Database and Application Migration UGO 24.9.0

Quick Start

 Issue
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Database Evaluation

UGO collects basic information and performance data of a source database, as well as SQL statements of specific object types, and provides an overview of the source database. Based on the analysis of factors such as compatibility and object complexity, UGO provides an analysis report on the compatibility and reconstruction cost of the source and target databases, helping you select a suitable target database and evaluate migration workloads.

The database needs to be evaluated before its objects are migrated using UGO.

1.1 Preparations

User Permissions

You need to obtain permissions to create an evaluation project. For details, see **Permission Management**.

Network Configurations

- 1. Check whether a source database and UGO are connected. Currently, they can be connected only over a public network.
- 2. Enable the source database firewall to allow UGO to access a local database.
- 3. Check whether the access whitelist of the source database allows UGO. The method of adding a whitelist entry varies depending on the database type. For details, see official documents.
- 4. Set the maximum number of connections for the source database. The parameters and modification methods vary depending on the database type. For details, see official documents.
- 5. Check whether the database connection information is correct, including IP address, database service name, username, and password.

Source Database Permissions

Before using UGO to evaluate a database, you need to create a database account for data collection and obtain access permissions.

• Grant DBA permissions when Oracle is used as the source database.

- a. Create a user. *USER* indicates a database username. CREATE USER user IDENTIFIED BY password;
- b. Grant the login permission to the user. GRANT CONNECT TO user;
- c. Grant DBA permissions to the user. GRANT DBA TO user;
- Grant non-DBA permissions when Oracle is used as the source database.
 - a. Create a user. *USER* indicates a database username. CREATE USER user IDENTIFIED BY password;
 - b. Grant the login permission to the user. GRANT CONNECT TO user;
 - c. Grant the SELECT_CATALOG_ROLE permission to the user, so that the user can obtain DDL statements of objects from a data dictionary. If the user does not have this permission, the permission check fails and the user is unable to proceed to next steps. GRANT SELECT_CATALOG_ROLE TO user; GRANT SELECT_ANY DICTIONARY TO user;

NOTICE

When the source database type is Oracle, the user must obtain the DBMS_METADATA, dynamic view, and schema object counting permissions. To ensure that DDLs returned by DBMS_METADATA.GET_DDL are consistent, UGO needs to format the captured SQL statements. So a non-read-only account is required. When UGO is being connected, you need to set export parameters. The settings are valid only for the collected DDLs. Only sessions will be affected, and the source database will not. The following parameters need to be set:

- Make table constraints and indexes a part of the CREATE TABLE statements.
 DBMS_METADATA.SET_TRANSFORM_PARAM(dbms_metadata.SESSION_TRANSFORM, 'CONSTRAINTS_AS_ALTER', false)
- Ensure that there are no collation clauses in the exported DDLs. DBMS_METADATA.SET_TRANSFORM_PARAM(dbms_metadata.SESSION_TRANSFORM, 'COLLATION_CLAUSE', 'NEVER')
- Add a semicolon (;) to each collected SQL statement. DBMS_METADATA.SET_TRANSFORM_PARAM(dbms_metadata.SESSION_TRANSFORM, 'SQLTERMINATOR', true)
- Grant query and PROCESS permissions on the MySQL system database and all permissions on a database to be migrated when MySQL is used as the source database. In MySQL 8.0 and later versions, if there are stored procedures and functions, grant the SHOW_ROUTINE permission as well.
 - a. Create a user. *db-user* indicates a database username. CREATE USER db-user IDENTIFIED BY passwd;
 - b. Grants user permissions. By default, when UGO connects to the MySQL database, the user needs to obtain permissions to access the MySQL database.
 GRANT SELECT ON mysql.* TO db-user;
 - c. Grant the PROCESS permission to view all tables in information_schema. GRANT PROCESS ON *.* TO db-user;

d. Grant the following permissions to objects to be collected: GRANT SELECT ON schema-name.* TO db-user; GRANT SHOW VIEW ON schema-name.* TO db-user; GRANT TRIGGER ON schema-name.* TO db-user;

To collect all schemas, replace *<schema-name>.** with ***.*to grant the permission of collecting all objects.

- e. In MySQL 8.0.20 and later versions, if there are stored procedures and functions, grant the following permission as well: GRANT SHOW_ROUTINE ON *.* TO db-user;
- Grant query and PROCESS permissions on the GoldenDB system database and all permissions on a database to be migrated when GoldenDB is used as the source database. If there are stored procedures and functions, grant the SHOW_ROUTINE permission as well.
 - a. Create a user. *db-user* indicates a database username. CREATE USER db-user IDENTIFIED BY passwd;
 - B. Grant permissions to collect user and role information in GoldenDB system table mysql.user.
 GRANT SELECT ON mysql.user TO db-user;
 - c. Grant the PROCESS permission to view all tables in information_schema. GRANT PROCESS ON *.* TO db-user;
 - d. Grant the following permissions to objects to be collected: GRANT SELECT ON schema-name.* TO db-user; GRANT SHOW VIEW ON schema-name.* TO db-user; GRANT TRIGGER ON schema-name.* TO db-user;

NOTE

To collect all schemas, replace *<schema-name>.** with *.* to grant the permission of collecting all objects.

- e. In MySQL 8.0.20 and later versions, if there are stored procedures and functions, grant the following permission as well: GRANT SHOW_ROUTINE ON *.* TO db-user
- **NOTE**

MySQL or GoldenDB as the source database: If a user is granted to the global SELECT permission and the SHOW_ROUTINE permission. No other permissions are required.

- Grant the VIEW DEFINITION permission when Microsoft SQL Server is used as the source database.
 - a. Create login user **login-user**. CREATE LOGIN login-user WITH PASSWORD=password,DEFAULT_DATABASE =database;
 - b. Create database user **db-user**. CREATE USER db-user FOR LOGIN login-user;
 - c. Grant the user permissions to query metadata and table structures. GRANT VIEW DEFINITION ON DATABASE :: database TO db-user;
 - d. Grant the permission to query dependencies to the user. GRANT SELECT ON OBJECT :: sys.sql_expression_dependencies TO db-user;

1.2 Creating an Evaluation Project

Scenarios

Based on basic information (including the number of schemas) about the source database and SQL statements of specific objects, UGO generates a report to evaluate workloads and risks before database migration and recommends a suitable target database, helping you make decisions and work plans during migration.

Suggestions

- To collect objects, UGO needs to connect to the source database, which may affect the database performance. You are advised to use a database in a non-production environment or perform database evaluation during off-peak hours.
- GoldenDB as the source database: Create an evaluation task as a CN user.

Constraints

- If the source database type is MySQL or GoldenDB, the username cannot contain special characters, such as single quotation marks ('), double quotation marks (''), and backslashes (\).
- UGO cannot evaluate overloaded functions with the same name in the same source database.
- Each user can create up to 10 evaluation projects.

Procedure

- Step 1 Log in to the UGO console.
- **Step 2** In the navigation pane, choose **Schema Migration** > **DB Evaluation**.
- Step 3 Click Create Project in the upper right corner.
- **Step 4** Read **Source Database Preparation and Authorization Tips** and click **Create**.
- **Step 5** Enter basic information on the **Basic Information** page. **Table 1-1** describes details about the parameters.

ic Information ——— 🤅	2) Precheck (3)	Evaluation Scope Selection	(4) Confirmati	ion	
Project Name		E.			
Exception Notification Mode	SMN Topic				
	Select	✓ Q Create	SMN Topic 🖸		
	After you create and subsc	ribe to an SMN topic, UGO ca	in send alarm notifications	to your configured subscription	on endpoints through SMN.
aurce DB Type	Oracle	MySOI	GoldenDB	PostareSQL	Microsoft SQL Server
	Oracle-10g and Oracle 11g do	not support SSL.		<u> </u>	
etwork Type	Public network				
	If the source DB network is re-	stricted by the IP address whit	telist, add (100.85.124.231) to the whitelist to ensure the	at UGO can connect to the source
Connection Method	Service name	Connection string			
	Service name, IP address, an	d port are required for source	DB connection.		
Source DB Name					
last Tupa	Hostname	Hoet IP addraee			
ost type	Tioaname	riost il address			
lost IP address		0			
Host Port					
Jsername					
Password		3P			
SSI Type	No SSL	One-way SSL			

Figure 1-1 Evaluation project creation

- **Step 6** After entering the basic information, click **Test**.
 - If the connection test succeeds, the **Next** button will be available.
 - If the connection test fails, an error message is displayed, indicating that the database cannot be connected. For details, see Database Connection Error.
- Step 7 (Optional) Test network stability. A successful network stability test only means that there is a little network latency or packet loss, or no packet loss at the current time. The test lasts for 10 to 15 seconds.
- **Step 8** Click **Next** to go to the **Precheck** page.

Figure 1-2 Prechecking permissions of Oracle database

🕑 Besk Informa	tion 2 Precheck (3) Evaluation Scope Selection (4) Continuation			
Ø	Go to the next step to create an evaluation task. The pre-deck has passed			Recheck Pre-check deadline: 202407/29 10.28.22 GMT+00.00
• 4 item	s were checked. The following 4 items passed the check.			
No.	Check Item	Description	Check Result	
1	DBMS_METADATA Permission	Provides mechanism to retrieve metadata from the database dictionary as creation DDL to re-create the object	Success	
2	Dynamic Wew Permission	Checks select access to various Dynamic views	Success	
3	DDL Object Count Check	Checks for at least one Schema Object which have DDL objects to fatch can be accessed	O Success	
4	Sotting DBNS_METADATA SQL Formatting Parameters	Check whether the user can run the SQL formating command of DBMS_METADATA. If the check result is warning, the evaluation project can be created successfully, but the collected SQL format may	• Success	

Step 9 After all check items are passed, click **Next** to go to the **Evaluation Scope Selection** page. **Table 1-2** and **Table 1-3** describe details about the parameters.

Figure 1-3 Selecting evaluation scope

Basic Information 🕑 Precheck 🚳 Eval	ation Scope Selection		
Redefect the UCO evolution the following objects. You can	dan salari iba chiaris	to be acculated	
Object Types to be Collected Staker All TABLE O INDEX	YPE 🕑 TYPE_BOD	W 🕑 VIEW 🧭 MATERIALIZED_VIEW 🕑 PROCEDURE 🕑 F	(Particin & Monare & Monare), roy of Trouber & More & User & Gamm & Smeltony & Gereating & Monama & Schedure & Jorgans & Jor & Grijna
Target Database Selection			
Available Target Databases	0/17	Selected Target Databases	010
GaussDB Primary/Standby - 8.100 Enterprise Edition			
GaussDB Primary/Standby - 8.0 Enterprise Edition			
GaussDB Primary/Standby - 3.3 Enterprise Edition	18		
GaussDB Primary/Standby - 3.2 Enterprise Edition		No data available	
GaussDB Primary/Standby - 3.1 Enterprise Edition			
GaussDB Primary/Standby - 2.7 Enterprise Edition			
GaussDS Distributed - 8.109 Enterprise Edition			

D NOTE

- Only selected database objects are collected.
- All collected data is stored in the source database of the tenant. The database password encrypted before being saved. Related data is visible only to you on the UGO console.
- When a user deletes an evaluation task, the user data is deleted.
- Dynamic SQL evaluation and object-level permission collection are available only for Oracle databases.

Step 10 Click **Next** to go to the **Confirmation** page.

- The basic information, pre-check results, selected target databases, selected and unselected schemas and object types are displayed.
- If the source database type is GoldenDB, the database configuration and instance quantity are not displayed.
- If the source database type is Microsoft SQL Server, database OS, connection string, database time zone, database configuration, and database memory are not displayed.

Figure 1-4 Confirming information (Oracle as the source database)

() save marineur (
Basic information					
Project Name	tesersdf	Connection to Source	Cnine	Connection Method	Service name
Skip Target DB Evaluation	Yes	SSL Type	No SSL	Source DB Name	Oracle
Source DB Version	19.0.0.0	Collection Time	Al Time	Host IP address	100.85.219.142
Hast Port	1921	Data Collected From	DBA views	Object Permissions Collection	No
Precheck					
DBMG_METADATA Permission	• Success	Dynamic Wew Permission	e Buccess	DDL Object Court Check	· Buccess
Setting DBMS_METADATA SQL	• Secces				
Selected Target Database:	1				
GaussDB Primary/Standby - 6. GaussDB Distributed - 2.7 Enter	100 Enterprise Edition GaussEB Primary/Standby - 6.0 Enterprise Edition GaussEB Primary/Standby - 3.2 Enterprise prise Edition GaussEB/Jor NySQL - 6.0 RDS for NySQL - 5.7 RDS for PosigneSDL - 14 RDS for PosigneSDL	se Edition GaussEB Primary/Stan - 13 RDS for PoolgreSQL - 12 1	dby - 3.1 Enterprise Edition GezusCB Primary/Standby - 2.7 Enterprise Edition GezusCB Distributed - 8.100 Enterp RDS for PostgreSCL - 11	rise Editor GaussDB Distributed	6.9 Enterprise Edition CeussDB Detributed - 3.2 Enterprise Edition
Selected Schemas					
AFA APPAD					
Unselected Schemas					
APPROD AUTO_E2E_SOUR HASH_COLUMN_808 HOM SOUNFTEC STATEMENT_U	CE AUTO_FEX023022000909_TEST CIDEUSER COMLINK EMS2 EMS250R EMS5 EM5_SENOR ICEC_SCURCE_UTSQ_TARGET_GEN_001 KERNEL_ORCLINC_TO LANGDEP LANGLI MODUERGE M POATE_000 STATEMENT_UPDATE_007 SYS TEST_DENO TEST_08LJAAME MELORLANDE TEST_0	ENSDEV ENSESP ENSEND DTERW NEW_SCHENA_NAME RA_PG 1015_toxial_charSHQ U	EMBODOFFLINE EMBODOFFLINE_CONCEPT EMBODOFFLINE_CNIX EMBODOFFLINE_SUF EMBON ORACLEYRC_TO_GAUSSEREZTO ORACLEYRC_TO_GAUSSEREZTO ORCLYRC_TO_GAUSSEREZTO ORCLYRC 100 U00_DEV U00_ETE U00_XERNEL_DEV U00_XERNEL_E_2_E_AT	FE2023022000999_CMIS3 FE202 2_TO_GAUSSD627D OUT_FUNC	2002000000_WISSION FINANCE GUOYL HASH_COLUMN_000 HASH_COLUMN_007 : Out_FUNC2 PHYROL12 POBADMIN POCUSER POCUSER_NEW READONLY_USER SDE
Selected Object Types					
TABLE INDEX SEQUENCE	SYNONYM TYPE TYPE_BODY WEW MATERIALIZED_VIEW PROCEDURE FUNCTION PACKAGE	PACKAGE_BODY TRIGGER	DIRECTORY CREDENTIAL PROGRAM SCHEDULE JOB_CLASS JOB DB_LUNK		
Unselected Object Types					
ROLE USER GRANT					

D NOTE

The parameters displayed on the task confirmation page vary depending on the source database.

- **Step 11** Verify the settings and click **Create**. A message is displayed, indicating that the project is created.
- **Step 12** Click **OK** to go to the **DB Evaluation** page. You can view the evaluation project you created in the list.

Data collection, project evaluation, pre-migration evaluation are required. You can view the status in the **Project Status** column. You can stop a project that is being evaluated or resume a stopped project.

Figure 1-5 Viewing the created project

You can create	38 more evaluation projects.					All project statuses	✓ Proje	:t Name	 Enter a project n 	arre. Q Search by tags ~ Q
SI No.	Project Name/ID	Connection Type	Project Status	Source DB Type	Created		Differential Analysis	SQL Lines	SQL Size	Operation
1	AUTO_ORACLE19c_TO_RD 790b46da-26a0-4812-990a-89	Online	Completed - Object Collection Error Create Migration Project	Oracle	Jul 29, 2024 04:35:52 GMT+0	8:00		72.29K	2 MB	Trace Run Differential Analysis Delete
2	Auto_eval_pause_and_resum 38782def-6dee-41b8-8b8d-7d	Online	In progress - Object Collection Error Confirm Target DB Pending	Oracle	Jul 29, 2024 04:34:47 GMT+0	8:00	-	274	7 KB	Trace Re-Evaluate More ~
3	Auto_fication_and_rollback_0 158b09d0-ea98-4ed1-8e17-6f1	Online	Completed Create Migration Project	Oracle	Jul 29, 2024 04:29:10 GMT+0	8:00	-	105	3 КВ	Trace Run Differential Analysis Delete
4	AUTO_ORACLE11g_TO_Gas Mc787a0-3b99-47d1-bd24-a2	• Online	Completed - Object Collection Error Create Migration Project	Oracle	Jul 29, 2024 04:26:22 GMT+0	8:00		9843	488 KB	Trace Run Differential Analysis Delete

D NOTE

- You can create up to 10 evaluation projects.
- Before Project Status of an evaluation project becomes In progress. Confirm Target DB Pending, you can stop and continue the creation of the project. When the Project Status is In progress. Confirm Target DB Pending, you can confirm a target database by following Confirming the Target Database or re-evaluate objects. However, if the source database type is GoldenDB, re-evaluation is not supported.
- The evaluation time varies depending on the number of objects selected.
- After the evaluation is complete, click a project name to view the result by following Viewing the Database Evaluation Result.
- During data collection, the system periodically automatically retries the connection to the source database. Next connection retry time: Current time + Time required for checking the connection and network stability + Sleep retry interval. After a connection test, there is several second delay before a network stability check can be performed. You may see a few seconds difference between the two retry times.

----End

Parameters

Parameter	Description
Project Name	Enter a project name. The name is unique. It can contain 5 to 50 characters and must start with a letter and end with a digit or letter. Only letters (case-insensitive), digits, underscores (_), and hyphens (-) are allowed.
(Optional) Exception Notification Mode	 SMN Topic Specifies whether to report exceptions through Simple Message Notification (SMN). To create an SMN topic, see Creating a Topic. NOTE Follow-up Operation After the topic is created, you can add a subscription. After the subscription has been confirmed, alarm notifications will be sent to the subscription endpoint via SMN.
Enterprise Project	If you have been associated with an enterprise project, select the target project from the Enterprise Project drop-down list. You can also go to the project management console to create a project. For details about how to create a project, see <i>Enterprise Management User Guide</i> .

Parameter	Description
Source DB Type	Select a source database type. For details about supported source database types, see Supported Databases .
	If you want to select GoldenDB, Microsoft SQL Server 2012/14/16/17/19/22, or PostgreSQL 10/11/12/13/14/15 as the source database, submit an application by choosing Service Tickets > Create Service Ticket in the upper right corner of the console.
	If the source database type is MySQL, run the following command on the source database to enable the CPU count function.
	SET GLOBAL innodb_monitor_enable = cpu_n;
(Optional) Network Type	Public Network : An elastic IP address (EIP) is used to connect to the source database.
	If the source database network is restricted by the IP address whitelist, add the EIP to the source database network whitelist to ensure that the UGO can connect to the source database.
	• EIP in AP-Singapore: 110.238.109.54
	• EIP in LA-Santiago: 159.138.116.198

Parameter	Description
Connection Method	Select Service name or Connection string . Service name is used by default. The following uses Service name as an example.
	Subsequent parameters vary depending on your selection of this parameter.
	Oracle: Compatible with JDBC formats of IPv4:
	– ip:port:databaseName
	– ip:port/databaseName
	 jdbc:oracle:thin:@(DESCRIPTION=(ADDRESS_LIST=(ADDRESS_S=(PROTOCOL=TCP)(HOST=ip)(PORT=port))) (CONNECT_DATA=(SERVICE_NAME=databaseName)))
	 jdbc:oracle:thin:@(DESCRIPTION=(ADDRESS_LIST=(ADDRESS_S=(PROTOCOL=TCPS)(HOST=ip)(PORT=port))) (CONNECT_DATA=(SERVICE_NAME=databaseName)))
	MySQL: Compatible with JDBC formats of IPv4:
	 jdbc:mysql://ip:port/databaseName? useUnicode=true&characterEncoding=UTF-8
	 jdbc:mysql://ip:port/databaseName? useUnicode=true&characterEncoding=UTF-8&useSSL=true&r equireSSL=true
	 jdbc:mysql://ip:port/databaseName? useUnicode=true&characterEncoding=UTF-8&allowPublicKe yRetrieval=true
	 jdbc:mysql://address=(protocol=tcp)(host=ip)(port=port)/ databaseName?useUnicode=true&characterEncoding=UTF-8
	 jdbc:mysql://address=(protocol=tcp)(host=ip)(port=port)/ databaseName?
	useUnicode=true&characterEncoding=UTF-8&useSSL=true&r equireSSL=true
	- jdbc:mysql://address=(protocol=tcp)(host=ip)(port=port)/ databaseName?
	useUnicode=true&characterEncoding=UTF-8&allowPublicKe yRetrieval=true
	 PostgreSQL: Compatible with JDBC formats of IPv4:
	 jdbc:postgresql://ip:port/databaseName
	 GoldenDB: Compatible with JDBC formats of IPv4:
	 jdbc:mysql://ip:port/databaseName? useUnicode=true&characterEncoding=UTF-8
	 jdbc:mysql://ip:port/databaseName? useUnicode=true&characterEncoding=UTF-8&useSSL=true&r equireSSL=true

Parameter	Description
	 jdbc:mysql://ip:port/databaseName? useUnicode=true&characterEncoding=UTF-8&allowPublicKe yRetrieval=true
	 jdbc:mysql://address=(protocol=tcp)(host=ip)(port=port)/ databaseName?useUnicode=true&characterEncoding=UTF-8
	 jdbc:mysql://address=(protocol=tcp)(host=ip)(port=port)/ databaseName? useUnicode=true&characterEncoding=UTF-8&useSSL=true&r
	 jdbc:mysql://address=(protocol=tcp)(host=ip)(port=port)/ databaseName?
	yRetrieval=true
	 For connection string, standard JDBC is used to connect to the source database.
	• If the source database type is Microsoft SQL Server, only Service name can be selected.
Host Type	Select Hostname or Host IP address.
Hostname	Host IP Address: IPv6 addresses are not supported.
Or HOST IP	Hostname:
Address	 The host name cannot be empty.
	• You can enter multiple host names and use commas (,) to separate them. All host names can contain up to 1,024 characters.
	 A host name can contain a maximum of 253 characters and cannot contain the following special characters: '!', '@', '#', '\$', '%', '^', '&', '*', '(', ')', '+', '=', '[', ']', '{', '}', ' ', '\', ':', ';', '<', '>', ',', '?', '/'
DB Name	Name of a source database to be evaluated.
	The source database name:
	 Consists of letters, digits, periods (.), underscores (_), hyphens (-), dollar signs (\$), and number signs (#).
	Contains 2 to 128 characters.
	• Starts with a letter, digit, dot (.), underscore (_), or hyphen (-) and can be enclosed in quotation marks (").
	NOTE This parameter is not displayed when the source database type is MySQL.
Host Port	Enter a database port. The port number ranges from 1 to 65535.

Parameter	Description
Username	Enter the username of the source database. It can contain up to 128 characters. You are advised to use the administrator username.
	The username can contain 2 to 128 characters and must start with a letter, digit, period (.), underscore (_), or hyphen (-). Only letters, digits, periods (.), underscores (_), hyphens (-), dollar signs (\$), and number signs (#) are allowed. The username can be enclosed in double quotation marks ("").
Password	Enter the password of the source database. The value contains up to 50 characters.
SSL Type	 Select No SSL. Currently, One-way SSL is unavailable. No SSL: The SSL security protocol is disabled. There may be potential security risks.
	• One-way SSL : The target database will be authenticated and transmission will be encrypted.
	- Upload : Upload the root certificate file in JKS format.
	 Trust Store Password: Enter the password of the trust store used to access the certificate.
	 Secure Socket Layer (SSL) provides a secure connection between the network and application layers. In mutual SSL authentication, an SSL connection between a client and a server is established only if they validate each other's identity using digital signatures. If SSL is disabled, your data may be at risk.
	• If the source database type is Oracle 10g or 11g, one way SSL is not supported.
	• If the source database type is a PostgreSQL, only PEM SSL certificates can be uploaded, and the trust password is not required.
Data Collected	You can select DBA views or All views to collect data from the source Oracle database. By default, DBA views is selected.
From	• DBA views : UGO collects data from objects in the entire source DB instance.
	• All views: UGO collects data from all objects owned and accessed by the source DB user.
(Optional) Tags	Use predefined tags in Tag Management Service (TMS). Predefined tags are visible to all service resources that support the tagging function. For details, see <i>Tag Management Service</i> <i>User Guide</i> .
	Enter a key and a value, and click Add .
	You can add up to 20 tags. For details, see Managing Tags.

Parameter	Description
Object Types to be	By default, all object types are selected. You can also manually select the object types to be collected as required.
Collected	NOTE If the source database type is MySQL and its version is earlier than 8.0, there are no ROLE objects in the source database. UGO does not collect ROLE objects.
	If the source database type is GoldenDB, there are no ROLE objects in the source database. UGO does not collect ROLE objects.
Target Database Selection	Select target databases and click <a>> . You can also select all of them.
	The target databases that you did not select will not be evaluated.
Schemas to be Collected	Manually select the schemas to be collected and click <a>> . You can search for or select all schemas.
	If there are many schemas, you can search for them by name. The names and number of selected schemas are displayed on the right list.
	NOTICE
	 If there are multiple schemas with the same name (case-insensitive), select one of them.
	 Oracle Lightweight Jobs are collected as part of PROGRAM object type.

Table 1-2 Parameters for selecting the evaluation scope

Table 1-3 Advanced settings

Parameter	Description
Target DB Analysis	Whether the target database needs to be evaluated. Skip Target DB Evaluation is selected by default.
	 If Skip Target DB Evaluation is selected, UGO only collects data. The target databases will not be evaluated, so no evaluation report is generated. There are only recommended target databases on the Target DB Analysis tab page when you view the evaluation result by following Viewing the Database Evaluation Result. Select Skip Target DB Evaluation if you have determined a target database. If you need to re-evaluate the task after the evaluation project is created, go to the evaluation project list page, locate the project, click More and choose Re-Evaluate in the Operation column. You can view the evaluation result of the target database only after the re-evaluation.
	• If you deselect Skip Target DB Evaluation , an evaluation report of the target database will be generated.

Parameter	Description
Dynamic SQL	Whether dynamic SQL statements need to be evaluated. Enable is selected by default.
Evaluation	• If Enable is selected, dynamic SQL statements in objects are analyzed, and a report is generated.
	 If Enable is deselected, dynamic SQL statements are not analyzed.

1.3 Viewing the Database Evaluation Result

This section describes how to view details of an evaluated project, including the source and target database analysis results. This helps you select a target database.

Constraints

If **Skip Target DB Evaluation** is selected setting when **you create an evaluation project**, there are only the basic information of recommended target databases on the **Target DB Analysis** tab.

Viewing the Collection Result of a Source Database

Step 1 Log in to the UGO console.

Step 2 In the navigation pane, choose **Schema Migration** > **DB Evaluation**.

- All the evaluation projects are displayed in the list. You can view the project basic information, including the project name/ID, connection type, and project status. The project ID can be directly copied.
- If there are many projects, you can search for them by project status, tag, project name, or project ID.

Figure 1-6 Viewing the created project

You can create	38 more evaluation projects.					All project statuses	~	Project Name	✓ Enter a project	name. Q Search by tags ~ Q
SI No.	Project Name/ID	Connection Type	Project Status	Source DB Type	Created		Differential An	lysis SQL Lines	SQL Size	Operation
1	AUTO_ORACLE19s_TO_RD 790546da-26a0-4812-090a-89	Online	Completed - Object Collection Error Create Migration Project	Oracle	Jul 29, 2024 04:35:52 GMT+0	8:00		72.25K	2 MB	Trace Run Differential Analysis Delete
2	Auto_eval_pause_and_resum 38782def-6dee-41b8-8b8d-7d	Online	In progress - Object Collection Error Confirm Target DB Pending	Oracle	Jul 29, 2024 04:34:47 GMT+0	8:00	-	274	7 KB	Trace Re-Evaluate More ~
3	Auto_fication_and_rollback_0 15/b09d0-ea98-4ed1-8e17-6f1	Online	o Completed Create Migration Project	Oracle	Jul 29, 2024 04:29:10 GMT+0	8:00	-	105	3 КВ	Trace Run Differential Analysis Delete
4	AUTO_ORACLE11g_TO_Gen Mc787a0-3b99-47d1-bd24-a2	Online	Completed - Object Collection Error Create Migration Project	Oracle	Jul 29, 2024 04:26:22 GMT+0	8:00		9843	488 KB	Trace Run Differential Analysis Delete

Step 3 Click a project name. The **Source DB Analysis** tab page is displayed by default. **Table 1-4** describes functions on this page.

Figure 1-7 Source DB Analysis

Address Conversion of the	inger our	0140/504	raga																				
Basic Information																							
Project Name								OB Type	Oracle							DB Version	21.0.0.0)						
CB Name								DB Schemas	1							DB OS	Linucide	64-02					
IP Address/Pert								Usemane	990							DB Character Set	UTF8						
CB Instances	1							DB Size	0.003	18						Connection String							
DB Time Zone	OMT -90	00						Database Type	Single	Instance						DB Memory	50A 4.65	08, POA 15 0					
Data Collected From	D5A view	0						Physical RAM	15.51	38, onSingle Insta						Physical CPUs	4 cores, r	on Single Instance					
Object Statistics																						0	lev Object Details
Schema Ti	ABLE	INDEX	VIEW	PACKAGE	PACKAGE	PROCEDU	FUNCTION	TRIGGER	SYNONYM	SEQUENCE	MATERIAL	TYPE	TYPE_BODY	DIRECTORY	CREDENTL.	PROGRAM	SCHEDULE	JOR_CLASS	308	USER	ROLE	GRANT	DO_LINK
UQ0 51	•	4	2	5	3	14	11	5	4			5		•	0	4			4			2	4
011110110																						-	
Object Distrib	ution																					Olivers	Object lows
60																							
50																							
40																							
20																							
20																							
10							1																
0 TABLE	_		VEW	PACK	AGE BODY	FU.	NCTION	8	NONYM	MATE	WIN CITZER		TYPE BODY	0	EDENTIAL	50	HEDULE		208		ROLE		DR UNK

Step 4 Click **View Object Details**. In the displayed schema list, view the object name, object type, and DDL collection status.

Figure 1-8	B Database	schemas
------------	------------	---------

08 Objects (121)				AT DOL conection statuses	V Alsonenas V	All wapped object status V
 ii) Storage (69) 	🔲 ~ Schema	Object Name	Object Type	DDL Collection Status	Object Wrapped	Operation
B SEQUENCE (8)			WEW	😋 Collected	No	Very Details Edit SQL
TABLE (58)			1.02			March March 1991
D INDEX (4)			1176	Conces	140	
SYNONYM (1)			TYPE	O Collected	No	View Details Edit SQL
TYPE (5)			FUNCTION	😋 Collected	No	Vev Details Edit SQL
 Code (41) 			TADI C	Calculat	No	Mary Particle Cold Sci
WEW (2)			Mete	Conces	NV	
MATERIALIZED_WEW (0)			TABLE	O Collected	No	Wew Details Edit SQL
In TRIGGER (5)			TABLE	🙁 Collected	No	Vew Details Edit SQL
TYPE_BODY (8)			7000			Hardware Course
PROCEDURE (14)			MBUC	Conces	NO	Were Develop Call out.
FUNCTION (11)			TABLE	O Collected	No	Wey Details IDdit SQL
PACKAGE (5)			PROCEDURE	Collected	No	Vew Details Edit SQL
PACKAGE_BODY (3)						
 DIRECTORY (8) 	Tatal Records: 121 10 v c 1	1 2 3 4 5 6 - 13 5				
DE_LINK (1)						
 Jan Objects (8) 						
CREDENTIAL (0)						
 PROGRAM (4) 						
SCHEDULE (0)						
(i) JOB_CLASS (8)						
(a) JOB (4)						
 B JOB (4) B Management (3) 						
(a) JOB (4) (b) Management (3) (c) USER (1)						
(6) JOB (4) (6) Management (2) (7) USER(1) (7) ROLE (0)						

- You can search for data by DDL collection status, schema, wrap encryption status, or specific object name.
- For details about incremental evaluation, see Performing an Incremental Evaluation.
- For details about how to re-collect objects, see **Re-Collecting Objects**.
- The collected object types vary depending on the source data structure. For details, see **Table 1-5**.

Step 5 Click View Details to view DDL statements of the object.

Figure 1-9 DDL statement details



NOTICE

The source database syntax is complex and flexible, so the workload evaluation and object evaluation statistics are for reference only.

Viewing the Analysis Result of a Target Database

- Step 1 Log in to the UGO console.
- **Step 2** In the navigation pane, choose **Schema Migration** > **DB Evaluation**.
- **Step 3** Click a project name to go to the **Source DB Analysis** tab page.
- Step 4 Click the Target DB Analysis tab. Table 1-6 describes functions on this page. If you deselect Skip Target DB Evaluation in Step 9, the following page is displayed.

Figure 1-10 Target DB Analysis

Target DB Selection ()					(Summary Report)
The source database syntax is complicated and adaptat	ble, so the conversion success rate, workload evaluation, object e	stuation and other information are for reference only.			
Delabase Type	Delabase Wission	Total Objects 😑	Supported Objects (i)	Unsupported Objects ()	Conversion Rate (%)
GaussDB Primary/Standby	8.200 Enterprise Edition	860	809	51	- 94.05%
O OaussCB Datributed	8.200 Enterprise Edition	860	809	51	- 94.09%
 GaussDB/ter My90L) 	8.0	960	363	497	42.2%
 RDS for PostgreGQL 	14	960	761	99	00.49%
Contine D5 Selection Re-Evolution					
Compatibility Analysis Current Dynamic SQL Evaluation Config					. Dynamic SQL Evaluation Report
Object Type	Scheme Name	Object Name	Dynamic SQL Information		
PROCEDURE			Keywords/EXECUTE IMMEDIATE, Line No. 31		
PROCEDURE			Keyvords EXECUTE IMMEDIATE Line No: 48,34,20,40,4	0	
PROCEDURE			Keywords:EXECUTE IMMEDIATE, Line No.: 145, 147, 141,	143	
PROCEDURE			Keywords:EXECUTE IMMEDIATE, Line No: 117,00		
PROCEDURE			Keyvords/EXECUTE IMMEDIATE, Line No. 68		
PROCEDURE			Keywords:EXECUTE IMMEDIATE.Line No.: 176.178.180.	170.172.174	
PROCEDURE			Keyvords:EXECUTE IMMEDIATE, Line No.: 101, 103, 185,	187,189,191	
PROCEDURE			Keyvords/EXECUTE IMMEDIATE, Line No.11		
PROCEDURE			Keywords:EXECUTE IMMEDIATE, Line No.:22		
PROCEDURE			Keyvords:EXECUTE IMMEDIATE, Line No.:23		
Telai Records: 28 10 V < 1 2 3	>				
Workload Evaluation					
Common Object Reconstruction (Persons/Day)		System Object Reconstruction (PersonsiDay)		Other Object Reconstruction (Persons/Day)	
0.1				2	

Step 5 Based on the analysis result, select the target database and click **Confirm Database Selection**.

NOTICE

The target database cannot be modified after it is confirmed.

----End

Page Functions

Function	Description
Basic Information	Displays basic information, including the project name, source database type, database version, database name, number of instances, and database memory.
	NOTE If the source database type is GoldenDB, the database configuration and instance quantity are not displayed.
	If the source database type is MySQL and GoldenDB, database names are not displayed.
Object Statistics	Displays the number of database objects, which may vary depending on the source database type.
	Click View Object Details to view schema details. For details, see Table 1-5 .
	NOTE Objects of some types (such as cluster) are not displayed.
Object Distribution	Displays the database object statistics in a bar chart. Hovering over on a bar shows the exact values.

NOTE

The source database analysis result provides a reference for you to select a target database.

Function	Description
Schema list	Displays the schema, object name, object type, and operation.
	• If there is a large amount of data, you can search for your desire data by DDL collection status, schema, wrapped object status (only available for Oracle database), or object name.
	• Incremental evaluation: The SQL data has to be incrementally evaluated if:
	 The DDL collection status is Not collected.
	 The wrapped objects are edited.
	• Click View Details in the Operation column to view the detailed information and SQL script of the object.
	• Locate an object and click Edit SQL in the Operation column to edit the SQL script of the object.
	NOTE
	 When the source database type is Microsoft SQL Server, incremental evaluation is not supported and SQL scripts cannot be edited.
	 If the source database type is PostgreSQL, SQL scripts cannot be edited.
	• Edit SQL is available only when the target database is not confirmed and any of the following conditions is met:
	The wrapped objects are edited.
	• DDL Collection Status of the object is displayed as Not collected.
DB Objects (Oracle as	Include storage objects, code objects, job objects, and management. You can click an object to view details.
the source database)	• Storage : include SEQUENCE, TABLE, INDEX, SYNONYM, and TYPE.
	NOTICE When the number of level-1 partitions in a table exceeds the upper limit (3,000 by default), UGO only collects key information, such as schema name, table name, column name, column data type, constraints of unique keys, primary keys, checks, and foreign keys, level-1 partition type, partition column, partition name, and partition range (partition information collection is ignored for automated partitioned tables).
	• Code : VIEW, MATERIALIZED_VIEW, TRIGGER, TYPE_BODY, PROCEDURE, FUNCTION, PACKAGE, PACKAGE_BODY, DIRECTORY, and DB_LINK
	• Job: CREDENTIAL, PROGRAM, SCHEDULE, JOB_CLASS, and JOB
	Management: include USER, ROLE, and GRANT.
DB Objects (for MySQL	Include storage objects, code objects, and management objects. You can click an object to view details.
database)	Storage: include TABLE, VIEW, and SCHEMA.
	Code: include FUNCTION, PROCEDURE, and TRIGGER.
	Management: includes GRANT, ROLE, and USER.

Table 1-5 Functions in the schema list

Function	Description
DB Objects (for	Include storage objects and code objects. You can click an object to view details.
PostgreSQL	• Storage: includes SCHEMA, TABLE, and INDEX.
ualabase)	• Code : includes VIEW, TRIGGER, PROCEDURE, and FUNCTION.
	Management: includes GRANT and ROLE.
DB Objects (for	Include storage objects, code objects, and management objects. You can click an object to view details.
GoldenDB	Storage: include TABLE, VIEW, and SCHEMA.
ualabase)	Code: include FUNCTION, PROCEDURE, and TRIGGER.
	Management: includes GRANT, ROLE, and USER.
DB Objects (for Microsoft SQL Server database)	 Include storage objects and code objects. You can click an object to view details. Storage: include SCHEMA, TABLE, VIEW, and INDEX. Code: include TRIGGER, FUNCTION, and PROCEDURE.

Table 1-6 Function description of the Target DB Analysis tab

Function	Sub- function	Description
Target DB Selection	Summary Report	Click Summary Report to download the compatibility evaluation summary report in PDF format to the local PC. You can view basic information about the source database and analysis result of the target database.
	Database list	 The names, versions, and conversion success rates of recommended target databases are displayed. NOTE By default, a database with the highest success rate is selected. You can also select other databases. The database compatibility evaluation changes as you change the target database. Comprehensive evaluation facilitates you to make a choice.
	Confirm DB Selection	You can determine the target database type to complete the evaluation. If the target database has been confirmed, the button is unavailable.

Function	Sub- function	Description			
	Re-Evaluate	This function is displayed only when Project Status is In progress. Confirm Target DB Pending .			
		You can re-evaluate objects as needed.			
		The time required depends on the number of objects.			
		After the re-evaluation, the target database, workload evaluation, object conversion statistics, and partially compatible/incompatible syntax are displayed.			
Compatibi lity Analysis	Current Dynamic SQL Evaluation	Only when the source database is Oracle, information such as object type, schema name, object name, and dynamic SQL information are displayed.			
	Config	Click Dynamic SQL Evaluation Report to download the evaluation report, which contains the object type, object name, keyword, location, and statements.			
	Workload Evaluation	The estimated workloads required for reconstructing common objects, system objects and other objects during database migration are displayed.			
	Evaluation Statistics	The information of supported and unsupported objects is displayed. Natively compatible objects, compatible objects after conversion, and partially compatible objects are supported.			
		Move the cursor to a bar chart to view the conversion details. You can click a bar chart to view the conversion analysis details, which are displayed by partially compatible and incompatible objects.			
		Click View Object Details to view partially compatible and incompatible objects.			
		Click Report on Partially Compatible and Incompatible Objects . This report includes all source SQL statements and details on any syntax conversion failures.			
		Click Anonymous Report on Partially Compatible and Incompatible Objects . This report includes all source SQL statements and details about any failure points in the SQL statements, but the statements will be anonymized. The actual syntax will not be exposed.			

Function	Sub- function	Description
	Partially Compatible/ Incompatible Syntax Points	All partially compatible or uncompatible syntax during database object conversion, object scopes, types, risk levels, quantities, and explanations are displayed. There are partially compatible syntax and uncompatible syntax. You can view their definitions and the quantity of partially compatible syntax. The risk levels are classified for partially compatible syntax.
		Locate the syntax and click View Definition in the Operation column. If a syntax point is partially compatible, UGO provides different conversion configuration items for the syntax point. During the migration, you can select a configuration item as needed.
		If no modification suggestion is provided, you can click the syntax name to view details.
	System Objects	The page displays the types of system objects, occurrences, and compatibility if the source database type is Oracle, PostgreSQL, or MySQL and the target database type is GaussDB. You can click a system object name to view its database objects.
		Click System Objects Report , a compressed package is downloaded to the local PC. You can extract an excel file from the package. There are two sheet System Data Report and System Table And View Details in the file.
		• System Data Report describes the compatibility of all system objects. The following information includes: target database type and version, system object type, name and quantity, supported type, and SQL statements. If a SQL character string is greater than the maximum value of a cell in the excel file, an independent SQL file is generated and stored in the compressed package.
		 System Table And View Details describes the column compatibility of all system views. The system object names, column names, quantities, and supported types are displayed.

2 Database Schema Migration

After the database evaluation is complete and the target database is confirmed, you can start to migrate database objects with a few clicks. In this module, UGO guides you to make a conversion plan and design a solution to automatically convert syntax. For objects that fail to be converted or migrated, you can edit and batch modify them to simplify manual reconstruction. Each modification is recorded, so that you can view and roll back historical modifications.

2.1 Creating a Migration Project

Scenarios

After the source database evaluation is complete, select the target database based on the evaluation result, enter related information, and create a migration project. Each migration project corresponds to an evaluation project. You can create multiple migration projects based on an evaluation project.

To create a migration project, perform the following steps:

- Step 1: Confirming the Target Database
- Step 2: Creating a Database Migration Project

Precautions

The target database performance is affected during migration. You are advised to use the target database in a non-production environment or perform the migration during off-peak hours.

Prerequisites

- You have permissions to create a migration project in the UGO console. To obtain permissions, see **Permission Management**.
- There is at least one evaluation project whose **Evaluation Status** is **Completed. Create Migration Project**.
- The type and version of the target database to be used must be the same as those confirmed in the evaluation project.

- The target database to be connected is normal and has no arrears or suspension.
- Ensure that the destination database can be accessed and the target database user must have the permission to create, delete, or modify databases objects, such as schemas, tables, programs, indexes, users, functions, and views. For details, see Viewing the Permission Check Report.

Confirming the Target Database

- Step 1 Log in to the UGO console.
- **Step 2** In the navigation pane, choose **Schema Migration** > **DB Evaluation**.
- Step 3 Locate the project whose Project Status is In progress. Confirm Target DB Pending. Click the project name or click Confirm Target DB Pending.
- **Step 4** On the displayed page, select your desired target database and click **Confirm DB Selection**.
- Step 5 Click Confirm.
- **Step 6** After the target database is confirmed, a dialog box is displayed.
 - Click Create Now to go to the Create Migration Project page.
 - Click Create Later to stay on the current page.

----End

NOTE

- After you confirm the target database, **Confirm DB Selection** and **Re-Evaluate** buttons are unavailable. The confirmed target database cannot be modified. Exercise caution when you select a target database.
- After you confirm the target database, **Project Status** changes to **Completed. Create Migration Project**.

Creating a Database Migration Project

- Step 1 Log in to the UGO console.
- **Step 2** In the navigation pane, choose **Schema Migration** > **Object Migration**.
- Step 3 Click Create Project in the upper right corner.
- **Step 4** On the **Create Project** page, configure parameters. For details, see **Table 2-1**.

Basic Information	2 Precheck 3 Migration Project Confirmation
* Project Name	-Enter
Exception Notification Mode	SMN Topic
	Select V Q Create SMN Topic 2 After you create and subscribe to an SMN topic, UGO can send alarm notifications to your configured subscription endpoints through SMN.
* Evaluation Project	~
Target DB	GaussDB Distributed
Target DB Version	3.2 Enterprise Edition
DB Connection Mode	Public network VPC Endpoint Auto assigned by instance
	If the target DB network is restricted by the IP address whitelist, add (100 85, 124, 231) to the whitelist to ensure that UGO can connect to the target database.
Host Type	Hostname Host IP Address
* Host IP Address	•
* Host Port	
* DB Name	•
* Username	0
* Password	
Schemas to Migrate	Select schemas to be collected by UGO from the source database.
SSL Type	No SSL SSL without authentication One-way SSL

Figure 2-1 Creating a migration project

Step 5 Click Test Connection.

- If the connection test is successful, the **Next** button is available.
- If the connection test fails, an error message is displayed.

Step 6 Click **Next** to go to the **Precheck** page.

Figure 2-2 Performing a pre-check

between the mass in the second s						
🚫 Pre	Pre-check failed. In the set of the					
 18 items we 	re checked. The following 3 items are faulty, pleas	se fix them now.				
No.	Check Bem	Description	Check Result	Operation		
1	Create schema privilege check	Check whether the database user has the privilege to create schemas in the target database, database eljects must be created in schemas.	Faled	View Details		
2	Create/Modify users and roles privilege check	Check whether the database user has the privilege to preate or modify users and roles in the target database instance.	Faled	View Details		
3	Create objects in the schema privilege check	Check whether the database user has the permission to create database adjects in the schema of the destination database.	Paled	View Details		
18 items we	re checked. The following 7 items has risks, Pay a	attention to the risks.				
No.	Check Item	Description	Check Result	Operation		
1	Create objects in the public schema privilege check	Check whether the database user has the privilege to create database objects in the public schema of the larget database.	▲ Aam	Vew Details		
2	ORANT Tablespace privilege check	Check the privilege of the database user in the labelespace of the target database instance. The privilege requirement is related to the regration of the ORIANT object.	▲ Aam	View Details		
3	ORANT Database privilege check	Check the privilege of the database user in the target database. The privilege requirement is related to the migration of the ORANT object.	A Aam	View Defaits		
4	ORANT ANY privilege check	Check whether the database user has the privilege to grant AVY privilege to other users in the target database. The privilege requirement is related to the migration of the ORAN	A Aam	View Details		
5	ORANT pg_catalog Schema privilege check	Check whether the database user has the privilege to grant the SELECT privilege of all tables in the pg_catalog schema in the target database to other users. The privilege require	A Aam	View Details		
6	GRANT Database link privilege check	Check whether the database user has the privilege to prart the privilege to create database link to other users in the target database. The privilege requirement is related to the	A Aam	View Details		
7	GRANT Role and user privilege sheck	Check whether the database user has the privilege to point an modify the privilege of other users. The privilege requirement is related to the migration of the GRANT object.	A Alam	View Details		
0 18 Rems were checked. The following 8 Rems passed the check.						
No.	Check Item	Description	Check Result	Operation		
4	Check the compatibility mode	Check whether the compatibility modes of the source and destination databases are the same	Success			
2	Character set check	Check whether the character sets of the source and destination databases are compatible	· Success	Vew Details		
3	GaussDS GUC behavior_compat_options configuration check	Check GaussDB GUC configuration that behavior_compal_options.	· Success	Vew Details		
4	GaussDB GUC pisol_comple_check_options configuration c	Check GaussDB GUC configuration that plog_comple_check_epitons.	Success	Vew Details		

- For check items in the **Failed** status, click **View Details** in the **Operation** column, perform operations as prompted, and click **Recheck**. The **Next** button is activated only when all check items are in the **Success** or **Alarm** status.
- If you have known the possible impact of unhandled check items and still want to create a project, click **Skip Failed Check Items**. When the results of failed check items change to **Alarm**, and the **Next** button is activated.

- If the target database type is GaussDB, the following checks are performed:
 - Check the compatibility mode. For details, see Checking the Compatibility Mode.
 - Check the character set. For details, see Checking the Character Set.
 - Check GUC parameters. For details about the check items, see Checking GUC Parameters.
 - Check user permissions. For details, see Checking User Permissions.
 - Database write permissions: The system checks whether the data node is normal. If the target database is read-only, this check item is displayed and the check is not passed.
- If the target database type is not GaussDB, the following checks are performed:
 - Check the character set. For details, see Checking the Character Set.
 - Check user permissions. For details, see Checking Permissions.

Step 7 Click **Next** in the lower right corner.

Figure 2-3 Confirming information

Stasic Information O Precheck S Migration Project Confirmation		
Confirmation		
Ŧ		Å
	Migration Project Details Project Name	
Migration Scope	Evaluation Project Name	Target Database Information
Migraled Schemas All schemas	Exception Notification Mode -	DB Information Input Type Input manually
Not Migrated Schemas 0	Taga ·	DB Name
		Target DB GeussDB Primary/Standby
		Target DB Version 8.0 Enterprise Edition
		Hast IP address
		Hast Part

The database migration scope, migration project details, and target database information are displayed.

Step 8 Confirm the information and click **Create**. After the creation is successful, click **OK**. to the **Object Migration** page.

D NOTE

After a migration project is created, the permission check is automatically triggered when the target database is not GaussDB. If the check is successful, the project status is **Ready**.

If the permission check fails, the project status is **Not ready**. You can manually **check permissions**.

----End

Parameters

Table 2-1	Parameter	description
-----------	-----------	-------------

Parameter	Description			
Project Name	The project name must be unique.			
	The name is unique. It can contain 5 to 50 characters and must start with a letter and end with a digit or letter. Only letters (case-insensitive), digits, underscores (_), and hyphens (-) are allowed.			
(Optional)	SMN Topic			
Exception Notification	Specifies whether to report exceptions through Simple Message Notification (SMN).			
Mode	To create an SMN topic, see Creating a Topic .			
	NOTE Follow-up Operation			
	After the topic is created, you can add a subscription . After the subscription has been confirmed, alarm notifications will be sent to the subscription endpoint via SMN.			
	Notification scenario:			
	When the account is frozen or unfrozen, SMN can be used to send notifications.			
Enterprise Project	If you have been associated with an enterprise project, select the target project from the Enterprise Project drop-down list.			
	You can also go to the project management console to create a project. For details about how to create a project, see <i>Enterprise Management User Guide</i> .			
Permission Check	If the target database type is not GaussDB, Skip Permission Check is displayed and is not selected by default. If Skip Permission Check is selected, the View Permission Check Report button is grayed out.			
	To create objects in the target database, you must have some database permissions, such as creating tables and functions. If you skip the permission check, the system does not check whether you have these permissions.			
	The migration may fail due to lack of permissions when SQL statements are converted on the target database.			
Evaluation Project	Select the evaluation project where a target database has confirmed.			
	• Target DB : The confirmed target database type is displayed. Each tenant can connect to a maximum of five target databases at the same time.			
	• Target DB Version : The confirmed target database version is displayed.			

Parameter	Description			
DB Connection Mode	If you select Public network , the source database will be connected using an EIP. Select Hostname or Host IP Address for Host Type and Set Host Port .			
	• If the target database network is restricted by the IP address whitelist, add the EIP to the target database network whitelist to ensure that UGO can connect to the target database.			
	 EIP in AP-Singapore: 110.238.109.54 			
	 EIP in LA-Santiago: 159.138.116.198 			
	• Host IP Address: Enter the IP address of the target database host.			
	 If the target database type is GaussDB Primary/Standby, you can enter only the IP address of the primary node or the IP addresses of the primary node and multiple standby nodes. Use commas (,) to separate the IP addresses. When you connect to the database, the system automatically selects the IP address of the primary node. 			
	 If the target database type is GaussDB Distributed, you can enter one or more CN IP addresses separated by commas (,). The first IP address is preferentially used to connect to the database. If the previous IP address is abnormal, the next IP address will be used to connect to the database. If the first IP address of the CN can be connected but the CN node is abnormal and cannot be written, the connection test is normal, but an error message is displayed during permission check and object migration. 			
	Host Name: Enter a host name.			
	 The host name cannot be empty. 			
	 You can enter multiple hostnames and use commas (,) to separate them. All hostnames can contain up to 1,024 characters. 			
	 A host name can contain a maximum of 253 characters and cannot contain the following special characters: !@# \$%^&*()+=[]{} \:;<>,?/ 			
	If you select VPC Endpoint for DB Connection Mode, you also need to set VPC Endpoint and Port Mapping.			
	• Click View VPC Endpoint to go to the VPC Endpoint management page and view the VPC endpoints.			
	• For details about how to configure VPC Endpoint, see Connecting to the Target Database Using VPC Endpoint.			
	If you select Auto assigned by instance , select a value from the Database Instance drop-down list.			
	• Click View DB Instance to go to the instance management page of the target database and view instance information.			

Parameter	Description			
	 Click View instances that cannot be selected. A dialog box is displayed, showing the unavailable instance names and reasons. NOTE Auto assigned by instance is available only to whitelisted users. To use this function, you need to submit a service ticket. To configure the whitelist permission, in the upper right corner of the management console, submit an application by choosing Service Tickets > Create Service Ticket. 			
DB Name	Name of the database.			
	The name can contain 2 to 128 characters and must start with a letter, digit, period (.), underscore (_), or hyphen (-). Only letters, digits, periods (.), underscores (_), hyphens (-), dollar signs (\$), and number signs (#) are allowed. The name can be enclosed in double quotation marks ("").			
Username	Username of the target database. It is recommended that the user has the administrator permissions.			
Password	Password for accessing the target database.			
Schemas to Migrate	• Select Select all : Select schemas to be collected by UGO from the source database.			
	• Deselect Select all : whether to reselect the schemas selected in the evaluation project.			
	By default, Select all is selected.			
SSL Type	• No SSL : SSL is disabled and there may be potential security risks.			
	• SSL No Auth : Transmission will be encrypted without authentication.			
	• One-way SSL : The target database will be authenticated and transmission will be encrypted.			
	 Truststore password: Enter the password of the truststore used to access the certificate. 			
	 Click Add File to upload the root certificate file of the target database. 			
	NOTE			
	• If you select One-way SSL , enter the correct uploaded file and entered password, which are private information of users. If the target database type is GaussDB or PostgreSQL, upload a PEM root certificate file. No password is required.			
	• Secure Socket Layer (SSL) provides a secure connection between the network and application layers. In mutual SSL authentication, an SSL connection between a client and a server is established only if they validate each other's identity using digital signatures. If SSL is disabled, your data may be at risk.			

Parameter	Description
(Optional) Tags	Use predefined tags in Tag Management Service (TMS). Predefined tags are visible to all service resources that support the tagging function. For details, see <i>Tag Management</i> <i>Service User Guide</i> .
	Enter a key and a value, and click Add .
	A maximum of 10 tags can be added. For details, see Managing Tags.

2.2 Database Migration and Verification

Scenarios

After the migration project is created, you need to start the migration project, select objects to be migrated, and configure the conversion solution based on the migration risk items. After the syntax conversion is started, UGO converts the SQL syntax of the source database to the syntax compatible with the target database. The syntax that fails to be converted can be manually corrected. After the modification is complete, migrate objects to the target database. You can view the migration progress and details to verify the migration result.

You can perform the following steps to migrate a database and verify the migration result:

- Step 1: Selecting Objects To Be Migrated
- Step 2: Setting Conversion Configuration Items
- Step 3: Starting Syntax Conversion
- Step 4: Correcting Objects That Failed to Be Converted
- Step 5: Verifying the Object Migration Result

Selecting Objects To Be Migrated

Step 1 Log in to the UGO console.

- **Step 2** In the navigation pane, choose **Schema Migration** > **Object Migration**.
- **Step 3** On the **Object Migration** page, locate the project that you want to migrate and click **Migrate** in the **Operation** column.

On the conversion plan page, the objects to be converted and their categories are displayed. You can search for objects by date or object name, or filter objects by schema, object status, or conversion status. For details, see **Viewing the Collection Result of a Source Database**.

Conversion Plan 2 Conversion Centle 3 Syn	ntax Conversion (Object Connection	5 Migration & Vertication					
User Password ③							
B 06 00(ects (778))	Select Migration Object Types Conver	Bpeched Objects Step Conversion Convert		All schemes v All object statuses v	All conversion statuses	Start Date — End Date 🔠 Enter an object name.	Q Q
 D Storage (620) 	🗌 🛩 Schema	Object Name	Object Type	Object Statum (3)	Conversion Status	Update Time	
(i) TABLE (400)	. 695	create_synonym_db	PROCEDURE	Normal	 Convert 	Sep 20, 2824 09 38 38 GMT+08 00	
 SCHEMA (5) WEW (146) 	aya	execute_prepared_stmt	PROCEDURE	Normal	 Convert 	Sep 20, 2824 09 38 38 GMT+08 00	
		format_bytes	FUNCTION	 Normal 	 Convert 	5ep 20, 2024 09 38 38 0MT+03 00	
FUNCTION (47) Processing and		edtact_schema_from_file_name	FUNCTION	Normal	 Convert 	Sep 20, 2824 09 38 38 GMT+08 00	
TRIOGER (1)	- 898	extract_table_from_file_name	FUNCTION	Normal	 Convert 	54p 20, 2824 09 38 38 CMT+08 00	
 D Management (54) 	. 99	format_path	FUNCTION	Normal	Convert	Sep 20, 2824 08 38 38 OMT+08 00	
GRANT (27) ROLE 00	0 00	format_statement	FUNCTION	 Normal 	Convert	Sep 20, 2824 09 38 38 GMT+08 00	
(i) USER (27)	. 191	host_summary_by_file_io	VEW	Normal	Convert	Sep 20, 2824 09 38 38 GMT+02 00	
	. 89	holt_summary	VIEW	 Normal 	 Convert 	54p 20, 2824 09 38 38 0MT+08 00	
		AA_PK0_REQ1748FN_88_YC88K2C8_WQ174	PROCEDURE	 Normal 	 Convert 	Sep 20, 2824 09 38 38 GMT+08 00	
	Total Records: 778					10	70 >

Figure 2-4 Configuring a conversion plan

- Select objects to be converted on the GUI.
 - All objects to be converted by default are displayed in the navigation pane. You can click Select Migration Object Types and quickly set Conversion Status of objects that are not migrated to Skip.
 - Click the check boxes next to the Schema column to select objects. Click
 Skip Conversion or Convert to determine whether to migrate the objects in batches. You can filter objects by name or status.
- Upload a specified object locally.

Click **Convert Specified Objects**, download the template, enter the objects to be converted in an Excel file, and upload the Excel file. For details, see **Uploading Objects**.

Step 4 (Optional) Set the GaussDB database data distribution mode.

- This function is supported when the source database type is an Oracle or MySQL and the target database type is GaussDB Distributed.
- You can set the data distribution mode for table objects. For details, see Distribution Mapping of Table Objects.
- **Step 5** If the object to be converted contains a user, you need to set a unified user password. Click **User Password** in the upper left corner. In the displayed dialog box, set the password.

Figure 2-5 Configuring USER password

User Password	×					
 1. Before converting the USER object type, you must set a password. This password applies to all USER objects created on the target database. After the migration, you must manually change the password. 2. You are advised to use SSL to connect. If SSL is not used, the password will be transferred as plain text as part of the database connection and any SQL statements involving a password and will be insecure. 	 Before converting the USER object type, you must set a password. This password applies to all USER objects created on the target database. After the migration, you must manually change the password. You are advised to use SSL to connect. If SSL is not used, the password will be transferred as plain text as part of the database connection and any SQL statements involving a password and will be insecure. 					
* New Password						
* Confirm Password						
Cancel Create Password						

If you want to convert the user object, you must set a password. The same password will be used for all USER object creation on the target database. After the migration, the individual user passwords must be changed manually. If you do not want to convert the object type USER, select the desired USER objects and click Skip Conversion. Then, the Conversion Status of the objects becomes Skip. To continue the conversion, select the desired objects and click Convert.

NOTE

If you ignore user migration, a message is displayed. You need to set **Current Configuration** to **Allow the object owner to execute scripts on the GaussDB database.** for item **User connection** in **Setting Conversion Configuration Items**. Otherwise, the migration may fail.

- You are advised to use SSL connection. If non-SSL connection is used, the password will be transmitted as plain text as part of the database connection and any SQL statements involving a password will be insecure.
- After the password is configured, it cannot be changed again until after the migration is complete.
- The password can consist of 8 to 32 characters and contain at least three types of the following characters: uppercase letters, lowercase letters, digits, and special characters (~!@#\$%^&*()-_=+\[{}];:,<.>/?). Spaces are not allowed. The password can contain up to three consecutive characters.

----End

Setting Conversion Configuration Items

Step 1 Click Next. The Conversion Config tab page is displayed.

Step 2 Set conversion configuration items using either of the following methods:

- By default, the default template is used. Click **Edit** in the **Operation** column of each conversion configuration item and set them based on the site requirements.
- If the maximum migration success rate is preferred, you can select **Max compatibility** from the **Baseline Template** drop-down list and fine-tune the template.

⊘ Converses Par 🕢 😨 Converses Carlog 🔄 🕽 Synda Conversos 👔 Ungelar S Institutor						
Configuration Tablespace Mapping						
A				×		
Feature Configuration						
Boseine Template Default value ^						
After importing co Default volue unation Max revenability	based on the current project requirements. The edjusted configuration does not affect the o	riginal templata.		×		
C. Search by item by denses						
iten	Affected Object Types	Configuration Status	Current Configuration	Operation		
Support for special character objectnemes case format.	Table./ndec./Package,Meterialized Vers/Function.Procedure,Trigger,User Defined	 Default value 	. If the object name contains special character, the object name would be conve \odot	tel		
Support for reserved keyword objectnames case format.	Table (ndec, Package, Materialized Vers Function, Procedure, Trigger, User Defined	 Default value 	The object names which are reserved keywords in the largeblo and is already $\dots \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ $	Eat		
Support for common object names case (non-keywords and without special chara	Schama, Table, Vew	 Default value 	Object name is stored as lowercase in the target database. $$	Eat		
Support for object level privileges	System	 Default value 	This config will raise the error. $$	Eat		
Support for system privilege	System	 Default value 	This config will threw the error for the system privileges which are not supported. $\textcircled{\baselinetwidth}$	Eat		
Support for grant Any privileges	System	 Default value 	throws an error. ①	Eat		
Support for system role	System	 Default value 	This config will retain the script as it is without logging any error. $\textcircled{\begin{tmatrix} \hline \end{tmatrix}}$	Eat		
Support for target character set	All Objects	 Default value 	This config will select UTF8 as characteriset for target db.	Eat		
Support for mismatch character set	All Objects	 Default value 	This config will retain the script without conversion. $$	Edit		
Support for source character set	All Objects	 Default value 	This config will select UTF8 as characterset for source db. $$	Eat		
Total Records: 64				11 v < 1 2 3 4 5 6 7 >		

Figure 2-6 Setting conversion configuration items

Step 3 (Optional) Click the Tablespace Mapping tab.

To map tablespaces, select required tablespaces of the source and target databases and click **Tablespace Mapping**.

The following migration flows support the tablespace mapping function.

- From Oracle to GaussDB
- From Oracle to PostgreSQL

----End

Starting Syntax Conversion

- Step 1 Click Next.
- **Step 2** Click **Start** to start the conversion.

Figure 2-7 Syntax conversion

Conversio	Conservato Fine 🕐 Conservato Config 1 State Conservato										
Syntax Conv	fat Onversion Conversion Harry										
A The sy	ntex will be converted again and all converted d	ata, including manually modified abje	icts, will be overwritten.								
0	Syntax conversion of Syntax of 15 object types converted.	completed								100% Start	Resurce Passe Time: Sep 18, 2024 14/20:05 GMT+06:00 Time: Sep 18, 2024 14/22:33 GMT+06:00
Dovriced	Reports										٩
	Object Type	Total Count	Skip	Conversion Successful	Conversion Failed	Ignored	Manual	Remaining	Success (%)		Operation
	Tetal	958	278	288	392	0	0	•		42.35%	
	DIRECTORY	1	0	1	0	•	0	•		100.00%	Details
	FUNCTION	50	45	2	2	•	0	•		50.00%	Details
	GRANT	6	0	6	0	•	0	•		100.00%	Details
	INDEX	39	0	37	2	0	0	0		94.87%	Details
	PACKAGE	66	61	5	0	0	٥	•		100.00%	Details
	PACKAGE_BODY	46	12	13	21	•	0			38.24%	Details
	PROCEDURE	155	142	10	3	0	0	0		76.92%	Details
	SEQUENCE	0	0	0	0	0	٥	•		100.00%	Details
	SYNONYM	1	0	1	0	•	0		-	100.00%	Details
	TABLE	400	0	132	356	•	0	•		27.05%	Details
	TRIGGER	14	54	0	0	0	٥	•		100.00%	Details
	TYPE	12	2	6	4	•	0			60.00%	Details
	TYPE_BODY	2	1	1	0	0	0	•		100.00%	Details
	USER	4	0	4	0	•	0	•		100.00%	Details
	VEW	66	0	62	4		0			93.94%	Details

- After the conversion is complete, the following information is displayed: object type, the number of total objects, the number of objects converted successfully, the number of objects that failed to be converted, conversion start time, and conversion end time.
- The migration progress is displayed in a progress bar and as a percentage.

MARNING

If you click **Start**, the syntax will be converted again and all converted data, including manually modified objects, will be overwritten. Exercise caution when performing this operation. To start the conversion, click **Start** and in the displayed dialog box, click **OK**.

- **Step 3** After the syntax conversion is complete, you can view the syntax conversion history and details. For details, see **Viewing the Syntax Conversion History**.
 - If the syntax conversion is complete, you need to modify the conversion plan. For details, see **Setting Conversion Configuration Items**.

• If syntax conversion fails, you need to manually modify the objects. For details, see **Correcting Objects That Failed to Be Converted**.

----End

Correcting Objects That Failed to Be Converted

Step 1 Click **Next** to go to the **Object Correction** page.

Figure 2-8 Object correction

(2) Converse Carlo (Carlos Carlos (Carlos (Car	
Bit Statemet Udda	
D To a Manusch and Tota Manusch and To	
B Baneye (3) C Commiss Statut: Faired X: Add Start	×Q
□ © 8500EVCE (?) □ > Schema Object Type Object Type Object Type	
□ (b) T468E (19) () U002 NY TUACTON PILOTON 0 Felded D Prodes Yee Date	
□ □ U001 ND_1545(_2EX4_3,_M200) MDEX ● Failed □ Prioring View Deals (3)	
C (B) NON-INVOLE (C) USS2 YOUR_ITABLE TABLE O Failed D Puedes (B)	
□ 0001 EMP_1_web3 TALE 0 Taled 0 Proteg Ver Deale ©	
□ 0001 N0_104_00 N001 N0_1040 N001 0 N001 N0_1040 N001 0 N000 0 N0000 0 N000 0 N0000 0 N000 0 N0000 0 N000 0 N000 0 N000 0 N000 0 N0000 0 N000 0 N0000 0 N000 0 N0000 0 N000 0 N000 0 N000 0 N0000 0 N0000 0 N0000 0 N0000 0 N0000 0 N0000 N0000 0 N0000 0 N0000 N0000 N000	
□ © © TROODER (1) □ 1000 ETE EDDTS OF DAVING TARE O Dear Province View Databan 0	
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De truction (2) U001 B#1_modH TABE ● Faled D Pending Viez Details (3)	
O MCXXX8 II O MCXX8 II O MCX8 II	
□ □ ■ □ ■	4 5 >

- Locate objects and click Skip Migration to ignore the objects that you do not want to verify.
- Batch update: You can click Bulk Statement Update to search for and modify objects with the similar issues in batches. For details, see Updating Statements in Batches.
- **Step 2** Locate an object and click **View Details** in the **Operation** column. You can view conversion error and modification suggestions.

Figure 2-9 Conversion errors on the object details page



NOTE

- You are advised to correct objects in the sequence of management, storage, code, and job objects.
- When you return to the object correction page and view details about the objects that failed to be migrated, migration errors are displayed.
- **Step 3** Modify the SQL statements of the objects that failed to be converted or migrated. Click **Save**. The modification record is generated,

- **Step 4** Click **Modification History** to view the modification history. Click the drop-down icon next to a historical ID to display the comparison result of SQL statements before and after the modification.
- **Step 5** Click **Rollback** to roll back the SQL statements to the status before the modification.

Fi	Figure 2-10 Modification history						
Modification History							
		History	Object Name	Split Object Name	Modification Time	Operation	
	\sim	2	BAS_DML_LOOKUP_PKG	BAS_DML_LOOKUP_PKG	May 14, 2024 15:14:	Rollback	
						Close	

----End

Verifying the Object Migration Result

Step 1 Click **Next**. The **Migration** tab page is displayed by default.

Figure 2-11 Migration

Conve	mion Plan 🕑 Conversion Cartig -	Syntax Conversion	Object Connection	Migration & Verification						
Migration	Migration History									
	Migration Succeeded							100% Myster W	ritcaten (Start) Piece Startied, Sieg 28, 2024 18:20:52 OMT+08 Ended: Sieg 28, 2024 18:21:29 OMT+08	2:00
61 Tot	114 al SQL Lines		1027 Read PL/SQL Rows			507 Migrated SQL Lines		93 Migrated Stored Procedure Lines		
Devel	load Reports									0
	Object Type	Total Count	Migration Succeeded	Migration Failed	Remaining	Ignored	Objects Not Migrated upon Conv	Success (%)	Operation	
	TOTAL	660	72	690	0	0	48	- 10.59%		
	DIRECTORY	4	0	1	0	D	0	0.00%	Defails	
	FUNCTION	4	2	0	0	0	2	50.00%	Details	
	GRANT	6	5	0	0	D	1	61.33%	Defails	
~	INDEX	39	0	32	0	0	7	0.00%	Details	
	PACKAGE	6	0	5	0	0	0	0.00%	Details	
	PACKAGE_BODY	34	0	33	0	D	1	0.00%	Defails	
	PROCEDURE	13	6	6	0	0	2	48.15%	Details	
	SEQUENCE	0	0	4	0	D	7	0.00%	Defails	
	SYNONYM	1	,	0	0	0	0	102.09%	Details	
	TABLE	400	3	455	0	D	19	0.51%	Details	
	TYPE	10	0	10	0	0	0	0.095	Details	
	TYPE_BODY	4	0	4	0	D	0	0.00%	Details	
	USER	4	0	4	0	0	0	0.02%	Details	

- Click Migration Verification to set the migration process.
- The detailed information about the migration project is displayed, including object types, total objects, objects that have been migrated, objects that failed to be migrated, and objects that have not been migrated. If objects that failed to be converted will not be migrated, **Objects Not Migrated upon Conversion Failure** is also displayed.
- Click **Details** in the **Operation** column to go to the **Object Correction** page and view the migration and syntax conversion details.
- **Step 2** Click **Start**. Objects start to be migrated to the target database.

If the migration is successful, you can log in to the target database to view the migrated objects. You can also perform **Step 3** to view the migrated objects.

If the migration fails, click **Details** next to a failed object and manually correct the object by following **Correcting Objects That Failed to Be Converted**.

Step 3 After the migration is complete, click **Migration History** to view the migration details.

Detailed information of the migrated projects is displayed in the descending order. The information includes the serial number, total count, migration succeed, migration failed. Click **Details** to view details.

- **Step 4** Click **Details** to view information such as object types, total number of objects, and migration result (successful or failed).
- Step 5 Locate an object type and click Details to view its details. The detailed information includes the schema, object name, object types, and migration status. You can search for an object by name or view details about each schema.

----End

$\mathbf{3}_{\mathsf{SQL}\,\mathsf{Audit}}$

SQL audit helps users detect SQL standardization, design rationality, and performance issues hidden in code at the development phase. More than 200 audit rules are preset for various SQL statements such as DML, DDL, and PL/SQL. You can adjust the risk level, threshold, and suggestion in a rule and create a custom audit template by combining multiple rules. GaussDB and MySQL databases can be audited. You can use a single statement, upload code files in batches (SQL statements are automatically extracted), or directly connect to the database to audit SQL statements. UGO also prevents inappropriate SQL statements from flowing into the production environment.

3.1 Creating a Data Source

Scenarios

You can perform unified data source management. Currently, this function is used only for SQL audit.

Prerequisites

The data source to be created must be connected successfully.

Procedure

- Step 1 Log in to the UGO console.
- Step 2 In the navigation pane, choose Data Source Management.
- Step 3 Click Create Data Source in the upper right corner.
- **Step 4** Configure parameters as needed.

After the basic information is configured, the **Test** button next to **Test Connection** is available.

* Name	
★ DB Type	GaussDB V
Network Type	Public network If access to the data network is controlled by an IP address whitelist add (100.95.124.221) to the whitelist to ansure that IIGO can connect to the tareet database
Connection Method	Service name Servi
* DB Name	
Host Type	Host IP address
* Host IP address	
* Host Port	
* Username	
* Password	
* Test Connection	Test

Figure 3-1 Creating a data source

Table 3-1 Parameter description

Parameter	Description
Name	Name displayed in the data source management list.
	The name must contain 5 to 50 characters, start with a letter, and end with a digit or letter. Only letters (case-insensitive), digits, underscores (_), and hyphens (-) are allowed.
DB Туре	Type of the source database to be configured. Only GaussDB and MySQL are supported.
Network	Public Network : An EIP is used to connect to a database.
Туре	If the database has an IP address whitelist, add the EIP to the whitelist to ensure that UGO can connect to the database.
Connection Method	Only the server name can be used for connection.
DB Name	Name of a database to be managed.
	Enter a string of 2 to 128 characters, including letters, digits, periods (.), underscores (_), hyphens (-), dollar signs (\$), and number signs (#). The value must start with a letter, digit, period (.), underscore (_), or hyphen (-) and can contain quotation marks (").
Host Type	Only the host IP address can be used.
Host IP	Host IP address, which can be an IPv4 or IPv6 address
Address	NOTE When DB Type is set to MySQL, IPv6 address can be used.

Parameter	Description
Host Port	Port of the database to be managed
Username	Username of the database to be managed.
	The value is a string of 2 to 128 characters, including letters, digits, underscores (_), hyphens (-), dollar signs (\$), and number signs (#). It must start with a letter, digit, period (.), underscore (_), or hyphen (-) and can be enclosed in double quotation marks.
Password	Password of the database to be managed.
	The password can contain up to 50 characters.

Step 5 Click **Test**. If the test is successful, **Connected** is displayed, and the **Create** button in the lower right corner is available.

If the test failed dut to network faults or insufficient permissions, an error is displayed. You cannot create a data source.

- **Step 6** Click **Create**. A message is displayed, indicating that the project is created.
- **Step 7** Click **OK** to go to the **Data Source Management** page. View the data source you created in the list.

You can search for a data source by data source ID, data source name, database name, database type, IP address, or port.

Q Search by Data Source ID by	Q. Search by Data Source ID by default						C®
Data Source ID	Name	DB Name	DB Type	IP Address	Port	Last Connected	Operation
212	test-syjhs	test_ysh	GaussDB			Apr 23, 2024 00:40:10 GMT+08:00	Test Connection Delete
572	Auto_db_audit_GaussDB_Cen	ugo	GaussDB			Apr 23, 2024 10:45:07 GMT+08:00	Test Connection Delete
573	Auto_db_audit_GaussDB_Dis_2	ugo	GaussDB			Apr 23, 2024 10:48:36 GMT+08:00	Test Connection Delete
574	Auto_db_audit_GaussDB_Cen	ugo	GaussDB			Apr 23, 2024 07:12:32 GMT+08:00	Test Connection Delete
575	Auto_db_audit_GaussDB_Dis_3	ugo	GaussDB			Apr 23, 2024 07:12:34 GMT+08:00	Test Connection Delete
576	Auto_db_audit_GaussDB_Cen	ugo	GaussDB			Apr 23, 2024 07:12:36 GMT+08:00	Test Connection Delete

----End

3.2 Creating a Rule Template

Scenarios

You can create rule templates based on different service scenarios.

Constraints

• Up to 1,000 rule templates can be created.

Procedure

Step 1 Log in to the UGO console.

- **Step 2** In the navigation pane, choose **SQL Audit** > **Rules**. The **Templates** page is displayed by default.
- **Step 3** Click **Create Template**. In the displayed dialog box, configure parameters as needed.

Create Template	e		×
★ Template Name	Enter a template name.		
Template Type	Baseline Template	Import Template	
* Baseline Template	GaussDB audit template	~	
	Applicable Database	GaussDB	
Description			
		0/100	
		Cancel	ОК

Figure 3-3 Creating a rule template

Table 3-2 Parameter description

Parameter	Description
Template Name	Name displayed in the rule template list.
	The name must contain 5 to 50 characters, start with a letter, digit, and end with a digit or letter. Only letters (case-insensitive), digits, underscores (_), and hyphens (-) are allowed.
Template Type	Baseline template and import template.
Import Template	Local file template to be imported, which must meet the following requirements:
	1. The file size cannot exceed 1 MB.
	2. The file name can contain only digits, letters, underscores (_), and hyphens (-).
	3. Maximum file name length: 240 characters
	4. The columns must be sorted according to the sequence in the template. TEXT data is recommended for each column to prevent deviation during data conversion.
	5. No blank line is allowed between two rows of data, or the data after the blank line will be invalid. The number of rows cannot exceed 200, or the data after 200th row will be invalid.
	NOTICE You are advised to modify rules in the exported Excel file template. For details, see Table 3-3. You are advised to modify the values in the Threshold, Risk Level, and Suggestion columns.

Parameter	Description
Baseline Template	You can select any existing template as the baseline template.
Description	Template description, which can contain up to 100 characters This parameter is optional.

Table 3-3 Example of file template

Rule Name	R ul e ID	Description	Applicable Database	Audited Object Type	Severity	Thresh old	Su gg es tio n
Do not use too many combi ned index fields.	10 05 5	The number of composite index fields cannot exceed the threshold. Audit object: CREATE INDEX	GaussDB	sqltext	Major	5	-

Step 4 Click OK.

The created template is displayed in the rule template list. Up to 1,000 custom templates can be created.

Figure 3-4 Rule template

Templates Rules						
Create Template						
Q Search by Template Name by default						C
Template ID	Template Name	Description	Туре	Applicable Database	Operation	
1	MySQL audit template	MySQL audit template	System template	MySQL	View Details Copy Export SQL	
2	GaussDB audit template	GaussDB audit template	System template	GaussDB	View Details Copy Export SQL	
3	GaussDB database audit template	GaussDB database audit template	System template	GaussDB	View Details Copy Export SQL	

----End

3.3 Creating an Audit Task

3.3.1 Creating a Text Audit Task

Scenarios

You want to check whether a SQL statement complies with specifications and affects performance.

Constraints

- Only four types of syntax for nested statements can be audited. For details, see **Table 3-4**.
- When WITH AS is used, only SELECT subqueries are supported.
- The table name and table alias must be different. The aliases of different tables must be different.
- Tables in the audit view cannot be audited.
- Database system tables and system views cannot be audited.
- MySQL statements containing number signs (#) cannot be audited.

Table 3-4 Supported nested statements

No.	SQL Statement
1	select id, (select <i>subquery</i>) as name from table;
2	select id from table where id in (select <i>subquery</i>);
3	select * from table1, (select);
4	with e as (select) select * from e;

Rule Constraints

- In all UPDATE and DELETE rules, multiple tables cannot be updated and deleted at a time.
- Multi-table UPDATE and DELETE operations are audited based on the rule Do not use a single UPDATE or DELETE statement to update or delete multiple tables.
- For rules In the PL/pgSQL, use uppercase for keywords and lowercase for non-keywords and In SQL statements, use uppercase for keywords and lowercase for non-keywords, you are not advised using object names as non-reserved keywords, or the audit may be inaccurate. For example, in SELECT ID FROM name, name is a non-reserved keyword.
- After the database system parameter enable_gpi_auto_update is modified, the rule Global indexes must be updated when partitions are swapped, merged, separated, cleared, or deleted in a partitioned table may not take effect. To clear sessions in the database, you can log in to the database. CLEAN CONNECTION TO ALL FORCE FOR DATABASE db_name;
- When object names are used as filters for querying system views, use lowercase object names. For details about supported system views, see Table 3-5.

• Exercise caution when deleting database objects and data. For supported SQL Syntax, see **Table 3-6**.

View Name	Schema	Object Name Column
adm_arguments	pg_catalog, sys	owner, object_name, package_name, argument_name
adm_audit_object	pg_catalog, sys	username, owner, obj_name, action_name
adm_audit_session	pg_catalog, sys	username, action_name
adm_audit_statement	pg_catalog, sys	username, obj_name, action_name
adm_col_comments	pg_catalog, sys	owner, table_name, column_name, schema
adm_col_privs	pg_catalog, sys	grantor, owner, grantee, table_schema, table_name, column_name, privilege
adm_coll_types	pg_catalog, sys	owner, type_name, elem_type_mod, elem_type_owner, elem_type_name
adm_constraints	pg_catalog, sys	owner, constraint_name, table_name, index_owner, index_name
adm_indexes	pg_catalog, sys	owner, index_name, table_name, table_owner, tablespace_name
adm_ind_columns	pg_catalog, sys	index_owner, index_name, table_name, table_owner, column_name
adm_objects	pg_catalog, sys	owner, object_name, subobject_name
adm_procedures	pg_catalog, sys	owner, object_name, procedure_name, impltypeowner, impltypename
adm_role_privs	pg_catalog, sys	grantee, granted_role
adm_tab_col_statistics	pg_catalog, sys	owner, table_name, column_name, schema
adm_roles	pg_catalog, sys	role

Table 3-5	View a	udit
-----------	--------	------

View Name	Schema	Object Name Column
adm_source	pg_catalog, sys	owner, name
adm_sys_privs	pg_catalog, sys	grantee, privilege
adm_tab_cols	pg_catalog, sys	owner, table_name, column_name, data_type_owner, schema, qualified_col_name
adm_tab_privs	pg_catalog, sys	grantee, owner, table_name, grantor, privilege
adm_tables	pg_catalog, sys	owner, table_name, tablespace_name
adm_tab_columns	pg_catalog, sys	owner, table_name, column_name, data_type_owner, schema
adm_tab_comments	pg_catalog, sys	owner, table_name, column_name, schema
adm_tab_statistics	pg_catalog, sys	owner, table_name
adm_triggers	pg_catalog, sys	owner, trigger_name, table_owner, table_name
adm_type_attrs	pg_catalog, sys	type_name, attr_name, attr_type_name, character_set_name
adm_types	pg_catalog, sys	owner, type_name
adm_users	pg_catalog, sys	username, default_tablespace, temporary_tablespace, default_collation
adm_views	pg_catalog, sys	owner, view_name
db_all_tables	pg_catalog, sys	owner, table_name, tablespace_name
db_arguments	pg_catalog, sys	owner, object_name, package_name, argument_name
db_col_comments	pg_catalog, sys	owner, table_name, column_name, schema
db_col_privs	pg_catalog, sys	grantor, owner, grantee, table_schema, table_name, column_name, privilege

View Name	Schema	Object Name Column
db_coll_types	pg_catalog, sys	owner, type_name, elem_type_mod, elem_type_owner, elem_type_name
db_constraints	pg_catalog, sys	owner, constraint_name, table_name, index_owner, index_name
db_indexes	pg_catalog, sys	owner, index_name, table_name, table_owner, tablespace_name
db_ind_columns	pg_catalog, sys	index_owner, index_name, table_name, table_owner, column_name
db_objects	pg_catalog, sys	owner, object_name, subobject_name
db_procedures	pg_catalog, sys	owner, object_name
db_tab_col_statistics	pg_catalog, sys	owner, table_name, column_name, schema
db_source	pg_catalog, sys	owner, name
db_tab_columns	pg_catalog, sys	owner, table_name, column_name, data_type_owner, schema
db_tab_comments	pg_catalog, sys	owner, table_name, schema
db_tables	pg_catalog, sys	owner, table_name, tablespace_name
db_triggers	pg_catalog, sys	trigger_name, table_owner, table_name
db_types	pg_catalog, sys	owner, type_name
db_users	pg_catalog, sys	username
db_views	pg_catalog, sys	owner, view_name
dict	pg_catalog, sys	table_name
dictionary	pg_catalog, sys	table_name
my_col_comments	pg_catalog, sys	owner, table_name, column_name, schema
my_col_privs	pg_catalog, sys	grantor, owner, grantee, table_schema, table_name, column_name, privilege

View Name	Schema	Object Name Column
my_coll_types	pg_catalog, sys	owner, type_name, elem_type_mod, elem_type_owner, elem_type_name
my_constraints	pg_catalog, sys	owner, constraint_name, table_name, index_owner, index_name
my_indexes	pg_catalog, sys	owner, index_name, table_name, table_owner, tablespace_name
my_ind_columns	pg_catalog, sys	index_owner, index_name, table_name, table_owner, column_name
my_objects	pg_catalog, sys	object_name, subobject_name
my_procedures	pg_catalog, sys	owner, object_name, procedure_name, impltypeowner, impltypename
my_role_privs	pg_catalog, sys	grantee, granted_role
my_tab_col_statistics	pg_catalog, sys	table_name, column_name, schema
my_source	pg_catalog, sys	owner, name
my_tab_columns	pg_catalog, sys	owner, table_name, column_name, data_type_owner, schema
my_tab_comments	pg_catalog, sys	owner, table_name, column_name, schema
my_tab_statistics	pg_catalog, sys	table_name
my_tables	pg_catalog, sys	owner, table_name, tablespace_name
my_triggers	pg_catalog, sys	owner, trigger_name, table_owner, table_name
my_type_attrs	pg_catalog, sys	type_name, attr_name, attr_type_name, character_set_name
my_types	pg_catalog, sys	type_name
my_views	pg_catalog, sys	owner, view_name

View Name	Schema	Object Name Column
pg_indexes	pg_catalog, sys	schemaname, tablename, indexname, tablespace
pg_roles	pg_catalog, sys	rolename
pg_tables	pg_catalog, sys	schemaname, tablename, tableowner, tablespace, tablecreator
pg_user	pg_catalog, sys	username, nodegroup
pg_views	pg_catalog, sys	schemaname, viewname, viewowner
column_privileges	information_sche ma, sys	grantor, grantee, table_catalog, table_schema, table_name, column_name
columns	information_sche ma, sys	table_catalog, table_schema, table_name, column_name
constraint_column_usage	information_sche ma, sys	table_catalog, table_schema, table_name, column_name, constraint_catalog, constraint_schema, constraint_name
constraint_table_usage	information_sche ma, sys	table_catalog, table_schema, table_name, constraint_catalog, constraint_schema, constraint_name
enabled_roles	information_sche ma, sys	role_name
schemata	information_sche ma, sys	catalog_name, schema_name, schema_owner, default_character_set_catal og, default_character_set_sche ma, default_character_set_nam e
table_constraints	information_sche ma, sys	constraint_catalog, constraint_schema, constraint_name, table_catalog, table_schema, table_name

View Name	Schema	Object Name Column
table_privileges	information_sche ma, sys	grantor, grantee, table_catalog, table_schema, table_name
tables	information_sche ma, sys	table_catalog, table_schema, table_name, self_referencing_column_n ame, user_defined_type_catalog, user_defined_type_schema, user_defined_type_name
triggers	information_sche ma, sys	trigger_catalog, trigger_schema, trigger_name, event_object_catalog, event_object_schema, event_object_table, action_reference_old_table, action_reference_new_tabl e
usage_privileges	information_sche ma, sys	grantor, grantee, object_catalog, object_schema, object_name
views	information_sche ma, sys	table_catalog, table_schema, table_name

DDL Type	SQL syntax
DROP	DROP TABLE, DROP TABLESPACE,
	DROP AGGREGATE, DROP AUDIT POLICY,
	DROP CAST, DROP DATABASE,
	DROP DATA SOURCE, DROP DIRECTORY,
	DROP EVENT, DROP FOREIGN TABLE,
	DROP GLOBAL CONFIGURATION, DROP GROUP,
	DROP MASKING POLICY, DROP MATERIALIZED VIEW,
	DROP MODEL, DROP OPERATOR,
	DROP OWNED, DROP PACKAGE,
	DROP PACKAGE BODY, DROP PROCEDURE,
	DROP RESOURCE LABEL, DROP RESOURCE POOL,
	DROP ROLE, DROP ROW LEVEL SECURITY POLICY,
	DROP RULE, DROP PUBLICATION,
	DROP SCHEMA, DROP SEQUENCE, DROP FUNCTION,
	DROP SERVER, DROP SUBSCRIPTION,
	DROP SYNONYM, DROP TEXT SEARCH CONFIGURATION,
	DROP TEXT SEARCH DICTIONARY, DROP TRIGGER,
	DROP TYPE, DROP USER, DROP USER MAPPING,
	DROP VIEW, DROP WEAK PASSWORD DICTIONARY
ALTER	ALTER DROP PARTITION, ALTER TRUNCATE PARTITION,
	ALTER DROP COLUMN, ALTER DROP CONSTRAINT,
	ALTER DROP FOREIGN TABLE, ALTER DROP AUDIT POLICY,
	ALTER DROP MASKING POLICY, ALTER DROP SERVER,
	ALTER DROP TEXT SEARCH CONFIGURATION,
	ALTER DROP USER MAPPING, ALTER DROP DATA SOURCE
TRUNCATE	TRUNCATE

Procedure

Step 1 Log in to the UGO console.

- **Step 2** In the navigation pane, choose **SQL Audit** > **Statement Audit**. The **SQL Text** page is displayed by default.
- **Step 3** Configure parameters as needed and view that the **Submit** button is highlighted.

Figure 3-5 Audited Text

SQL Text SQL from Files		
* Database Type	Seleci a DB type. v	
Data Source ③	Select a data source.	
* Rule Template	Select a rule temptate.	
* SQL Statement ⑦	Enter the SQL statements to be audited.	
	0102400 UTF-0	
	Submit	

 Table 3-7 Parameter description

Parameter	Description		
Database Type	Select a database type. Currently, only GaussDB and MySQL are supported.		
Data Source	Select a data source. Currently, only GaussDB and MySQL are supported.		
	This parameter is optional. If no data source is provided, the audit rules that depend on the data source are skipped by default.		
Schema	Select a schema. This parameter is optional and only available for GaussDB databases.		
	• If the SQL statement contains a schema name, use the schema in the SQL statement.		
	 If the SQL statement does not contain a schema name, the selected schema is used. 		
	 If the SQL statement does not contain a schema name and no schema is selected, use the public schema. 		
Rule	Select a template based on the selected database type.		
Template	You can set the template information by referring to Adding a Rule Template .		
SQL	Enter the SQL statement to be audited.		
Statement	• Text audit is supported only for a single statement. If there are multiple statements, only the first statement is audited.		
	• If a SQL object name is in uppercase and is not enclosed in double quotation marks, the system automatically converts the name to lowercase and then queries the corresponding table structure in the database.		

Step 4 Click **Submit**. The **View Details** dialog box is displayed, and a corresponding record is generated.

Figure 3-6 Viewing details

Basic Information Result × Analyze_error Failure Reason Ime:1, position:19, token. <eof> Database Type GaussDB Data Source 100.93.7.218.4000/test_ysh Rule Template GaussDB audit template</eof>
Result X Analyze_error Failure Reason line:1, position:19, token: <eof> Database Type GaussDB Data Source 100.93.7.218:4000/test_ysh Rule Template GaussDB audit template</eof>
Failure Reason line:1, position:19, token: <eof> Database Type GaussDB Data Source 100.93.7.218.4000/test_ysh Rule Template GaussDB audit template</eof>
Database Type GaussDB Data Source 100.93.7.218.4000/test_ysh Rule Template GaussDB audit template
Data Source 100.93.7.218.4000/test_ysh Rule Template GaussDB audit template
Rule Template GaussDB audit template
select * from table
SQL Statement
Violeted Duleo Tablo Cirusturo Llamothed Duleo Evolution Diese
Q Search by Rule Name by default

Click the template name next to **Rule Template** to view template information.

If the statement fails to be audited, the cause is displayed.

Failure causes (examples):

- line:1, position:14, token:table indicates the SQL statement contains table.
- **line:1, position:3, token:<EOF>** indicates the entered SQL statement is incomplete.

----End

3.3.2 Creating a File Audit Task

Scenarios

You want to check whether SQL statements in a file comply with specifications and affect performance.

Constraints

- Only four types of syntax for nested statements can be audited. For details, see **Table 3-4**.
- The table name and table alias must be different. The aliases of different tables must be different.
- Tables in a view cannot be audited.
- Database system tables and system views cannot be audited.
- MySQL statements containing number signs (#) cannot be audited.
- You cannot click **Retry** when the file is being or has been audited.
- If a system template is used, the audit results before and after a version upgrade will be inconsistent. You are advised to use a custom template.
- Up to 110 SQL audit tasks can be created, and up to 10 can be executed concurrently.

Procedure

- Step 1 Log in to the UGO console.
- Step 2 In the navigation pane, choose SQL Audit > Statement Audit. Click the SQL from Files tab.
- Step 3 Click Upload File.

Figure 3-7 Upload a file

-		
★ Database Type	Select a DB type.	~
Data Source 🕜	Select a data source.	~
* Rule Template	Select a rule template.	~
★ Upload Data File	Add File 🕜	
Description	Add the description of the data f	ile.
		0/100
		Canaal

Table 3-8 Parameter description

Paramet er	Description
Database Type	Select a database type. Currently, only GaussDB and MySQL are supported.
Data Source	Select a data source. Currently, only GaussDB and MySQL are supported.
	This parameter is optional. If no data source is provided, the audit rules that depend on the data source are skipped by default.

Upload File

 \times

Paramet er	Description
Schema	Select a schema. This parameter is optional and only available for GaussDB databases.
	• If the SQL statement contains a schema name, use the schema in the SQL statement.
	 If the SQL statement does not contain a schema name, the selected schema is used.
	 If the SQL statement does not contain a schema name and no schema is selected, use the public schema.
Rule Template	Select a template based on the selected database type. You can set the template information by referring to Adding a Rule Template.
Upload Data File	 Upload a SQL file that meets the following requirements: The SQL object name can contain only lowercase letters. If you enter an uppercase SQL object name, the system automatically converts it to lowercase letters. The file can contain only simple SQL statements, such as INSERT, ALTER, DELETE, SELECT operations, and cannot contain stored procedures, functions, triggers, packages, or anonymous blocks, which is regarded as one SQL statement for audit. Only .zip, .xml, .sql, .java, and .json files can be uploaded. The file name can contain only digits, letters, underscores (_), and hyphens (-). Maximum file name length: 240 characters Max. file size: 5 MB. Only XML, SQL, Java, and JSON files in the .zip package can be audited. Any other file types will be skipped automatically. Max. files: 10,000 The file name can contain only digits, letters, underscores (_), and hyphens (-). Maximum file name length: 240 characters
	 Files to be uploaded cannot contain sensitive data such as binary files, passwords, and keys.
Descripti on	(Optional) Enter a description, which contains up to 100 characters.

Step 4 Click **OK**. view the file task you created on the task list page.

Figure 3-8 Audit task list

Upload File								
Q. Search by File Name by defaul	1							Co
File Name	Status 🖯	Progress	Database Type	Source DB Information	Rule Template	Uploaded O	Operation	
sql_audit_namecheck_valid_00	 Audit completed 		MySQL	-	-	May 09, 2024 16:14:25 GMT+0	View Details Retry	/ More ~
sql_audit_namechack_valid_00	 Audit failed 		GaussDB	-	-	May 09, 2024 16:14:25 GMT+0	View Details Retry	y More ~
sql_audit_namecheck_valid_00	 Audit completed 		GaussDB	-	-	May 09, 2024 11:04:00 GMT+0	View Details Retry	y More ~
sql_audit_namecheck_valid_00	 Audit completed 		MySQL	-	-	May 09, 2024 11:03:59 GMT+0	View Details Retry	/ More ~
sql_audit_namecheck_valid_00	 Audit completed 		MySQL		-	May 09, 2024 10:51:21 GMT+0	View Details Retry	y More ~
sql_audit_namecheck_valid_00	O Audit completed		GaussDB		-	May 09, 2024 10:51:21 GMT+0	View Details Retry	More ~

The status can be one of the following:

- Pending: The SQL audit task is to be scheduled.
- **Collecting objects**: SQL statements scanned in the file.
- Auditing SQL statements: The file is being audited.
- Audit completed: The audit is complete only after all SQL statements in the file are audited.
- Audit failed: An exception occurred during the audit.

----End

3.3.3 Creating a Database Audit Task

Scenarios

You want to check whether database objects for audit meet specifications and affect performance

Prerequisites

A data source has been created and connected successfully.

Constraints

- The audited database objects can only be tables, views, sequences, indexes, functions, procedures, triggers, or packages.
- A maximum of 10,000 schemas can be audited at a time.
- During the database audit, do not delete database objects that are being audited, or audit results may be affected.
- If a system template is used, the audit results before and after a version upgrade will be inconsistent. You are advised to use a custom template.

Procedure

- Step 1 Log in to the UGO console.
- Step 2 In the navigation pane, choose SQL Audit > Database Audit.
- Step 3 Click Create Audit Task.

Figure 3-9 Creating a Database Audit Task

-

★ Task Name	Enter a task name.)
★ Database Type	Select a DB type.	~)
★ Data Source ⑦	Select a data source.	~	Create Data Sourc
★ Rule Template	Select a rule template.	~)
Description	Enter a task description.		
			0/100

Table 3-9	Parameter	description
-----------	-----------	-------------

Parameter	Description
Task Name	Enter a task name, which is mandatory. The value is a string of 5 to 50 characters, including letters, digits, underscores (_), and hyphens (-). It must start with a
Database Type	Select a database type. Only the GaussDB database is supported. This parameter is mandatory.
Data Source	Select a data source. Currently, only GaussDB is supported. This parameter is mandatory. If there is no available data source, click Create Data Source .
Schema	 Select a schema. This parameter is optional and only available for GaussDB databases. If this parameter is not specified, all schemas are audited by default. However, up to 10,000 schemas can be audited. If the parameter is specified, you can select up to 10,000 schemas.

Parameter	Description
Rule Template	Select a template based on the selected database type. You can set the template information by referring to Adding a Rule Template.
Description	Enter a task description, which contains up to 100 characters. This parameter is optional.

Step 4 Click **OK**. The task is displayed in the list.

Figure 3-10 Audit task list

Deale Just Taik										
C: Search by Task Name by delayal										
Task Name	Status 🕀	Progress	Database Type	Schema	Data Source	Rule Template	Created At 😣	Operation		
	4 Audit failed		GaussDB	abhi		GaussDB database audit template	Apr 23, 2024 10:46:07 GMT+08	View Details Retry More ~		
	 Audit completed 		GaussDB	finterval		GaussDB audit template	Apr 23, 2024 10:45:08 GMT+08	View Details Rolry More ~		

The task status can be:

- **Pending**: The database audit task is to be scheduled.
- **Collecting objects**: DDL statements in the schema of a specified database.
- Auditing SQL statements: The database is being audited.
- **Audit completed**: The database audit is complete only after all database objects are audited.
- **Audit failed**: An exception occurred during the audit.

----End