



## Cloud Search Service

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# Product Introduction

Issue 01

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# 1 What Is CSS?

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Cloud Search Service (CSS) is a fully managed, distributed search engine service. It is fully compatible with open-source Elasticsearch and provides you with structured and unstructured data search, statistics, and report capabilities. CSS works in the similar way as a database.

CSS can be automatically deployed, where you can quickly create clusters. It provides the search engine optimization practices with zero O&M. Additionally, it has a robust monitoring system to present you key metrics, including clusters and query performance so that you can focus on the business logic.

For details about Elasticsearch, see the [Elasticsearch Reference](#).

# 2 Product Advantages

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CSS provides the search service on the public cloud and has the following advantages:

- Efficient and ease of use

You can get insights from terabyte-scale data in milliseconds. In addition, you can use the visualized platform for data display and analysis.

- Flexible and scalable

You can request resources as needed and perform capacity expansion online with zero service interruption.

- Custom word dictionary

Custom word dictionaries are supported. You can modify the word dictionary without the need of restarting the instance.

- Easy O&M

CSS is a fully-managed, out-of-the-box service. You can start using it with several clicks, instead of managing clusters.

- Solid reliability

You can choose to trigger snapshots manually or on a periodic basis for backup and restore snapshots to the current or other clusters. Snapshots of a cluster can be restored to another cluster to implement cluster data migration.

# 3 Application Scenarios

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CSS applies to diversified scenarios, such as log analysis and site search.

## Log Analysis

In this scenario, you can perform O&M analysis and fault location for IT devices as well as operation analytics based on service metrics.

- Statistical analysis: Over 20 statistical analysis methods and nearly ten analytical dimensions are available.
- Real-time and efficient: You can get insights within seconds once new data is stored in indices.
- Visualized data: CSS provides multiple report display modes, such as table, line chart, heat map, and cloud map.

## Site Search

In this scenario, you can search website content by keyword as well as search for commodities on e-commerce sites with recommendations obtained.

- Real-time search: You can get the content or commodities you want within seconds or minutes.
- Categorized statistics: You can get categorized statistics on the searched commodities that meet conditions.
- Custom highlight style: You can customize the highlight style as you like.

# 4 Basic Concepts

## Cluster

CSS provides functions on a per cluster basis. A cluster represents an independent search service that consists of multiple nodes.

## Index

Index, similar to "Database" in the relational database (RDB), stores Elasticsearch data. It refers to a logical space that consists of one or more shards.

**Table 4-1** Mapping between Elasticsearch and RDB

Elasticsearch	Index	Document Type	Document	Field	Mapping
RDB	Database	Table	Row	Column	Schema

## Shard

An index can potentially store a large amount of data that can exceed the hardware limits of a single node. To solve this problem, Elasticsearch provides the ability to subdivide your index into multiple pieces called shards. When you create an index, you can simply define the number of shards that you want. Each shard is in itself a fully-functional and independent "index" that can be hosted on any node in the cluster.

You need to specify the number of shards before creating an index and cannot change the number after the index is successfully created.

## Replica

A replica is a copy of the actual storage index in a shard. It can be understood as a backup of the shard. Replicas help prevent single point of failures (SPOFs). You can increase or decrease the number of replicas based on your service requirements.

## Document

An entity for Elasticsearch storage. Equivalent to the row in the RDB, the document is the basic unit that can be indexed.

## Document Type

Similar to the table in the RDB, the document type is used to distinguish between different data. One index can contain multiple document types. A document actually must be indexed to a document type inside an index.

## Mapping

A mapping is used to restrict the type of a field and can be automatically created based on data. It is similar to the schema in the database.

## Field

The field is the minimum unit of a document. It is similar to the column in the database.



# 5 Functions

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CSS provides the following functions:

- Professional cluster management platform

The CSS management console provides various function menus, allowing you to securely manage and maintain clusters at ease by using a web browser.

- Robust monitoring system

The CSS management console allows you to view the running status of created clusters via the dashboard and cluster list. You can learn about the current running status of clusters through metric views.

- Support for Elasticsearch

Elasticsearch is a popular enterprise-class Lucene-powered search server and provides the distributed multi-user capabilities. CSS adopts Elasticsearch and delivers multiple functions, including full-text search, structured search, analytics, aggregation, and highlighting. With CSS, you can achieve stable, reliable, and real-time search.

# 6 Restrictions

## Restrictions on Clusters and Nodes

The following table describes restrictions on clusters and nodes in CSS.

**Table 6-1** Restrictions on clusters and nodes

Cluster and Node	Restriction
Maximum number of nodes in a cluster	Default: 32. Maximum: 200. To change the default value, contact customer service support.
Minimum number of nodes in a cluster	1

## Restrictions on the EVS Disk Size

The following table lists the minimum capacity and maximum capacity of EVS disks corresponding to node types supported by CSS.

**Table 6-2** Restrictions on the EVS disk size

Node Type	Minimum EVS Disk Capacity (GB)	Maximum EVS Disk Capacity (GB)
ess.spec-2u16g	40	1280
ess.spec-4u32g	40	2560
ess.spec-8u64g	80	5120
ess.spec-16u128g	160	10240

## Restrictions on Browsers

- You are advised to use the following browsers to access the CSS management console:

- Google Chrome 36.0 or later
- Mozilla Firefox 35.0 or later
- Internet Explorer 9.0 or later

If you use Internet Explorer 9.0, you may fail to log in to the CSS management console because user **Administrator** is disabled by default in some Windows systems, such as Windows 7 Ultimate. The Internet Explorer automatically selects a system user for installation. As a result, the Internet Explorer cannot access the management console. Reinstall Internet Explorer 9.0 or later (recommended) or run Internet Explorer 9.0 as user **Administrator**.

- You are advised to use the following browsers to access Kibana integrated in CSS:
  - Google Chrome 36.0 or later
  - Mozilla Firefox 35.0 or later
  - Internet Explorer 11.0 or later (Internet Explorer 9 is not supported.)

# 7 Related Services

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This section describes the relationship between CSS and other services.

- **Virtual Private Cloud (VPC)**  
CSS clusters are created in the subnets of a VPC. VPCs provide a secure, isolated, and logical network environment for your clusters.
- **Elastic Cloud Server (ECS)**  
In a CSS cluster, each node represents an ECS. When you create a cluster, ECSs are automatically created to serve as nodes.
- **Elastic Volume Service (EVS)**  
CSS uses EVS to store index data. When you create a cluster, EVSs are automatically for cluster data storage.
- **Object Storage Service (OBS)**  
Snapshots of CSS clusters are stored in OBS buckets.
- **Identity and Access Management (IAM)**  
IAM authenticates access to CSS.
- **Cloud Eye**  
CSS uses Cloud Eye to monitor cluster metrics in real time to ensure normal service running. The supported CSS metrics include the disk usage and cluster health status. You can learn about the disk usage of the cluster in a timely manner based on the disk usage metric. You can learn about the health status of a cluster based on the cluster health status metric.
- **Cloud Trace Service (CTS)**  
With CTS, you can record operations associated with CSS for later query, audit, and backtrack operations.

# 8 Quotas

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CSS uses the following infrastructure resources:

- Clusters
- ECSs
- EVS disks
- VPCs

For details about how to view and modify the quota, see [Quotas](#).

# 9 High Reliability

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## **Automatic Backup Using Snapshots**

CSS provides the backup function. You can enable the automatic backup function on the CSS management console and set the backup period based on the actual requirements.

Automatic backup is to back up the index data of a cluster. Index backup is implemented by creating cluster snapshots. For backup of the first time, you are advised to back up all index data.

CSS allows you to store the snapshot data of Elasticsearch instances to OBS, thereby achieving cross-region backup with the cross-region replication function of OBS.

For details, see [Index Backup and Restoration](#).

## **Restoring Data Using Snapshots**

If data loss occurs or you want to retrieve data of a certain period, use the backup and restoration function to restore the index data backup to the specified cluster by using existing snapshots. For details, see [Index Backup and Restoration](#).

## **Zero Service Interruptions Under Specification Changes**

CSS supports cluster capacity expansion, disk capacity expansion, and word dictionary updates. Services are not interrupted during the expansion or update.

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# 10 High Security

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CSS ensures secure running of data and services from the following aspects:

- Network isolation

The network is divided into two planes, service plane and management plane. The two planes are deployed and isolated physically to ensure the security of the service and management networks.

  - Service plane: refers to the network plane of the cluster. It provides service channels for users and delivers data definition, index, and search capabilities.
  - Management plane: refers to the management console. It is used to manage CSS.
  - VPC security groups or isolated networks ensure the security of hosts.
- Access control
  - Using the network access control list (ACL), you can permit or deny the network traffic entering and exiting the subnets.
  - Internal security infrastructure (including the network firewall, intrusion detection system, and protection system) can monitor all network traffic that enters or exits the VPC through the IPsec VPN.
  - User authentication and index-level authentication are supported. CSS also supports interconnection with third-party user management systems.
- Data security
  - In CSS, the multi-replica mechanism is used to ensure user data security.
  - Communication between the client and server can be encrypted using SSL.
- Operation audit

Cloud Trace Service (CTS) can be used to perform auditing on key logs and operations.

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# 11 What Is Kibana?

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Kibana is an open-source data analytics and visualization platform and works with Elasticsearch. You can use Kibana to search, view, and interact with data stored in Elasticsearch indices as well as to visualize your data in a variety of charts, tables, and maps.

To learn more about Kibana, go to the Kibana official website: <https://www.elastic.co/guide/en/kibana/current/index.html>

## Access to Kibana with a Few Clicks

CSS is integrated with Kibana. You can access Kibana with a few clicks, without having to install Kibana.

Log in to the CSS management console. In the left navigation pane, click **Cluster Management**. On the displayed **Cluster Management** page, locate the row where the target cluster resides and click **Kibana** in the **Operation** column.

## Kibana Functions

Kibana delivers the functions of visualization and Elasticsearch statistics and analysis. Specifically, it supports:

- Over 10 data presentation modes
- Nearly 20 data statistics methods
- Classification in terms of various dimensions, such as time and tag



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# 12 Accessing CSS

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You can access the public cloud platform with HTTPS-based application programming interfaces (APIs) or a web-based management console.

- Using APIs  
Use this mode if you need to integrate CSS into a third-party system for secondary development. For detailed operations, see the *Cloud Search Service API Reference*.
- Through the management console  
Operations other than the secondary development can be performed on the CSS management console. If you have signed up for the public cloud, log in to the management console and choose **Service List > EI Enterprise Intelligence > Cloud Search Service**. If you do not sign up for the public cloud, click **Register**. In the displayed window, specify your basic information and click **Register**.

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# 13 Change History

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Version	Released On	Description
1.0.0	2019-04-30	The issue is the first official release.