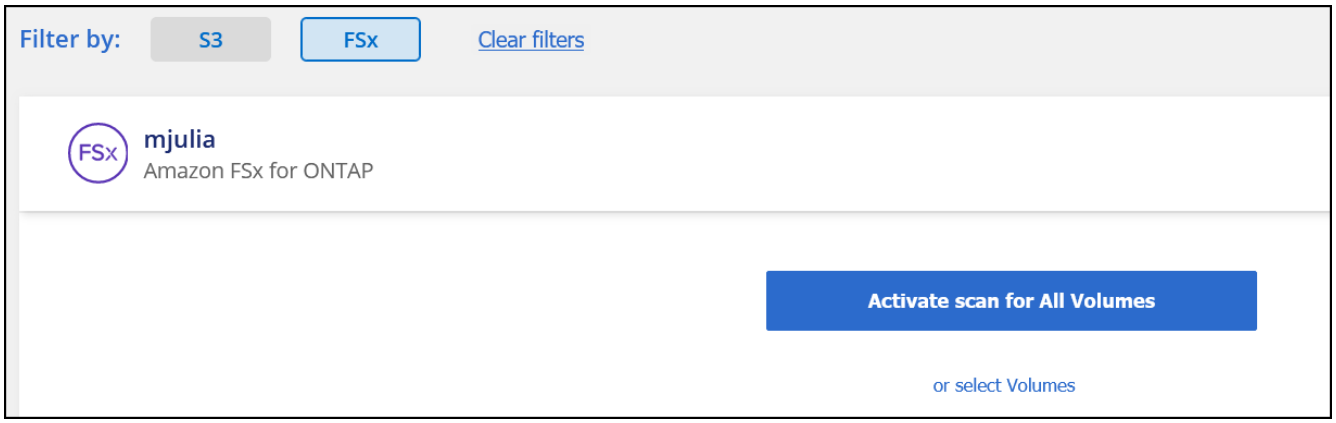
Deploy Cloud Data Sense if there isn't already an instance deployed.

Data Sense should be deployed in the same AWS network as the Connector for AWS and the FSx volumes you wish to scan.

Enabling Cloud Data Sense in your working environments

You can enable Cloud Data Sense for FSx for ONTAP volumes.

1. At the top of Cloud Manager, click **Data Sense** and then select the **Configuration** tab.



2. To scan all volumes in a working environment, click **Activate Scanning for All Volumes**.

   When enabled in this manner, full "mapping and classification" scanning is performed on all volumes.

   If you want to enable scanning only for certain volumes, or if you only want to perform "mapping-only" scanning, click **or select Volumes** and then choose the volumes you want to scan.

See Enabling and disabling compliance scans on volumes for details.

Result

Cloud Data Sense starts scanning the volumes you selected in the working environment. Results will be available in the Compliance dashboard as soon as Cloud Data Sense finishes the initial scans. The time that it takes depends on the amount of data—it could be a few minutes or hours.

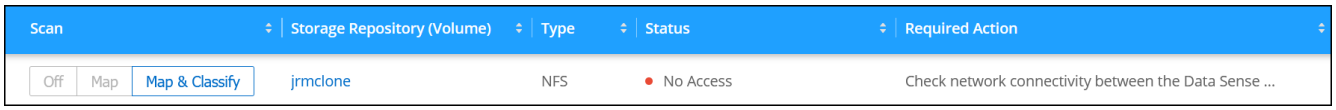
Verifying that Cloud Data Sense has access to volumes

Make sure Cloud Data Sense can access volumes by checking your networking, security groups, and export policies.

Steps

1. On the *Configuration* page, click **View Details** to review the status and correct any errors.

   For example, the following image shows a volume Cloud Data Sense can't scan due to network connectivity issues between the Data Sense instance and the volume.



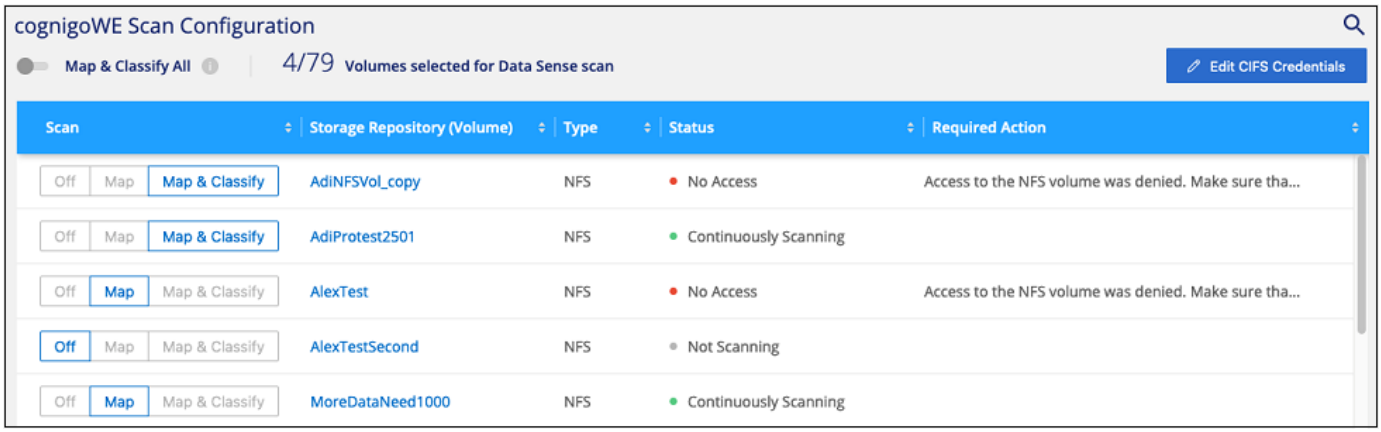
2. Make sure there's a network connection between the Cloud Data Sense instance and each network that includes volumes for FSx for ONTAP.

   For FSx for ONTAP, Cloud Data Sense can scan volumes only in the same region as Cloud Manager.

3. Ensure NFS ports 111 and 2049 are open to the Data Sense instance.
4. Ensure NFS volume export policies include the IP address of the Data Sense instance so it can access the data on each volume.

Enabling and disabling compliance scans on volumes

You can stop or start mapping scans, or mapping and classification scans, in a working environment at any time from the Configuration page. We recommend that you scan all volumes.



To:	Do this:
Enable mapping-only scans on a volume	Click **Map**
Enable full scanning on a volume	Click **Map & Classify**
Enable full scanning on all volumes	Move the **Map & Classify All** slider to the right
Disable scanning on a volume	Click **Off**
Disable scanning on all volumes	Move the **Map & Classify All** slider to the left

New volumes added to the working environment are automatically scanned only when the **Activate Compliance for all Volumes** setting is enabled. When this setting is disabled, you'll need to activate scanning on each new volume you create in the working environment.

Getting started with Cloud Data Sense for Amazon S3

Cloud Data Sense can scan your Amazon S3 buckets to identify the personal and sensitive data that resides in S3 object storage. Cloud Data Sense can scan any bucket in the account, regardless if it was created for a NetApp solution.

Quick start

Get started quickly by following these steps, or scroll down to the remaining sections for full details.

1 Set up the S3 requirements in your cloud environment

Ensure that your cloud environment can meet the requirements for Cloud Data Sense, including preparing an IAM role and setting up connectivity from Data Sense to S3. See the complete list.

2 Deploy the Cloud Data Sense instance

Deploy Cloud Data Sense if there isn't already an instance deployed.

Activate Data Sense on your S3 working environment

Select the Amazon S3 working environment, click **Enable**, and select an IAM role that includes the required permissions.

Select the buckets to scan

Select the buckets that you'd like to scan and Cloud Data Sense will start scanning them.

Reviewing S3 prerequisites

The following requirements are specific to scanning S3 buckets.

Set up an IAM role for the Cloud Data Sense instance

Cloud Data Sense needs permissions to connect to the S3 buckets in your account and to scan them. Set up an IAM role that includes the permissions listed below. Cloud Manager prompts you to select an IAM role when you enable Data Sense on the Amazon S3 working environment.

```
{
  "Version": "2012-10-17",
  "Statement": [
      {
          "Effect": "Allow",
          "Action": [
              "s3:Get*",
              "s3:List*",
              "s3:PutObject",
          ],
          "Resource": "*"
      },
      {
          "Effect": "Allow",
          "Action": [
              "iam:GetPolicyVersion",
              "iam:GetPolicy",
              "iam:ListAttachedRolePolicies"
          ],
          "Resource": [
              "arn:aws:iam::*:policy/*",
              "arn:aws:iam::*:role/*"
          ]
      }
  ]
}
```

Provide connectivity from Cloud Data Sense to Amazon S3

Cloud Data Sense needs a connection to Amazon S3. The best way to provide that connection is through a VPC Endpoint to the S3 service. For instructions, see AWS Documentation: Creating a Gateway Endpoint.

When you create the VPC Endpoint, be sure to select the region, VPC, and route table that corresponds to the Cloud Data Sense instance. You must also modify the security group to add an outbound HTTPS rule that enables traffic to the S3 endpoint. Otherwise, Data Sense can't connect to the S3 service.

If you experience any issues, see AWS Support Knowledge Center: Why can't I connect to an S3 bucket using a gateway VPC endpoint?

An alternative is to provide the connection by using a NAT Gateway.

ⓘ You can't use a proxy to get to S3 over the internet.

Deploying the Cloud Data Sense instance

Deploy Cloud Data Sense in Cloud Manager if there isn't already an instance deployed.

You need to deploy the instance in an AWS Connector so that Cloud Manager automatically discovers the S3 buckets in this AWS account and displays them in an Amazon S3 working environment.

Note: Deploying Cloud Data Sense in an on-premises location is not currently supported when scanning S3 buckets.

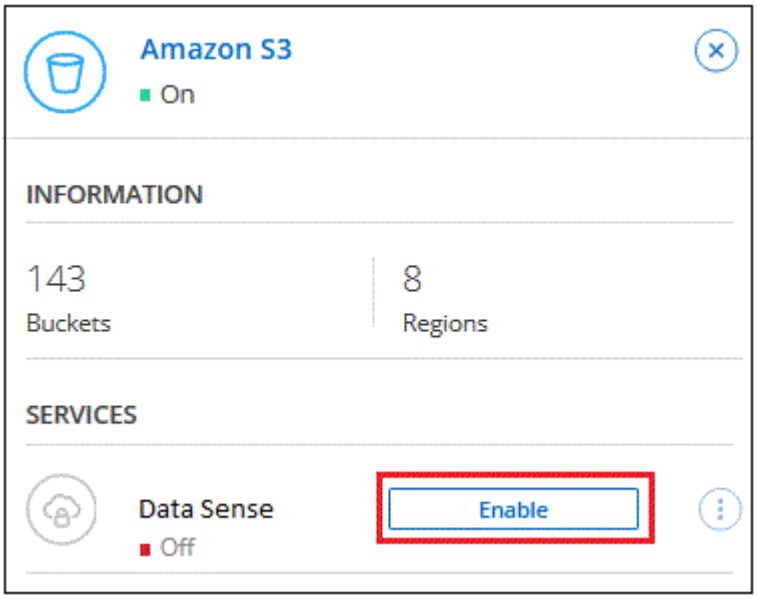
Activating Data Sense on your S3 working environment

Enable Cloud Data Sense on Amazon S3 after you verify the prerequisites.

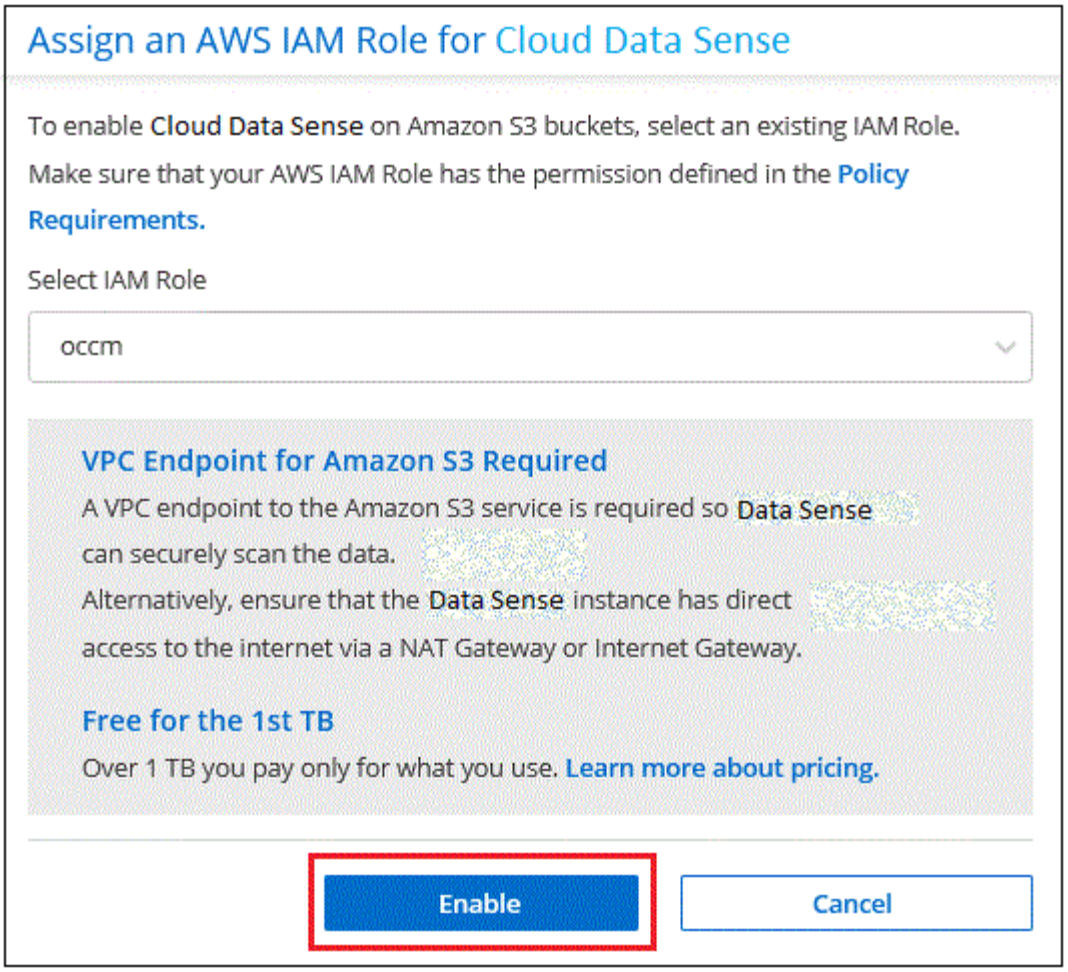
Steps

1. At the top of Cloud Manager, click **Canvas**.
2. Select the Amazon S3 working environment.

3. In the Data Sense pane on the right, click **Enable**.



4. When prompted, assign an IAM role to the Cloud Data Sense instance that has the required permissions.



5. Click **Enable**.

You can also enable compliance scans for a working environment from the Configuration page by clicking the button and selecting **Activate Data Sense**.

Result

Cloud Manager assigns the IAM role to the instance.

Enabling and disabling compliance scans on S3 buckets

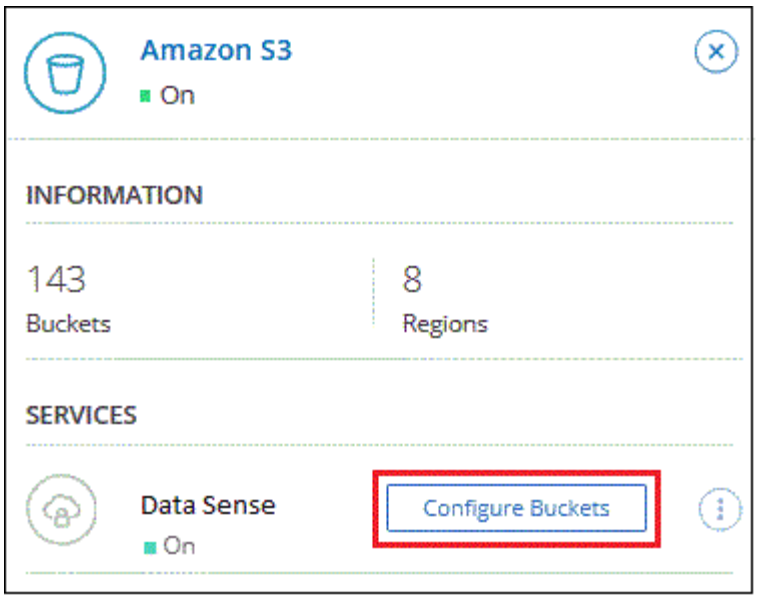
After Cloud Manager enables Cloud Data Sense on Amazon S3, the next step is to configure the buckets that you want to scan.

When Cloud Manager is running in the AWS account that has the S3 buckets you want to scan, it discovers those buckets and displays them in an Amazon S3 working environment.

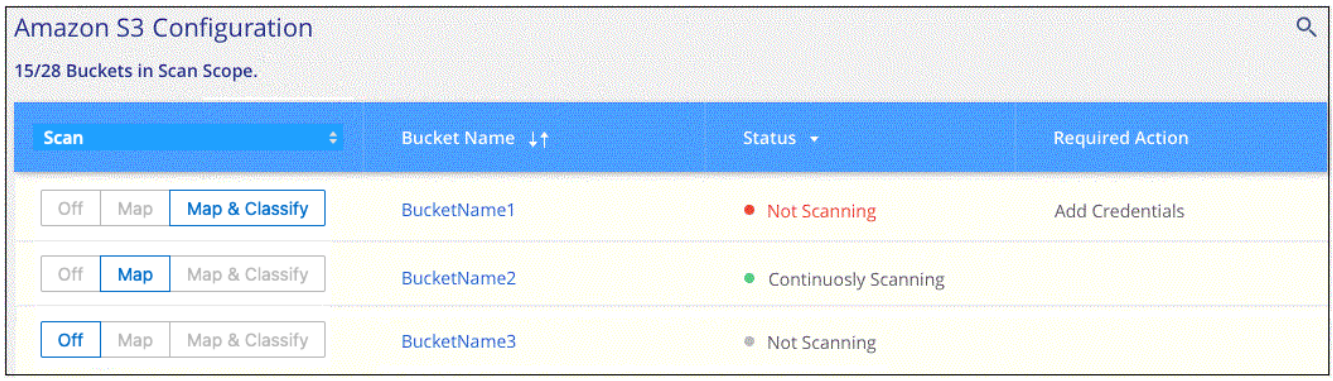
Cloud Data Sense can also scan S3 buckets that are in different AWS accounts.

Steps

1. Select the Amazon S3 working environment.
2. In the pane on the right, click **Configure Buckets**.



3. Enable mapping-only scans, or mapping and classification scans, on your buckets.



To:	Do this:
Enable mapping-only scans on a bucket	Click **Map**
Enable full scans on a bucket	Click **Map & Classify**
Disable scanning on a bucket	Click **Off**

Result

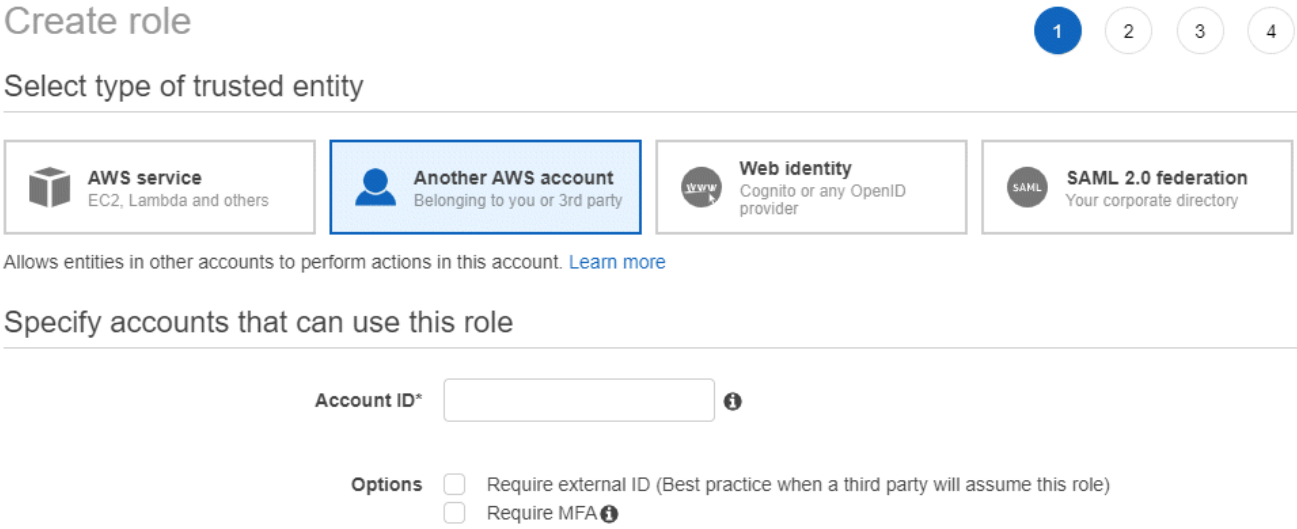
Cloud Data Sense starts scanning the S3 buckets that you enabled. If there are any errors, they'll appear in the Status column, alongside the required action to fix the error.

Scanning buckets from additional AWS accounts

You can scan S3 buckets that are under a different AWS account by assigning a role from that account to access the existing Cloud Data Sense instance.

Steps

1. Go to the target AWS account where you want to scan S3 buckets and create an IAM role by selecting **Another AWS account**.



Be sure to do the following:

- Enter the ID of the account where the Cloud Data Sense instance resides.
- Change the **Maximum CLI/API session duration** from 1 hour to 12 hours and save that change.
- Attach the Cloud Data Sense IAM policy. Make sure it has the required permissions.

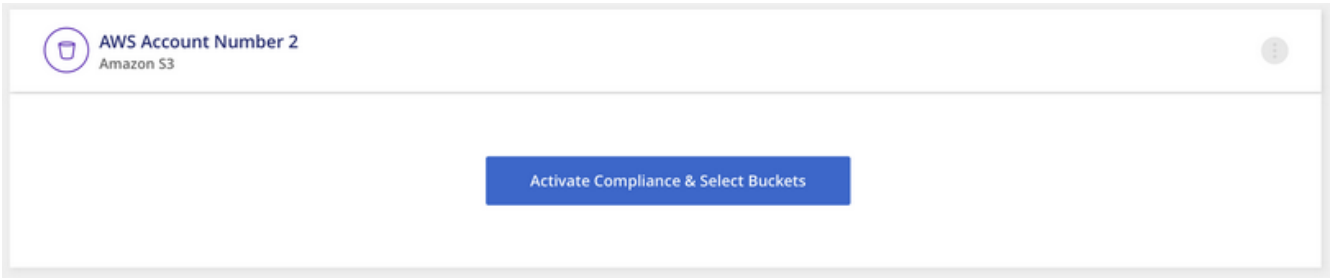
```
{
  "Version": "2012-10-17",
  "Statement": [
      {
          "Effect": "Allow",
          "Action": [
              "s3:Get*",
              "s3:List*",
              "s3:PutObject",
          ],
          "Resource": "*"
      },
  ]
}
```

2. Go to the source AWS account where the Data Sense instance resides and select the IAM role that is attached to the instance.
   a. Change the **Maximum CLI/API session duration** from 1 hour to 12 hours and save that change.
   b. Click **Attach policies** and then click **Create policy**.
   c. Create a policy that includes the "sts:AssumeRole" action and specify the ARN of the role that you created in the target account.

```
{
    "Version": "2012-10-17",
    "Statement": [
        {
            "Effect": "Allow",
            "Action": "sts:AssumeRole",
            "Resource": "arn:aws:iam::<ADDITIONAL-ACCOUNT-
ID>:role/<ADDITIONAL_ROLE_NAME>"
        },
        {
            "Effect": "Allow",
            "Action": [
                "iam:GetPolicyVersion",
                "iam:GetPolicy",
                "iam:ListAttachedRolePolicies"
            ],
            "Resource": [
                "arn:aws:iam::*:policy/*",
                "arn:aws:iam::*:role/*"
            ]
        }
    ]
}
```

The Cloud Data Sense instance profile account now has access to the additional AWS account.

3. Go to the **Amazon S3 Configuration** page and the new AWS account is displayed. Note that it can take a few minutes for Cloud Data Sense to sync the new account's working environment and show this information.



4. Click **Activate Data Sense & Select Buckets** and select the buckets you want to scan.

Result

Cloud Data Sense starts scanning the new S3 buckets that you enabled.

Scanning database schemas

Complete a few steps to start scanning your database schemas with Cloud Data Sense.

Quick start

Get started quickly by following these steps, or scroll down to the remaining sections for full details.

 **Review database prerequisites**

Ensure that your database is supported and that you have the information necessary to connect to the database.

 **Deploy the Cloud Data Sense instance**

Deploy Cloud Data Sense if there isn't already an instance deployed.

 **Add the database server**

Add the database server that you want to access.

 **Select the schemas**

Select the schemas that you want to scan.

Reviewing prerequisites

Review the following prerequisites to make sure that you have a supported configuration before you enable Cloud Data Sense.

Supported databases

Cloud Data Sense can scan schemas from the following databases:

- Amazon Relational Database Service (Amazon RDS)
- MongoDB
- MySQL
- Oracle
- PostgreSQL
- SAP HANA
- SQL Server (MSSQL)

The statistics gathering feature **must be enabled** in the database.

Database requirements

Any database with connectivity to the Cloud Data Sense instance can be scanned, regardless of where it is hosted. You just need the following information to connect to the database:

- IP Address or host name
- Port
- Service name (only for accessing Oracle databases)
- Credentials that allow read access to the schemas

  When choosing a user name and password, it's important to choose one that has full read permissions to all the schemas and tables you want to scan. We recommend that you create a dedicated user for the Cloud Data Sense system with all the required permissions.

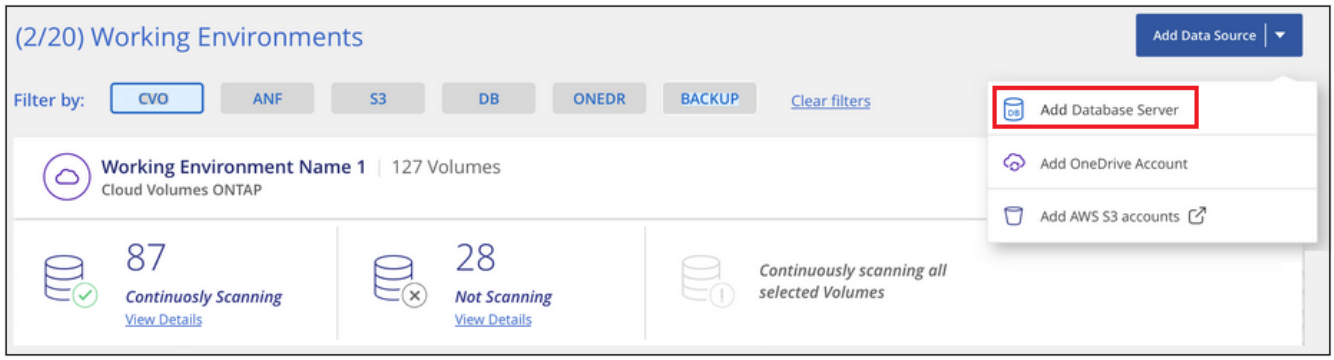
Note: For MongoDB, a read-only Admin role is required.

Adding the database server

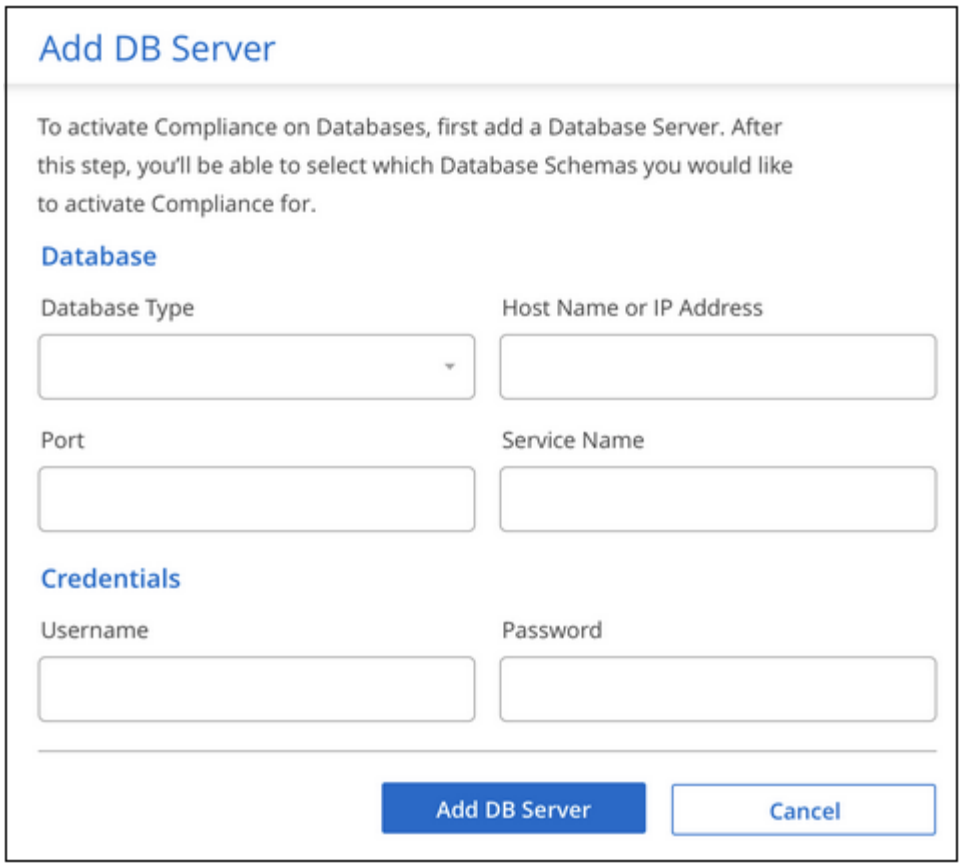
You must have deployed an instance of Cloud Data Sense in Cloud Manager already.

Add the database server where the schemas reside.

1. From the Working Environments Configuration page, click **Add Data Source** > **Add Database Server**.



2. Enter the required information to identify the database server.
   a. Select the database type.
   b. Enter the port and the host name or IP address to connect to the database.
   c. For Oracle databases, enter the Service name.
   d. Enter the credentials so that Cloud Data Sense can access the server.
   e. Click **Add DB Server**.



The database is added to the list of working environments.

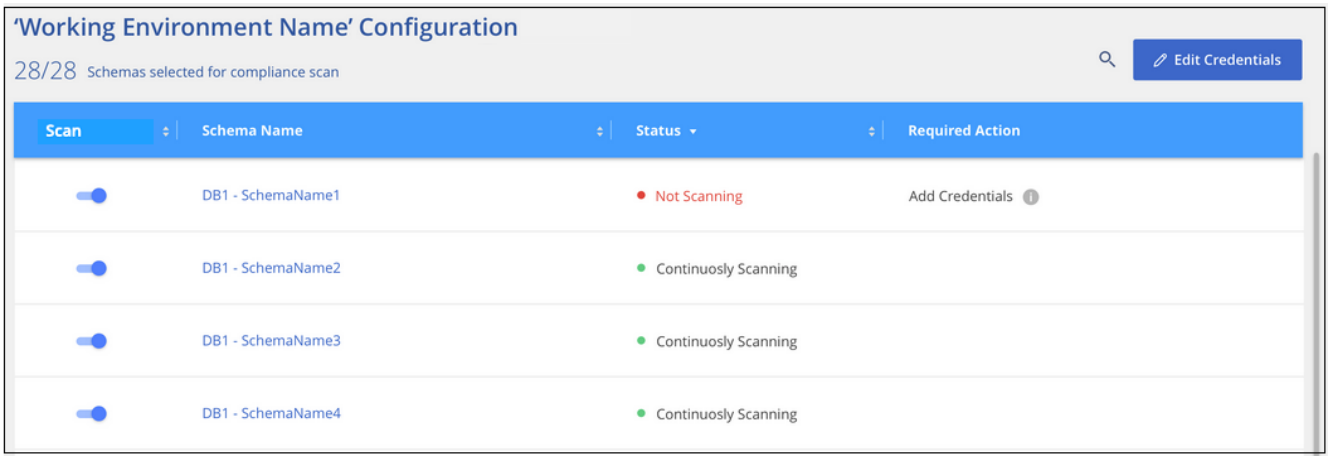
Enabling and disabling compliance scans on database schemas

You can stop or start full scanning of your schemas at any time.

There is no option to select mapping-only scans for database schemas.

1. From the *Configuration* page, click the **Configuration** button for the database you want to configure.

2. Select the schemas that you want to scan by moving the slider to the right.



Result

Cloud Data Sense starts scanning the database schemas that you enabled. If there are any errors, they'll appear in the Status column, alongside the required action to fix the error.

Scanning OneDrive accounts

Complete a few steps to start scanning files in your user's OneDrive folders with Cloud Data Sense.

Quick start

Get started quickly by following these steps, or scroll down to the remaining sections for full details.

1 Review OneDrive prerequisites

Ensure that you have the Admin credentials to log into the OneDrive account.

2 Deploy the Cloud Data Sense instance

Deploy Cloud Data Sense if there isn't already an instance deployed.

3 Add the OneDrive account

Using Admin user credentials, log into the OneDrive account that you want to access so that it is added as a new working environment.

4 Add the users and select the users to scan

Add the list of users from the OneDrive account that you want to scan and select the type of scanning. You can add up to 100 users at time.

Reviewing OneDrive requirements

Review the following prerequisites to make sure that you have a supported configuration before you enable Cloud Data Sense.

- You must have the Admin login credentials for the OneDrive for Business account that provides read access to all user files.
- You will need a line-separated list of the email addresses for all the users whose OneDrive folders you want to scan.

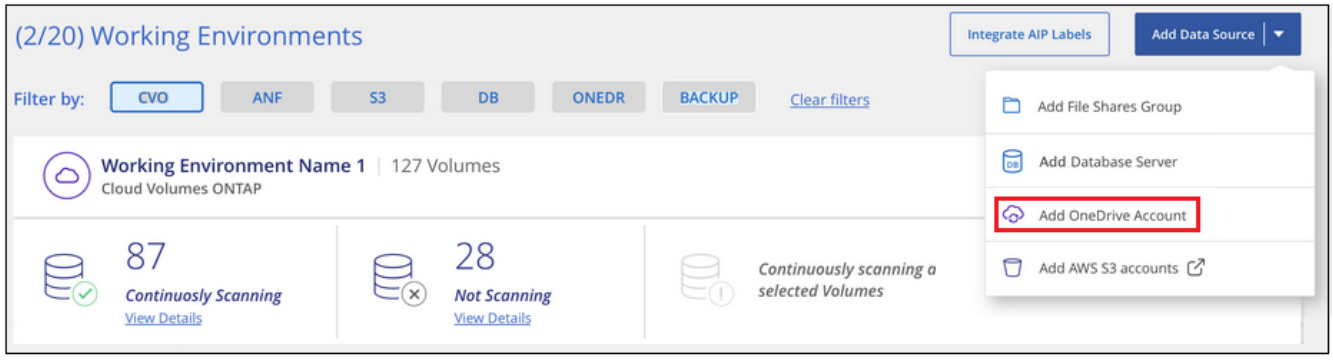
Adding the OneDrive account

You must have deployed an instance of Cloud Data Sense in Cloud Manager already.

Add the OneDrive account where the user files reside.

Steps

1. From the Working Environments Configuration page, click **Add Data Source** > **Add OneDrive Account**.



2. In the Add a OneDrive account dialog, click **Sign in to OneDrive**.
3. In the Microsoft page that appears, select the OneDrive account and enter the required Admin user and password, then click **Accept** to allow Cloud Data Sense to read data from this account.

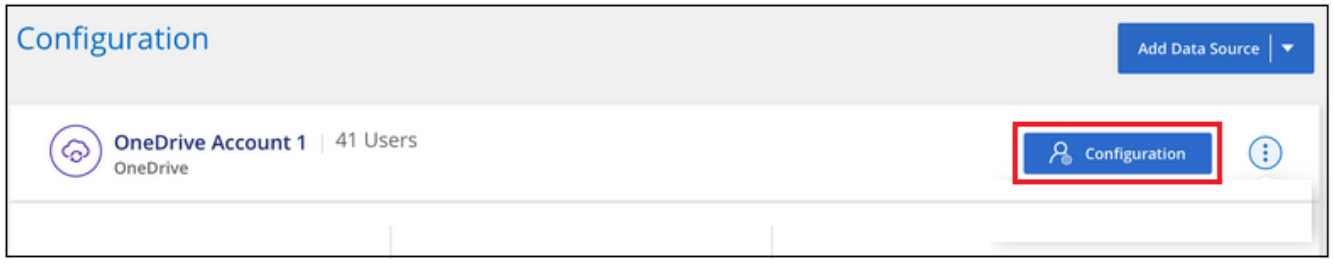
The OneDrive account is added to the list of working environments.

Adding OneDrive users to compliance scans

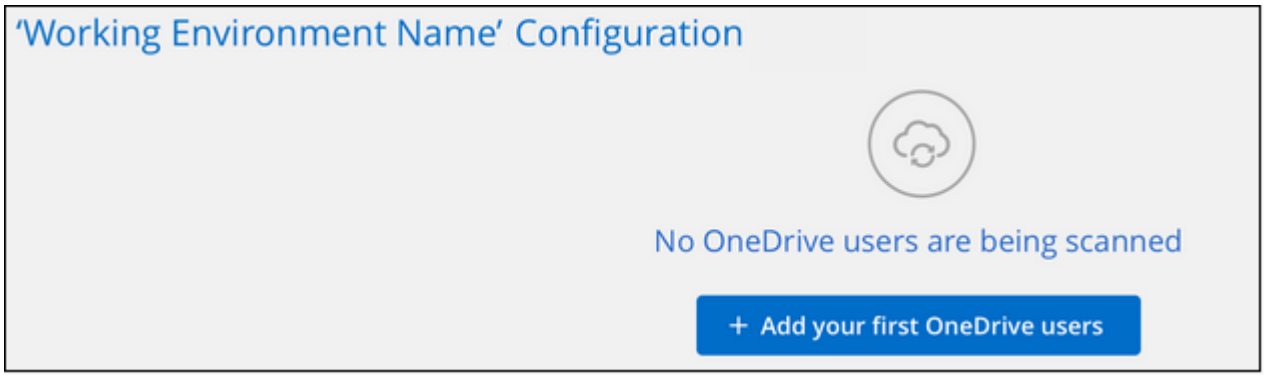
You can add individual OneDrive users, or all of your OneDrive users, so that their files will be scanned by Cloud Data Sense.

Steps

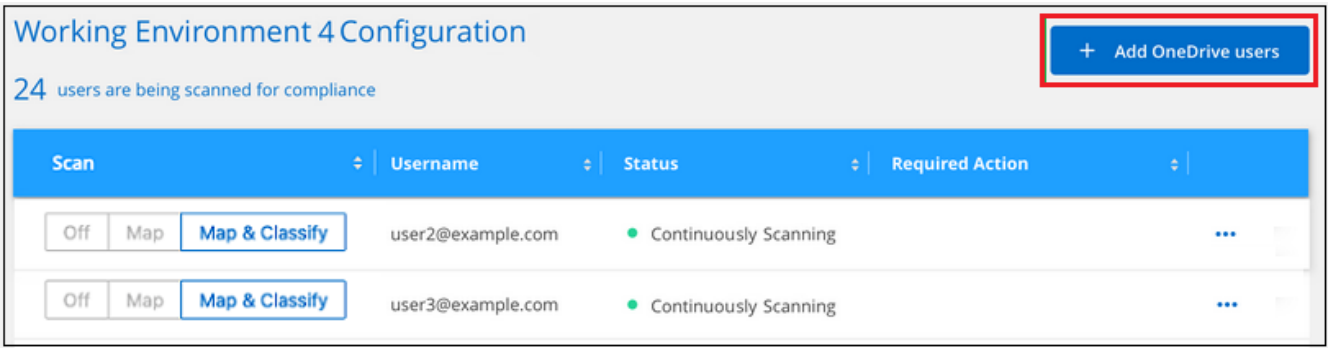
1. From the *Configuration* page, click the **Configuration** button for the OneDrive account.



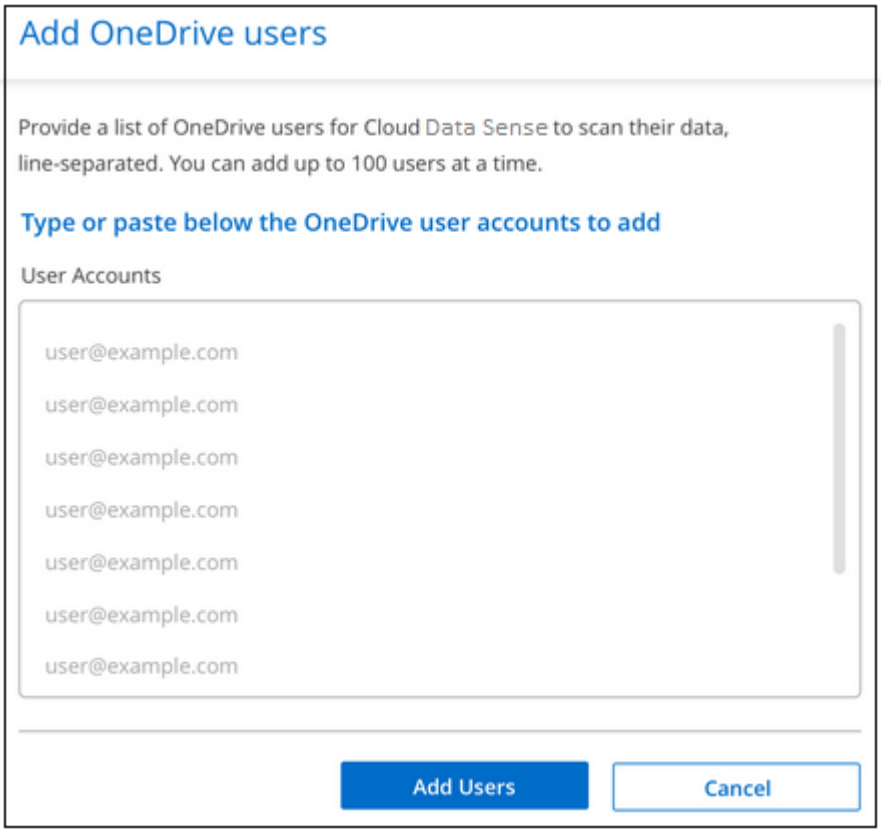
2. If this is the first time adding users for this OneDrive account, click **Add your first OneDrive users**.



If you are adding additional users from a OneDrive account, click **Add OneDrive users**.



3. Add the email addresses for the users whose files you want to scan - one email address per line (up to 100 maximum per session) - and click **Add Users**.



A confirmation dialog displays the number of users who were added.

If the dialog lists any users who could not be added, capture this information so that you can resolve the issue. In some cases you can re-add the user with a corrected email address.

4. Enable mapping-only scans, or mapping and classification scans, on user files.

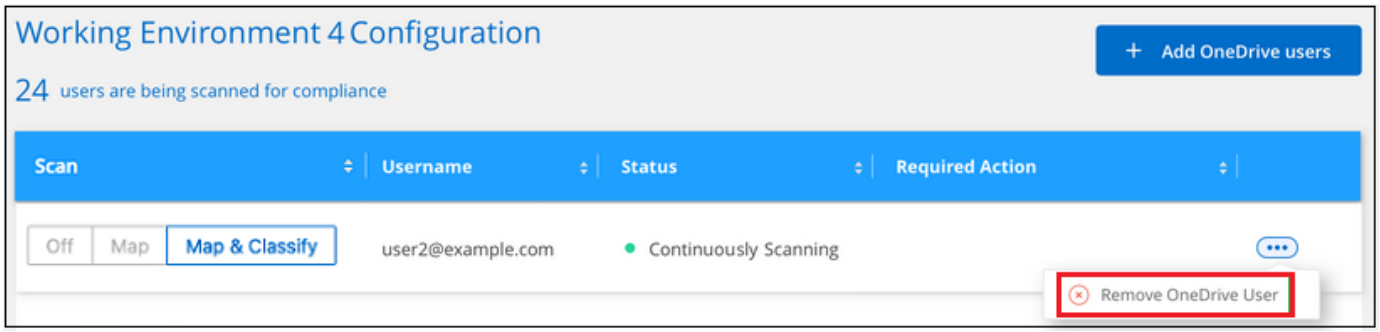
To:	Do this:
Enable mapping-only scans on user files	Click **Map**
Enable full scans on user files	Click **Map & Classify**
Disable scanning on user files	Click **Off**

Result

Cloud Data Sense starts scanning the files for the users you added, and the results are displayed in the Dashboard and in other locations.

Removing a OneDrive user from compliance scans

If users leave the company or if their email address changes, you can remove individual OneDrive users from having their files scanned at any time. Just click **Remove OneDrive User** from the Configuration page.



Scanning file shares

Complete a few steps to start scanning non-NetApp NFS or CIFS file shares directly with Cloud Data Sense. These file shares can reside on-premises or in the cloud.

Quick start

Get started quickly by following these steps, or scroll down to the remaining sections for full details.

Review file share prerequisites

For CIFS (SMB) shares, ensure that you have credentials to access the shares.

Deploy the Cloud Data Sense instance

Deploy Cloud Data Sense if there isn't already an instance deployed.

Create a group to hold the file shares

The group is a container for the file shares that you want to scan, and it is used as the working environment name for those file shares.

Add the file shares and select the shares to scan

Add the list of file shares that you want to scan and select the type of scanning. You can add up to 100 file shares at a time.

Reviewing file share requirements

Review the following prerequisites to make sure that you have a supported configuration before you enable Cloud Data Sense.

- The shares can be hosted anywhere, including in the cloud or on-premises. These are file shares that reside on non-NetApp storage systems.
- There needs to be network connectivity between the Data Sense instance and the shares.
- Make sure these ports are open to the Data Sense instance:
  - For NFS – ports 111 and 2049.
  - For CIFS – ports 139 and 445.
- You will need the list of shares you want to add in the format `<host_name>:/<share_path>`. You can enter the shares individually, or you can supply a line-separated list of the file shares you want to scan.
- For CIFS (SMB) shares, ensure that you have Active Directory credentials that provide read access to the shares. Admin credentials are preferred in case Cloud Data Sense needs to scan any data that requires elevated permissions.

Creating the group for the file shares

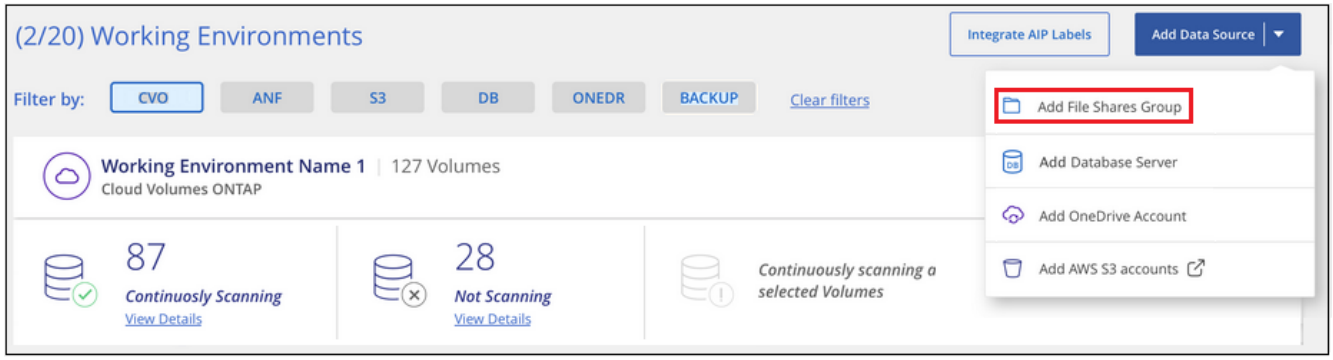
You must have deployed an instance of Cloud Data Sense in Cloud Manager already.

You must add a files shares "group" before you can add your file shares. The group is a container for the file shares that you want to scan, and the group name is used as the working environment name for those file shares.

You can mix NFS and CIFS shares in the same group, however, all CIFS file shares in a group need to be using the same Active Directory credentials. If you plan to add CIFS shares that use different credentials, you must make a separate group for each unique set of credentials.

Steps

1. From the Working Environments Configuration page, click **Add Data Source** > **Add File Shares Group**.



2. In the Add Files Shares Group dialog, enter the name for the group of shares and click **Continue**.

The new File Shares Group is added to the list of working environments.

Adding file shares to a group

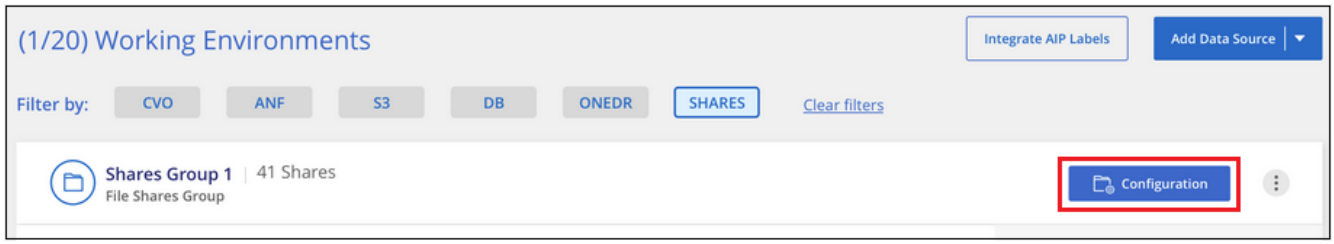
You add file shares to the File Shares Group so that the files in those shares will be scanned by Cloud Data Sense. You add the shares in the format `<host_name>:/<share_path>`.

You can add individual file shares, or you can supply a line-separated list of the file shares you want to scan. You can add up to 100 shares at a time.

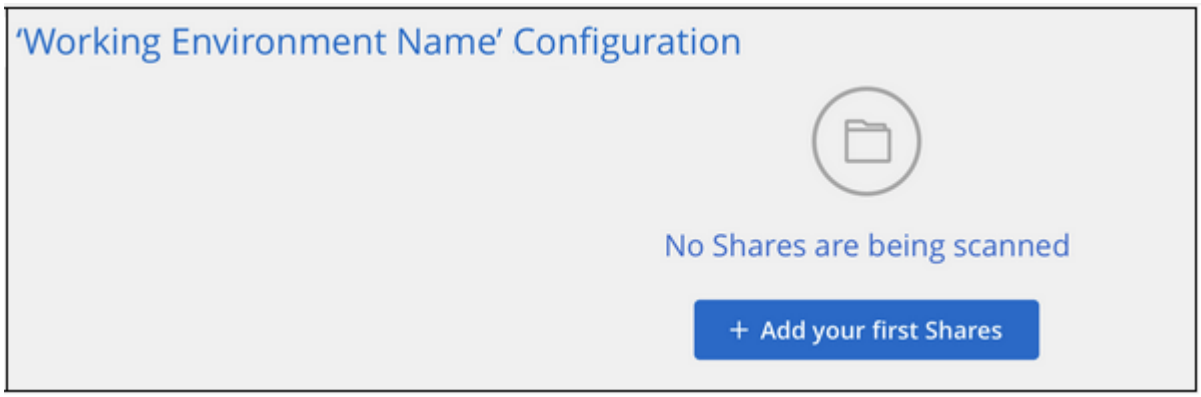
When adding both NFS and CIFS shares in a single group, you'll need to run through the process twice - once adding NFS shares, and then again adding the CIFS shares.

Steps

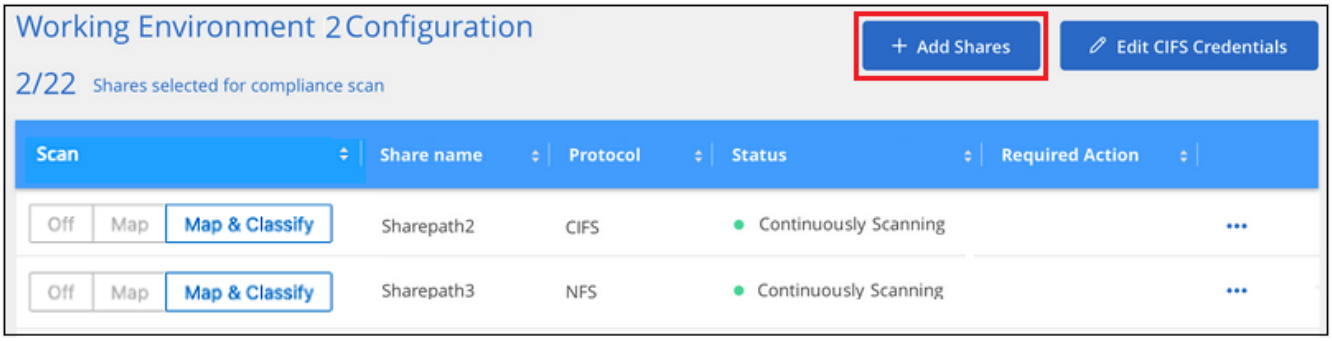
1. From the *Working Environments* page, click the **Configuration** button for the File Shares Group.



2. If this is the first time adding file shares for this File Shares Group, click **Add your first Shares**.

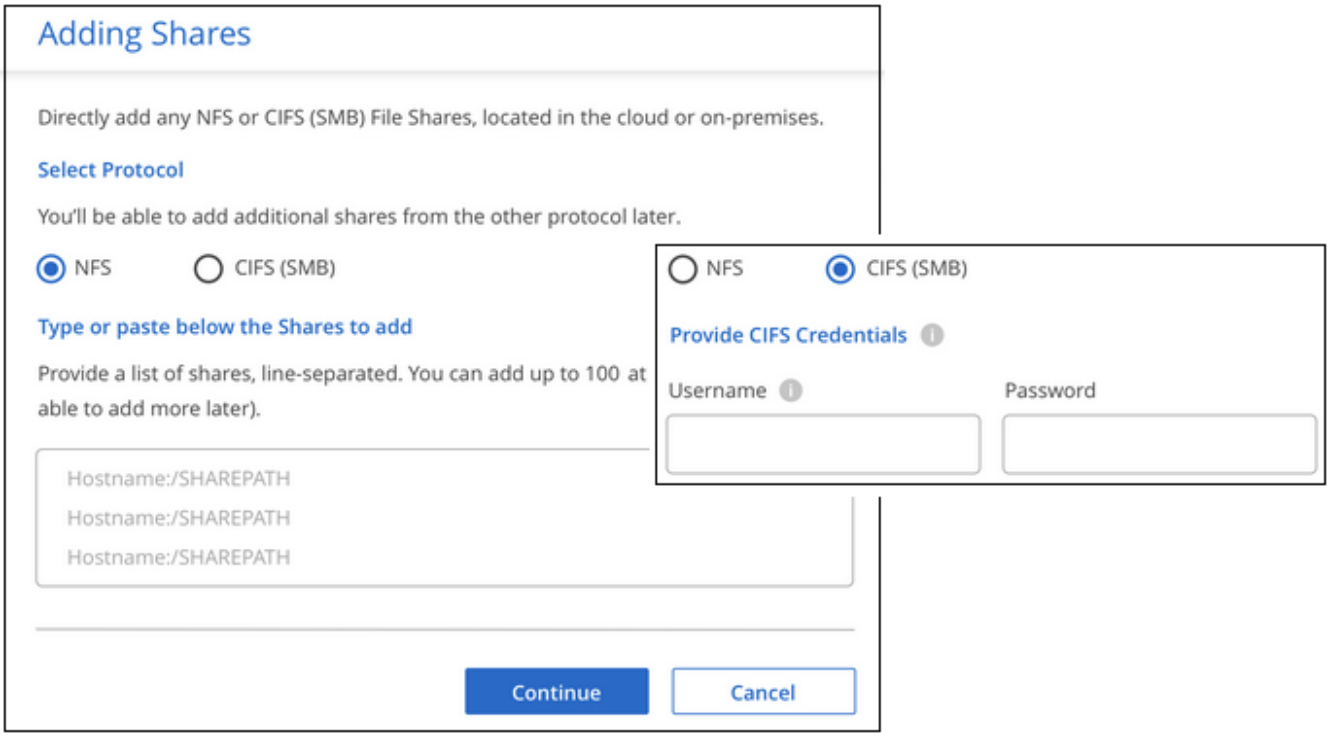


If you are adding file shares to an existing group, click **Add Shares**.



3. Select the protocol for the file shares you are adding, add the file shares that you want to scan - one file share per line - and click **Continue**.

   When adding CIFS (SMB) shares, you need to enter the Active Directory credentials that provide read access to the shares. Admin credentials are preferred.



   A confirmation dialog displays the number of shares that were added.

   If the dialog lists any shares that could not be added, capture this information so that you can resolve the issue. In some cases you can re-add the share with a corrected host name or share name.

4. Enable mapping-only scans, or mapping and classification scans, on each file share.

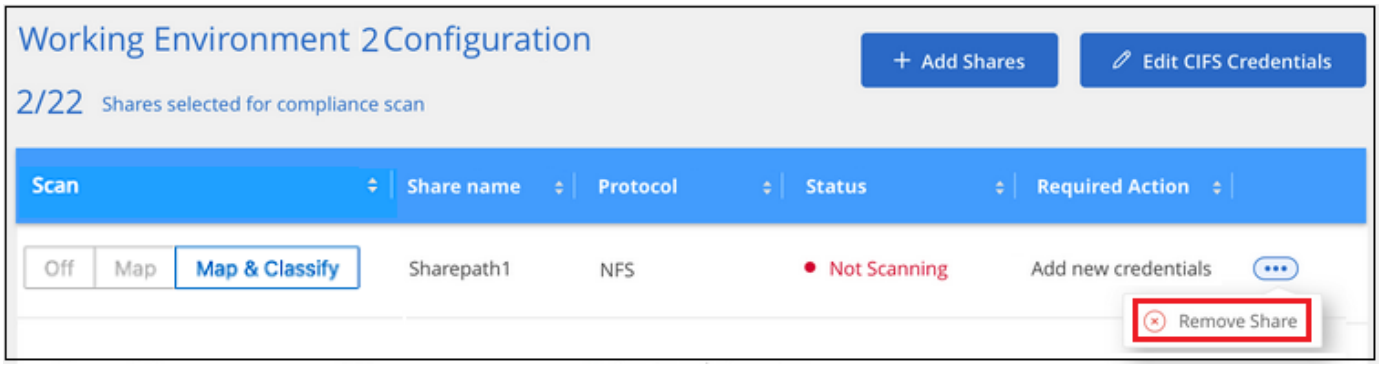
To:	Do this:
Enable mapping-only scans on file shares	Click **Map**
Enable full scans on file shares	Click **Map & Classify**
Disable scanning on file shares	Click **Off**

Result

Cloud Data Sense starts scanning the files in the file shares you added, and the results are displayed in the Dashboard and in other locations.

Removing a file share from compliance scans

If you no longer need to scan certain file shares, you can remove individual file shares from having their files scanned at any time. Just click **Remove Share** from the Configuration page.



Scanning object storage that uses S3 protocol

Complete a few steps to start scanning data within object storage directly with Cloud Data Sense. Data Sense can scan data from any Object Storage service which uses the Simple Storage Service (S3) protocol. This includes NetApp StorageGRID, IBM Cloud Object Store, Azure Blob (using MinIO), Linode, B2 Cloud Storage, and more.

Quick start

Get started quickly by following these steps, or scroll down to the remaining sections for full details.

Review object storage prerequisites

You need to have the endpoint URL to connect with the object storage service.

You need to have the Access Key and Secret Key from the object storage provider so that Cloud Data Sense can access the buckets.

Deploy the Cloud Data Sense instance

Deploy Cloud Data Sense if there isn't already an instance deployed.

Add the Object Storage Service

Add the object storage service to Cloud Data Sense.

Select the buckets to scan

Select the buckets that you'd like to scan and Cloud Data Sense will start scanning them.

Reviewing object storage requirements

Review the following prerequisites to make sure that you have a supported configuration before you enable Cloud Data Sense.

- You need to have the endpoint URL to connect with the object storage service.
- You need to have the Access Key and Secret Key from the object storage provider so that Data Sense can access the buckets.
- Support for Azure Blob requires that you use the MinIO service.

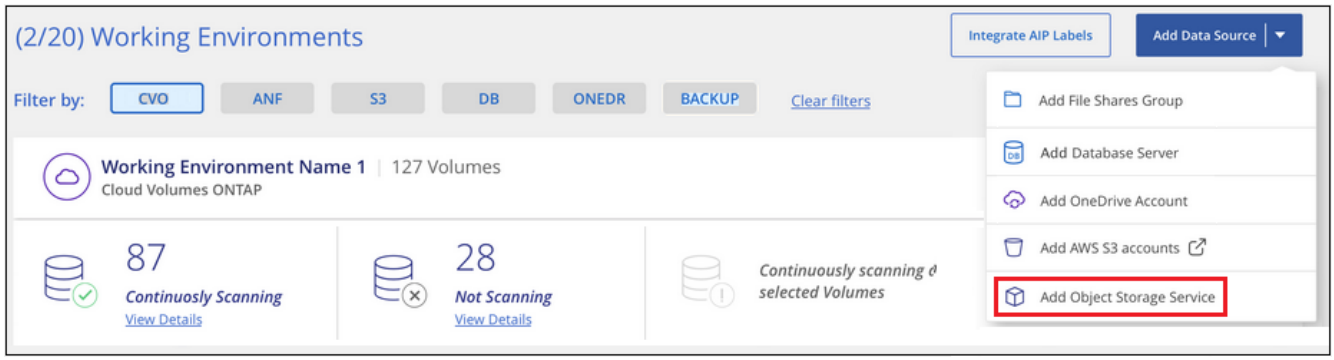
Adding the object storage service to Cloud Data Sense

You must have deployed an instance of Cloud Data Sense in Cloud Manager already.

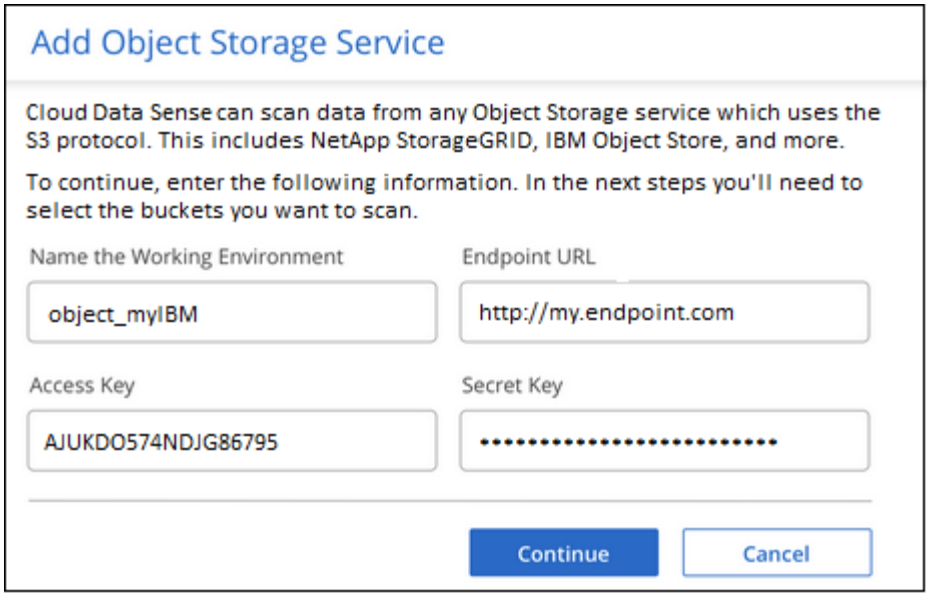
Add the object storage service.

Steps

1. From the Working Environments Configuration page, click **Add Data Source** > **Add Object Storage Service**.



2. In the Add Object Storage Service dialog, enter the details for the object storage service and click **Continue**.
   a. Enter the name you want to use for the Working Environment. This name should reflect the name of the object storage service to which you are connecting.
   b. Enter the Endpoint URL to access the object storage service.
   c. Enter the Access Key and Secret Key so that Cloud Data Sense can access the buckets in the object storage.



Result

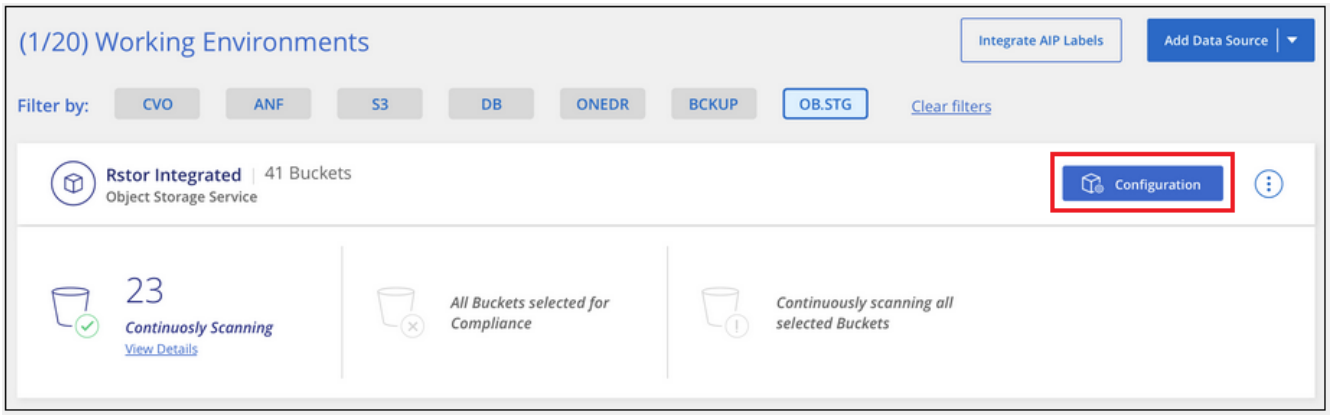
The new Object Storage Service is added to the list of working environments.

Enabling and disabling compliance scans on object storage buckets

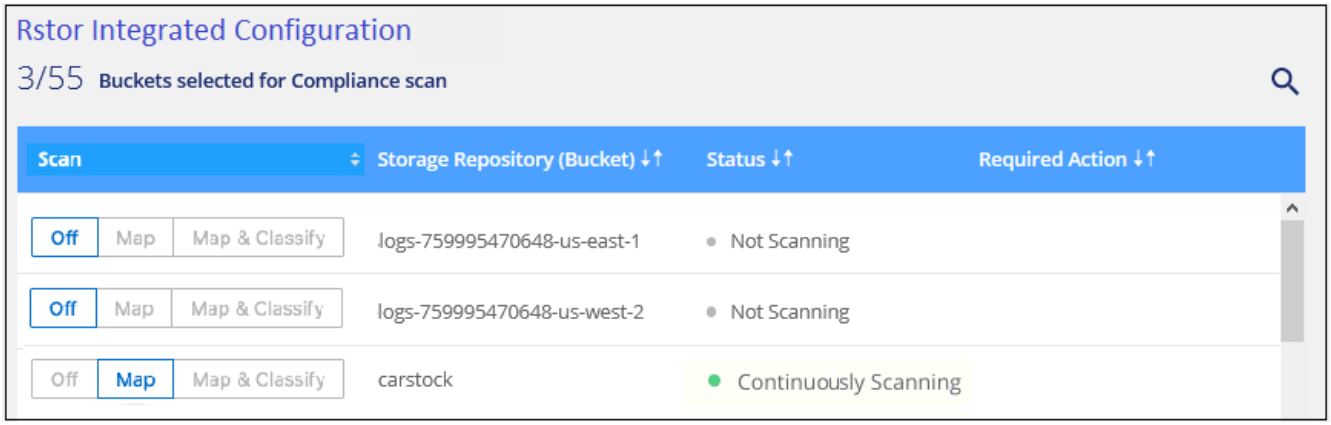
After you enable Cloud Data Sense on your Object Storage Service, the next step is to configure the buckets that you want to scan. Data Sense discovers those buckets and displays them in the working environment you created.

Steps

1. In the Configuration page, click **Configuration** from the Object Storage Service working environment.



2. Enable mapping-only scans, or mapping and classification scans, on your buckets.



To:	Do this:
Enable mapping-only scans on a bucket	Click **Map**
Enable full scans on a bucket	Click **Map & Classify**
Disable scanning on a bucket	Click **Off**

Result

Cloud Data Sense starts scanning the buckets that you enabled. If there are any errors, they'll appear in the Status column, alongside the required action to fix the error.

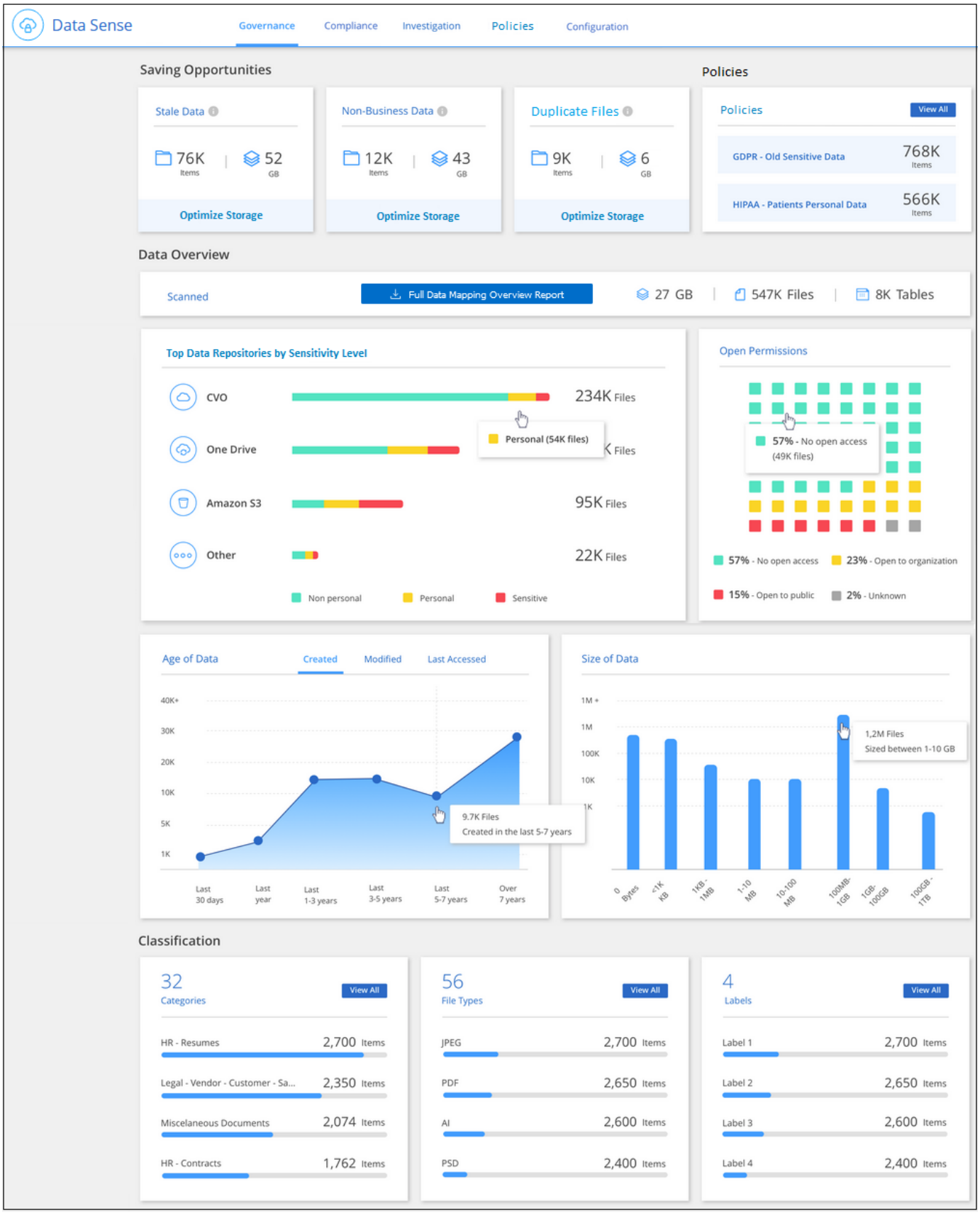
Viewing governance details about the data stored in your organization

Gain control of the costs related to the data on your organizations' storage resources. Cloud Data Sense identifies the amount of stale data, non-business data, duplicate files, and very large files in your systems so you can decide whether you want to remove or tier some files to less expensive object storage.

Additionally, if you are planning to migrate data from on-premises locations to the cloud, you can view the size of the data and whether any of the data contains sensitive information prior to moving it.

The Governance dashboard

The Governance dashboard provides information so that you can increase the efficiency and control the costs related to the data stored on your storage resources.



Saving Opportunities

You may want to investigate the items in the *Saving Opportunities* area to see if there is any data you should delete or tier to less expensive object storage. Click each item to view the filtered results in the Investigation

page.

- **Stale Data** - Data that was last modified over 3 years ago.
- **Non-Business Data** - Data considered not to be business related, based on their Category or File Type. This includes:
  - Application Data
  - Audio
  - Executables
  - Images
  - Logs
  - Videos
  - Miscellaneous (general "other" category)
- **Duplicate Files** - Files that are duplicated in other locations in the data sources you are scanning. See what types of duplicate files are displayed.

Data Overview

A quick overview of all the data that is being scanned. Click the button to download a full data mapping report that includes Usage Capacity, Age of Data, Size of Data, and File Types for all working environments and data sources. See Data Mapping Report for complete details.

Policies with the largest number of results

Click the name of a Policy in the *Policy* area to display the results in the Investigation page. Click **View All** to view the list of all available Policies.

Click here to learn more about Policies.

Top data repositories listed by data sensitivity

The *Top Data Repositories by Sensitivity Level* area lists up to the top four data repositories (working environments and data sources) that contain the most sensitive items. The bar chart for each working environment is divided into:

- Non-Personal data
- Personal data
- Sensitive Personal data

You can hover over each section to see the total number of items in each category.

Data listed by types of Open Permissions

The *Open Permissions* area shows the percentage for each type of permissions that exist for all files that are being scanned. The chart shows the following types of permissions:

- No Open Access
- Open to Organization
- Open to Public

- Unknown Access

You can hover over each section to see the total number of files in each category. Click each area to view the filtered results in the Investigation page so that you can investigate further.

Files in OneDrive accounts and in databases are not represented in this chart.

Age of Data and Size of Data graphs

You may want to investigate the items in the *Age* and *Size* graphs to see if there is any data you should delete or tier to less expensive object storage.

You can hover over a point in the charts to see details about the age or size of the data in that category. Click to view all the files filtered by that age or size range.

- **Age of Data graph** - Categorizes data based on the time it was created, the last time it was accessed, or the last time it was modified.
- **Size of Data graph** - Categorizes data based on size.

Most identified data Classifications

The *Classification* area provides a list of the most identified Categories, File types, and AIP Labels in your scanned data.

Categories

Categories can help you understand what's happening with your data by showing you the types of information that you have. For example, a category like "resumes" or "employee contracts" can include sensitive data. When you investigate the results, you might find that employee contracts are stored in an insecure location. You can then correct that issue.

See Viewing files by categories for more information.

File types

Reviewing your file types can help you control your sensitive data because you might find that certain file types are not stored correctly.

See Viewing file types for more information.

AIP labels

If you have subscribed to Azure Information Protection (AIP), you can classify and protect documents and files by applying labels to content. Reviewing the most used AIP labels that are assigned to files enables you to see which labels are most used in your files.

See AIP Labels for more information.

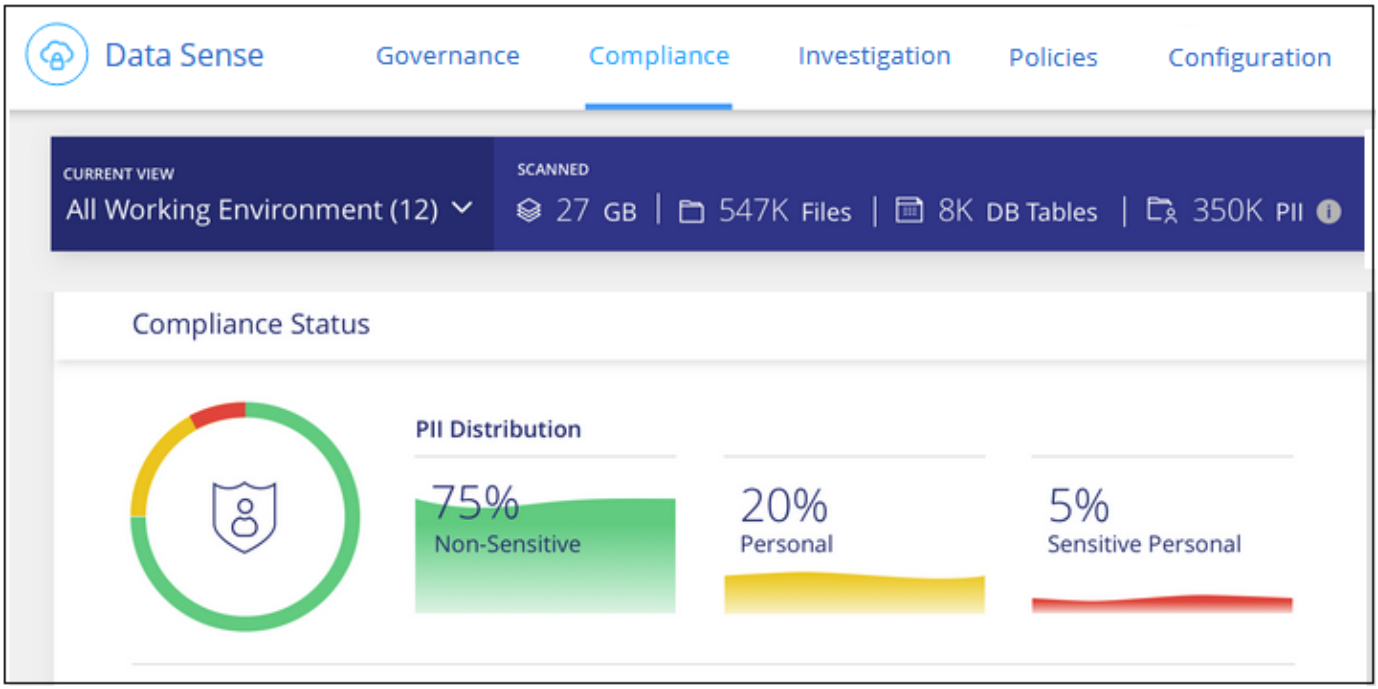
Viewing compliance details about the data stored in your organization

Gain control of your private data by viewing details about the personal data and sensitive

personal data in your organization. You can also gain visibility by reviewing the categories and file types that Cloud Data Sense found in your data.

The capabilities described in this section are available only if you have chosen to perform a full classification scan on your data sources. Data sources that have had a mapping-only scan do not show file-level details.

By default, the Cloud Data Sense dashboard displays compliance data for all working environments and databases.



If you want to see data for only some of the working environments, select those working environments.

You can also filter the results from the Data Investigation page and download a report of the results as a CSV file. See Filtering data in the Data Investigation page for details.

Viewing files that contain personal data

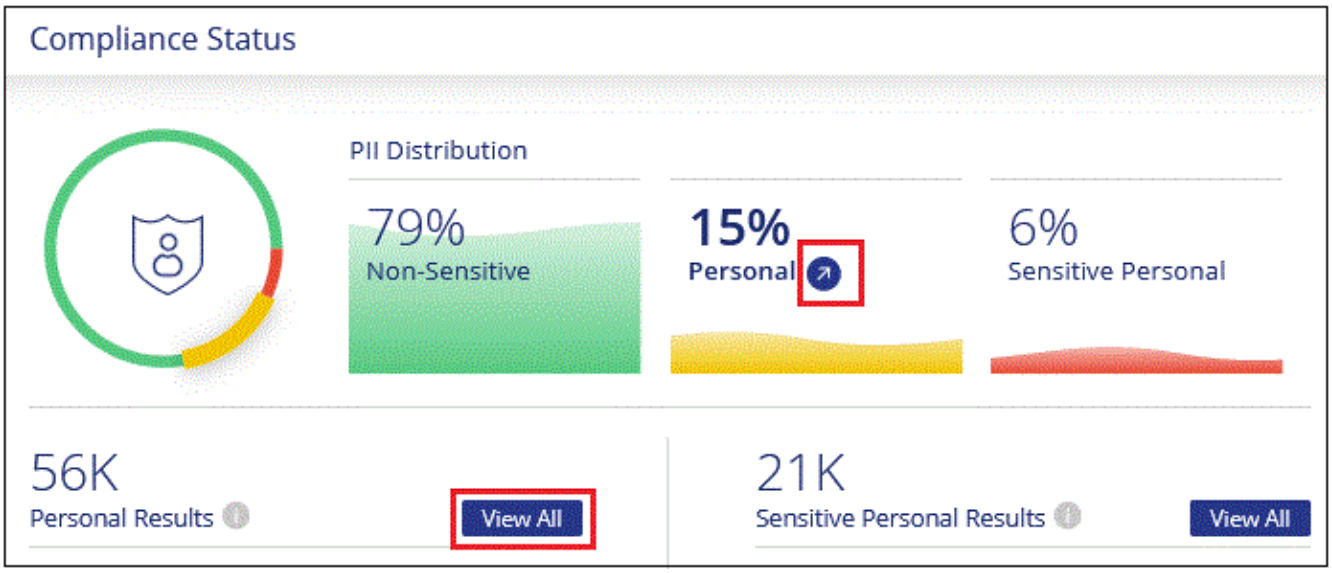
Cloud Data Sense automatically identifies specific words, strings, and patterns (Regex) inside the data. For example, Personal Identification Information (PII), credit card numbers, social security numbers, bank account numbers, and more. See the full list.

Additionally, if you have added a database server to be scanned, the *Data Fusion* feature allows you to scan your files to identify whether unique identifiers from your databases are found in those files or other databases. See Adding personal data identifiers using Data Fusion for details.

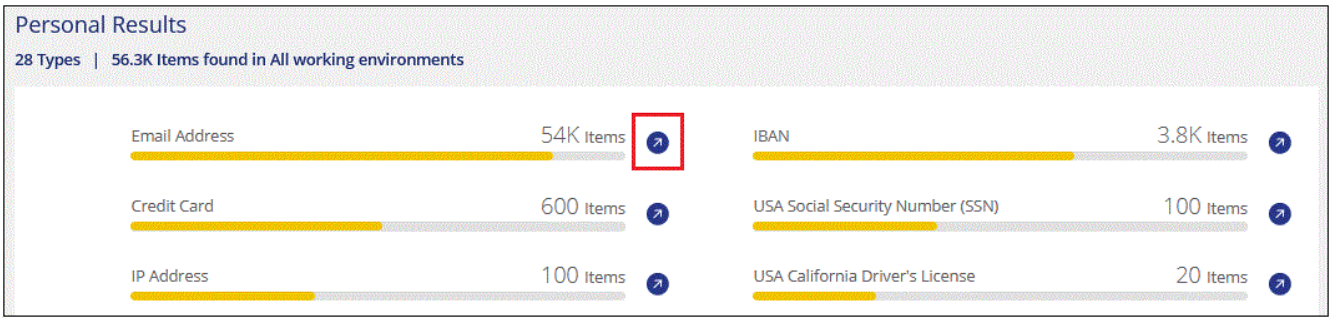
For some types of personal data, Data Sense uses *proximity validation* to validate its findings. The validation occurs by looking for one or more predefined keywords in proximity to the personal data that was found. For example, Data Sense identifies a U.S. social security number (SSN) as a SSN if it sees a proximity word next to it—for example, *SSN* or *social security*. The table of personal data shows when Data Sense uses proximity validation.

Steps

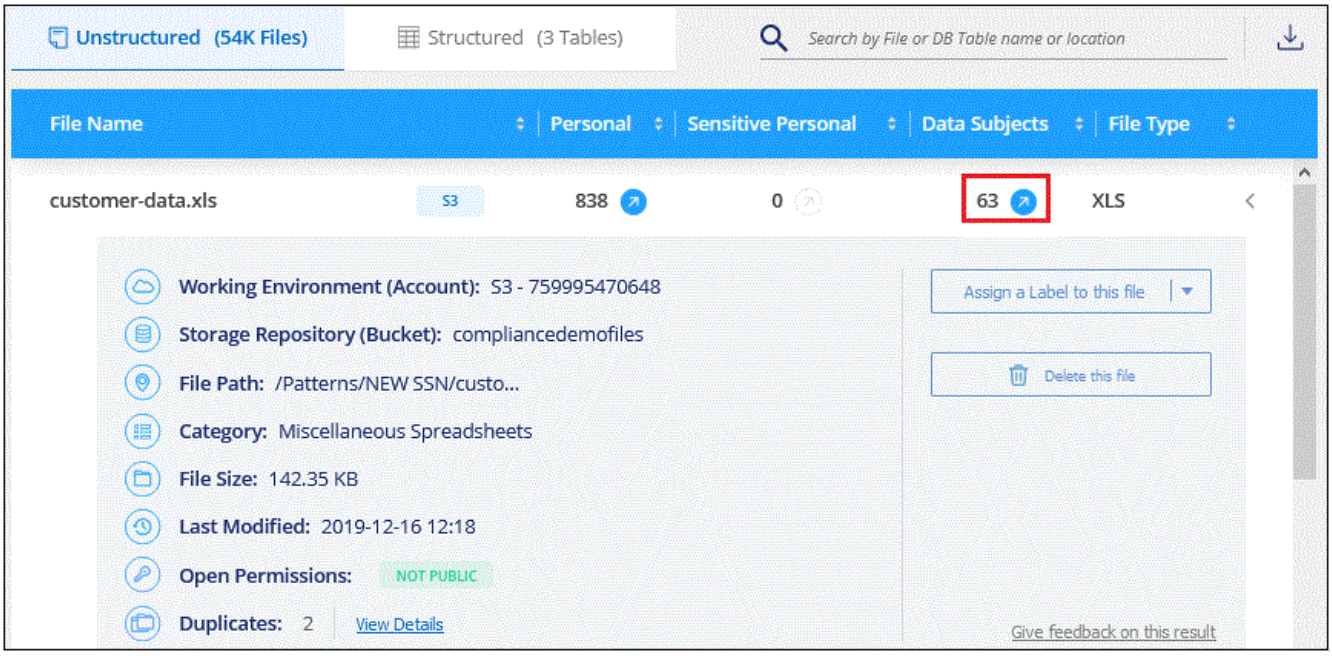
1. At the top of Cloud Manager, click **Data Sense** and click the **Compliance** tab.
2. To investigate the details for all personal data, click the icon next to the personal data percentage.



3. To investigate the details for a specific type of personal data, click **View All** and then click the **Investigate Results** icon for a specific type of personal data; for example, email addresses.



4. Investigate the data by searching, sorting, expanding details for a specific file, clicking **Investigate Results** to see masked information, or by downloading the file list.



Viewing files that contain sensitive personal data

Cloud Data Sense automatically identifies special types of sensitive personal information, as defined by privacy regulations such as articles 9 and 10 of the GDPR. For example, information regarding a person's health, ethnic origin, or sexual orientation. See the full list.

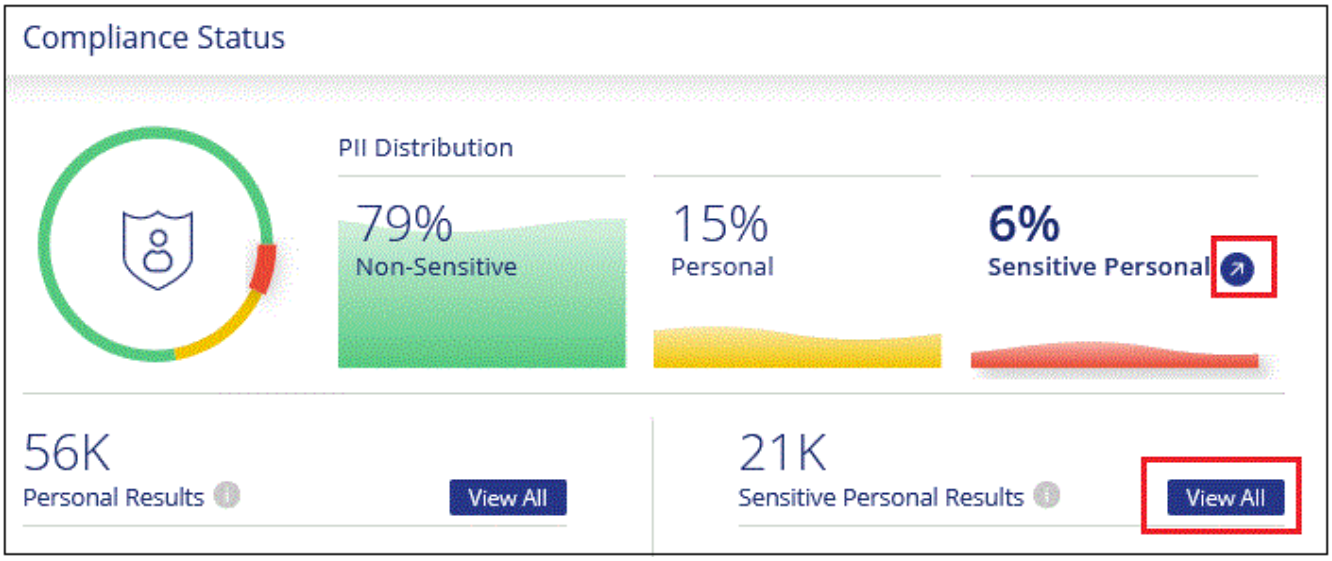
Cloud Data Sense uses artificial intelligence (AI), natural language processing (NLP), machine learning (ML), and cognitive computing (CC) to understand the meaning of the content that it scans in order to extract entities and categorize it accordingly.

For example, one sensitive GDPR data category is ethnic origin. Because of its NLP abilities, Data Sense can distinguish the difference between a sentence that reads "George is Mexican" (indicating sensitive data as specified in article 9 of the GDPR), versus "George is eating Mexican food."

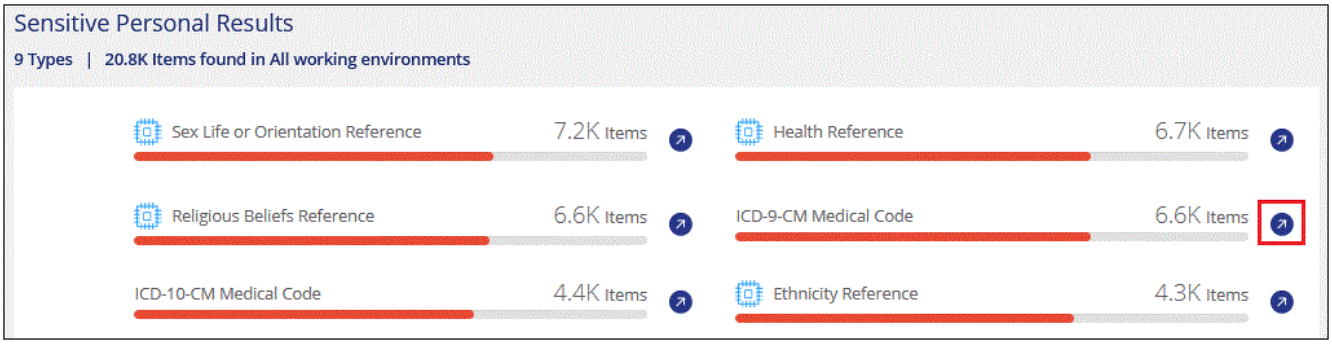
Only English is supported when scanning for sensitive personal data. Support for more languages will be added later.

Steps

1. At the top of Cloud Manager, click **Data Sense** and click the **Compliance** tab.
2. To investigate the details for all sensitive personal data, click the icon next to the sensitive personal data percentage.



3. To investigate the details for a specific type of sensitive personal data, click **View All** and then click the **Investigate Results** icon for a specific type of sensitive personal data.



4. Investigate the data by searching, sorting, expanding details for a specific file, clicking **Investigate Results** to see masked information, or by downloading the file list.

Viewing files by categories

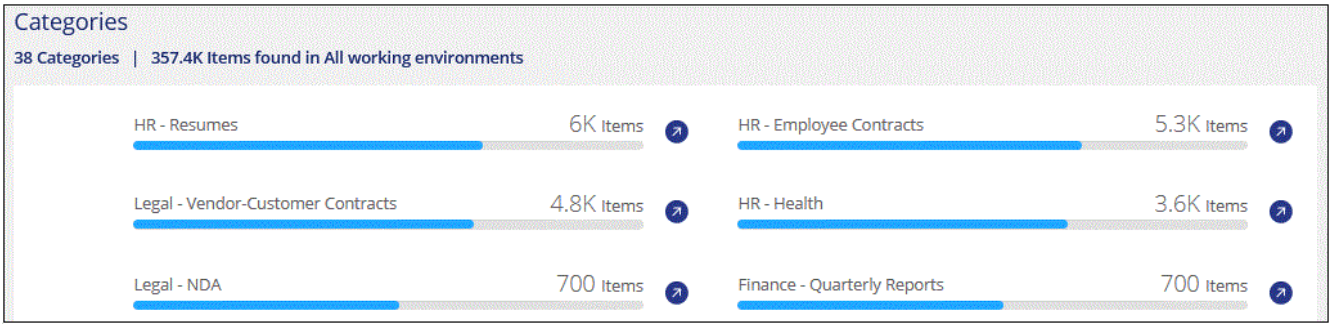
Cloud Data Sense takes the data that it scanned and divides it into different types of categories. Categories are topics based on AI analysis of the content and metadata of each file. See the list of categories.

Categories can help you understand what's happening with your data by showing you the types of information that you have. For example, a category like resumes or employee contracts can include sensitive data. When you investigate the results, you might find that employee contracts are stored in an insecure location. You can then correct that issue.

Only English is supported for categories. Support for more languages will be added later.

Steps

1. At the top of Cloud Manager, click **Data Sense** and click the **Compliance** tab.
2. Click the **Investigate Results** icon for one of the top 4 categories directly from the main screen, or click **View All** and then click the icon for any of the categories.



3. Investigate the data by searching, sorting, expanding details for a specific file, clicking **Investigate Results** to see masked information, or by downloading the file list.

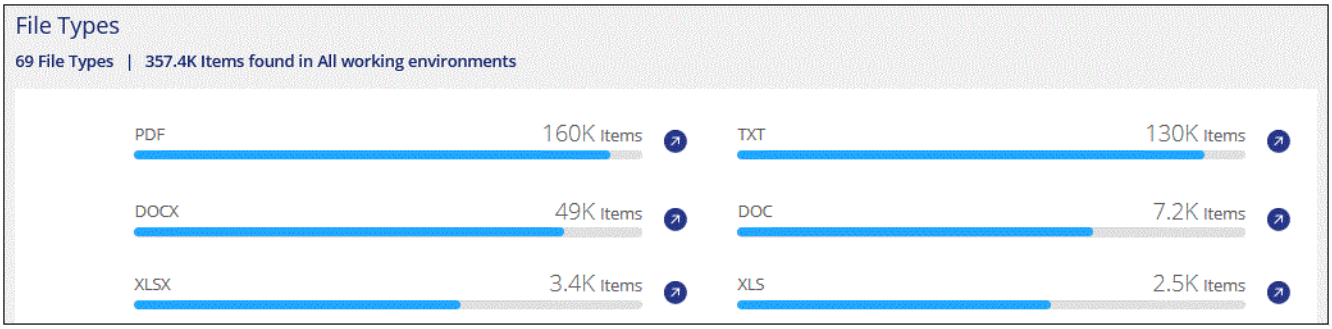
Viewing files by file types

Cloud Data Sense takes the data that it scanned and breaks it down by file type. Reviewing your file types can help you control your sensitive data because you might find that certain file types are not stored correctly. See the list of file types.

For example, you might be storing CAD files that include very sensitive information about your organization. If they are unsecured, you can take control of the sensitive data by restricting permissions or moving the files to another location.

Steps

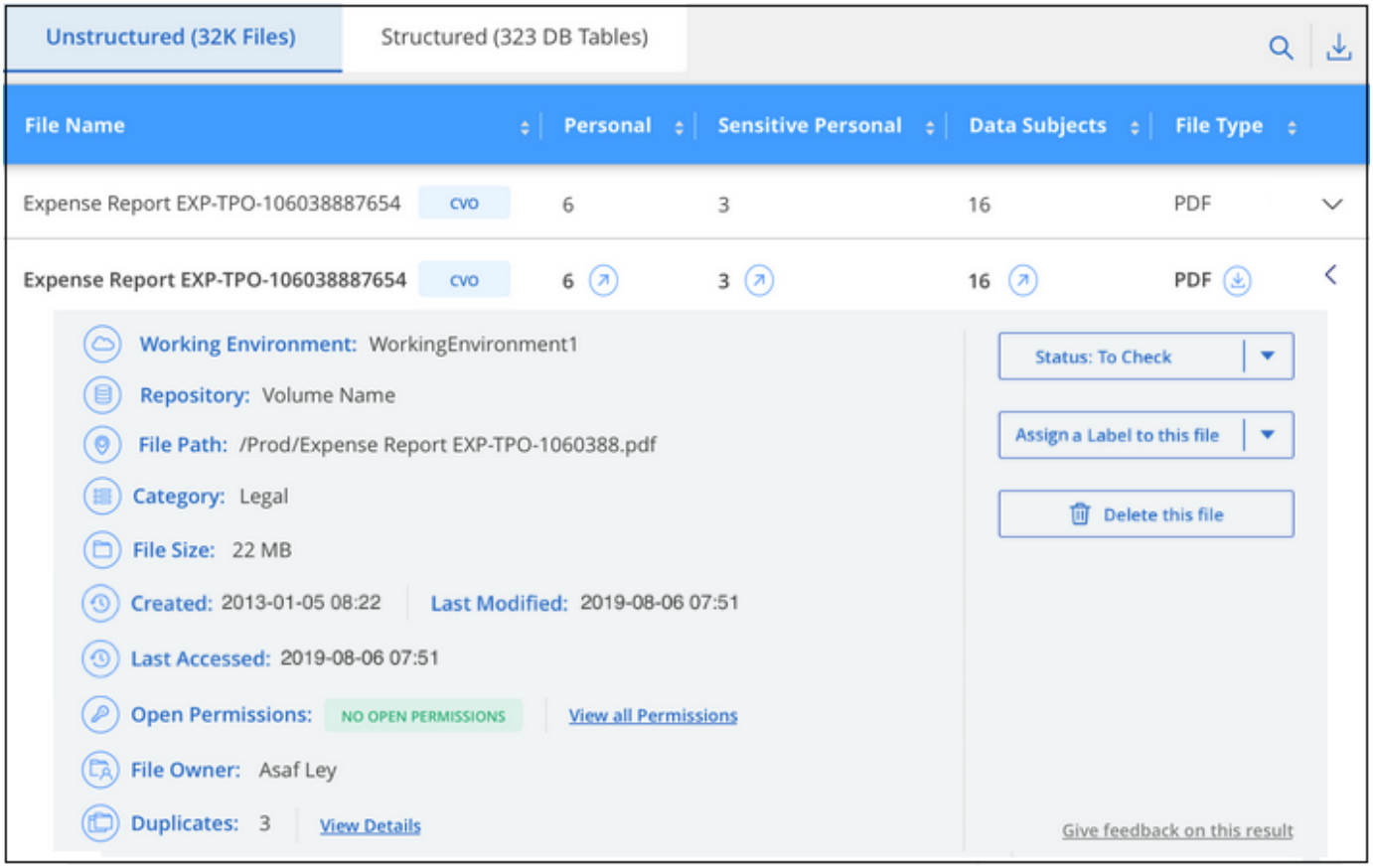
1. At the top of Cloud Manager, click **Data Sense** and click the **Compliance** tab.
2. Click the **Investigate Results** icon for one of the top 4 file types directly from the main screen, or click **View All** and then click the icon for any of the file types.



3. Investigate the data by searching, sorting, expanding details for a specific file, clicking **Investigate Results** to see masked information, or by downloading the file list.

Viewing file metadata

In the Data Investigation results pane you can click ⌄ for any single file to view the file metadata.



In addition to showing you the working environment and volume where the file resides, the metadata shows much more information, including the file permissions, file owner, whether there are duplicates of this file, and assigned AIP label (if you have integrated AIP in Cloud Data Sense). This information is useful if you're planning to create Policies because you can see all the information that you can use to filter your data.

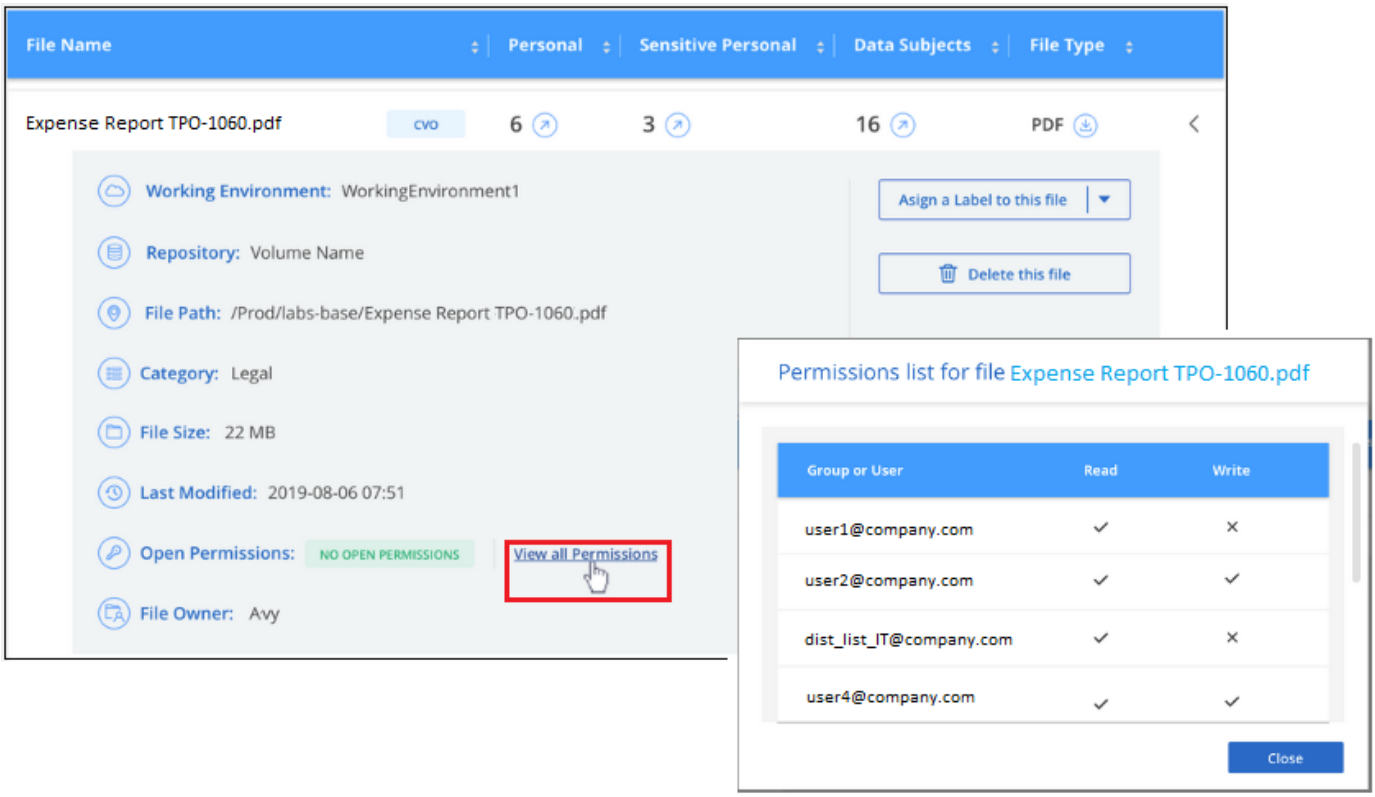
Note that not all information is available for all data sources - just what is appropriate for that data source. For example, volume name, permissions, and AIP labels are not relevant for database files.

When viewing the details for a single file there are a few actions you can take on the file:

- You can move the file to any NFS share. See Moving source files to an NFS share for details.
- You can delete the file. See Deleting source files for details.
- You can assign a certain Status to the file. See Applying Status tags for details.
- You can assign the file to a Cloud Manager user to be responsible for any follow-up actions that need to be done on the file. See Assigning users to a file for details.
- If you have integrated AIP labels with Cloud Data Sense, you can assign a label to this file, or change to a different label if one already exists. See Assigning AIP labels manually for details.

Viewing permissions for files

To view a list of all users or groups who have access to a file, and the types of permissions they have, click **View all Permissions**.



This button is available only for files in CIFS shares.

Checking for duplicate files in your storage systems

You can view if duplicate files are being stored in your storage systems. This is useful if you want to identify areas where you can save storage space. It can also be helpful to make sure certain files that have specific permissions or sensitive information are not unnecessarily duplicated in your storage systems.

You can download the list of duplicate files and send it to your storage admin so they can decide which files, if any, can be deleted. Or you can delete the file yourself if you are confident that a specific version of the file is not needed.

Viewing all duplicated files

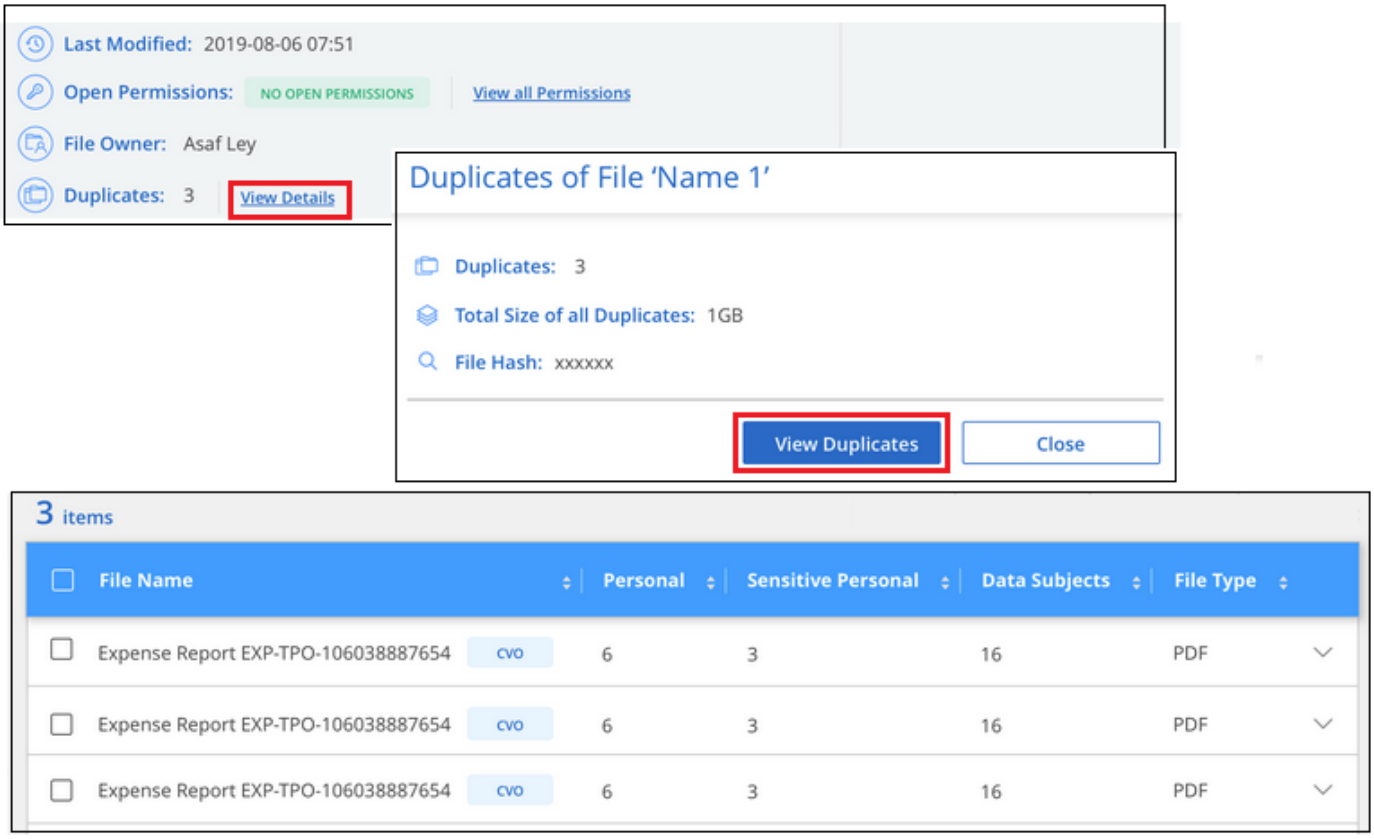
If you want a list of all files that are duplicated in the working environments and data sources you are scanning, you can use the filter called **Duplicates > Has duplicates** in the Data Investigation page.

All files with duplicates from all file types (not including databases), with a minimum size of 50 MB, and/or containing personal or sensitive personal information, will show in the Results page.

Viewing if a specific file is duplicated

If you want to see if a single file has duplicates, in the Data Investigation results pane you can click ⌄ for any single file to view the file metadata. If there are duplicates of a certain file, this information appears next to the *Duplicates* field.

To view the list of duplicate files and where they are located, click **View Details**. In the next page click **View Duplicates** to view the files in the Investigation page.



You can use the "file hash" value provided in this page and enter it directly in the Investigation page to search for a specific duplicate file at any time - or to be used in a Policy.

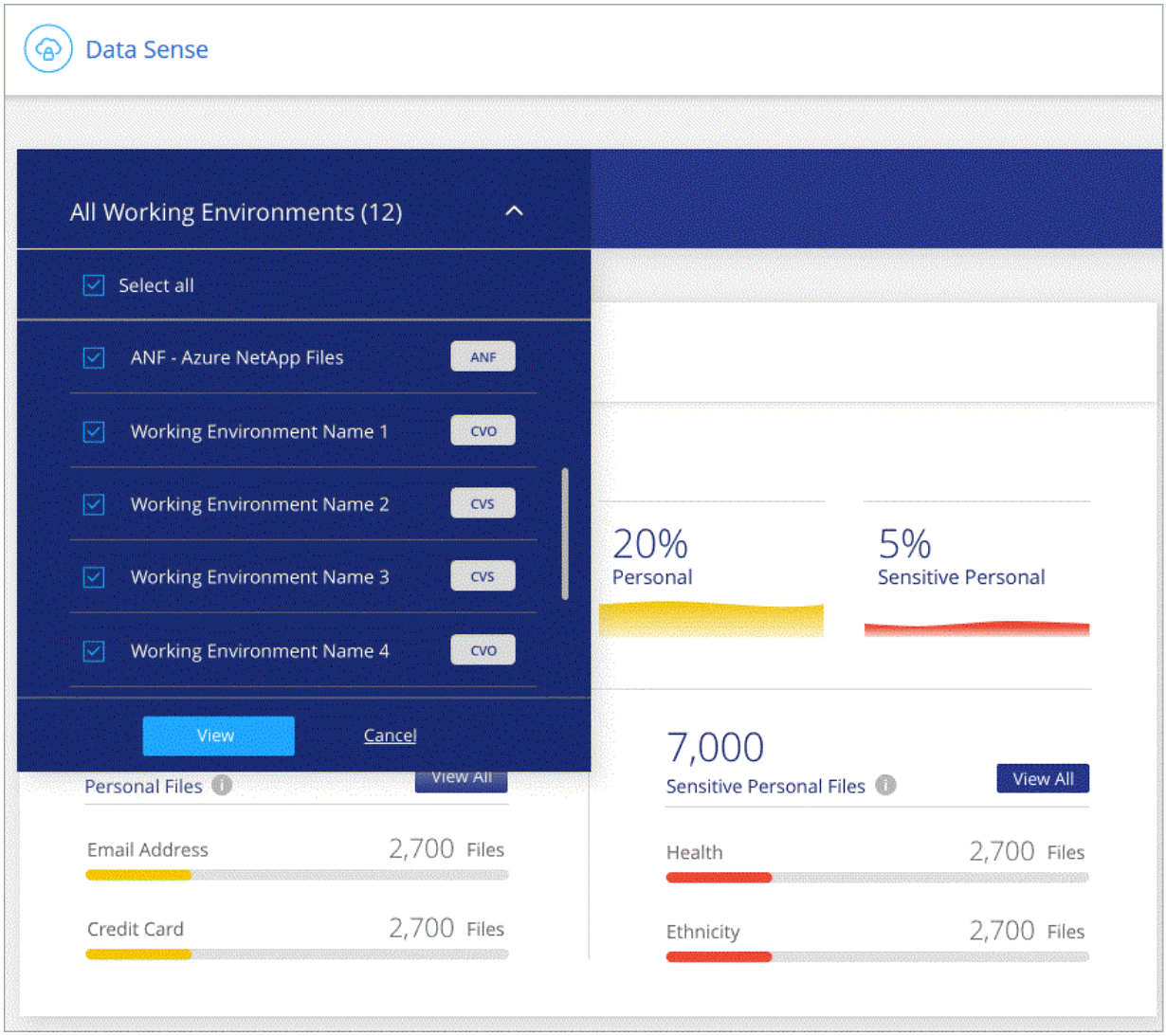
Viewing Dashboard data for specific working environments

You can filter the contents of the Cloud Data Sense dashboard to see compliance data for all working environments and databases, or for just specific working environments.

When you filter the dashboard, Data Sense scopes the compliance data and reports to just those working environments that you selected.

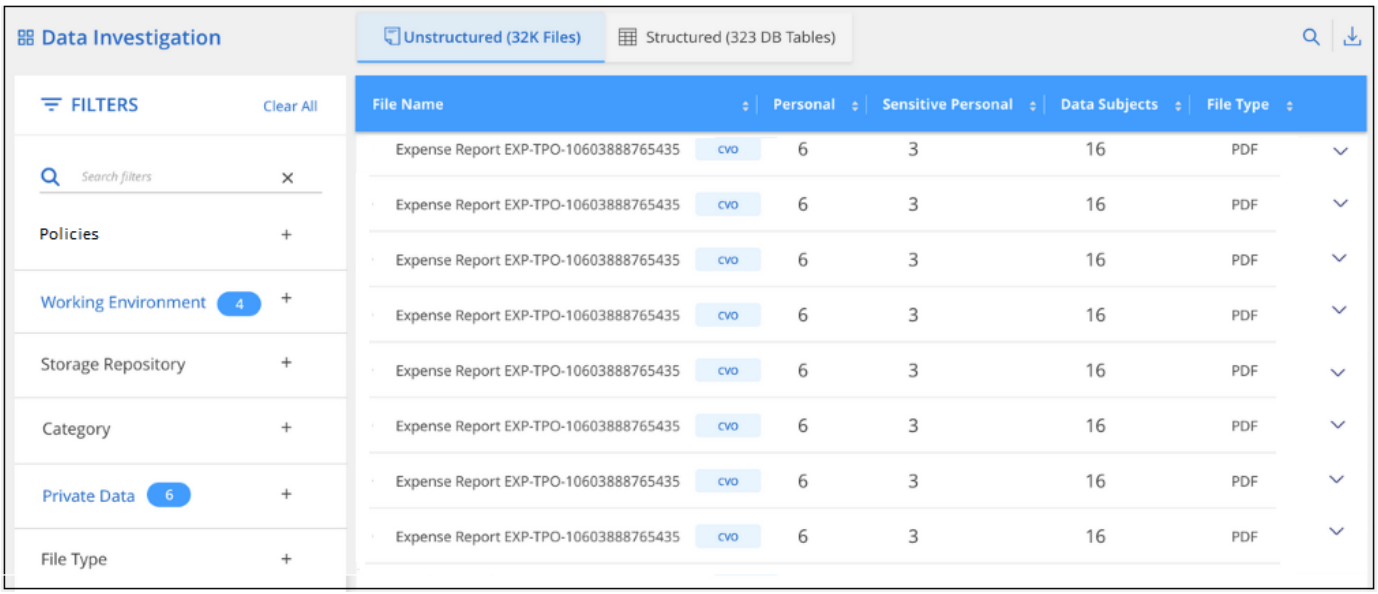
Steps

1. Click the filter drop-down, select the working environments that you'd like to view data for, and click **View**.



Filtering data in the Data Investigation page

You can filter the contents of the investigation page to display only the results you want to see. If you want to save a CSV version of the content as a report after you have refined it, click the button.



- The top-level tabs allow you to view data from files (unstructured data) or from databases (structured data).
- The controls at the top of each column allow you to sort the results in numerical or alphabetical order.
- The left-pane filters enable you to refine the results by selecting from the following attributes:
  - Policies
  - Open Permissions
  - File Owner
  - Label
  - Working Environment
  - Storage Repository
  - File Path
  - Category
  - Sensitivity Level
  - Personal Data
  - Sensitive Personal Data
  - Data Subject
  - File Type
  - File Size
  - Created date
  - Last Modified date
  - Last Accessed date (For the types of files that we scan for content this is the last time Data Sense scanned the file.)
  - Has Duplicates
  - Status
  - Assigned To
  - File Hash

- The *Policies* filter at the top of the Filters pane lists the custom filters that provide commonly requested combinations of filters; like a saved database query or Favorites list. Go here to view the list of predefined Policies and to see how you can create your own custom Policies.

What's included in each file list report (CSV file)

From each Investigation page you can click the button to download file lists (in CSV format) that include details about the identified files. If Data Sense is scanning both Structured (database tables) and Unstructured (files) data, there are two reports contained in the downloaded ZIP file.

If there are more than 10,000 results, only the top 10,000 appear in the list.

The **Unstructured Data Report** includes the following information:

- File name
- Location type
- Working environment
- Storage repository
- Protocol type
- File path
- File type
- Created time
- Last modified
- Last accessed
- File size
- File owner
- Category
- Personal information
- Sensitive personal information
- Deletion detection date

  A deletion detection date identifies the date that the file was deleted or moved. This enables you to identify when sensitive files have been moved. Deleted files aren't part of the file number count that appears in the dashboard or on the Investigation page. The files only appear in the CSV reports.

The **Structured Data Report** includes the following information:

- DB Table name
- Location type
- Working environment
- Storage repository
- Column count
- Row count
- Personal information

- Sensitive personal information

Managing your private data

Cloud Data Sense provides many ways for you to manage your private data. Some functionality just makes it easier to see the data that is most important to you, and other functionality allows you to make changes to the data.

- Using the "Policy" functionality you can create your own custom search queries so that you can easily see the results by clicking one button.
- You can send email alerts to Cloud Manager users when certain critical Policies return results.
- You can add a Status to files that you want to mark for some type of follow-up.
- If you are subscribed to Azure Information Protection (AIP) to classify and protect your files, you can use Cloud Data Sense to manage those AIP labels.
- You can delete files that seem insecure or too risky to leave in your storage system, or that you have identified as a duplicate.

The capabilities described in this section are available only if you have chosen to perform a full classification scan on your data sources. Data sources that have had a mapping-only scan do not show file-level details.

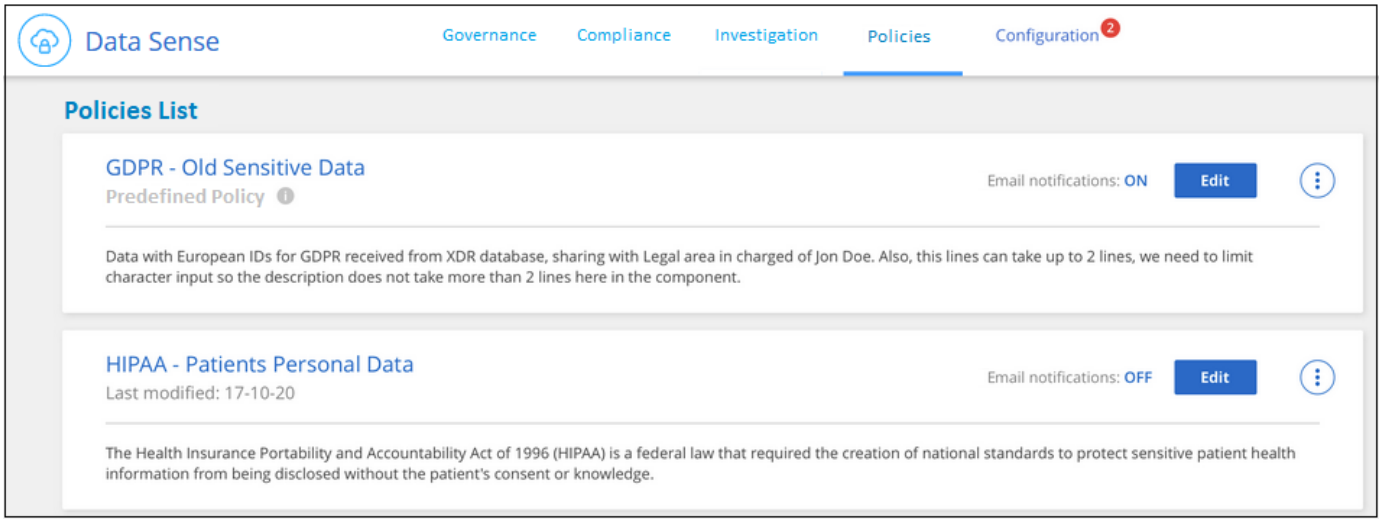
Controlling your data using Policies

Policies are like a favorites list of custom filters that provide search results in the Investigation page for commonly requested compliance queries. Cloud Data Sense provides a set of predefined Policies based on common customer requests. You can create custom Policies that provide results for searches specific to your organization.

Policies provide the following functionality:

- Predefined Policies from NetApp based on user requests
- Ability to create your own custom Policies
- Launch the Investigation page with the results from your Policies in one click
- Send email alerts to Cloud Manager users when certain critical Policies return results so you can get notifications to protect your data
- Assign AIP (Azure Information Protection) labels automatically to all files that match the criteria defined in a Policy

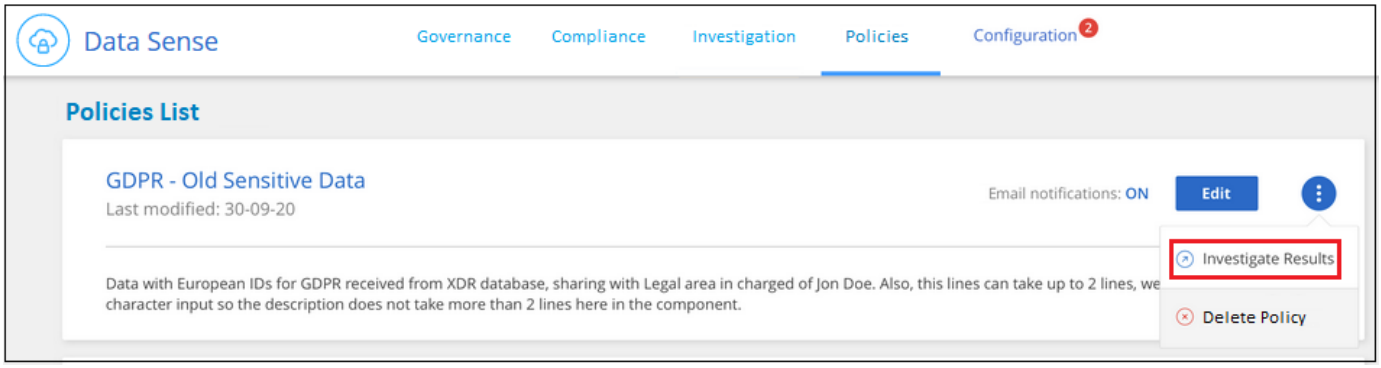
The **Policies** tab in the Compliance Dashboard lists all the predefined and custom Policies available on this instance of Cloud Data Sense.



In addition, Policies appear in the list of Filters in the Investigation page.

Viewing Policy results in the Investigation page

To display the results for a Policy in the Investigation page, click the button for a specific Policy, and then select **Investigate Results**.

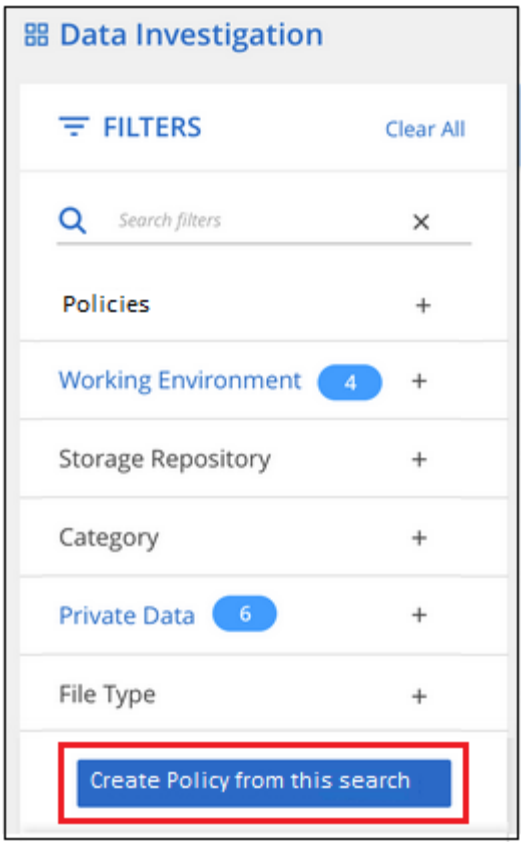


Creating custom Policies

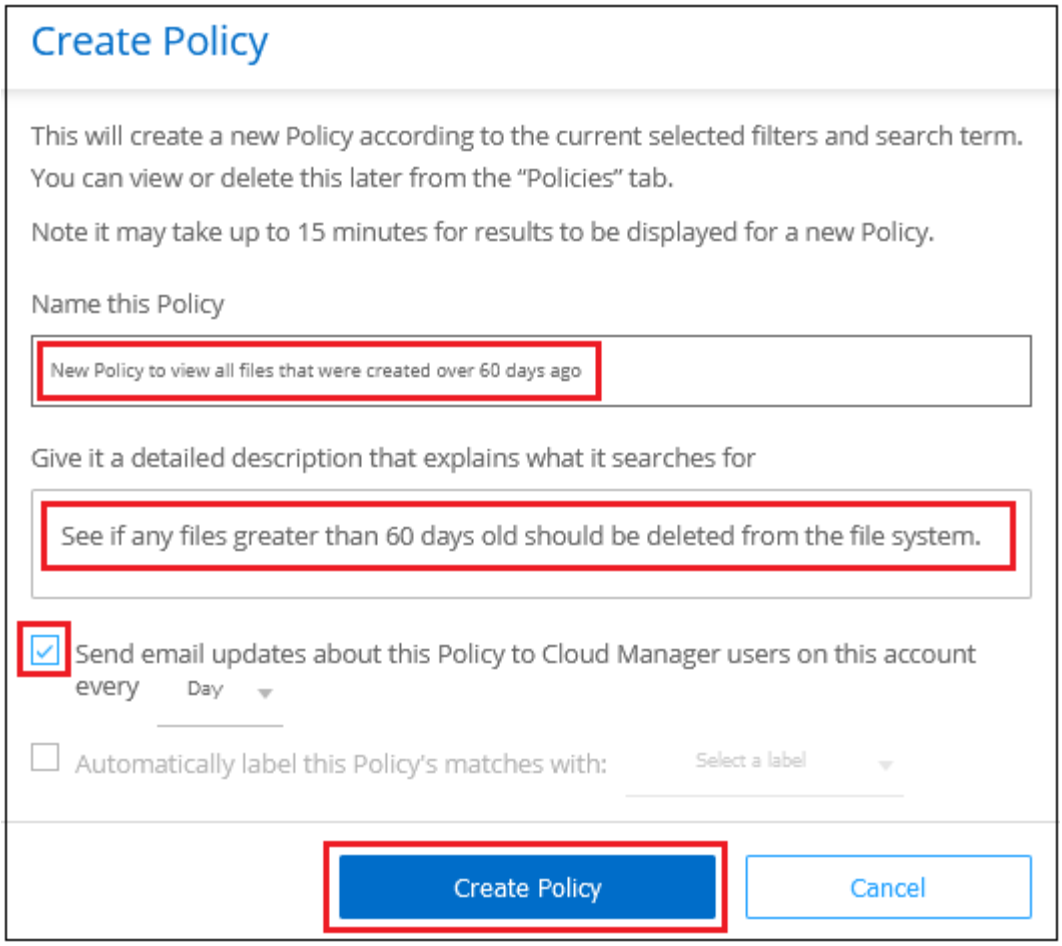
You can create your own custom Policies that provide results for searches specific to your organization.

Steps

1. From the Data Investigation page, define your search by selecting all the filters you want to use. See Filtering data in the Data Investigation page for details.
2. Once you have all the filter characteristics just the way you want them, click **Create Policy from this search**.



3. Name the Policy and select other actions that can be performed by the Policy:
   a. Enter a unique name and description.
   b. Optionally, check the box if you want notification emails sent to Cloud Manager users, and choose the interval at which the email is sent.
   c. Optionally, check the box to automatically assign AIP labels to files that match the Policy parameters, and select the label. (Only if you have already integrated AIP labels. Learn more about AIP labels.)
   d. Click **Create Policy**.



Result

The new Policy appears in the Policies tab.

Editing Policies

You can modify certain parts of a Policy depending on the type of Policy:

- Custom Policies - You can modify the *Name*, the *Description*, whether email notifications are sent, and whether AIP labels are added.
- Predefined Policies - You can modify only whether email notifications are sent and whether AIP labels are added.

If you need to change the filter parameters for a custom Policy, you'll need to create a new Policy with the parameters you want, and then delete the old Policy.

To modify a Policy, click the **Edit** button, enter your changes on the *Edit Policy* page, and click **Save Policy**.

Deleting Policies

You can delete any custom Policy that you created if you no longer need it. You can't delete any of the predefined Policies.

To delete a Policy, click the button for a specific Policy, click **Delete Policy**, and then click **Delete Policy** again in the confirmation dialog.

Applying Status tags to manage your scanned files

You can add a Status to files that you want to mark for some type of follow-up. For example, you may have found some duplicate files and you want to delete one of them, but you need to check to see which one should be deleted. You could add a status of "Check to delete" to the file so you know this file requires some research and some type of future action.

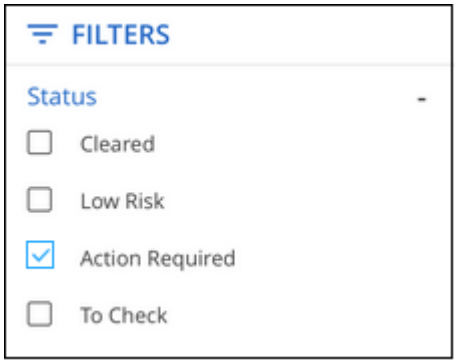
Data Sense enables you to view the Statuses that are assigned to files, add or remove a Status from files, and change the name or delete an existing Status.

Note that the Status is not added to the file in the same way as AIP Labels are part of the file metadata. The Status is just seen by Cloud Manager users using Cloud Data Sense so you can see if a file needs to be deleted, or checked for some type of follow-up.

Viewing Status tags assigned to your files

You can view all the files that have a specific Status assigned.

1. Click the **Investigation** tab from Cloud Data Sense.
2. In the Data Investigation page, click **Status** in the Filters pane and then select the required Status.



The Investigation Results pane lists all the files that have that Status assigned.

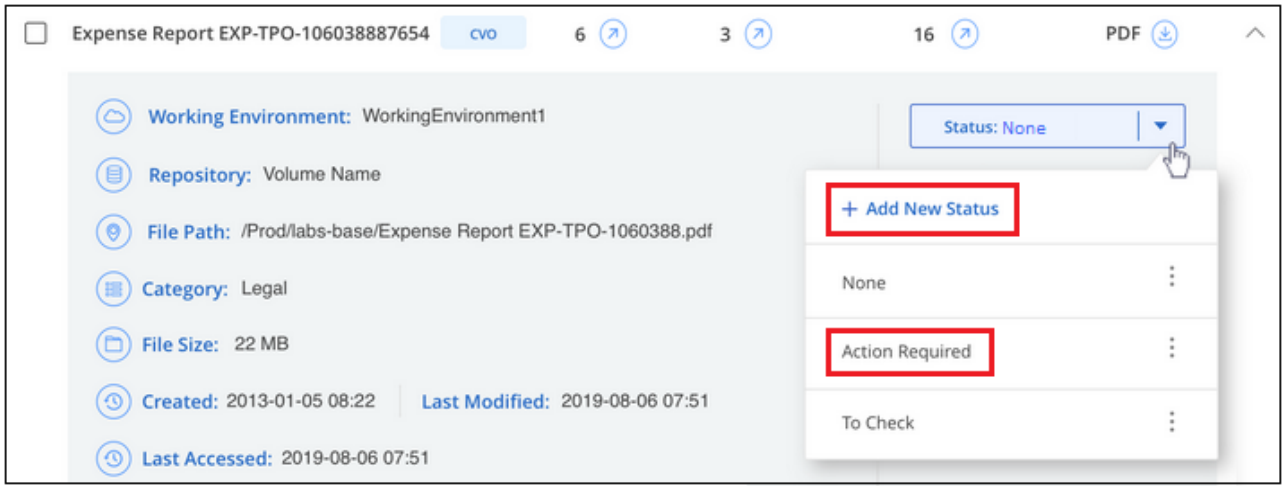
Assigning a Status tag to files

You can add a Status tag to a single file or to a group of files.

To add a Status tag to a single file:

Steps

1. In the Data Investigation results pane, click ⌄ for the file to expand the file metadata details.
2. Click the **Status** field and assign a Status tag:
   - To assign an existing Status tag, click that tag. For example, "Action Required".
   - To create a new Status tag and assign it to the file, click **Add New Status**, enter the name of the new Status, and click **Done**.

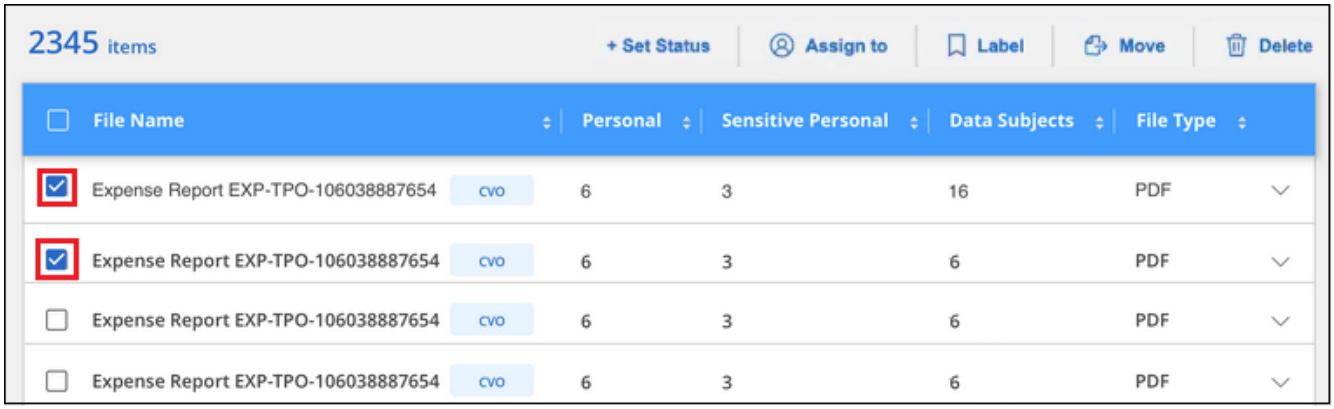


The Status tag appears in the file metadata.

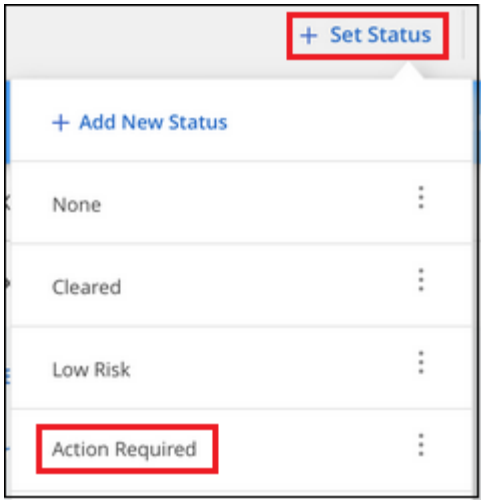
To add a Status tag to multiple files:

Steps

1. In the Data Investigation results pane, select the file, or files, that you want to tag.



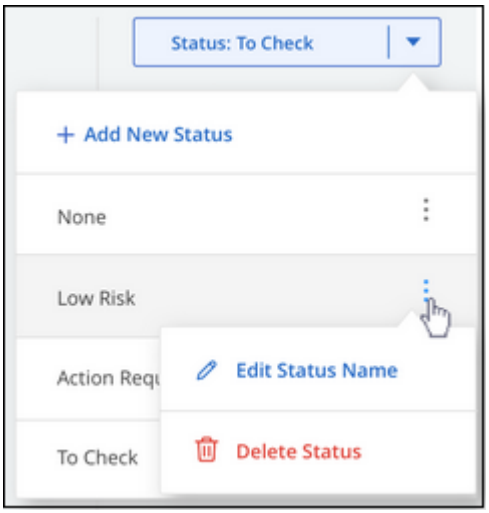
   - To select all files on the current page, check the box in the title row (File Name). (You can't select files from more than one page.)
   - To select individual files, check the box for each file (Volume_1).
2. From the button bar, click **Set Status** and assign a Status tag:
   - To assign an existing Status tag, click that tag.
   - To create a new Status tag and assign it to the files, click **Add New Status**, enter the name of the new Status, and click **Done**.



The Status tag is added to the metadata for all selected files.

Editing and deleting a Status tag

You can edit a Status tag to change the name, or you can delete a Status if you don't need to use it anymore. Click the ⋮ for an existing Status and click **Edit Status Name** or **Delete Status**.



When you change a Status name, it is changed for all files that were using the old name.

When you delete a Status tag, it is cleared from all files that were using the Status.

Assigning users to manage certain files

You can assign a Cloud Manager user to a specific file, or to multiple files, so that person can be responsible for any follow-up actions that need to be done on the file. This capability is often used with the feature to add custom Status tags to a file.

For example, you might have a file that contains certain personal data that allows too many users read and write access (open permissions). So you could assign the Status tag "Change permissions" and assign this file to user "Joan Smith" so they can decide how to fix the issue. When they have fixed the issue they could change the Status tag to "Completed".

Note that the user name is not added to the file as part of the file metadata - it is just seen by Cloud Manager

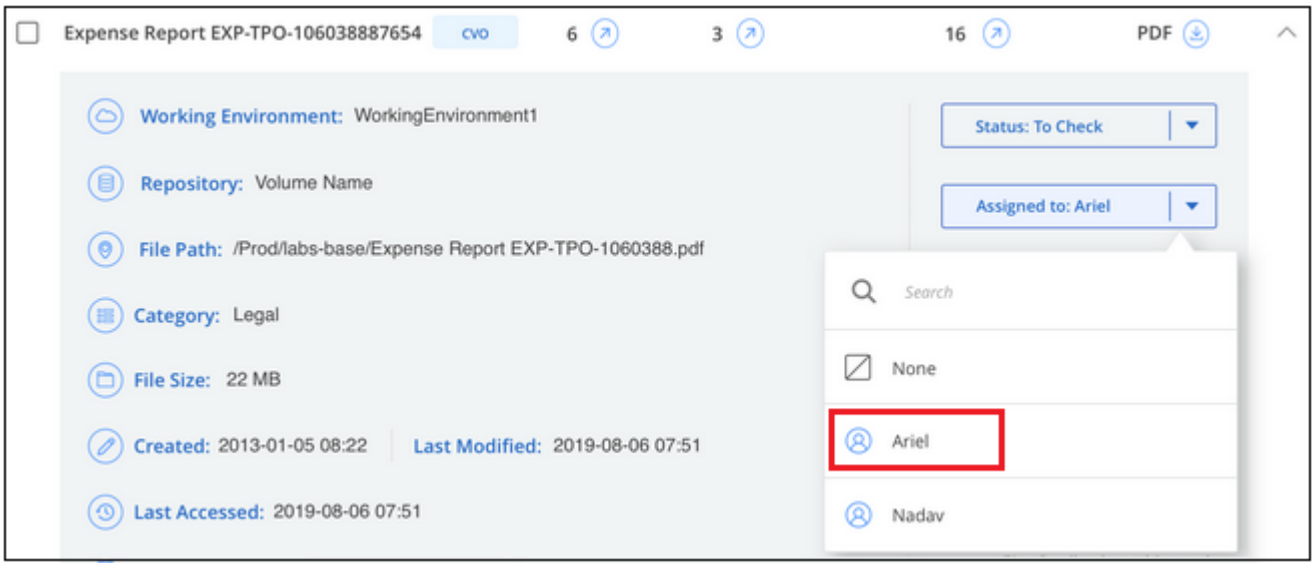
users when using Cloud Data Sense.

A new Filter in the Investigation page enables you to easily view all files that have the same person in the "Assigned To" field.

To assign a user to a single file:

Steps

1. In the Data Investigation results pane, click ⌄ for the file to expand the file metadata details.
2. Click the **Assigned to** field and select the user name.

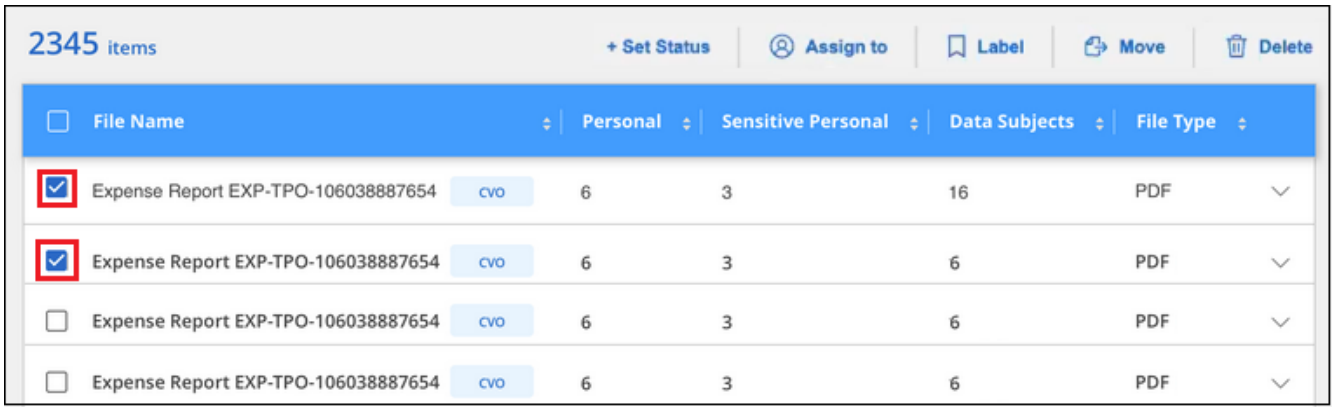


The User name appears in the file metadata.

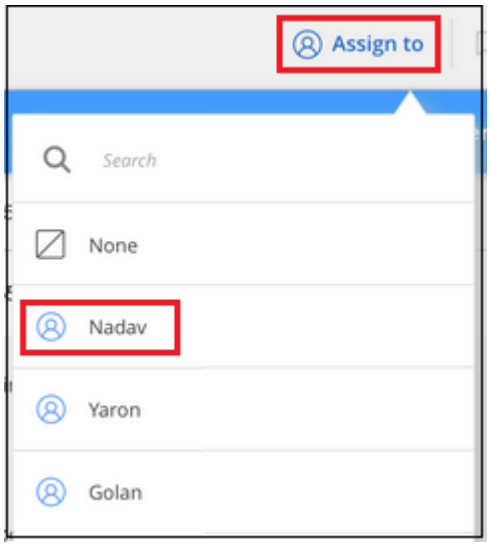
To assign a user to multiple files:

Steps

1. In the Data Investigation results pane, select the file, or files, that you want to assign to a user.



   - To select all files on the current page, check the box in the title row (File Name). (You can't select files from more than one page.)
   - To select individual files, check the box for each file (Volume_1).
2. From the button bar, click **Assign to** and select the user name:



The user is added to the metadata for all selected files.

Categorizing your data using AIP labels

You can manage AIP labels in the files that Cloud Data Sense is scanning if you have subscribed to Azure Information Protection (AIP). AIP enables you to classify and protect documents and files by applying labels to content. Data Sense enables you to view the labels that are already assigned to files, add labels to files, and change labels when a label already exists.

Cloud Data Sense supports AIP labels within the following file types: .DOC, .DOCX, .PDF, .PPTX, .XLS, .XLSX.

Note that you can't currently change labels in files larger than 30 MB. For OneDrive accounts the maximum file size is 4 MB.

If a file has a label which doesn't exist anymore in AIP, Cloud Data Sense considers it as a file without a label.

Integrating AIP labels in your workspace

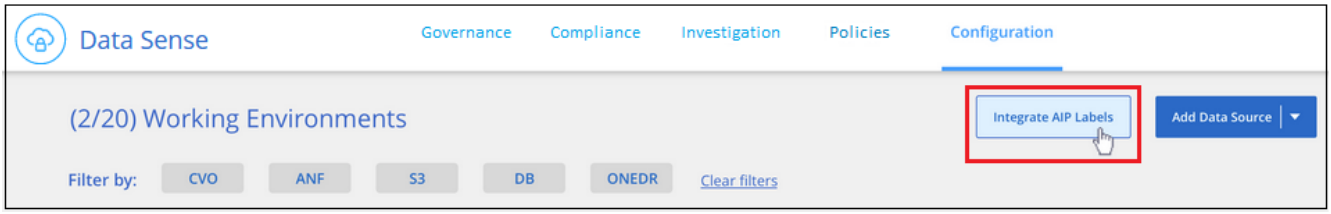
Before you can manage AIP labels, you need to integrate the AIP label functionality into Cloud Data Sense by signing into your existing Azure account. Once enabled, you can manage AIP labels within files for all working environments and data sources in your Cloud Manager workspace.

Requirements

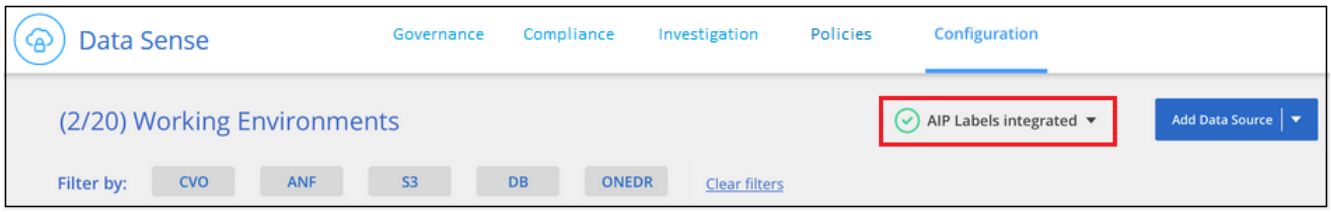
- You must have an account and an Azure Information Protection license.
- You must have the login credentials for the Azure account.
- If you plan to change labels in files that reside in Amazon S3 buckets, ensure that the permission `s3:PutObject` is included in the IAM role. See setting up the IAM role.

Steps

1. From the Cloud Data Sense Configuration page, click **Integrate AIP Labels**.



2. In the Integrate AIP Labels dialog, click **Sign in to Azure**.
3. In the Microsoft page that appears, select the account and enter the required credentials.
4. Return to the Cloud Data Sense tab and you'll see the message "*AIP Labels were integrated successfully with the account <account_name>*".
5. Click **Close** and you'll see the text *AIP Labels integrated* at the top of the page.



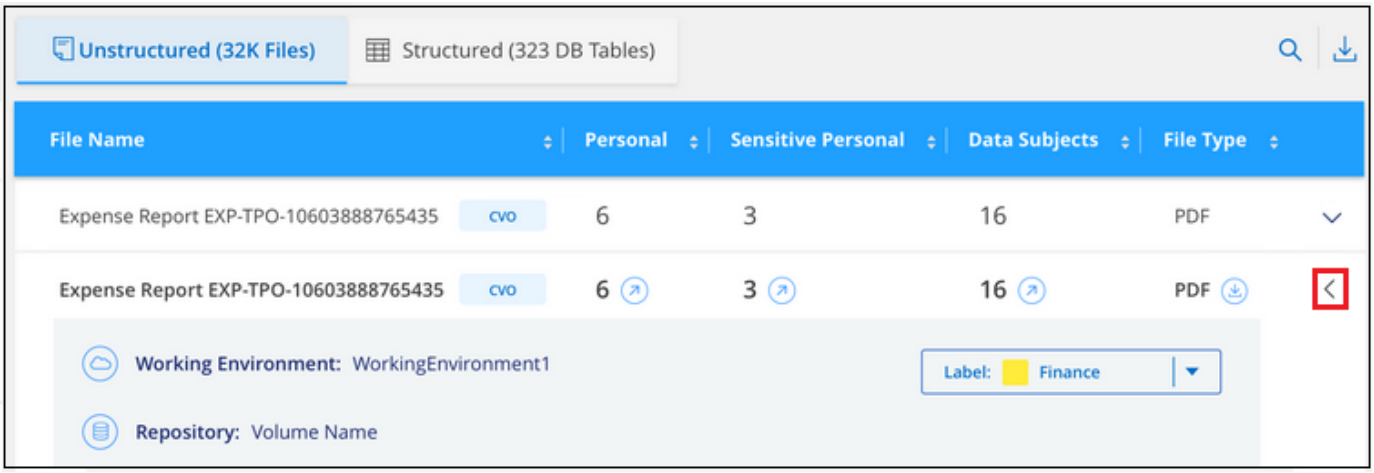
Result

You can view and assign AIP labels from the results pane of the Investigation page. You can also assign AIP labels to files using Policies.

Viewing AIP labels in your files

You can view the current AIP label that is assigned to a file.

In the Data Investigation results pane, click ⌄ for the file to expand the file metadata details.



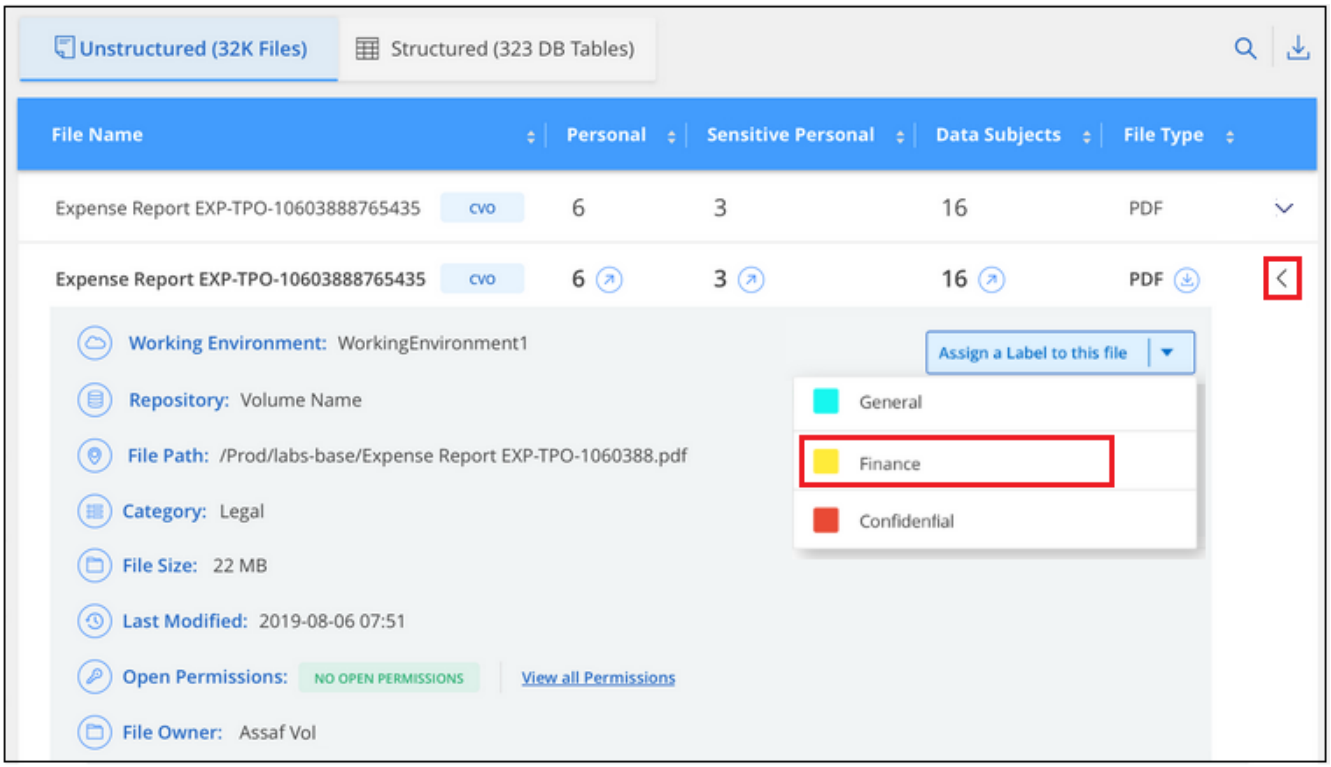
Assigning AIP labels manually

You can add, change, and remove AIP labels from your files using Cloud Data Sense.

Follow these steps to assign an AIP label to a single file.

Steps

1. In the Data Investigation results pane, click ⌄ for the file to expand the file metadata details.



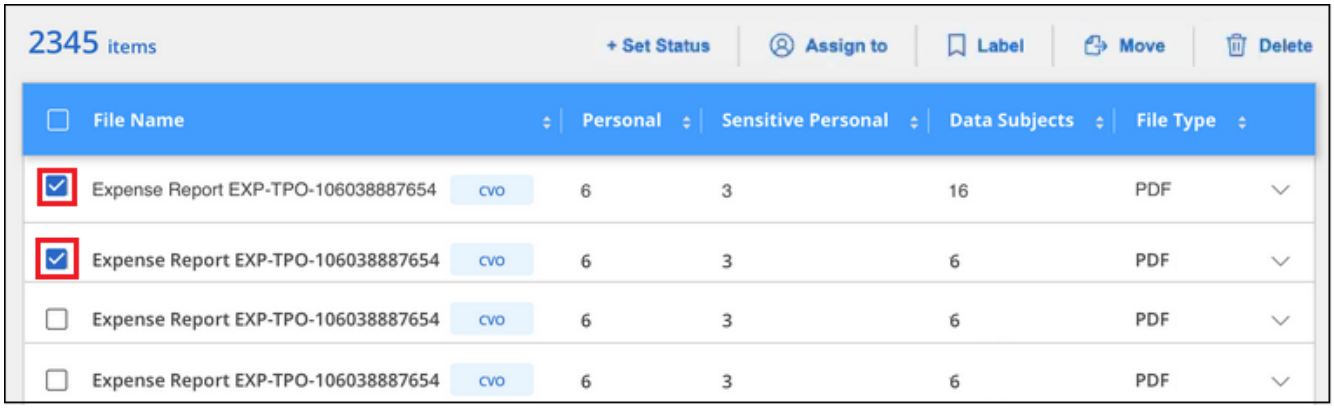
2. Click **Assign a Label to this file** and then select the label.

   The label appears in the file metadata.

To assign an AIP label to multiple files:

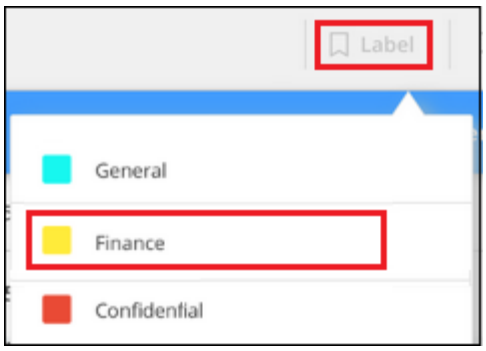
Steps

1. In the Data Investigation results pane, select the file, or files, that you want to label.



   - To select all files on the current page, check the box in the title row (File Name). (You can't select files from more than one page.)
   - To select individual files, check the box for each file (Volume_1).

2. From the button bar, click **Label** and select the AIP label:



The AIP label is added to the metadata for all selected files.

Assigning AIP labels automatically with Policies

You can assign an AIP label to all the files that meet the criteria of the Policy. You can specify the AIP label when creating the Policy, or you can add the label when editing any Policy.

Labels are added or updated in files continuously as Cloud Data Sense scans your files.

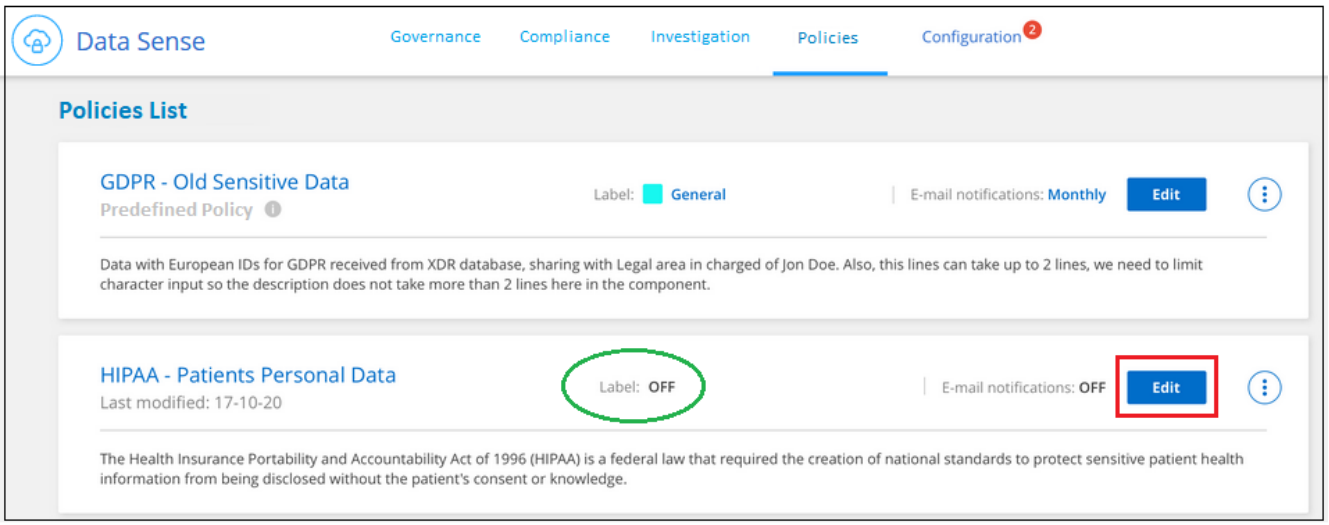
Depending on whether a label is already applied to a file, and the classification level of the label, the following actions are taken when changing a label:

If the file…	Then…
Has no label	The label is added
Has an existing label of a lower level of classification	The higher level label is added
Has an existing label of a higher level of classification	The higher level label is retained
Is assigned a label both manually and by a Policy	The higher level label is added
Is assigned two different labels by two Policies	The higher level label is added

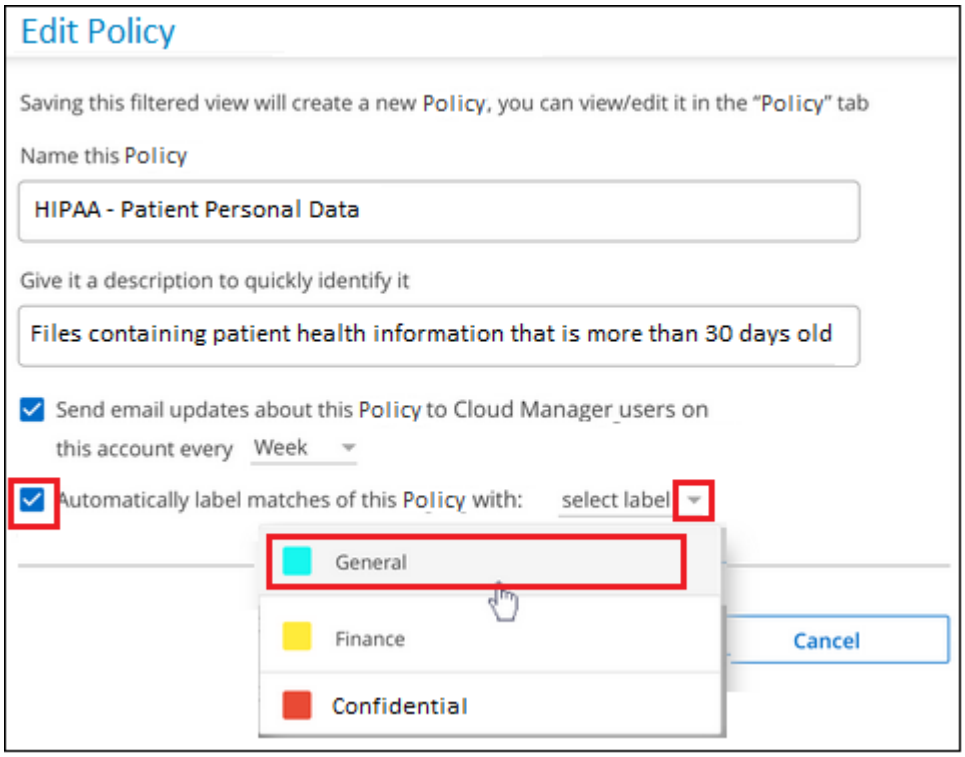
Follow these steps to add an AIP label to an existing Policy.

Steps

1. From the Policies List page, click **Edit** for the Policy where you want to add (or change) the AIP label.



2. In the Edit Policy page, check the box to enable automatic labels for files that match the Policy parameters, and select the label (for example, **General**).



3. Click **Save Policy** and the label appears in the Policy description.

If a Policy was configured with a label, but the label has since been removed from AIP, the label name is turned to OFF and the label is not assigned anymore.

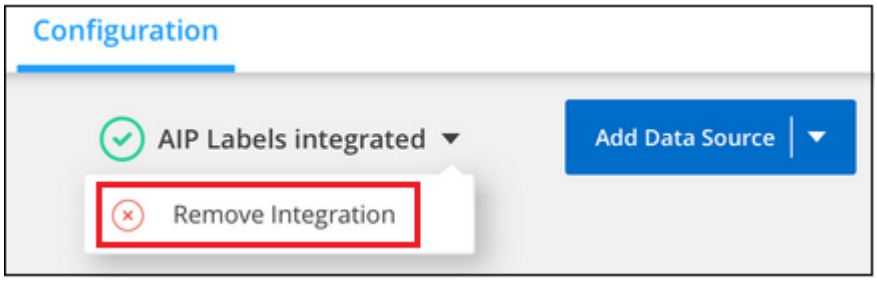
Removing the AIP integration

If you no longer want the ability to manage AIP labels in files, you can remove the AIP account from the Cloud Data Sense interface.

Note that no changes are made to the labels you have added using Data Sense. The labels that exist in files will stay as they currently exist.

Steps

1. From the *Configuration* page, click **AIP Labels integrated > Remove Integration**.



2. Click **Remove Integration** from the confirmation dialog.

Sending email alerts when non-compliant data is found

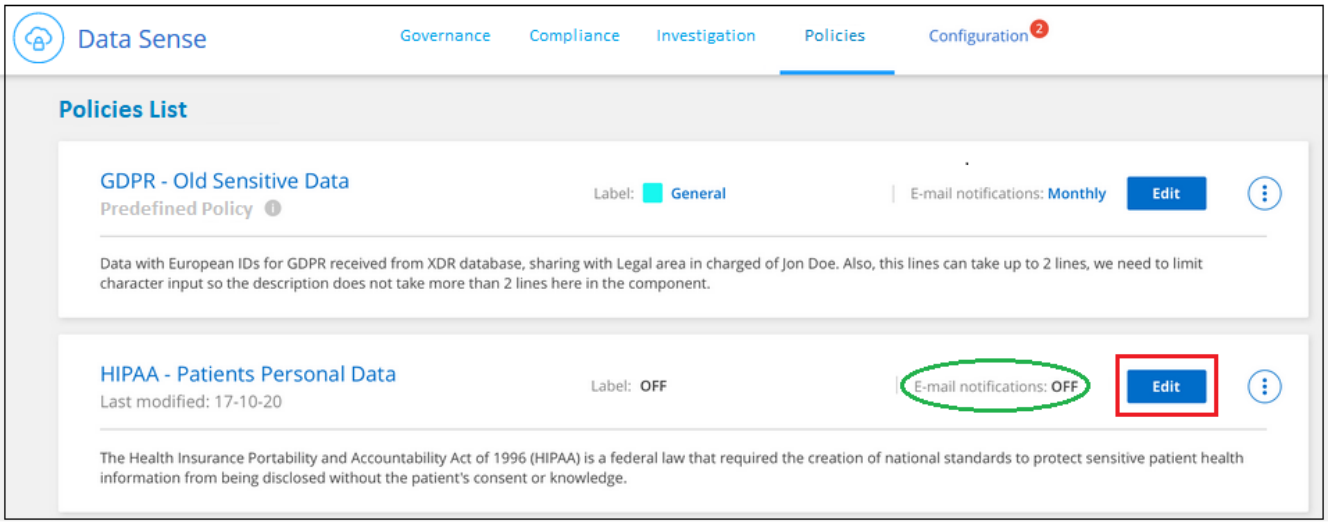
Cloud Data Sense can send email alerts to Cloud Manager users when certain critical Policies return results so you can get notifications to protect your data. You can choose to send the email notifications on a daily, weekly, or monthly basis.

You can configure this setting when creating the Policy or when editing any Policy.

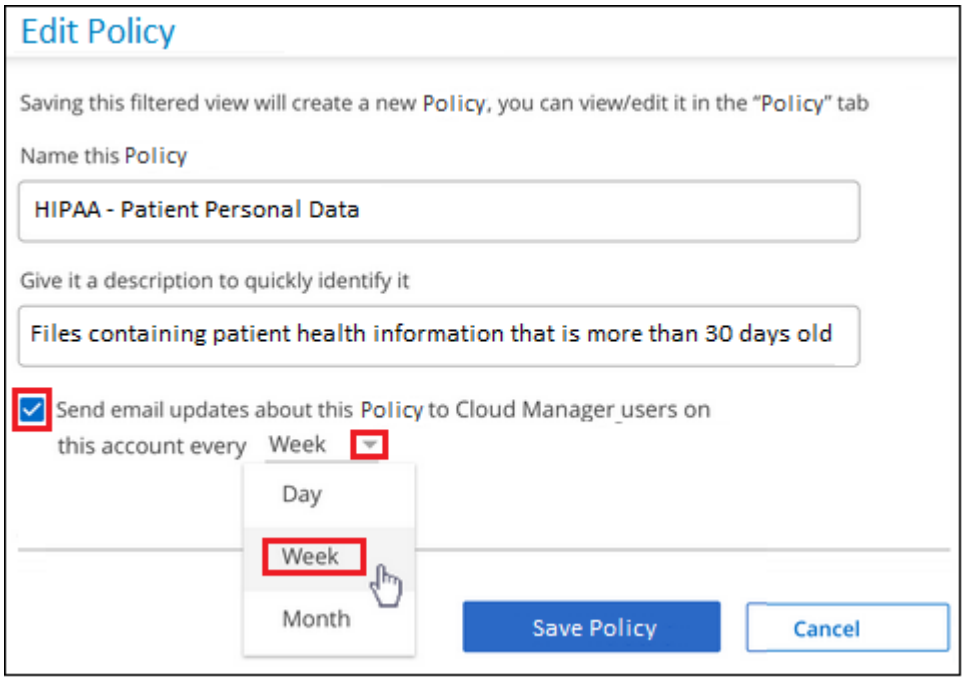
Follow these steps to add email updates to an existing Policy.

Steps

1. From the Policies List page, click **Edit** for the Policy where you want to add (or change) the email setting.



2. In the Edit Policy page, check the box if you want notification emails sent to Cloud Manager users, and choose the interval at which the email is sent (for example, every **Week**).



3. Click **Save Policy** and the interval at which the email is sent appears in the Policy description.

Result

The first email is sent now if there are any results from the Policy - but only if any files meet the Policy criteria. No personal information is sent in the notification emails. The email indicates that there are files that match the Policy criteria, and it provides a link to the Policy results.

Deleting source files

You can permanently remove source files that seem insecure or too risky to leave in your storage system, or that you have identified as a duplicate. This action is permanent and there is no undo.

You can't delete files that reside in databases or files that reside in volume Backups.

Requirements

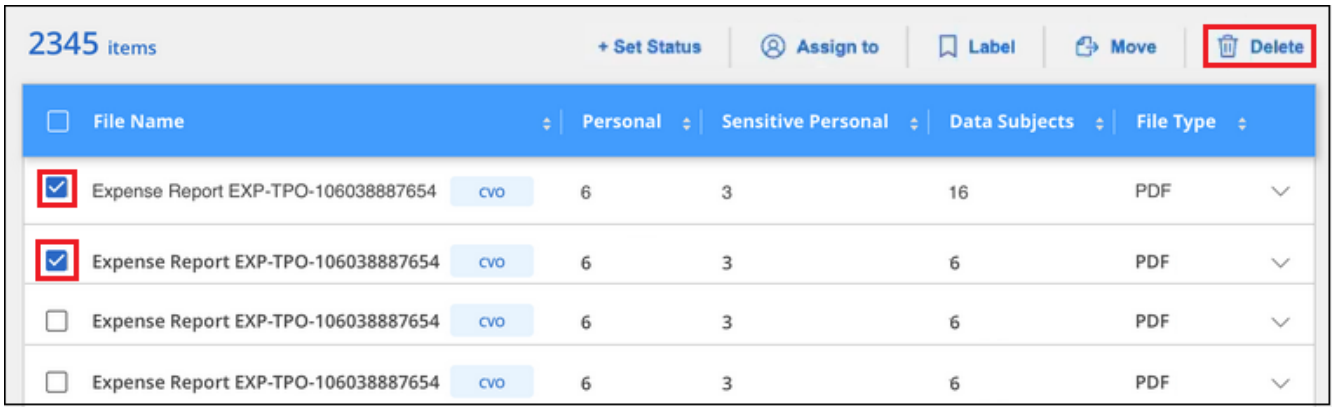
You must have the Account Admin or Workspace Admin role to delete files.

Deleting files requires the following permissions:

- For NFS data – the export policy needs to be defined with write permissions.
- For CIFS data – the CIFS credentials need to have write permissions.
- For S3 data - the IAM role must include the following permission: `s3:DeleteObject`

Steps

1. In the Data Investigation results pane, select the file, or files, that you want to delete.



   - To select all files on the current page, check the box in the title row (File Name). (You can't select files from more than one page.)
   - To select individual files, check the box for each file (Volume_1).
2. From the button bar, click **Delete**.
3. Because the delete operation is permanent, you must type "**permanently delete**" in the subsequent *Delete File* dialog and click **Delete File**.

Note that you can also delete an individual file when viewing the metadata details for a file. Just click **Delete this file**.

Moving source files to an NFS share

You can move source files that Data Sense is scanning to any NFS share. The NFS share does not need to be integrated with Data Sense (see Scanning file shares).

You can't move files that reside in databases or files that reside in volume Backups.

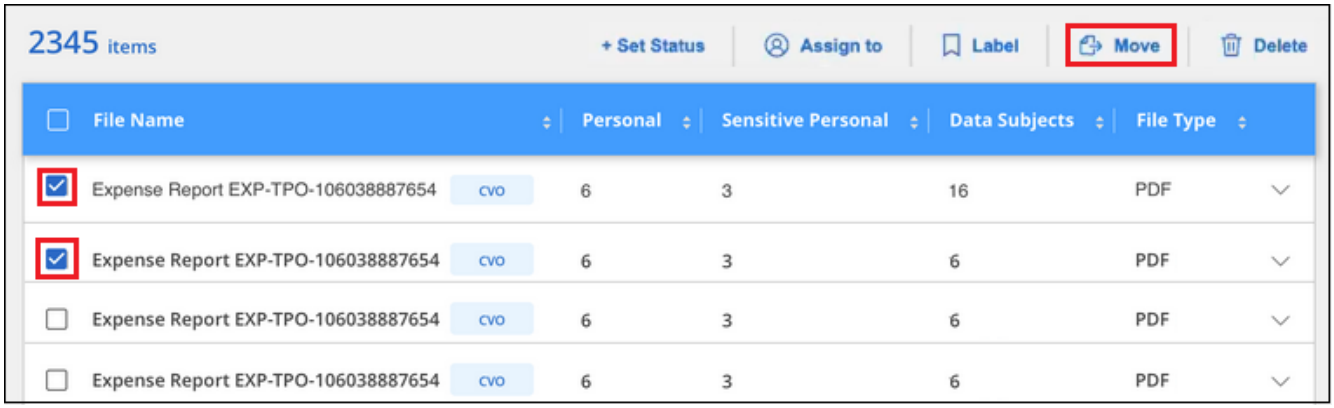
Requirements

You must have the Account Admin or Workspace Admin role to move files.

Moving files requires that the NFS share allows access from the Data Sense instance.

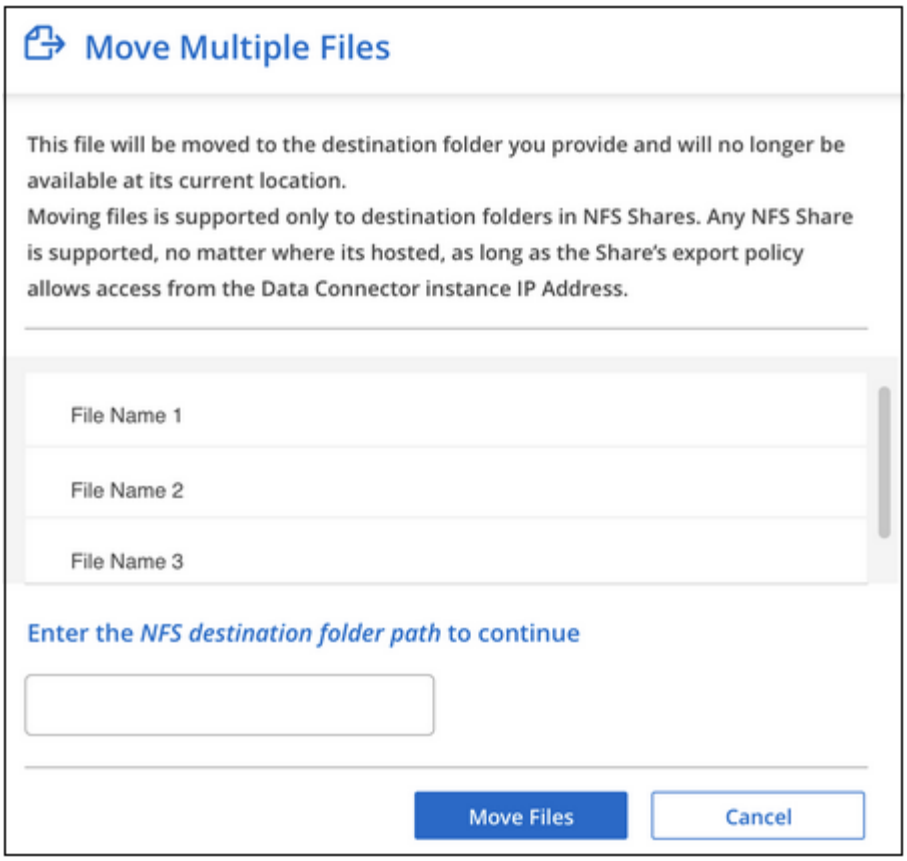
Steps

1. In the Data Investigation results pane, select the file, or files, that you want to move.



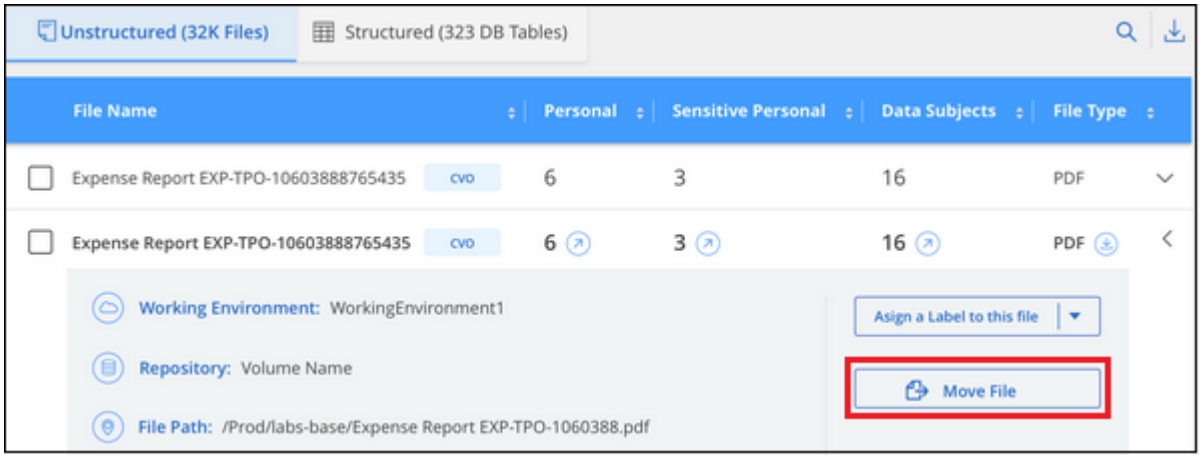
   - To select all files on the current page, check the box in the title row (File Name). (You can't select files from more than one page.)
   - To select individual files, check the box for each file (Volume_1).

2. From the button bar, click **Move**.



3. In the *Move Files* dialog, enter the name of the NFS share where all selected files will be moved in the format `<host_name>:/<share_path>`, and click **Move Files**.

Note that you can also move an individual file when viewing the metadata details for a file. Just click **Move file**.



List of predefined Policies

Cloud Data Sense provides the following system-defined Policies:

Name	Description	Logic
S3 publicly-exposed private data	S3 Objects containing personal or sensitive personal information, with open Public read access.	(S3 Public) AND contains personal OR sensitive personal info)

Name	Description	Logic
PCI DSS – Stale data over 30 days	Files containing Credit Card information, last modified over 30 days ago.	Contains credit card AND last modified over 30 days
HIPAA – Stale data over 30 days	Files containing Health information, last modified over 30 days ago.	Contains health data (defined same way as in HIPAA report) AND last modified over 30 days
Private data – Stale over 7 years	Files containing personal or sensitive personal information, last modified over 7 years ago.	Files containing personal or sensitive personal information, last modified over 7 years ago
GDPR – European citizens	Files containing more than 5 identifiers of an EU country's citizens or DB Tables containing identifiers of an EU country's citizens.	Files containing over 5 identifiers of an (one) EU citizens or DB Tables containing rows with over 15% of columns with one country's EU identifiers. (any one of the national identifiers of the European countries. Does not include Brazil, California, USA SSN, Israel, South Africa)
CCPA – California residents	Files containing over 10 California Driver's License identifiers or DB Tables with this identifier.	Files containing over 10 California Driver's License identifiers OR DB Tables containing California Driver's license
Data Subject names – High risk	Files with over 50 Data Subject names.	Files with over 50 Data Subject names
Email Addresses – High risk	Files with over 50 Email Addresses, or DB Columns with over 50% of their rows containing Email Addresses	Files with over 50 Email Addresses, or DB Columns with over 50% of their rows containing Email Addresses
Personal data – High risk	Files with over 20 Personal data identifiers, or DB Columns with over 50% of their rows containing Personal data identifiers.	Files with over 20 personal, or DB Columns with over 50% of their rows containing personal
Sensitive Personal data – High risk	Files with over 20 Sensitive Personal data identifiers, or DB Columns with over 50% of their rows containing Sensitive Personal data.	Files with over 20 sensitive personal, or DB Columns with over 50% of their rows containing sensitive personal

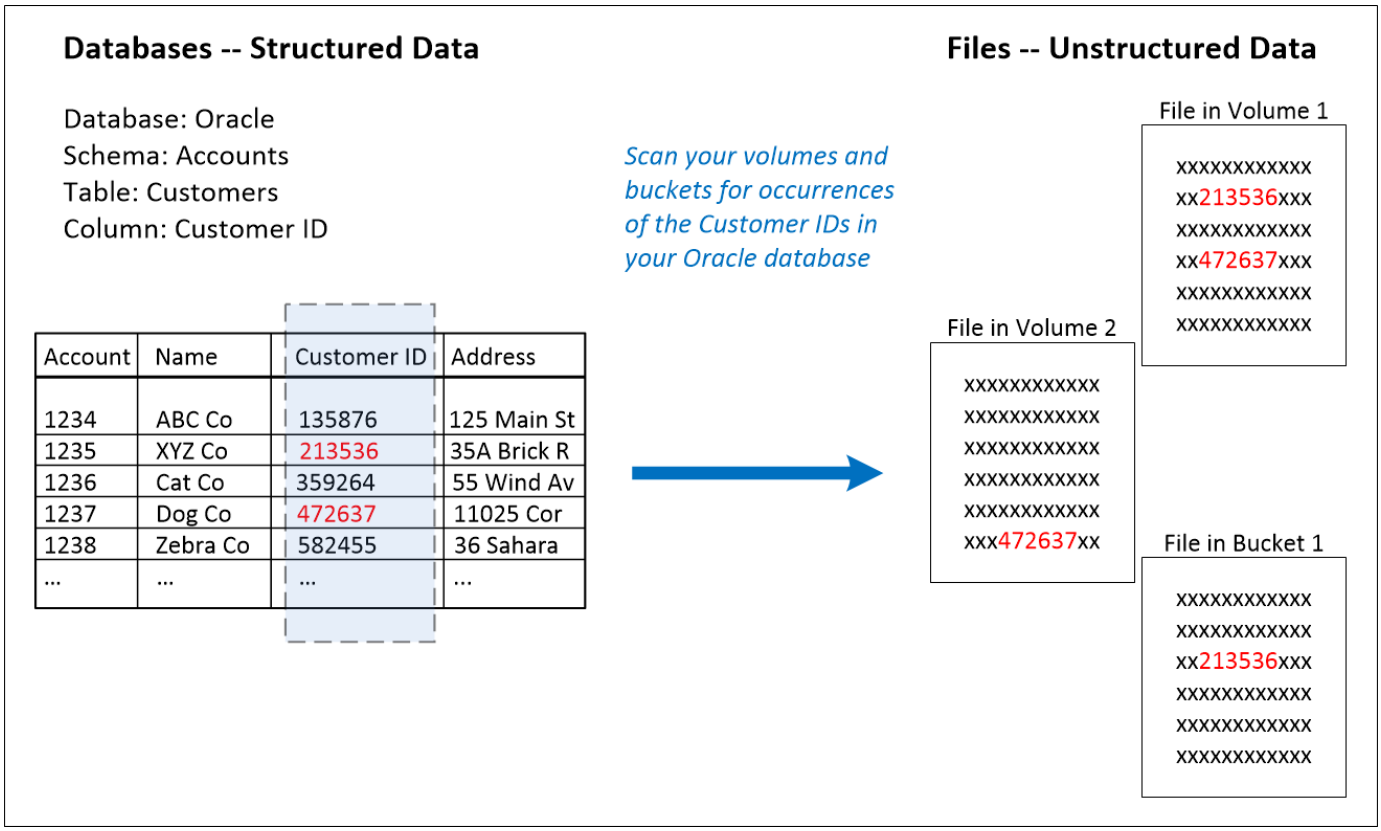
Adding personal data identifiers using Data Fusion

A feature we call *Data Fusion* allows you to scan your organizations' data to identify whether unique identifiers from your databases are found in files or other databases - basically making your own list of "personal data" that is identified in Cloud Data Sense scans. This gives you the full picture about where potentially sensitive data resides in *all* your files.

The capabilities described in this section are available only if you have chosen to perform a full classification scan on your data sources. Data sources that have had a mapping-only scan do not show file-level details.

Creating custom personal data identifiers from your databases

You can choose the additional identifiers that Cloud Data Sense will look for in its' scans by selecting a specific column, or columns, in a database table. For example, the diagram below shows how data fusion is used to scan your volumes, buckets, and databases for occurrences of all your Customer IDs from your Oracle database.

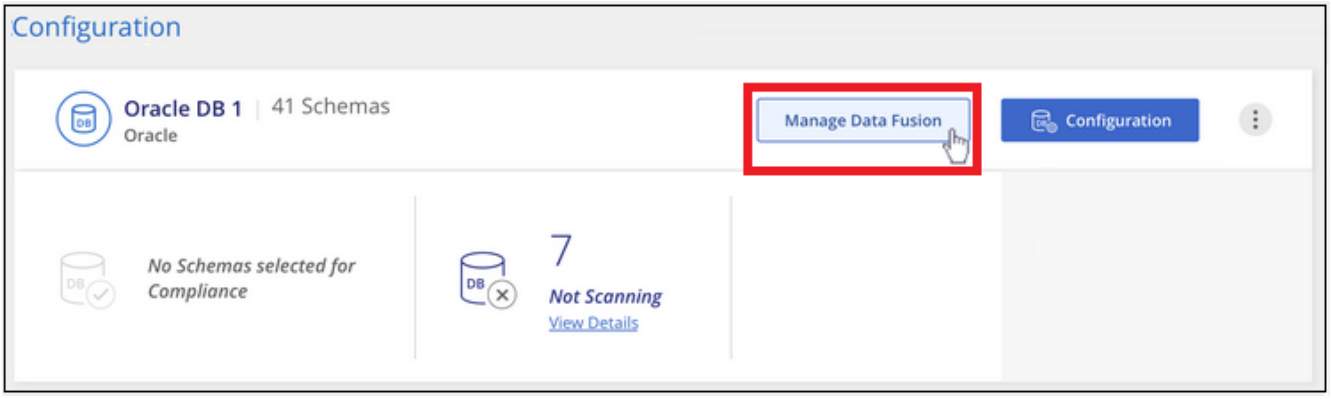


As you can see, two unique Customer IDs have been found in two volumes and in one S3 bucket. Any matches in database tables will also be identified.

Steps

You must have added at least one database server to Cloud Data Sense before you can add data fusion sources.

1. In the Configuration page, click **Manage Data Fusion** in the database where the source data resides.

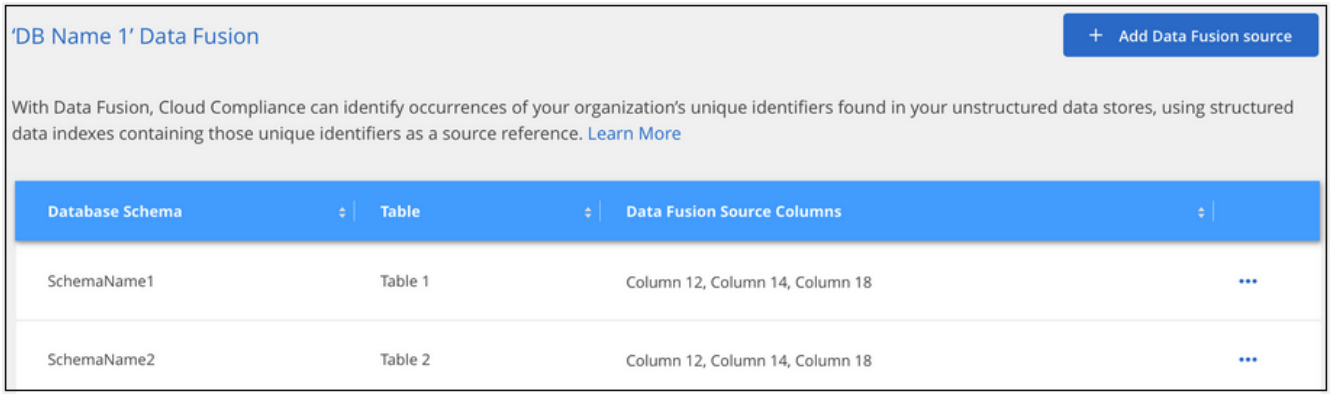


2. Click **Add Data Fusion source** on the next page.
3. In the *Add Data Fusion Source* page:
   a. Select the Database Schema from the drop-down menu.
   b. Enter the Table name in that schema.
   c. Enter the Column, or Columns, that contain the unique identifiers you want to use.

      When adding multiple columns, enter each column name, or table view name, on a separate line.

4. Click **Add Data Fusion Source**.

   The Data Fusion inventory page displays the database source columns that you have configured for Cloud Data Sense to scan.

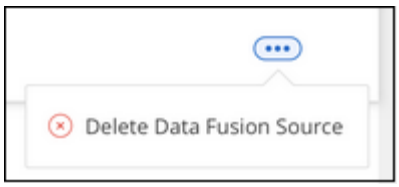


Results

After the next scan, the results will include this new information in the Dashboard under the "Personal" results section, and in the Investigation page in the "Personal Data" filter. Each source column you added appears in the filter list as "Table.Column", for example `Customers.Customer ID`.

Deleting a Data Fusion source

If at some point you decide not to scan your files using a certain Data Fusion source, you can select the source row from the Data Fusion inventory page and click **Delete Data Fusion Source**.



Viewing compliance reports

Cloud Data Sense provides reports that you can use to better understand the status of your organization's data privacy program.

By default, the Cloud Data Sense dashboards display compliance and governance data for all working environments and databases. If you want to view reports that contain data for only some of the working environments, select those working environments.

The reports described in this section are available only if you have chosen to perform a full classification scan on your data sources. Data sources that have had a mapping-only scan can only generate the Data Mapping Report.

NetApp can't guarantee 100% accuracy of the personal data and sensitive personal data that Cloud Data Sense identifies. You should always validate the information by reviewing the data.

Privacy Risk Assessment Report

The Privacy Risk Assessment Report provides an overview of your organization's privacy risk status, as required by privacy regulations such as GDPR and CCPA. The report includes the following information:

Compliance status

A severity score and the distribution of data, whether it's non-sensitive, personal, or sensitive personal.

Assessment overview

A breakdown of the types of personal data found, as well as the categories of data.

Data subjects in this assessment

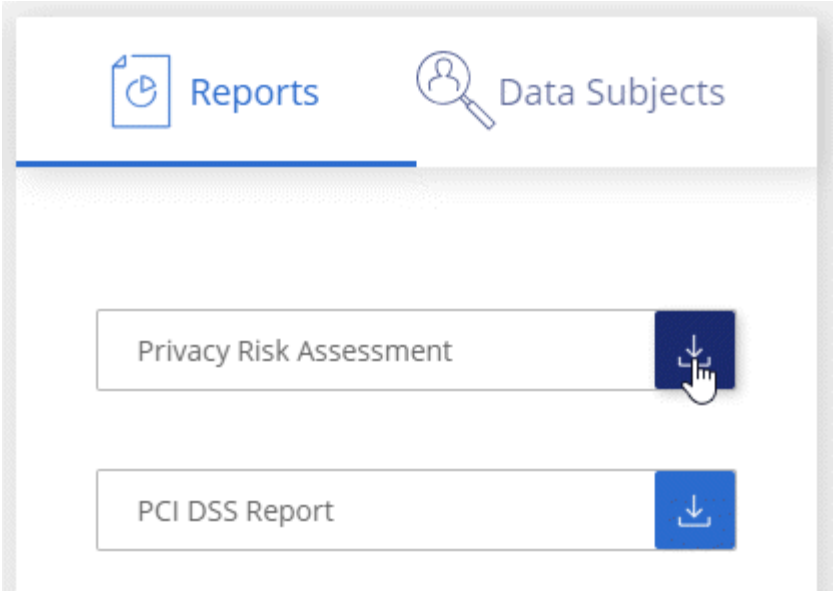
The number of people, by location, for which national identifiers were found.

Generating the Privacy Risk Assessment Report

Go to the Data Sense tab to generate the report.

Steps

1. At the top of Cloud Manager, click **Data Sense**.
2. Click **Compliance**, and then click the download icon next to **Privacy Risk Assessment** under **Reports**.



Result

Cloud Data Sense generates a PDF report that you can review and send to other groups as needed.

Severity score

Cloud Data Sense calculates the severity score for the Privacy Risk Assessment Report on the basis of three variables:

- The percentage of personal data out of all data.
- The percentage of sensitive personal data out of all data.
- The percentage of files that include data subjects, determined by national identifiers such as national IDs, Social Security numbers, and tax ID numbers.

The logic used to determine the score is as follows:

Severity score	Logic
0	All three variables are exactly 0%
1	One of the variables are larger than 0%
2	One of the variables are larger than 3%
3	Two of the variables are larger than 3%
4	Three of the variables are larger than 3%
5	One of the variables are larger than 6%
6	Two of the variables are larger than 6%
7	Three of the variables are larger than 6%
8	One of the variables are larger than 15%
9	Two of the variables are larger than 15%
10	Three of the variables are larger than 15%

PCI DSS Report

The Payment Card Industry Data Security Standard (PCI DSS) Report can help you identify the distribution of credit card information across your files. The report includes the following information:

Overview

How many files contain credit card information and in which working environments.

Encryption

The percentage of files containing credit card information that are on encrypted or unencrypted working environments. This information is specific to Cloud Volumes ONTAP.

Ransomware Protection

The percentage of files containing credit card information that are on working environments that do or don't have ransomware protection enabled. This information is specific to Cloud Volumes ONTAP.

Retention

The timeframe in which the files were last modified. This is helpful because you shouldn't keep credit card information for longer than you need to process it.

Distribution of Credit Card Information

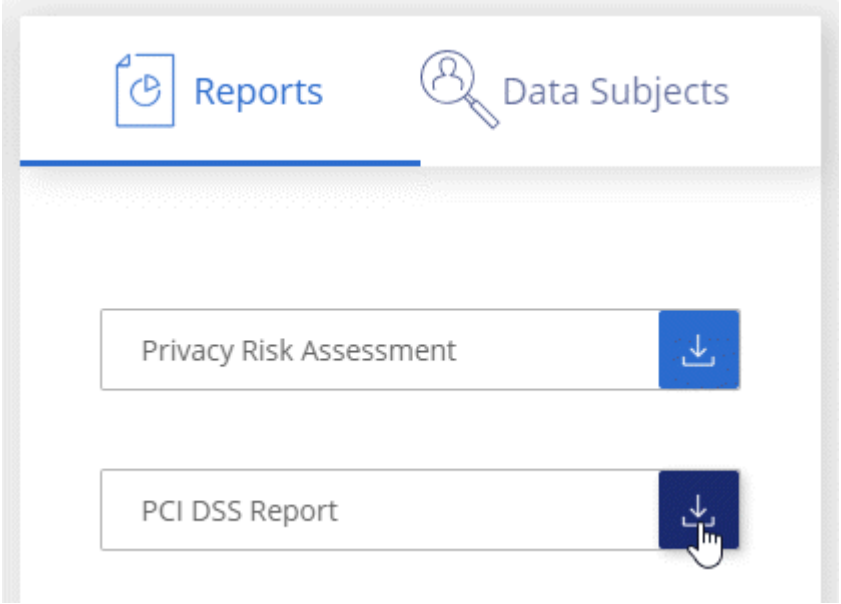
The working environments where the credit card information was found and whether encryption and ransomware protection are enabled.

Generating the PCI DSS Report

Go to the Data Sense tab to generate the report.

Steps

1. At the top of Cloud Manager, click **Data Sense**.
2. Click **Compliance**, and then click the download icon next to **PCI DSS Report** under **Reports**.



Result

Cloud Data Sense generates a PDF report that you can review and send to other groups as needed.

HIPAA Report

The Health Insurance Portability and Accountability Act (HIPAA) Report can help you identify files containing health information. It is designed to aid in your organization's requirement to comply with HIPAA data privacy laws. The information Cloud Data Sense looks for includes:

- Health reference pattern
- ICD-10-CM Medical code
- ICD-9-CM Medical code
- HR – Health category
- Health Application Data category

The report includes the following information:

Overview
: How many files contain health information and in which working environments.

Encryption
: The percentage of files containing health information that are on encrypted or unencrypted working environments. This information is specific to Cloud Volumes ONTAP.

Ransomware Protection
: The percentage of files containing health information that are on working environments that do or don't have ransomware protection enabled. This information is specific to Cloud Volumes ONTAP.

Retention
: The timeframe in which the files were last modified. This is helpful because you shouldn't keep health information for longer than you need to process it.

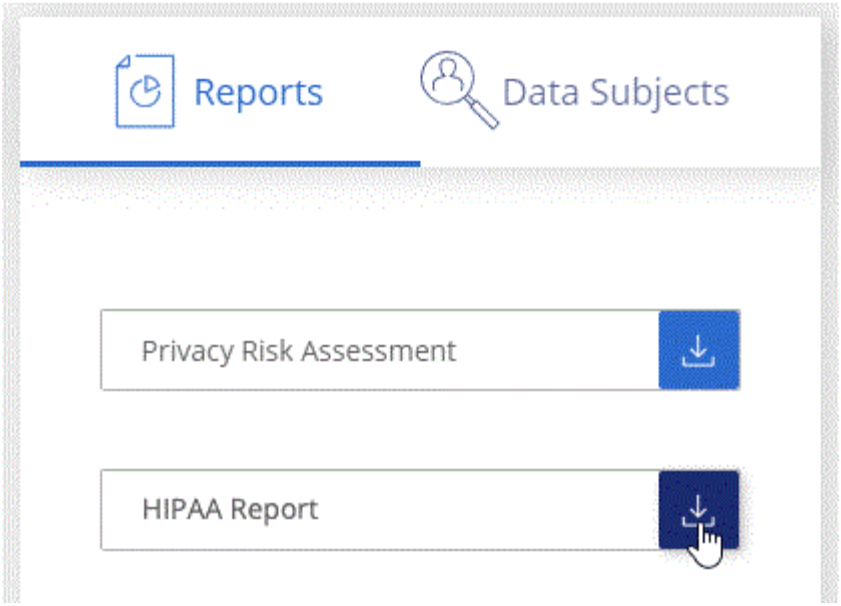
Distribution of Health Information
: The working environments where the health information was found and whether encryption and ransomware protection are enabled.

Generating the HIPAA Report

Go to the Data Sense tab to generate the report.

Steps

1. At the top of Cloud Manager, click **Data Sense**.
2. Click **Compliance**, and then click the download icon next to **HIPAA Report** under **Reports**.



Result

Cloud Data Sense generates a PDF report that you can review and send to other groups as needed.

Data Mapping Report

The Data Mapping Report provides an overview of the data being stored in your corporate data sources to assist you with decisions of migration, back up, security, and compliance processes. The report first lists an overview report summarizing all your working environments and data sources, and then provides a breakdown for each working environment.

The report includes the following information:

Usage Capacity

For all working environments: Lists the number of files and the used capacity for each working environment.
For single working environments: Lists the files that are using the most capacity.

Age of Data

Provides three charts and graphs for when files were created, last modified, or last accessed. Lists the number of files, and their used capacity, based on certain date ranges.

Size of Data

Lists the number of files that exist within certain size ranges in your working environments.

File Types

Lists the total number of files and the used capacity for each type of file being stored in your working environments.

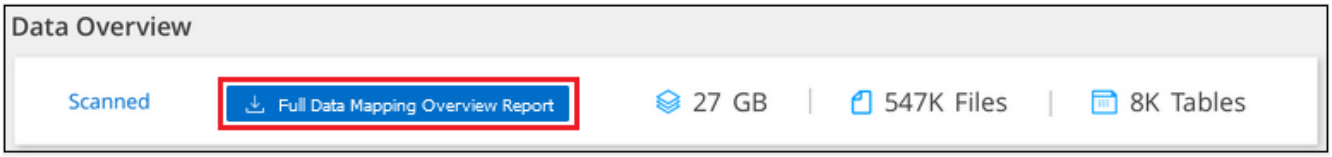
Generating the Data Mapping Report

Go to the Data Sense tab to generate the report.

Steps

1. At the top of Cloud Manager, click **Data Sense**.

2. Click **Governance**, and then click the **Full Data Mapping Overview Report** button from the Governance Dashboard.



Result

Cloud Data Sense generates a PDF report that you can review and send to other groups as needed.

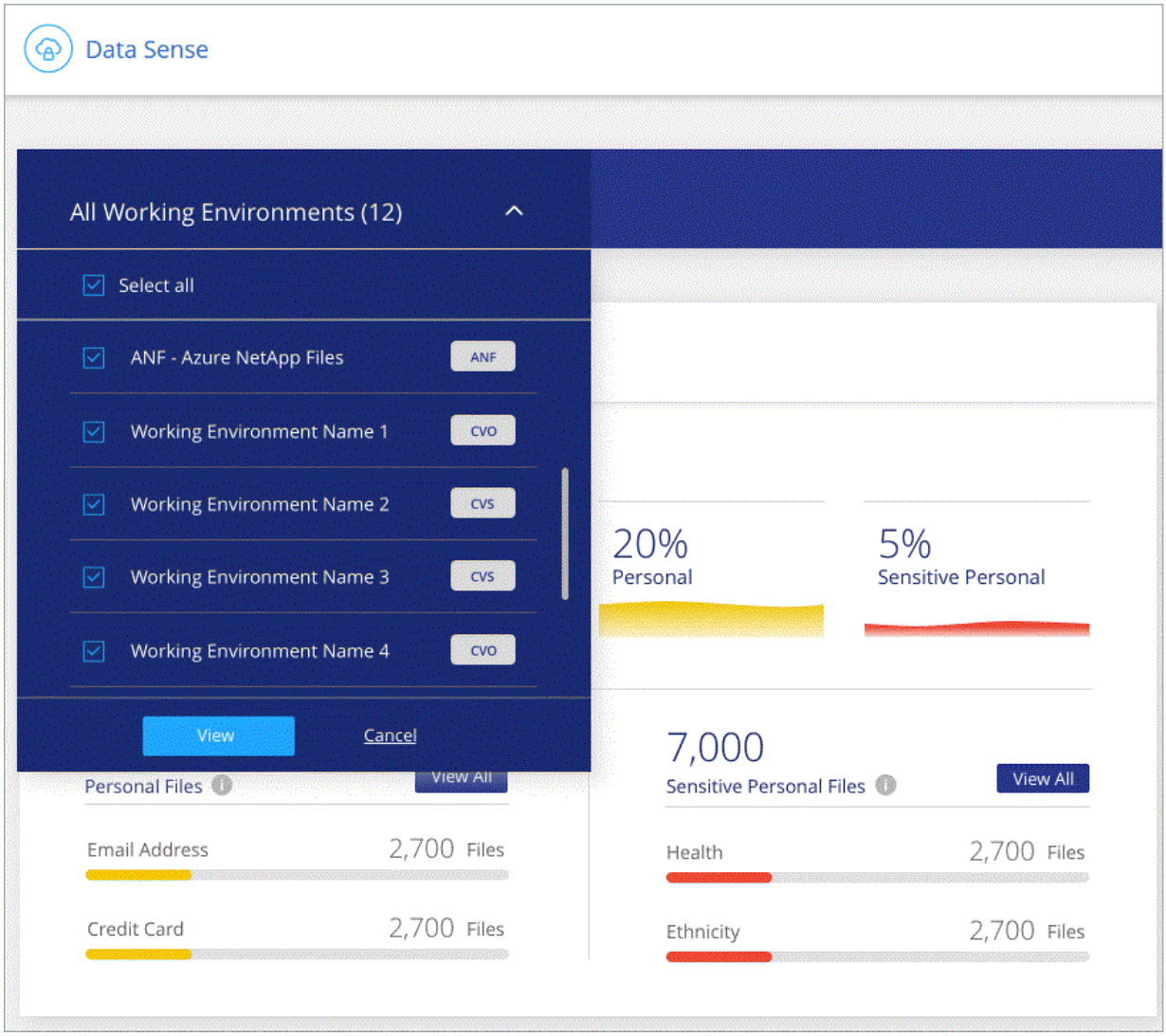
Selecting the working environments for reports

You can filter the contents of the Cloud Data Sense Compliance dashboard to see compliance data for all working environments and databases, or for just specific working environments.

When you filter the dashboard, Data Sense scopes the compliance data and reports to just those working environments that you selected.

Steps

1. Click the filter drop-down, select the working environments that you'd like to view data for, and click **View**.



Responding to a Data Subject Access Request

Respond to a Data Subject Access Request (DSAR) by searching for a subject's full name or known identifier (such as an email address) and then downloading a report. The report is designed to aid in your organization's requirement to comply with GDPR or similar data privacy laws.

The DSAR capabilities are available only if you have chosen to perform a full classification scan on your data sources. Data sources that have had a mapping-only scan do not provide file-level details.

NetApp can't guarantee 100% accuracy of the personal data and sensitive personal data that Cloud Data Sense identifies. You should always validate the information by reviewing the data.

What is a Data Subject Access Request?

Privacy regulations such as the European GDPR grant data subjects (such as customers or employees) the right to access their personal data. When a data subject requests this information, this is known as a DSAR

(data subject access request). Organizations are required to respond to these requests "without undue delay", and at the latest within one month of receipt.

How can Cloud Data Sense help you respond to a DSAR?

When you perform a data subject search, Cloud Data Sense finds all of the files, buckets, and databases that have that person's name or identifier in it. Data Sense checks the latest pre-indexed data for the name or identifier. It doesn't initiate a new scan.

After the search is complete, you can then download the list of files for a Data Subject Access Request report. The report aggregates insights from the data and puts it into legal terms that you can send back to the person.

Searching for data subjects and downloading reports

Search for the data subject's full name or known identifier and then download a file list report or DSAR report. You can search by any personal information type.

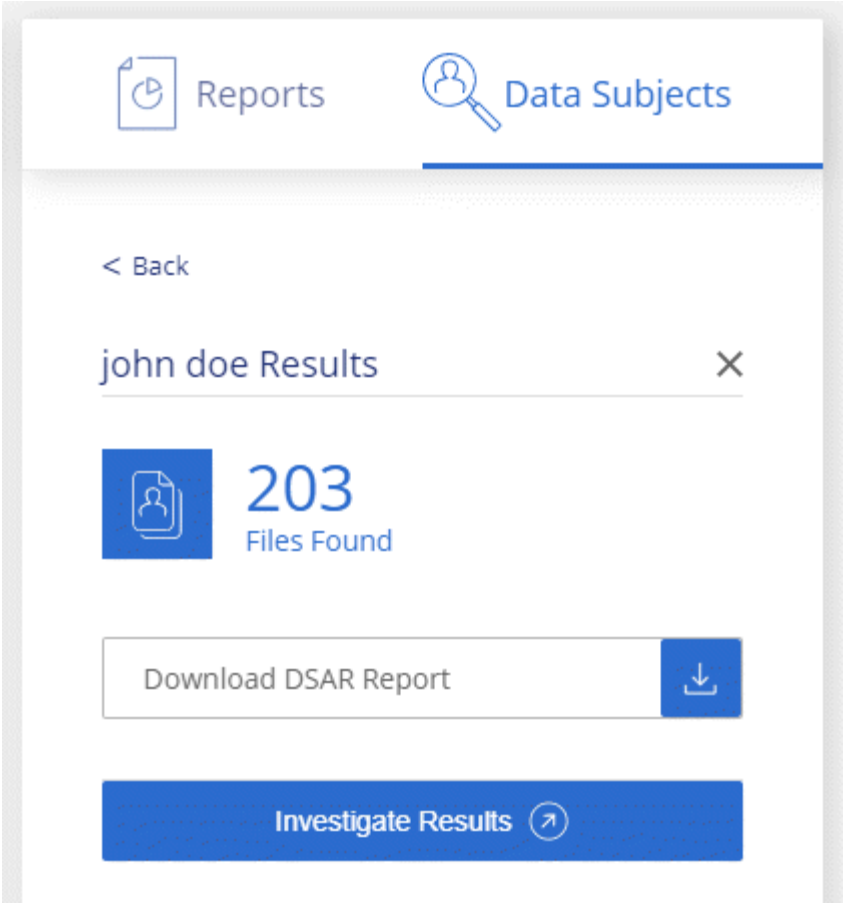
Only English is supported when searching for the names of data subjects. Support for more languages will be added later.

Data subject search is not supported within databases at this time.

Steps

1. At the top of Cloud Manager, click **Data Sense**.
2. Click **Data Subjects**.
3. Search for the data subject's full name or known identifier.

   Here's an example that shows a search for the name *john doe*:



4. Choose one of the available options:
   - **Download DSAR Report**: A formal response to the access request that you can send to the data subject. This report contains automatically-generated information based on data that Cloud Data Sense found on the data subject and is designed to be used as a template. You should complete the form and review it internally before sending it to the data subject.
   - **Investigate Results**: A page that enables you to investigate the data by searching, sorting, expanding details for a specific file, and by downloading the file list.

     If there are more than 10,000 results, only the top 10,000 appear in the file list.

Categories of private data

There are many types of private data that Cloud Data Sense can identify in your volumes, Amazon S3 buckets, databases, and OneDrive folders. See the categories below.

If you need Cloud Data Sense to identify other private data types, such as additional national ID numbers or healthcare identifiers, email ng-contact-data-sense@netapp.com with your request.

Types of personal data

The personal data found in files can be general personal data or national identifiers. The third column identifies whether Cloud Data Sense uses proximity validation to validate its findings for the identifier.

Note that you can add to the list of personal data that is found in your files if you are scanning a database server. The *Data Fusion* feature allows you to choose the additional identifiers that Cloud Data Sense will look for in its' scans by selecting columns in a database table. See Adding personal data identifiers using Data Fusion for details.

Type	Identifier	Proximity validation?
General	Email address	No
	Credit card number	No
	IBAN number (International Bank Account Number)	No
	IP address	No

Type	Identifier	Proximity validation?
National Identifiers	Austrian SSN	Yes
	Belgian ID (Numero National)	Yes
	Brazilian ID (CPF)	Yes
	Bulgarian ID (UCN)	Yes
	California Driver's License	Yes
	Croatian ID (OIB)	Yes
	Cyprus Tax Identification Number (TIC)	Yes
	Czech/Slovak ID	Yes
	Danish ID (CPR)	Yes
	Dutch ID (BSN)	Yes
	Estonian ID	Yes
	Finnish ID (HETU)	Yes
	French Tax Identification Number (SPI)	Yes
	German Tax Identification Number (Steuerliche Identifikationsnummer)	Yes
	Greek ID	Yes
	Hungarian Tax Identification Number	Yes
	Irish ID (PPS)	Yes
	Israeli ID	Yes
	Italian Tax Identification Number	Yes
	Latvian ID	Yes
	Lithuanian ID	Yes
	Luxembourg ID	Yes
	Maltese ID	Yes
	Polish ID (PESEL)	Yes
	Portuguese Tax Identification Number (NIF)	Yes
	Romanian ID (CNP)	Yes
	Slovenian ID (EMSO)	Yes
	South African ID	Yes
	Spanish Tax Identification Number	Yes
	Swedish ID	Yes
	U.K. ID (NINO)	Yes
	USA Social Security Number (SSN)	Yes

Types of sensitive personal data

The sensitive personal data that Cloud Data Sense can find in files includes the following:

Criminal Procedures Reference
Data concerning a natural person's criminal convictions and offenses.

Ethnicity Reference
Data concerning a natural person's racial or ethnic origin.

Health Reference
Data concerning a natural person's health.

ICD-9-CM Medical Codes
Codes used in the medical and health industry.

ICD-10-CM Medical Codes
Codes used in the medical and health industry.

Philosophical Beliefs Reference
Data concerning a natural person's philosophical beliefs.

Political Opinions Reference
Data concerning a natural person's political opinions.

Religious Beliefs Reference
Data concerning a natural person's religious beliefs.

Sex Life or Orientation Reference
Data concerning a natural person's sex life or sexual orientation.

Types of categories

Cloud Data Sense categorizes your data as follows:

Finance

- Balance Sheets
- Purchase Orders
- Invoices
- Quarterly Reports

HR

- Background Checks
- Compensation Plans
- Employee Contracts
- Employee Reviews
- Health
- Resumes

Legal

- NDAs
- Vendor-Customer contracts

Marketing

- Campaigns
- Conferences

Operations

- Audit Reports

Sales

- Sales Orders

Services

- RFI
- RFP
- SOW
- Training

Support

- Complaints and Tickets

Metadata categories

- Application Data
- Archive Files
- Audio
- Business Application Data
- CAD Files
- Code
- Database and index files
- Design Files
- Email Application Data
- Executables
- Financial Application Data
- Health Application Data
- Images
- Logs
- Miscellaneous Documents
- Miscellaneous Presentations
- Miscellaneous Spreadsheets
- Videos

Types of files

Cloud Data Sense scans all files for category and metadata insights and displays all file types in the file types section of the dashboard.

But when Data Sense detects Personal Identifiable Information (PII), or when it performs a DSAR search, only the following file formats are supported:
.CSV, .DCM, .DICOM, .DOC, .DOCX, .JSON, .PDF, .PPTX, .RTF, .TXT, .XLS, and .XLSX.

Accuracy of information found

NetApp can't guarantee 100% accuracy of the personal data and sensitive personal data that Cloud Data Sense identifies. You should always validate the information by reviewing the data.

Based on our testing, the table below shows the accuracy of the information that Data Sense finds. We break it down by *precision* and *recall*:

Precision

The probability that what Data Sense finds has been identified correctly. For example, a precision rate of 90% for personal data means that 9 out of 10 files identified as containing personal information, actually contain personal information. 1 out of 10 files would be a false positive.

Recall

The probability for Data Sense to find what it should. For example, a recall rate of 70% for personal data means that Data Sense can identify 7 out of 10 files that actually contain personal information in your organization. Data Sense would miss 30% of the data and it won't appear in the dashboard.

We are constantly improving the accuracy of our results. Those improvements will be automatically available in future Data Sense releases.

Type	Precision	Recall
Personal data - General	90%-95%	60%-80%
Personal data - Country identifiers	30%-60%	40%-60%
Sensitive personal data	80%-95%	20%-30%
Categories	90%-97%	60%-80%

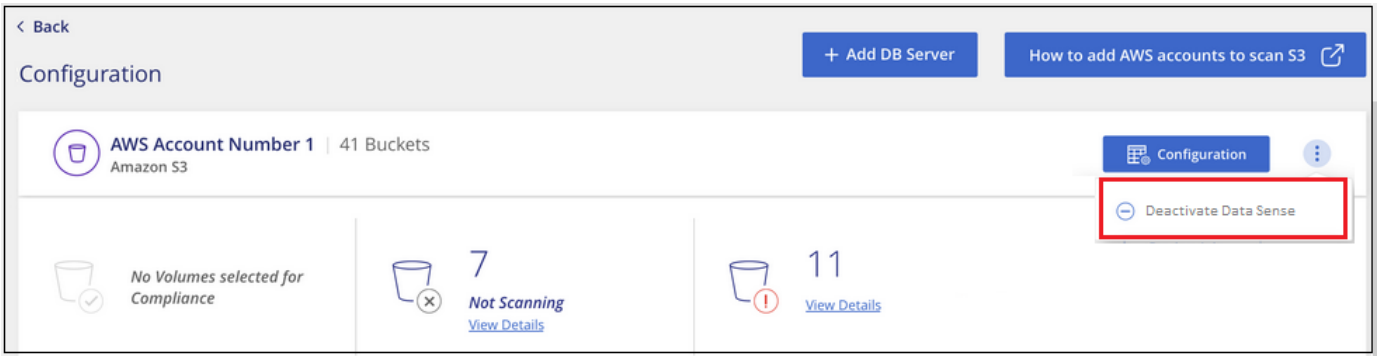
Removing data sources from Cloud Data Sense

If you need to, you can stop Cloud Data Sense from scanning one or more working environments, databases, file share groups, or OneDrive accounts. You can also delete the Cloud Data Sense instance if you no longer want to use Data Sense with your working environments.

Deactivating compliance scans for a working environment

When you deactivate scans, Cloud Data Sense no longer scans the data on the working environment and it removes the indexed compliance insights from the Data Sense instance (the data from the working environment itself isn't deleted).

1. From the *Configuration* page, click the button in the row for the working environment, and then click **Deactivate Data Sense**.

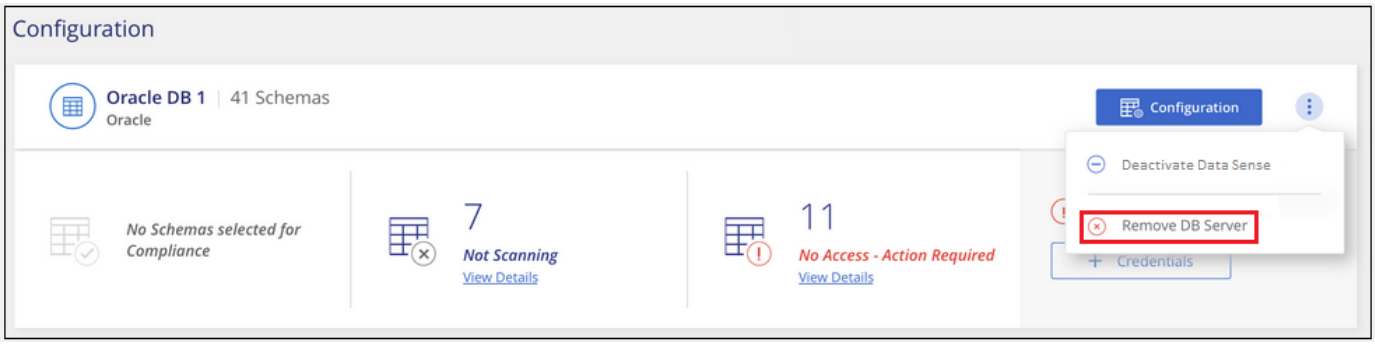


You can also disable compliance scans for a working environment from the Services panel when you select the working environment.

Removing a database from Cloud Data Sense

If you no longer want to scan a certain database, you can delete it from the Cloud Data Sense interface and stop all scans.

1. From the *Configuration* page, click the button in the row for the database, and then click **Remove DB Server**.

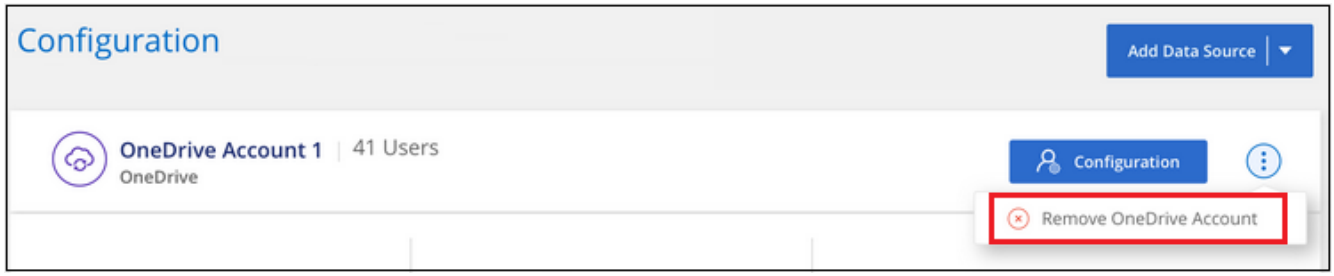


Removing a OneDrive account from Cloud Data Sense

If you no longer want to scan user files from a certain OneDrive account, you can delete the account from the Cloud Data Sense interface and stop all scans.

Steps

1. From the *Configuration* page, click the button in the row for the OneDrive account, and then click **Remove OneDrive Account**.



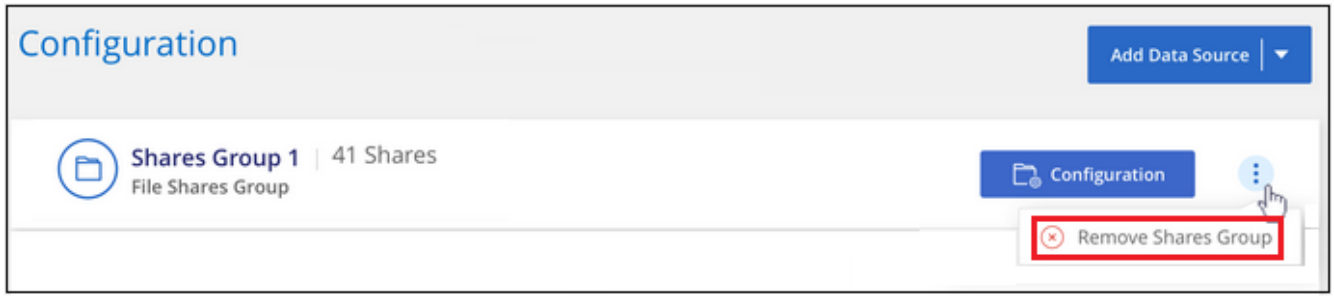
2. Click **Delete Account** from the confirmation dialog.

Removing a group of file shares from Cloud Data Sense

If you no longer want to scan user files from a file shares group, you can delete the File Shares Group from the Cloud Data Sense interface and stop all scans.

Steps

1. From the *Configuration* page, click the button in the row for the File Shares Group, and then click **Remove File Shares Group**.



2. Click **Delete Group of Shares** from the confirmation dialog.

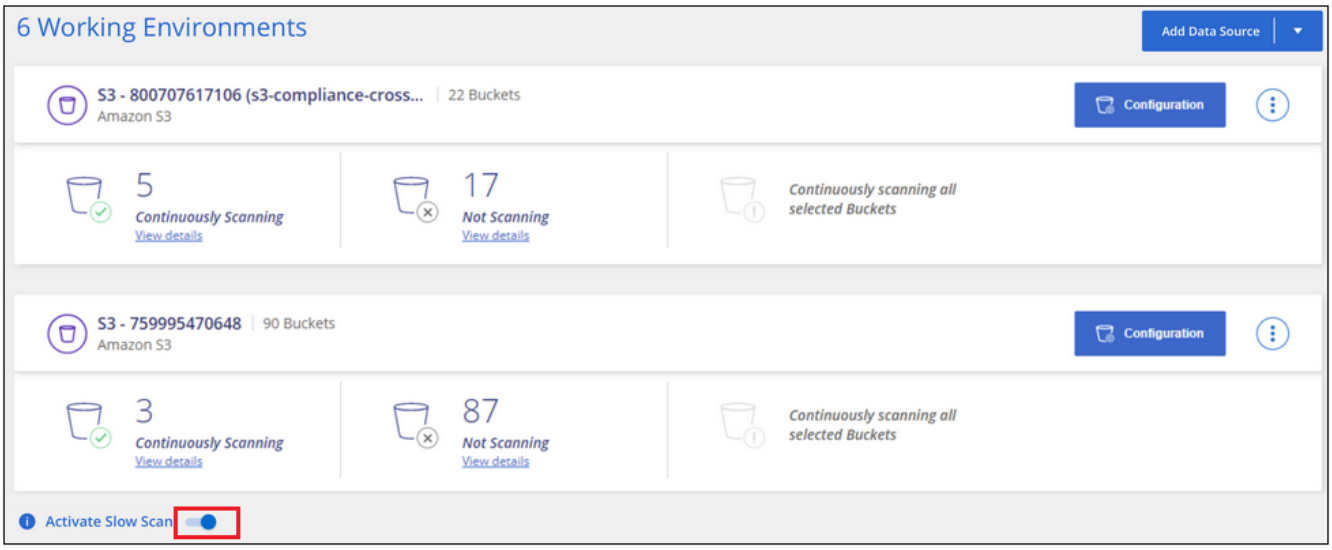
Reducing the Data Sense scan speed

Data scans have a negligible impact on your storage systems and on your data. However, if you are concerned with even a very small impact, you can configure Data Sense to perform "slow" scans. When enabled, slow scanning is used on all data sources - you can't configure slow scanning for a single working environment or data source.

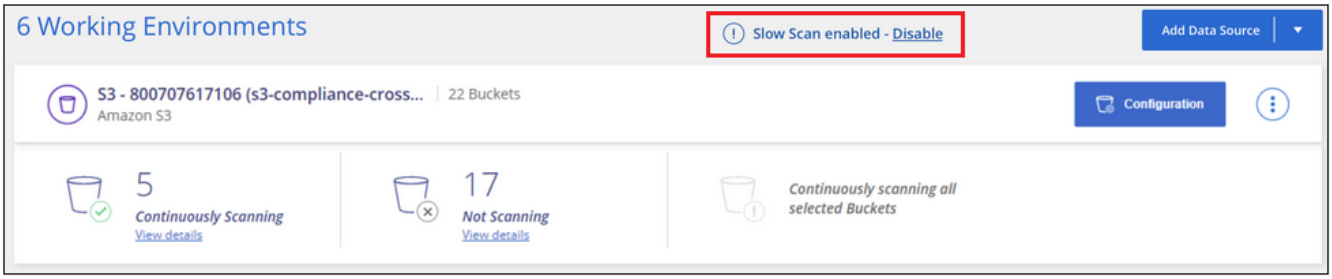
The scan speed can't be reduced when scanning databases.

Steps

1. From the bottom of the *Configuration* page, move the slider to the right to activate slow scanning.



The top of the Configuration page indicates that slow scanning is enabled.



2. You can disable slow scanning by clicking **Disable** from this message.

Deleting the Cloud Data Sense instance

You can delete the Cloud Data Sense instance if you no longer want to use Data Sense. Deleting the instance also deletes the associated disks where the indexed data resides.

1. Go to your cloud provider's console and delete the Cloud Data Sense instance.

   The instance is named *CloudCompliance* with a generated hash (UUID) concatenated to it. For example: *CloudCompliance-16bb6564-38ad-4080-9a92-36f5fd2f71c7*

Frequently asked questions about Cloud Data Sense

This FAQ can help if you're just looking for a quick answer to a question.

What is Cloud Data Sense?

Cloud Data Sense (Cloud Compliance) is a cloud offering that uses Artificial Intelligence (AI) driven technology to help organizations understand data context and identify sensitive data across your storage systems. The systems can be Azure NetApp Files configurations, Amazon FSx for ONTAP, Cloud Volumes ONTAP systems hosted in AWS or Azure, Amazon S3 buckets, on-prem ONTAP systems, non-NetApp file shares, generic S3 object storage, databases, and OneDrive accounts.

Cloud Data Sense provides pre-defined parameters (such as sensitive information types and categories) to

address new data compliance regulations for data privacy and sensitivity, such as GDPR, CCPA, HIPAA, and more.

Why should I use Cloud Data Sense?

Cloud Data Sense can empower you with data to help you:

- Comply with data compliance and privacy regulations.
- Comply with data retention policies.
- Easily locate and report on specific data in response to data subjects, as required by GDPR, CCPA, HIPAA, and other data privacy regulations.

What are the common use cases for Cloud Data Sense?

- Identify Personal Identifiable Information (PII).
- Identify a wide scope of sensitive information as required by GDPR and CCPA privacy regulations.
- Comply with new and upcoming data privacy regulations.

Learn more about the use cases for Cloud Data Sense.

What types of data can be scanned with Cloud Data Sense?

Cloud Data Sense supports scanning of unstructured data over NFS and CIFS protocols that are managed by Cloud Volumes ONTAP, Azure NetApp Files, Amazon FSx for ONTAP, and on-prem ONTAP systems. Data Sense can also scan data stored on Amazon S3 buckets, in generic S3 object storage, and non-NetApp file shares.

Additionally, Data Sense can scan databases that are located anywhere, and user files from OneDrive accounts.

Learn how scans work.

Which cloud providers are supported?

Cloud Data Sense operates as part of Cloud Manager and currently supports AWS and Azure. This provides your organization with unified privacy visibility across different cloud providers.

How do I access Cloud Data Sense?

Cloud Data Sense is operated and managed through Cloud Manager. You can access Data Sense features from the **Data Sense** tab in Cloud Manager.

How does Cloud Data Sense work?

Cloud Data Sense deploys another layer of Artificial Intelligence alongside your Cloud Manager system and storage systems. It then scans the data on volumes, buckets, databases, and OneDrive accounts and indexes the data insights that are found.

Learn more about how Cloud Data Sense works.

How much does Cloud Data Sense cost?

The cost to use Cloud Data Sense depends on the amount of data that you're scanning. The first 1 TB of data that Data Sense scans in a Cloud Manager workspace is free. A subscription to the AWS or Azure Marketplace is required to continue scanning data after that point. See pricing for details.

What type of instance or VM is required for Cloud Data Sense?

- In Azure, Cloud Data Sense runs by default on a Standard_D16s_v3 VM with a 512 GB disk.
- In AWS, Cloud Data Sense runs by default on an m5.4xlarge instance with a 500 GB GP2 disk.

  In regions where m5.4xlarge isn't available, Data Sense runs on an m4.4xlarge instance instead.

You can also download and install Data Sense software on a Linux host in your network or in the cloud. Everything works the same and you continue to manage your scan configuration and results through Cloud Manager. See Deploying Cloud Data Sense on premises for system requirements and installation details.

Note that you can deploy Data Sense on a system with fewer CPUs and less RAM, but there are limitations when using these systems. See Using a smaller instance type for details.

Cloud Data Sense is currently unable to scan S3 buckets and ANF files when it is installed on premises.

Learn more about how Cloud Data Sense works.

How often does Cloud Data Sense scan my data?

Data changes frequently, so Cloud Data Sense scans your data continuously with no impact to your data. While the initial scan of your data might take longer, subsequent scans only scan the incremental changes, which reduces system scan times.

Learn how scans work.

Data scans have a negligible impact on your storage systems and on your data. However, if you are concerned with even a very small impact, you can configure Data Sense to perform "slow" scans. See how to reduce the scan speed.

Does Cloud Data Sense offer reports?

Yes. The information offered by Cloud Data Sense can be relevant to other stakeholders in your organizations, so we enable you to generate reports to share the insights.

The following reports are available for Data Sense:

Privacy Risk Assessment report

Provides privacy insights from your data and a privacy risk score. Learn more.

Data Subject Access Request report

Enables you to extract a report of all files that contain information regarding a data subject's specific name or personal identifier. Learn more.

PCI DSS report

Helps you identify the distribution of credit card information across your files. Learn more.

HIPAA report

Helps you identify the distribution of health information across your files. Learn more.

Data Mapping report

Provides information about the size and number of files in your working environments. This includes usage capacity, age of data, size of data, and file types. Learn more.

Reports on a specific information type

Reports are available that include details about the identified files that contain personal data and sensitive personal data. You can also see files broken down by category and file type. Learn more.

Does scan performance vary?

Scan performance can vary based on the network bandwidth and the average file size in your cloud environment. It can also depend on the size characteristics of the host system (either in the cloud or on-premises). See The Cloud Data Sense instance and Deploying Cloud Data Sense for more information.

When initially adding new data sources you can also choose to only perform a "mapping" scan instead of a full "classification" scan. Mapping can be done on your data sources very quickly because it does not access files to see the data inside. See the difference between a mapping and classification scan.

Which file types are supported?

Cloud Data Sense scans all files for category and metadata insights and displays all file types in the file types section of the dashboard.

When Data Sense detects Personal Identifiable Information (PII), or when it performs a DSAR search, only the following file formats are supported:
.CSV, .DCM, .DICOM, .DOC, .DOCX, .JSON, .PDF, .PPTX, .RTF, .TXT, .XLS, and .XLSX.

How do I enable Cloud Data Sense?

First you need to deploy an instance of Cloud Data Sense in Cloud Manager. Once the instance is running, you can enable it on existing working environments and databases from the **Data Sense** tab or by selecting a specific working environment.

Learn how to get started.

Activating Cloud Data Sense results in an immediate initial scan. Scan results display shortly after.

How do I disable Cloud Data Sense?

You can disable Cloud Data Sense from scanning an individual working environment, database, file share group, or OneDrive account from the Data Sense Configuration page.

Learn more.

To completely remove the Cloud Data Sense instance, you can manually remove the Data Sense instance from your cloud provider's portal.

What happens if data tiering is enabled on Cloud Volumes ONTAP?

You might want to enable Cloud Data Sense on a Cloud Volumes ONTAP system that tiers cold data to object storage. If data tiering is enabled, Data Sense scans all of the data—data that's on disks and cold data tiered to object storage.

The compliance scan doesn't heat up the cold data—it stays cold and tiered to object storage.

Can I use Cloud Data Sense to scan on-premises ONTAP storage?

Yes. As long as you have discovered the on-prem ONTAP cluster as a working environment in Cloud Manager, you can scan any of the volume data.

Alternatively, you can run compliance scans on backup files created from your on-prem ONTAP volumes. So if you're already creating backup files from your on-prem systems using Cloud Backup, you can run compliance scans on those backup files.

Learn more.

Can Cloud Data Sense send notifications to my organization?

Yes. In conjunction with the Policies feature, you can send email alerts to Cloud Manager users (daily, weekly, or monthly) when a Policy returns results so you can get notifications to protect your data. Learn more about Policies.

You can also download status reports from the Investigation page in .CSV format that you can share internally in your organization.

Can I customize the service to my organization's needs?

Cloud Data Sense provides out-of-the-box insights to your data. These insights can be extracted and used for your organization's needs.

Additionally, you can use the **Data Fusion** capability to have Data Sense scan all your data based on criteria found in specific columns in databases you are scanning — essentially allowing you to make your own custom personal data types.

Learn more.

Can Cloud Data Sense work with the AIP labels I have embedded in my files?

Yes. You can manage AIP labels in the files that Cloud Data Sense is scanning if you have subscribed to Azure Information Protection (AIP). You can view the labels that are already assigned to files, add labels to files, and change existing labels.

Learn more.

Can I limit Cloud Data Sense information to specific users?

Yes, Cloud Data Sense is fully integrated with Cloud Manager. Cloud Manager users can only see information for the working environments they are eligible to view according to their workspace privileges.

Additionally, if you want to allow certain users to just view Data Sense scan results without having the ability to manage Data Sense settings, you can assign those users the *Cloud Compliance Viewer* role.

Learn more.