Data Security Center

Service Overview

Issue 01

Date 2023-11-30

HUAWEI CLOUD COMPUTING TECHNOLOGIES CO., LTD.

Trademarks and Permissions


and other Huawei trademarks are the property of Huawei Technologies Co., Ltd.
All other trademarks and trade names mentioned in this document are the property of their respective holders.

Notice

The purchased products, services and features are stipulated by the contract made between Huawei Cloud and the customer. All or part of the products, services and features described in this document may not be within the purchase scope or the usage scope. Unless otherwise specified in the contract, all statements, information, and recommendations in this document are provided "AS IS" without warranties, guarantees or representations of any kind, either express or implied.

The information in this document is subject to change without notice. Every effort has been made in the preparation of this document to ensure accuracy of the contents, but all statements, information, and recommendations in this document do not constitute a warranty of any kind, express or implied.

Huawei Cloud Computing Technologies Co., Ltd.

Address: Huawei Cloud Data Center Jiaoxinggong Road
Qianzhong Avenue
Gui'an New District
Gui Zhou 550029
People's Republic of China

Website: https://www.huaweicloud.com/intl/en-us/

Contents

1 What Is DSC?

Data Security Center (DSC) is a latest-generation cloud data security management platform that protects your data assets by leveraging its data protection capabilities such as data classification, risk identification, data masking, and watermark-based source tracking. Asset Map gives you an insight into the security status of each stage in data security lifecycle and provides constant visibility of the security status of your data assets.

Extensive Range of Data Sources

DSC aggregates various data sources on the cloud and provides one-stop protection for structured and unstructured data on both cloud-native environments and self-built ECSs.

Flexible Data Masking

DSC leverages preset and user-defined masking algorithms to limit exposure of sensitive data, preventing unauthorized access to sensitive data.

NOTICE

DSC only detects sensitive data and does not save data files.

2 Specifications of Different DSC Editions

DSC provides the **standard** and **professional** editions. Table 2-1 describes the specifications of each edition.

NOTE

If the number of databases and OBS capacity of the current version cannot meet your service requirements, you can **upgrade edition and specifications**.

Table 2-1 Specifications of different DSC editions

Edition	Database Quantity	OBS Storage (GB)	API Calling Quota	Function
Standard	2	100	Not supported	• Asset Map • Sensitive Data Identification • Data Risk Detection
Professional	2	100	1,000,000 times	• Asset Map • Sensitive data identification • Risk detection • Data masking • Data watermark injection/extraction • API calling

3 Functions

Table 3-1 lists the DSC functions.

Table 3-1 DSC functions

Function	Description	Reference Document
Asset Map	You can view multiple aspects of your asset security, such as asset overview, categories and levels, permission configuration, data storage, and sensitive data. This helps you quickly detect risky assets and handle them.	Asset Map
Asset Management	• Asset list: DSC manages the data assets added in DSC, including OBS, databases, MRS, and big data. • Asset catalog: You can view statistics about your data from different domains or of different types. • Data insight: You can view details about all the added data assets and add descriptions, tags, security levels, and classifications to databases, tables, and data views to manage data assets by level and classification. • Metadata task: You can collect metadata. • Asset group management: You can manage existing data by group.	Adding Assets in Batches

Function	Description	Reference Document
Sensitive Data Identification	• **Automatic data classification**: DSC precisely and efficiently identifies sensitive data from structured data stored in Relational Database Service (RDS) and GaussDB(DWS) and unstructured data stored in Object Storage Service (OBS), covering all data on the cloud. – File types: DSC can identify sensitive data from over 200 types of unstructured files. – Data types: DSC is able to identify dozens of personal privacy data types (Chinese or English). – Image types: DSC is able to identify sensitive words (Chinese and English) in eight types of images such as PNG, JPEG, x-portable-pixmap, TIFF, BMP, GIF, JPX, and JP2. – Compliance templates: Various templates built in DSC are used to check whether data is compliant with regulations and standards such as General Data Protection Regulation (GDPR), Payment Card Industry Data Security Standard (PCI DSS), and Health Insurance Portability and Accountability Act (HIPAA). • **Automatic identification of sensitive data** – Automatic identification of sensitive data and personal privacy data – Customized identification rules to meet various requirements of different industries – Visualized identification results The identification duration depends on the data volume, number of identification rules, and scan mode. For details, see **How Long Does It Take for DSC to Identify and Mask Sensitive Data?**	**Creating a Sensitive Data Identification TaskCreating a Sensitive Data Identification Task**

Function	Description	Reference Document
Data Risk Detection	Analyzes abnormal user behaviors. DSC establishes a user behavior library through deep learning of user behaviors. Any behavior not found in the library is deemed abnormal and an alarm will be reported on a real-time basis. You can then trace user behaviors and correlate the events with the users to identify who performed the risky operations. The following behaviors are regarded as abnormal events: • Unauthorized users access and download sensitive data. • Authorized users access, download, and modify sensitive data, as well as change and delete permissions. • Authorized users change or delete permissions granted for buckets that contain sensitive data. • Users who accessed sensitive files fail to log in to the device.	**Viewing an Abnormal Event**

Function	Description	Reference Document
Data Masking	Supports static data masking and dynamic data masking. Data masking has the following features: • **Zero impact**: DSC reads data from original databases, statically masks sensitive data using precise masking engines, and saves the masked data separately without affecting your data assets. • **Various data sources**: Data of various sources on the cloud, such as RDS, self-built databases on ECSs, or big data, can be masked to meet security requirements. • **Custom data masking policies**: DSC provides you with over 20 preset data masking rules. You can use the default masking rules or customize the masking rules to mask sensitive data in the specified database table. For details about the data masking algorithms supported by DSC, see **Data Masking Algorithms**. • **Easy and quick masking rule configuration for security compliance**: Easy and quick data masking rule configuration can be achieved based on data scanning results. In addition, DSC provides APIs for dynamic data masking. For details, see **Dynamic Data Masking**. DSC uses preset and customized masking algorithms to mask sensitive data stored in RDS, Elasticsearch, MRS, Hive, and HBase. For details about the masking duration, see **How Long Does It Take for DSC to Identify and Mask Sensitive Data?**	**Configuring a Data Masking Rule**

Function	Description	Reference Document
Data Watermarking	Provides the functions of adding and extracting watermarks for databases and documents. • **Copyright proof**: The owner information is added to the assets to specify the ownership, achieving copyright protection. • **Automated monitoring**: The user information is added to the assets for tracing data leak. DSC provides APIs for dynamically adding data watermarks and extracting watermarks from data. For details, see **DSC API Reference**.	**Watermark Injection**
Alarm Notifications	Sends notifications through the notification method configured by users when sensitive data identification is completed or abnormal events are detected.	**Alarm Notifications**

4 Advantages

Actionable Insights into Data Security

DSC displays security status in data collection, transmission, storage, exchange, usage and deletion. You can efficiently locate the risks and take immediate actions to ensure data security.

Extensive Range of Data Sources

DSC provides one-stop protection for both structured and unstructured data from a wide range of sources, such as Object Storage Service, databases (self-built databases on ECSs), and big data sources.

Efficient Identification

DSC efficiently identifies sensitive data sources based on expert knowledge bases and Natural Language Processing (NLP).

Flexible Data Masking

DSC leverages preset and user-defined masking algorithms to limit exposure of sensitive data, preventing unauthorized access to sensitive data.

5 Applicable Scenarios

Automatic Identification and Classification of Sensitive Data

DSC automatically identifies sensitive data and analyzes the usage of such data. With data identification engines, DSC scans and classifies structured data and unstructured data in RDS and OBS. It then automatically identifies sensitive data and analyzes the usage of such data for further ensuring security.

Data Masking

DSC builds a data masking engine by leveraging multiple preset and customized masking algorithms. It then masks structured and unstructured data for storage.

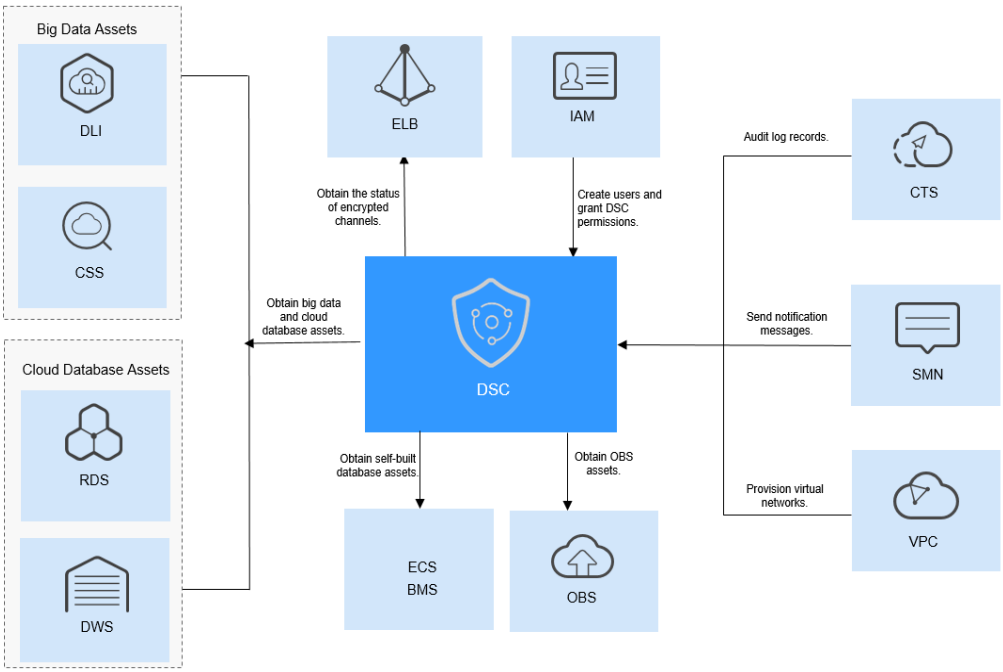
Data Compliance

DSC provides dozens of templates that can be used to check for compliance with regulations and standards such as GDPR, PCI DSS, and HIPAA. DSC checks your data protection measures against multiple rules in the templates and generates reports to propose corrective measures

6 DSC and Related Services

Figure 6-1 shows the relationships between DSC and related services.

Figure 6-1 DSC and related services



OBS

Object Storage Service (OBS) is a stable, secure, efficient, and easy-to-use cloud storage service that can store any amount and form of unstructured data. After OBS access permissions are granted, DSC is allowed to automatically identify and classify sensitive data, analyze abnormal user behaviors, and protect data stored in OBS.

RDS

Relational Database Service (RDS) is a cloud-based web service that is reliable, scalable, easy to manage, and immediately ready for use. After RDS access

permissions are granted, DSC is allowed to automatically identify and classify sensitive data and protect data stored in RDS instances.

DWS

Data Warehouse Service (DWS) is an online data processing database that uses the cloud infrastructure to provide scalable, fully-managed, and immediately read for use database services. After DWS access permissions are granted, DSC is allowed to automatically identify and classify sensitive data and protect data stored in DWS.

ECS

Elastic Cloud Server (ECS) is a cloud server that provides scalable, on-demand computing resources. After ECS access permissions are granted, DSC is allowed to automatically identify and classify sensitive data and protect data stored in self-built databases on ECSs.

Bare Metal Server (BMS)

Bare Metal Server (BMS) features both the scalability of VMs and high performance of physical servers. After BMS access permissions are granted, DSC is allowed to automatically identify and classify sensitive data and protect data stored in self-built databases on BMSs.

CSS

Cloud Search Service (CSS) is a fully managed, distributed search service. It is fully compatible with open-source Elasticsearch and provides functions including structured and unstructured data search, statistics, and reporting. The process of using CSS is similar to that of using a database. After CSS access permissions are granted, DSC is allowed to automatically identify and classify sensitive data and protect data stored in big data assets on CSS.

DLI

Data Lake Insight (DLI) is a Serverless big data compute and analysis service that is fully compatible with Apache Spark, Apache Flink, and openLooKeng (Apache Presto) ecosystems. With multi-model engines, enterprises can use SQL statements or programs to easily complete batch processing, stream processing, in-memory computing, and machine learning of heterogeneous data sources. After DLI access permissions are granted, DSC is allowed to automatically identify and classify sensitive data and protect data stored in big data assets on DLI.

MRS

MapReduce Service (MRS) provides enterprise-level big data clusters on the cloud. Tenants can fully control the clusters and run big data components such as Hadoop, Spark, HBase, Kafka, and Storm in the clusters. After MRS access permissions are granted, DSC is allowed to automatically identify and classify sensitive data and protect data stored in Hive on CSS.

ELB

DSC is bound to to query the encryption communications status.

SMN

Simple Message Notification (SMN) provides the message notification function. Once this function is enabled, DSC sends messages to you by email when sensitive data identification is complete or an abnormal event is detected.

CTS

Cloud Trace Service (CTS) is used to record the operations you have performed using DSC for later querying, auditing, or backtracking.

Table 6-1 DSC operations supported by CTS

Operation	Resource Type	Trace Name
Assign or revoke permissions for DSC	dscGrant	grantOrRevokeTodsc
Add an OBS bucket	dscObsAsset	addBuckets
Delete an OBS bucket	dscObsAsset	deleteBucket
Add a database	dscDatabaseAsset	addDatabase
Modify a database	dscDatabaseAsset	updateDatabase
Delete a database	dscDatabaseAsset	deleteDatabase
Add a big data source	dscBigdataAsset	addBigdata
Modify a big data source	dscBigdataAsset	updateBigdata
Delete a big data source	dscBigdataAsset	deleteBigdata
Update the object name	dscAsset	updateAssetName
Download a template for batch import	dscBatchImportTemplate	downloadBatchImportTemplate
Add databases in batches	dscAsset	batchAddDatabase
Add assets in batches	dscAsset	batchAddAssets

Operation	Resource Type	Trace Name
Display abnormal events	dscExceptionEvent	listExceptionEventInfo
Obtain the abnormal event details	dscExceptionEvent	getExceptionEventDetail
Add alarm configurations	dscAlarmConfig	addAlarmConfig
Change alarm configurations	dscAlarmConfig	updateAlarmConfig
Download a report	dscReport	downloadReport
Delete a report	dscReport	deleteReport
Add a scan rule	dscRule	addRule
Modify a scan rule	dscRule	editRule
Delete a scan rule	dscRule	deleteRule
Add a scan rule group	dscRuleGroup	addRuleGroup
Modify a scan rule group	dscRuleGroup	editRuleGroup
Delete a scan rule group	dscRuleGroup	deleteRuleGroup
Add a scan task	dscScanTask	addScanJob
Modify a scan task	dscScanTask	updateScanJob
Delete a scan subtask	dscScanTask	deleteScanTask
Delete a scan task	dscScanTask	deleteScanJob
Start a scan task	dscScanTask	startJob
Stop a scan task	dscScanTask	stopJob
Start a scan subtask	dscScanTask	startTask
Stop a scan subtask	dscScanTask	stopTask
Enable/disable data masking for Elasticsearch	dscBigDataMaskSwitch	switchBigDataMaskStatus

Operation	Resource Type	Trace Name
Obtain the Elasticsearch field	dscBigDataMetaData	getESField
Add an Elasticsearch data masking template	dscBigDataMaskTemplate	addBigDataTemplate
Modify an Elasticsearch data masking template	dscBigDataMaskTemplate	editBigDataTemplate
Delete an Elasticsearch data masking template	dscBigDataMaskTemplate	deleteBigDataTemplate
Query the Elasticsearch data masking template list	dscBigDataMaskTemplate	showBigDataTemplates
Enable or disable an Elasticsearch data masking template	dscBigDataMaskTemplate	operateBigDataTemplate
Switch the status of an Elasticsearch data masking template	dscBigDataMaskTemplate	switchBigDataTemplate
Enable or disable data masking for databases	dscDBMaskSwitch	switchDBMaskStatus
Obtain the database fields	dscDBMetaData	getColumn
Add a database masking template	dscDBMaskTemplate	addDBTemplate
Modify a database masking template	dscDBMaskTemplate	editDBTemplate
Delete a database masking template	dscDBMaskTemplate	deleteDBTemplate
Query the database masking template list	dscDBMaskTemplate	showDBTemplates
Start or stop a database data masking template	dscDBMaskTemplate	operateDBTemplate

Operation	Resource Type	Trace Name
Switch the status of a database data masking template	dscDBMaskTemplate	switchDBTemplate
Add a masking algorithm	dscMaskAlgorithm	addMaskAlgorithm
Edit a masking algorithm	dscMaskAlgorithm	editMaskAlgorithm
Delete a masking algorithm	dscMaskAlgorithm	deleteMaskAlgorithm
Test a masking algorithm	dscMaskAlgorithm	testMaskAlgorithm
Obtain the mapping between fields and masking algorithms	dscMaskAlgorithm	getFieldAlgorithms
Add encryption algorithm configurations	dscEncryptMaskConfig	addEncryptConfig
Modify encryption algorithm configurations	dscEncryptMaskConfig	editEncryptConfig
Delete encryption algorithm configurations	dscEncryptMaskConfig	deleteEncryptConfig

VPC

Virtual Private Cloud (VPC) enables you to provision logically isolated, configurable, and manageable virtual networks for cloud servers, cloud containers, and cloud databases, improving cloud service security and simplifying network deployment.

IAM

Identity and Access Management (IAM) provides you with permission management for DSC. Only users who have Tenant Administrator permissions can perform operations such as authorizing, managing, and detect cloud assets using DSC. To obtain the permissions, contact the users who have the Security Administrator permissions.

7 Constraints

DSC can only manage data assets on HUAWEI CLOUD at present.

Supported Huawei Cloud Data Sources

- Relational Database Service (RDS)
- Object Storage Service (OBS)
- Data Warehouse Service (DWS)
- Cloud Search Service (CSS)
- Data Lake Insight (DLI)
- Databases on Elastic Cloud Servers (ECSs)
- Databases on Bare Metal Servers (BMSs)

Supported Database Versions

Table 1 lists the asset types and versions supported by DSC.

Table 7-1 Asset types and versions supported by DSC

Asset Type	Version
MySQL	5.6, 5.7, 5.8, and 8.0
SQL Server	• 2017_SE, 2017_EE, and 2017_WEB • 2016_SE, 2016_EE, and 2016_WEB • 2014_SE and 2014_EE • 2012_SE, 2012_EE, and 2012_WEB • 2008_R2_EE and 2008_R2_WEB
KingBase	V8
DMDBMS	7 and 8
GaussDB for openGauss	1.4
PostgreSQL	11, 10, 9.6, 9.5, 9.4, and 9.1

Asset Type	Version
TDSQL	10.3.X
Oracle	11, 12
DDS	4.2, 4.0, and 3.4
DWS	4.2, 4.0, and 3.4
Elasticsearch	5.x, 6.x, and 7.x
OBS	V3

8 Personal Data Protection Mechanism

To ensure that your personal data, such as the username, password, and mobile phone number, will not be leaked or obtained by unauthorized or unauthenticated entities or people, DSC controls access to the data and records logs for operations performed on the data.

Personal Data

Table 8-1 lists the personal data generated or collected by DSC.

Table 8-1 Personal data

Type	Source	Modifiable	Mandatory
Tenant ID	• Tenant ID in the token used for authentication when an operation is performed on the console • Tenant ID in the token used for authentication when an API is called	No	Yes
Password	Entered by the tenant on the console	Yes	Yes. When scanning, desensitizing, and injecting watermarks to database data, DSC needs to use the database password to connect to the database and obtain data.

Storage Mode

- Tenant ID is not sensitive data and can be stored in plaintext.
- Database password: encrypted for storage.

Access Permission Control

Users can view only logs related to their own services.

Log Records

DSC records logs for all operations, such as modifying, querying, and deleting, performed on personal data. The logs are uploaded to Cloud Trace Service (CTS). You can view only the logs generated for operations you performed.

9 Permissions Management

If you want to assign different access permissions to employees in an enterprise for the DSC resources purchased on HUAWEI CLOUD, you can use Identity and Access Management (IAM) to perform refined permission management. IAM provides identity authentication, permissions management, and access control, helping you efficiently manage access to your DSC resources.

With IAM, you can create IAM users under your account for your employees, and assign permissions to these IAM users to control their access to DSC resources. For example, if you have software developers and you want to assign them the permission to access DSC but not to delete DSC or its resources, you can create an IAM policy to assign the developers the permission to access DSC but prevent them from deleting DSC data.

If your HUAWEI CLOUD account does not require individual IAM users for permissions management, skip this section.

IAM is free. You pay only for the resources in your account. For more information about IAM, see **IAM Service Overview**.

DSC Permissions

By default, new IAM users do not have any permissions. You need to add a user to one or more groups, and attach permission policies or roles to these groups. Users inherit permissions from their groups and can perform specified operations on cloud services based on the permissions.

DSC is a project-level service deployed and accessed in specific physical regions. To assign permissions to a user group, specify the scope as region-specific projects and select projects for the permissions to take effect. If **All projects** is selected, the permissions will take effect for the user group in all region-specific projects. To access DSC, the users need to switch to a region where they have been authorized to use cloud services.

You can grant users permissions by using roles and policies.

- Roles: A coarse-grained authorization mechanism provided by IAM to define permissions based on users' job responsibilities. This mechanism provides a limited number of service-level roles for authorization. You need to also assign other dependent roles for the permission control to take effect. Roles are not an ideal choice for fine-grained authorization and secure access control.

- Policies: A fine-grained authorization mechanism that defines permissions required to perform operations on specific cloud resources under certain conditions. This mechanism allows for more flexible policy-based authorization, meeting requirements for secure access control. For example, you can grant DSC users the permissions to manage only a certain type of resources.

Table 9-1 describes the system-defined policies of DSC.

Table 9-1 DSC system permissions

Policy	Description	Type	Dependency
DSC DashboardReadOnlyAccess	Read-only permissions for the overview page of DSC	System-defined policy	None
DSC FullAccess	All permissions for DSC	System-defined policy	To purchase a yearly/monthly RDS DB instance, you need to configure the following actions: bss:order:update bss:order:pay
DSC ReadOnlyAccess	Read-only permissions for Data Security Center	System-defined policy	None

NOTICE

Only users with the **Security Administrator** permission can perform **Allowing or Disallowing Access to Cloud Assets**.

Helpful Links

- **IAM Service Overview**
- **Creating a User and Assigning DSC Permissions**

A Change History

Released On	Description
2023-11-30	This issue is the first official release.

