

Graph Engine Service

Getting Started

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1 Getting Started with GES

Graph Engine Service (GES) is an in-house distributed native graph engine for commercial use. It is the first of its kind in China that owns independent intellectual property rights. It facilitates query and analysis of multi-relational graph data structures. It is particularly useful for scenarios requiring analysis of rich relationships, including social network analysis, enterprise relationship analysis, risk control, product recommendations, social listening, and fraud detection.

This document helps you quickly understand and use GES. The basic process is as follows:

1. **Preparations:** Register a Huawei Cloud Account. The account cannot be frozen or in arrears.
2. **Creating a Graph:** [Create a custom graph](#) and set related parameters.
3. **Importing Graph Data:** Import metadata and edge and vertex data to the graph.
4. **Querying and Analyzing the Graph:** Use the graph editor to query and analyze graph data.
5. **Managing the Graph:** Perform graph management operations, such as starting, stopping, deleting, and upgrading the graph.

2 Preparations

Before using GES, register a Huawei Cloud account.

Registering a Huawei Cloud Account

Skip this step if you already have registered with Huawei Cloud.

- Step 1** Log in to the [Huawei Cloud](#) official website.
- Step 2** Click **Register** in the upper right corner to access the registration page.
- Step 3** Complete the registration as instructed. For details, see [Account Registration Process](#).

----End

3 Creating a Graph

Creating a Custom Graph

1. Log in to the GES console and click **Create Graph** in the upper right corner of the home page. The **Create Graph** page is displayed.
2. In the **Configure** tab, set the following parameters:
 - **Graph Name:** Use the default name. After a graph is created, its name cannot be changed.
 - **GES Software Version:** The system uses the latest version by default.
 - **VPC:** If your account has VPCs, a VPC will be automatically selected. You can change it as needed. If no VPC is available, you need to create a VPC. After the VPC is created, it will be automatically selected.
 - **Subnet:** A subnet is automatically selected. Change it to the subnet where the cluster will be created. Click **View VPC** and go to the subnet page to view available subnets.
 - **Other options:** Use the default values.

Figure 3-1 Network information

* Graph Name ?

* GES Software Version

* VPC ? [View VPC](#)

* Subnet ?

* Security Group ? [Learn how to configure a security group.](#)
 [View Security Group](#)

* Public Network Access

A graph instance without an EIP cannot be accessed over the Internet. However, the graph instance can be accessed through ECSs deployed on a private network.

Tag TMS's predefined tag function is recommended for adding the same tag to different cloud resources. [View Predefined Tags](#)
 To add a tag, enter a tag key and a tag value below.

 20 tags available for addition.

Data Encryption Data Encryption
 Access to a graph instance will be encrypted. Enabling data encryption will affect the performance.

Cryptographic Algorithm ?

Figure 3-2 Graph parameters

Cross-AZ HA Cross-AZ HA

* Purpose
 Supports high reliability and concurrency, suitable for enterprise production and large-scale application.

* Versions
 In-memory storage and compute. This edition supports Gremlin and Cypher queries and provides a range of preset algorithms. It has a limited storage capacity, but supports tens of billions of edges.

* Compute Resource
 An Elastic Cloud Server (ECS) is a virtual server that runs in a secure and isolated environment.

* CPU Architecture

* Graph Size (Edges) ?

Advanced Settings

3. Click **Next**. In the displayed **Confirm** tab, click **Submit**.
4. The **Finish** tab is displayed indicating the submission is successful. Click **Back to Task Center** to view the status and running result of the created graph.

4 Importing Graph Data

After you create a graph, you need to import data. You can use the method described in this section to import incremental data into your graph.

Procedure

1. Go to the **Graph Management** page, locate the target graph and click **More > Import** in the **Operation** column.
2. Click **Download** behind the **Metadata**, **Edge Data**, and **Vertex Data** to obtain the templates.

NOTE

The templates contain a copy of movie information data and can directly be uploaded to an OBS bucket.

- **Log Storage Path:** Leave this field empty.
- **Edge Processing** and **Import Type:** Retain the default settings.

Figure 4-1 Importing data

Import ×

Metadata C Create Download

Edge Data Download

Vertex Data Download

Log Storage Path ? Download

★ Edge Processing ?

- Allow repetitive edges ?
- Ignore subsequent repetitive edges ?
- Overwrite previous repetitive edges ?
- Ignore labels on repetitive edges ?

Import Type

- Online import
The import speed is slower, but the graph can be read (cannot be written).
- Offline import
The import speed is higher, but the graph cannot be read or written.

OK Cancel

3. Click **OK**.

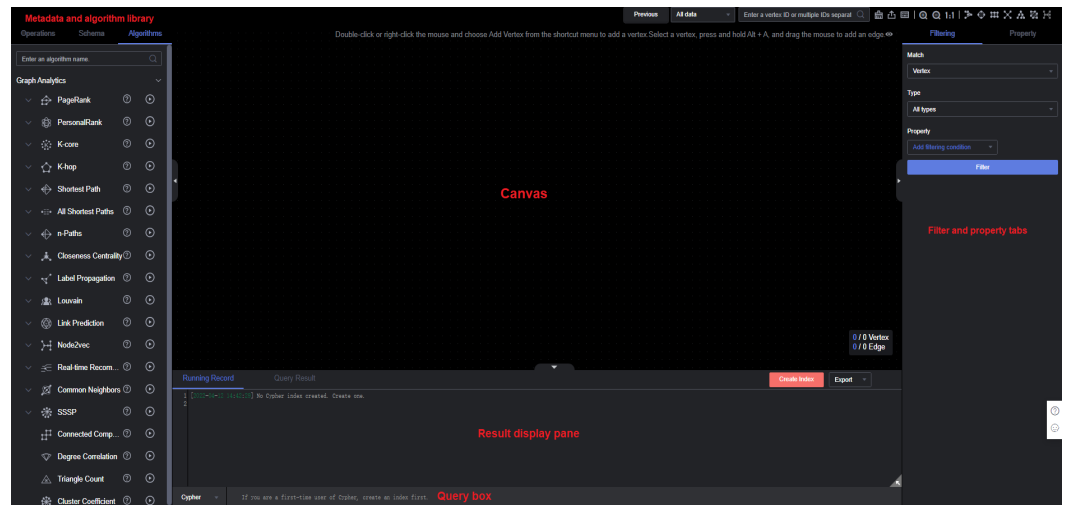
5 Querying and Analyzing the Graph

On the **Graph Management** page, you can click **Access** to query and analyze a created graph.

Procedure

1. Go to the **Graph Management** page, locate the graph you have created and click **Access** in the **Operation** column to open the Graph Editor.
2. **Figure 5-1** shows the layout of the editor page. You can perform the following operations in the editor:
 - **Algorithm library:** Select an algorithm and set parameters. GES will run the algorithm and display the sampling subgraph of the key results on the canvas. For example, select the PageRank algorithm and use the default parameters, click the run button. The resulting sampling subgraph is displayed on the canvas.
 - **Schema tab (Metadata):** Add and hide metadata labels, and import and export metadata.
 - **Operations tab:** Add custom operations that call GES APIs.
 - **Query box:** Enter Gremlin or Cypher statements to query graph data. For example, enter and run **g.V().limit(100)**. The resulting graph is displayed on the canvas.
 - **Result display area:** View the running records and query results. Click **Export** on the upper right corner of the result display area to download the result.
 - **Filter and Property tabs:** Right-click a vertex on the canvas and choose **View Property**. The property information about that vertex is displayed in the right pane.

Figure 5-1 Graph editor



6 Managing Graphs

You can view details about created graphs on the **Graph Management** page.

Procedure


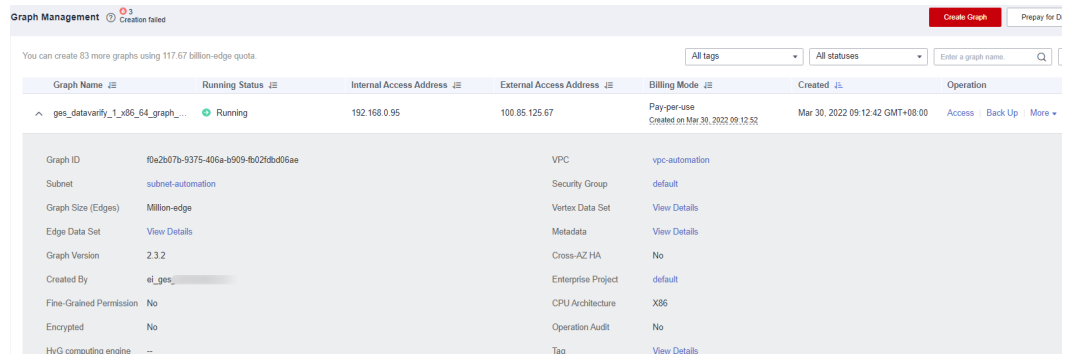
1. On the **Graph Management** page, click  next to a graph name to view the graph details.

Figure 6-1 Graph information

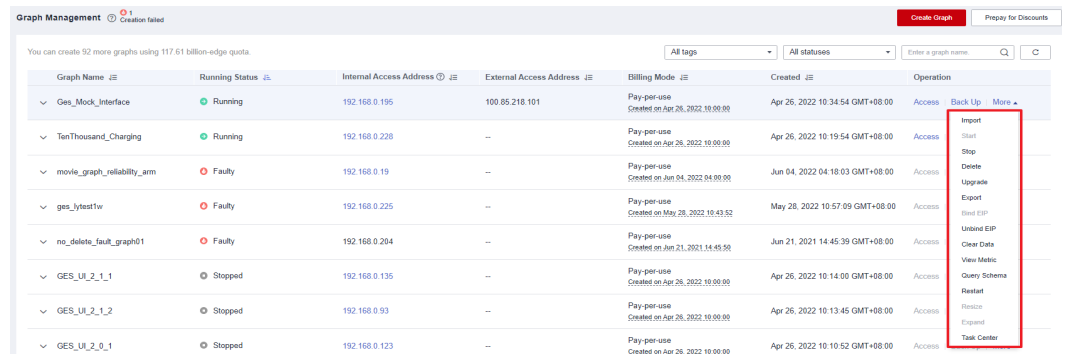


Graph Name	Running Status	Internal Access Address	External Access Address	Billing Mode	Created	Operation
ges_dataverify_1_x86_64_graph_...	Running	192.168.0.95	100.85.125.67	Pay-per-use Created on Mar 30, 2022 09:12:52	Mar 30, 2022 09:12:42 GMT+08:00	Access Back Up More

Graph ID	fb2267b-9375-406a-b909-602fbd06ae	VPC	vpc-automation
Subnet	subnet-automation	Security Group	default
Graph Size (Edges)	Million-edges	Vertex Data Set	View Details
Edge Data Set	View Details	Metadata	View Details
Graph Version	2.3.2	Cross-AZ HA	No
Created By	el_ges_...	Enterprise Project	default
Fine-Grained Permission	No	CPU Architecture	X86
Encrypted	No	Operation Audit	No
HyG computing engine	--	Tag	View Details

2. In the graph list, locate the row that contains the graph you want to manage and choose **More** in the **Operation** column. You can start, stop, delete, and upgrade the graph and perform other operations.

Figure 6-2 Managing a graph



Graph Name	Running Status	Internal Access Address	External Access Address	Billing Mode	Created	Operation
ges_mock_interface	Running	192.168.0.195	100.85.218.101	Pay-per-use Created on Apr 26, 2022 10:00:00	Apr 26, 2022 10:34:54 GMT+08:00	Access Back Up More
TenThousand_Charging	Running	192.168.0.228	--	Pay-per-use Created on Apr 26, 2022 10:00:00	Apr 26, 2022 10:19:54 GMT+08:00	Access
movie_graph_reliability_arm	Faulty	192.168.0.19	--	Pay-per-use Created on Jun 04, 2022 04:00:00	Jun 04, 2022 04:18:03 GMT+08:00	Access
ges_lytest1vr	Faulty	192.168.0.225	--	Pay-per-use Created on May 28, 2022 10:43:52	May 28, 2022 10:57:09 GMT+08:00	Access
no_delete_fault_graph01	Faulty	192.168.0.204	--	Pay-per-use Created on Jun 21, 2021 14:45:38	Jun 21, 2021 14:45:39 GMT+08:00	Access
GES_UI_2_1_1	Stopped	192.168.0.135	--	Pay-per-use Created on Apr 26, 2022 10:00:00	Apr 26, 2022 10:14:00 GMT+08:00	Access
GES_UI_2_1_2	Stopped	192.168.0.93	--	Pay-per-use Created on Apr 26, 2022 10:00:00	Apr 26, 2022 10:13:45 GMT+08:00	Access
GES_UI_2_0_1	Stopped	192.168.0.123	--	Pay-per-use Created on Apr 26, 2022 10:00:00	Apr 26, 2022 10:10:52 GMT+08:00	Access

Import
Start
Stop
Delete
Upgrade
Export
View EIP
Unbind EIP
Clear Data
View Metric
Query Schema
Restart
Refresh
Expand
Task Center