

Database and Application Migration UGO(UGO) 26.1.0

Service Overview

Issue 01
Date 2026-05-28



Copyright © Huawei Cloud Computing Technologies Co., Ltd. 2026. All rights reserved.

No part of this document may be reproduced or transmitted in any form or by any means without prior written consent of Huawei Cloud Computing Technologies Co., Ltd.

Trademarks and Permissions



HUAWEI and other Huawei trademarks are the property of Huawei Technologies Co., Ltd.

All other trademarks and trade names mentioned in this document are the property of their respective holders.

Notice

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

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

Contents

1 UGO Infographics.....	1
2 What Is UGO?.....	3
3 Functions.....	6
4 Highlights.....	7
5 Application Scenarios.....	8
6 Basic Concepts.....	9
7 Supported Database Versions.....	10
8 Constraints.....	17
9 Security.....	18
9.1 Compliance Description.....	18
10 Permission Management.....	19
10.1 Role/Policy-based Authorization.....	19
10.2 Identity Policy-based Authorization.....	23
11 Relationship Between UGO and Other Services.....	33

1 UGO Infographics

Database and Application Migration UGO

01 What is UGO?

Database and Application Migration UGO (UGO) is a professional cloud service for migrating heterogeneous database structures. It can automatically convert the DDL, DML and DCL statements of source databases into statements compatible with Huawei Cloud products such as GaussDB and RDS. UGO provides database evaluation, object migration, and automatic syntax conversion to help you evaluate the reconstruction workload in advance, improve the conversion rate, and minimize migration costs.

02 Product Advantages

Ease of Use
UGO provides you with a UI that lowers the requirements for technical skills. UGO performs database evaluation, object migration, and automatic syntax conversion so you can enjoy a one-stop migration experience.

Low Risks
UGO can identify possible reconstruction points in advance, evaluate the migration workload, and display the entire migration process on the UI.

High Syntax Conversion Rate
UGO delivers a spectacular syntax conversion rate for mainstream commercial databases. With hundreds of millions of samples in massive service scenarios, UGO is an industry leader.

High Security
User operations and sensitive information are protected and filtered to maximize user data and operational security. The entire progress is manageable, visible, and controllable.

03 Product Features

Source Database Analysis
Source database analysis uses massive service scenarios as samples and extracts key metrics of source databases for system analysis. This provides a basis for fast accurate analysis of application scenarios and user habits.

Target Database Compatibility Analysis
The compatibility of major object types are analyzed according to the source database profiling and syntax conversion rate for the target database. UGO delivers an excellent conversion rate based on hundreds of millions of samples.

Object type	Compatibility analysis	Success Rate
INDEX	✓	100%
TABLE	✓	99.98%
TYPE	✓	100%

(The values are for reference only.)

Target Database Selection and Specification Recommendation
Based on source database profiling, compatibility, performance, object complexity, and application scenarios, UGO intelligently recommends target databases with different specifications by priority and estimates costs of different databases.

Database Schema Migration
After evaluating the source database, UGO allows you to filter the objects to be migrated, and then verifies and migrates the objects. Failed objects are modified and the process is repeated until all objects pass.

2 What Is UGO?

Database and Application Migration UGO, referred to as UGO, is a professional cloud service focused on heterogeneous database schema migration. It can automatically convert the DDL, DML and DCL statements in source databases into SQL statements compatible with Huawei Cloud databases such as GaussDB and RDS. With the functions of database evaluation, object migration, and automatic syntax conversion, UGO can help you evaluate your reconstruction workload in advance, improve the conversion rate, and minimize the costs of database migration.

Functions

Table 2-1 Functions

Function	Description	Reference
Database evaluation	UGO collects basic information 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.	Evaluation Project
Object 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.	Migration Project

Function	Description	Reference
SQL 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.	SQL Audit

Billing

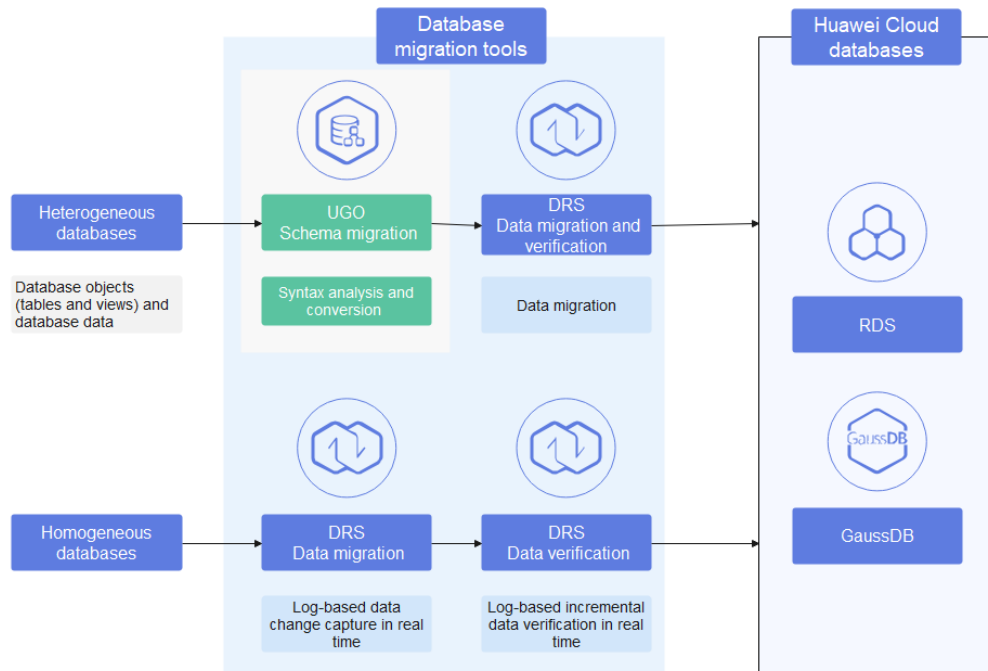
UGO is available for commercial use and is free for all users.

Solution

In heterogeneous database migration, UGO is used for schema migration and syntax conversion and [Data Replication Service \(DRS\)](#) for online data migration. UGO and DRS form a complete end-to-end heterogeneous database migration solution, helping you migrate data from mainstream commercial databases to Huawei Cloud databases easily and smoothly.

You can use UGO and DRS to migrate heterogeneous databases with complex stored procedures and functions to Huawei Cloud.

Figure 2-1 Database migration solution



3 Functions

Source Database Profiling

UGO efficiently collects database metadata such as various database object types and abstracts various types of information from them. This provides a sufficient data basis for accurate and quick analysis of important information such as application scenarios and user operation habits of the source database.

Target Database Compatibility Analysis

UGO uses a source database profile as the input to analyze the syntax compatibility of core database object types based on the selected destination database type. UGO analysis results include native compatibility, conversion compatibility, partial compatibility, and incompatibility. It then classifies and collects the analyses, lists the most incompatible syntax points, and provides reconstruction suggestions.

Workload Evaluation

UGO has incorporated extensive experience in migration and reconstruction through numerous real-world user service scenarios. It evaluates migration workloads based on factors such as the amount of code involved, the conversion rate, and how hard it will be to reconstruct incompatible features.

Database Schema Migration

UGO maximizes semantic equivalence for SQL syntaxes in source and target databases and then applies the converted SQL statements to the target database. Objects that are incompatible with the syntax and cannot be converted are marked as failed and a failure cause is provided. Manual correction is supported too. If needed, you can manually modify objects on UGO and then apply those modified statements to the target database in one-click.

4 Highlights

Easy to Use

The entire process of one-stop migration of heterogeneous databases is visible to you. You can migrate schemas from a source database to a target database just as prompted on the GUI even unfamiliar with database syntax.

Low Risk

The metadata of the source database is used to generate a source database profile that gives you a clear and complete understanding of the database you are about to migrate. A syntax compatibility report is generated based on the target database. Warnings are provided for potentially incompatible or only partially compatible syntax points, so you can identify migration reconstruction points in advance and evaluate the reconstruction workload. These reports help you visualize and quantify the process.

Low Cost

Automatic database object collection and syntax conversion allow you to migrate compatible objects in one-click, minimizing the workforce required for syntax reconstruction. In addition, error tracing and locating capabilities are provided for objects that fail to be converted or migrated, helping you quickly identify the root cause.

High Conversion Rate

Hundreds of millions of SQL statement conversions have verified the knowledge base of syntax differences among tens of thousands of databases. Additionally, implementing highly automatic conversion from mainstream databases to GaussDB is possible through the use of various conversion configuration parameters.

High Security

User operations and sensitive information are protected to maximize user data and operation security. The entire progress is manageable, visible, and controllable.

5 Application Scenarios

Financial/Internet Industry

UGO is suitable for migrating bank's core transaction services and Internet transaction services from traditional commercial databases to cloud databases.

Advantages:

- High syntax conversion rate
UGO supports automated syntax conversion from mainstream commercial databases to cloud databases. By training hundreds of millions of code samples in massive service scenarios, the syntax conversion rate of UGO reaches the excellence level in the industry, greatly reducing migration costs and improving efficiency.
- Exception locating and reconstruction suggestions
UGO automatically locates objects that fail to convert and analyzes the root causes, and provides manual reconstruction suggestions for syntax that cannot be adapted to heterogeneous databases based on the DBA knowledge base.

Government/Large Enterprises

UGO is suitable for migrating operating businesses and operational businesses of government organizations and enterprises. Government organizations and enterprises have complex scenarios. During the migration from traditional commercial databases to cloud databases, they demand solutions that best suit their needs and businesses.

Advantages:

- Target database recommendation
Target database type and specifications are recommended based on the source database service running scenarios. This helps resolve the difficulties in database selection.
- Migration verification
All migrated objects are automatically replayed in the target database for reconstruction verification, ensuring that the objects in the source database are equivalent to those in the target database.

6 Basic Concepts

Source Database

Source database is the database to be migrated.

Target Database

Target database is the database that receives the data migrated from the source database. It can be a Huawei Cloud GaussDB or RDS database.

Compatibility Analysis

The entire syntax tree of the source database is analyzed, so you can learn what differences there are in the syntaxes of the source and target databases. You can learn how compatible the two databases are and what the expected migration success rate will be for the objects migrated.

Database Evaluation

Database evaluation includes a syntax compatibility analysis, target database recommendation, syntax reconstruction workload evaluation, and migration risk identification for the object collection of the source database. The database evaluation allows you to identify how feasible the migration will be and what risks may be involved.

Object Migration

The database objects (tables, indexes, views, stored procedures, and functions) are converted to match the syntax of the target database. These converted objects are then added to the target database.

Source Database Profiling

The metadata of the source database is extracted and analyzed in multiple ways, such as the number of objects, type distribution, and complexity, to abstract the database information. This provides data basis for further accurate and quick analysis of important information, such as the application scenarios and user operation habits of the source database.

7 Supported Database Versions

Constraints

- Currently, some source and target databases can be used only by trustlisted users. To use them, you need to submit a service ticket. To configure the trustlist permission, in the upper right corner of the console, submit an application by choosing [Service Tickets > Create Service Ticket](#).
- If the target database is GaussDB, you are advised to use its compatibility mode based on the source database type. For details, see [How Do I Create GaussDB Databases Compatible with Source Databases?](#)

Supported Source Database Types and Versions

[Table 7-1](#) lists source database types and versions supported by UGO.

Table 7-1 Source database types and versions

Source DB Engine	Source DB Version
Oracle	10g, 11g, 12c, 18c, 19c, and 21c
MySQL	5.5, 5.6, 5.7, and 8.0
PostgreSQL	10, 11, 12, 13, 14, and 15
GoldenDB	-
Microsoft SQL Server	2012, 2014, 2016, 2017, 2019, and 2022
MariaDB	10.6
openGauss	1.0, 2.0, 3.0, 4.0, 5.0, 6.0, and 7.0

NOTE

Source GoldenDB, MariaDB, and openGauss databases are only available to whitelisted users.

Evaluable Database Middleware

Table 7-2 lists the database middleware and versions supported by UGO.

Table 7-2 Supported database middleware and versions

Source Database Middleware	Source Database Middleware Version
DDM	-

Supported Data Flows and Target Database Versions

Table 7-3 lists data flows supported by UGO and target database types and versions.

Table 7-3 Supported data flows and target database types and versions

Source DB Engine	Target DB Type and Version
Oracle	RDS for MySQL 5.7
	RDS for PostgreSQL 11, 12, 13, and 14
	TaurusDB
	GaussDB Centralized V2.0 (A-compatible) 2.7 Enterprise Edition, 3.1 Enterprise Edition, 3.2 Enterprise Edition, 3.3 Enterprise Edition, 8.0 Enterprise Edition, 8.100 Enterprise Edition, 8.200 Enterprise Edition, 9.0 Enterprise Edition, 9.1 Enterprise Edition, and 10.0 Enterprise Edition
	GaussDB Centralized V2.0 (A-compatible and multi-primary) 9.1 Enterprise Edition and 10.0 Enterprise Edition
GaussDB Distributed V2.0 (Oracle-compatible) 2.7 Enterprise Edition, 3.2 Enterprise Edition, 3.3 Enterprise Edition, 8.0 Enterprise Edition, 8.100 Enterprise Edition, 8.200 Enterprise Edition, 9.0 Enterprise Edition, 9.1 Enterprise Edition, and 10.0 Enterprise Edition	
GaussDB Distributed V2.0 (A-compatible and multi-primary) 9.1 Enterprise Edition and 10.0 Enterprise Edition	

Source DB Engine	Target DB Type and Version
MySQL	GaussDB Centralized V2.0 (B-compatible) 2.7 Enterprise Edition, 3.1 Enterprise Edition, 3.2 Enterprise Edition, 8.0 Enterprise Edition, 8.100 Enterprise Edition, 8.200 Enterprise Edition, 9.0 Enterprise Edition, 9.1 Enterprise Edition, and 10.0 Enterprise Edition
	GaussDB Centralized V2.0 (M-compatible) 8.100 Enterprise Edition, 8.200 Enterprise Edition, 9.0 Enterprise Edition, 9.1 Enterprise Edition, and 10.0 Enterprise Edition
	GaussDB Distributed V2.0 (MySQL-compatible) 2.7 Enterprise Edition, 3.2 Enterprise Edition, 8.0 Enterprise Edition, 8.100 Enterprise Edition, 8.200 Enterprise Edition, 9.0 Enterprise Edition, 9.1 Enterprise Edition, and 10.0 Enterprise Edition
PostgreSQL	GaussDB Centralized V2.0 (A-compatible) 3.1 Enterprise Edition, 3.2 Enterprise Edition, 8.0 Enterprise Edition, 8.100 Enterprise Edition, 8.200 Enterprise Edition, and 9.0 Enterprise Edition
	GaussDB Distributed V2.0 (Oracle-compatible) 3.2 Enterprise Edition, 8.0 Enterprise Edition, 8.100 Enterprise Edition, 8.200 Enterprise Edition, and 9.0 Enterprise Edition
GoldenDB	GaussDB Centralized V2.0 (B-compatible) 8.0 Enterprise Edition and 8.100 Enterprise Edition
	GaussDB Centralized V2.0 (M-compatible) 8.200 Enterprise Edition and 9.0 Enterprise Edition
	GaussDB Distributed V2.0 (MySQL-compatible) 8.0 Enterprise Edition and 8.100 Enterprise Edition

Source DB Engine	Target DB Type and Version
Microsoft SQL Server	GaussDB Centralized V2.0 (A-compatible) 3.1 Enterprise Edition, 3.2 Enterprise Edition, 8.0 Enterprise Edition, 8.100 Enterprise Edition, 8.200 Enterprise Edition, 9.0 Enterprise Edition, 9.1 Enterprise Edition, and 10.0 Enterprise Edition GaussDB Centralized V2.0 (A-compatible and multi-primary) 9.1 Enterprise Edition and 10.0 Enterprise Edition
	GaussDB Distributed V2.0 (Oracle-compatible) 3.2 Enterprise Edition, 8.0 Enterprise Edition, 8.100 Enterprise Edition, 8.200 Enterprise Edition, 9.0 Enterprise Edition, 9.1 Enterprise Edition, and 10.0 Enterprise Edition GaussDB Distributed V2.0 (A-compatible and multi-primary) 9.1 Enterprise Edition and 10.0 Enterprise Edition
	TaurusDB
	RDS for PostgreSQL 11, 12, 13, 14, and 15
	TaurusDB for PostgreSQL 16.4
MariaDB	GaussDB Centralized V2.0 (A-compatible) 9.0 Enterprise Edition
openGauss	GaussDB Centralized V2.0 (A-compatible) 8.0 Enterprise Edition, 8.100 Enterprise Edition, 8.200 Enterprise Edition, and 9.0 Enterprise Edition
	GaussDB Distributed V2.0 (Oracle-compatible) 8.0 Enterprise Edition, 8.100 Enterprise Edition, 8.200 Enterprise Edition, and 9.0 Enterprise Edition
DDM	GaussDB Distributed V2.0 (MySQL-compatible) 8.200 Enterprise Edition, 9.0 Enterprise Edition, 9.1 Enterprise Edition, and 10.0 Enterprise Edition

 **NOTE**

- The target GaussDB instance V2.0-10.0 Enterprise Edition is only available to whitelisted users.
- The target GaussDB instance V2.0-9.1 Enterprise Edition is only available to whitelisted users.
- The target GaussDB instance V2.0-9.0 Enterprise Edition is only available to whitelisted users.
- When GaussDB is used as the destination database, its versions earlier than V2.0-2.7 are not displayed on UGO. If GaussDB V2.0-2.1 or V2.0-2.2 Enterprise Edition is used, select V2.0-2.7 Enterprise Edition for migration. Instances of GaussDB in versions earlier than V2.0-2.1 cannot be migrated by UGO, so you need to upgrade the version.

No Collection from Source Databases

Table 7-4 No collection from source database objects

Source DB Engine	Object Type	Not Collected by UGO
Oracle	Schema	'APEX_050000', 'AUDSYS', 'ADAMS', 'ANONYMOUS', 'AURORA\$ORB\$UNAUTHENTICATED', 'AWR_STAGE', 'APEX_030200', 'APEX_040200', 'APEX_PUBLIC_USER', 'APPQOSSYS', 'BLAKE', 'CLARK', 'CSMIG', 'CTXSYS', 'DBSNMP', 'DIP', 'DMSYS', 'DSSYS', 'DEMO', 'DVSYS', 'DVF', 'DBSFUSER', 'EXFSYS', 'FLOWS_FILES', 'GGSYS', 'GSMADMIN_INTERNAL', 'GSMCATUSER', 'GSMUSER', 'JONES', 'LBACSYS', 'MDDATA', 'MDSYS', 'MGMT_VIEW', 'OLAPSYS', 'ORACLE_OCM', 'ORDDATA', 'ORDPLUGINS', 'ORDSYS', 'OUTLN', 'OWBSYS', 'OWBSYS_AUDIT', 'OJVMSYS', 'PERFSTAT', 'REMOTE_SCHEDULER_AGENT', 'SI_INFORMTN_SCHEMA', 'SPATIAL_CSW_ADMIN_USR', 'SPATIAL_WFS_ADMIN_USR', 'SYS', 'SYSMAN', 'SPATIAL_CSW_ADMIN_USR', 'SYSBACKUP', 'SYSKM', 'SYSDG', 'SYSRAC', 'SYS\$UMF', 'SYSTEM', 'TRACESVR', 'TSMYSYS', 'WMSYS', 'XDB', 'XS\$NULL', 'GSMROOTUSER'

Source DB Engine	Object Type	Not Collected by UGO
	Table	<ul style="list-style-type: none"> • Tables generated by the system, for example, SYS_EXPORT_SCHEMA_% • System objects whose names start with SYS_PLSQL • Deleted objects whose names start with BIN\$ • Tables that are automatically generated by data pump jobs and recorded in the DBA_DATAPUMP_JOBS or USER_DATAPUMP_JOBS view
	JOB	<ul style="list-style-type: none"> • System job objects whose names start with DBMS_JOB\$_
	Index	Indexes generated by primary keys and unique constraints
MySQL	Schema	'INFORMATION_SCHEMA', 'MYSQL', 'PERFORMANCE_SCHEMA', 'SYS'
	Event	Event objects
PostgreSQL	Schema	information_schema and a system schema prefixed with pg_ , for example, pg_catalog , pg_toast , or pg_temp_1
	Grant	Table GRANT privileges
Microsoft SQL Server	Schema	'GUEST', 'INFORMATION_SCHEMA', 'SYS', 'DB_OWNER', 'DB_ACCESSADMIN', 'DB_SECURITYADMIN', 'DB_DDLADMIN', 'DB_BACKUPOPERATOR', 'DB_DATAREADER', 'DB_DATAWRITER', 'DB_DENYDATAREADER', 'DB_DENYDATAWRITER'
	Table	<ul style="list-style-type: none"> • Partitioned tables and file groups • Encrypted columns with the ENCRYPTED WITH clause • Computed columns with the AS clause • Sparse columns • COLLATE character sets specified in columns • GENERATED ALWAYS
	CLR	<ul style="list-style-type: none"> • CLR functions • CLR stored procedures • CLR triggers • CLR user-defined types
	XML Schema COLLECTION	XML schema collection

Source DB Engine	Object Type	Not Collected by UGO
	Trigger	<ul style="list-style-type: none"> • Database triggers • Server triggers
	Index	<ul style="list-style-type: none"> • JSON indexes • XML indexes • Spatial indexes • Full-text indexes • Ordering of common index columns • INCLUDE of common index columns • WHERE of common index columns
Maria DB	Schema	'INFORMATION_SCHEMA', 'MYSQL', 'PERFORMANCE_SCHEMA', 'SYS'
	Event	Event objects
open Gauss	Schema	'blockchain', 'coverage', 'cstore', 'db4ai', 'dbe_perf', 'dbe_pldebugger', 'dbe_pldeveloper', 'dbe_sql_util', 'information_schema', 'pg_catalog', 'pg_toast', 'pkg_service', 'snapshot', 'sqladvisor'

8 Constraints

Table 8-1 lists the constraints for UGO.

Table 8-1 Functions and constraints

Function	Constraints
Object collection scope	Only database objects related to user services are collected. For details, see Which Schemas in Source Databases Are Ignored for Migration? in <i>Database and Application Migration UGO (UGO) Usage Guide</i> .
Impact on the source database	UGO occupies some database session connections and source database resources during object collection. To prevent UGO from affecting services of the source database, you are advised to export objects from the source database to the test database. UGO can then connect to a test database for collection, evaluation, and conversion. If this type of data collection is necessary, perform it during off-peak hours.
No incremental data migration performed	UGO converts database schemas based on the collected data. Any schema changes after the data is collected will not be migrated. After the migration, the changes must be synchronized between the source and target databases, or, the changed functions will be affected.
Migration and verification	UGO is used to reduce costs and improve migration efficiency. After database objects are migrated, strict tests must be performed to ensure that the functions and performance of the migrated objects on the target database meet service requirements. Otherwise, the target database cannot be used to replace the source database.

9 Security

9.1 Compliance Description

Data Compliance

UGO needs to access your data, including database connections and schema information.

1. Connection information includes the database IP address, port number, username, and password, and SSL certificate and password.
2. UGO only accesses and obtains required schema information about the source database, which is displayed on the console. Table data in the source database is not accessed.

There are a wide range of security measures, such as authentication, encrypted storage, and internal data isolation, to ensure data security. After you delete related projects after the migration, UGO will delete data related to the projects.

Service Compliance

You understand and agree that your use of this service complies with laws and regulations, including but not limited to legal compliance requirements for data content, data transfer, and cross-border data transfer. UGO only provides a standard service when requested and is not responsible for the legal compliance of your use. If you use the services illegally or engage in illegal actions using the services, you shall bear all consequences arising therefrom.

10 Permission Management

If you need to assign different permissions to employees in your enterprise to access your UGO resources, IAM is a good choice for fine-grained permissions management. IAM provides identity authentication, permissions management, and access control, helping you securely manage access to your Huawei Cloud resources.

With IAM, you can use your Huawei Cloud account to create IAM users, and assign permissions to the users to control their access to specific resources. For example, you can grant software developers in your enterprise permissions to use UGO resources but not permissions needed to delete them or perform any high-risk operations. To achieve this result, you can create IAM users for the software developers and grant them only the permissions required for using UGO resources.

If your Huawei Cloud account does not need individual IAM users for permissions management, you may skip over this section.

IAM can be used for free. You pay only for the resources in your account. For more information about IAM, see [What Is IAM?](#)

10.1 Role/Policy-based Authorization

New IAM users do not have any permissions assigned by default. You need to first add them to one or more groups and then attach policies or roles to these groups. The users then inherit permissions from the groups and can perform specified operations on cloud services.

UGO is a project-level service deployed in specific physical regions. To assign UGO permissions to a user group, select a project (ap-southeast-3) in a specific region (AP-Singapore) to apply the permission changes. If all projects are selected, the permissions will take effect for the user group in all region-specific projects. When accessing UGO, you need to switch to the authorized region.

You can grant users permissions by using roles and policies.

- **Roles:** A type of coarse-grained authorization system that defines permissions related to users responsibilities. Only a limited number of service-level roles are available for authorization. Cloud services depend on each other. When granting permissions using roles, you also need to assign other roles on which

the permissions depend. Roles are not ideal for fine-grained authorization and secure access control.

- Policies: A type of fine-grained authorization system that defines permissions required to perform operations on specific cloud resources under certain conditions. Policies are more flexible than roles, and they can ensure more secure access control.

Table 10-1 and **Table 10-2** list all built-in roles and policies of UGO.

Table 10-1 UGO built-in roles

System-defined Role	Description	Supported
Tenant Administrator	Tenant admin permission, which can be used to access and perform operations on resources that can be accessed by tenants of all cloud services except IAM.	Yes
Tenant Guest	Tenant read-only permission, which can be used to query all objects of tenants except IAM.	Yes

Table 10-2 System-defined permissions of UGO

Policy Name	Description	Supported
UGO FullAccess	All permissions	Mandatory
UGO ReadOnlyAccess	Read-only permissions	Mandatory
UGO CommonOperations	SQL conversion permission	Optional

Table 10-3 lists the common operations supported by each system-defined policy of UGO. Select policies as needed.

Table 10-3 Common operations and system-defined permissions

Operation	UGO FullAccess	UGO ReadOnlyAccess	UGO CommonOperations
Creating a project	√	x	x
Querying a tag	√	√	x

Operation	UGO FullAccess	UGO ReadOnlyAccess	UGO CommonOperations
Querying quotas	√	√	x
Obtaining the project list	√	√	x
Deleting a project	√	x	x
Starting a migration project	√	x	x
Querying project details	√	√	x
Converting SQL statements	√	x	√

Table 10-4 lists common UGO operations and corresponding actions. You can customize permission policies based on this table.

Table 10-4 Common operations and supported actions

Permission	Action	Category
Evaluation project - Obtaining the evaluation project list	ugo:evaluationJob:list	ReadOnly
Migration project - Obtaining the migration project list	ugo:migrationJob:list	ReadOnly
Querying a tag	ugo:tag:getTags	ReadOnly
Adding, modifying, or deleting a tag	ugo:tag:operateTags	ReadWrite
Querying quotas	ugo:jobs:getQuotas	ReadOnly
Public - Querying project details	ugo:jobs:getDetails	ReadOnly
Evaluation project - Testing the connectivity of the source database	ugo:evaluationJob:testConnection	ReadWrite
Evaluation project - Testing the network stability of the source database	ugo:evaluationJob:testNetworkConnection	ReadWrite

Permission	Action	Category
Evaluation project - Pre-checking an evaluation project	ugo:evaluationJob:preCheck	ReadWrite
Evaluation project - Creating an evaluation project	ugo:evaluationJob:create	ReadWrite
Evaluation project - Stopping evaluation	ugo:evaluationJob:stopEvalProject	ReadWrite
Evaluation project - Resuming evaluation	ugo:evaluationJob:resumeEvalProject	ReadWrite
Evaluation project - Re-evaluation	ugo:evaluationJob:reanalyze	ReadWrite
Evaluation project - Differentiated analysis	ugo:evaluationJob:collectDiffAnalysis	ReadWrite
Evaluation project - Incremental evaluation	ugo:evaluationJob:startDeltaEvaluation	ReadWrite
Evaluation project - Confirming the target database type	ugo:evaluationJob:updateEvalProject	ReadWrite
Evaluation project - Re-selecting and evaluating objects	ugo:evaluationJob:analyzeType	ReadWrite
Evaluation project - Editing SQL statements	ugo:evaluationJob:saveSQL	ReadWrite
Evaluation project - Deleting an evaluation project	ugo:evaluationJob:delete	ReadWrite
Migration project - Testing the connectivity of the target database	ugo:migrationJob:testConnection	ReadWrite
Migration project - Creating a migration project	ugo:migrationJob:create	ReadWrite
Migration project - Conversion plan - Skipping conversion/Canceling the skip	ugo:migrationJob:skipObjects	ReadWrite
Migration project - Conversion plan - Conversion configuration	ugo:migrationJob:updateConfig	ReadWrite
Migration project - Conversion plan - Application configuration	ugo:migrationJob:updateCategory	ReadWrite

Permission	Action	Category
Migration project - Conversion plan - Setting the user password	ugo:migrationJob:setPassword	ReadWrite
Migration project - Conversion plan - Tablespace mapping	ugo:migrationJob:updateTableSpaceMapping	ReadWrite
Migration project - Syntax conversion - Start/Resume	ugo:migrationJob:startConvert	ReadWrite
Migration project - Syntax conversion - Pause	ugo:migrationJob:stopConvert	ReadWrite
Migration project - Object correction - Update status	ugo:migrationJob:updateFailedStatus	ReadWrite
Migration project - Object correction - Skipping migration/Canceling the skip	ugo:migrationJob:skipVerification	ReadWrite
Migration project - Object correction - Re-conversion	ugo:migrationJob:reconvert	ReadWrite
Migration project - Object correction - Batch update - Replacement	ugo:migrationJob:updateBulk	ReadWrite
Migration project - Object correction - Comparing, ignoring, and saving SQL modifications	ugo:migrationJob:updateSQL	ReadWrite
Migration project - Migration result verification - Start	ugo:migrationJob:startVerify	ReadWrite
Migration project - Migration result verification - Stop	ugo:migrationJob:stopVerify	ReadWrite
Migration project - Deleting a migration project	ugo:migrationJob:delete	ReadWrite
SQL conversion	ugo:sqlStatement:convert	ReadWrite

10.2 Identity Policy-based Authorization

UGO supports identity policy-based authorization. [Table 10-5](#) lists all the system-defined identity policies for UGO. System-defined policies in identity policy-based authorization are not interoperable with those in role/policy-based authorization.

Table 10-5 System-defined identity policies

Policy Name	Description	Supported
UGOFullAccessPolicy	All permissions	Mandatory
UGOReadOnlyPolicy	Read-only permission	Mandatory
UGOCommonOperationsPolicy	SQL translation permission	Optional

Table 10-6 lists the common operations supported by each system-defined identity policy of UGO. You can select proper system-defined identity policies based on this table.

Table 10-6 Common operations supported by system-defined identity policies

Operation	UGOFullAccessPolicy	UGOReadOnlyPolicy	UGOCommonOperationsPolicy
Creating a project	√	x	x
Querying a tag	√	√	x
Querying quotas	√	√	x
Obtaining the project list	√	√	x
Deleting a project	√	x	x
Starting a migration project	√	x	x
Querying project details	√	√	x
Converting SQL statements	√	x	√

Table 10-7 lists the common operations supported by UGO and supported actions in system-defined identity policies. You can customize permission policies based on this table.

Table 10-7 Common operations supported by UGO and supported actions in system-defined identity policies

Permission	Action	Category
Querying evaluation projects	ugo::listEvaluation	ReadOnly
Testing the source database connection	ugo::testConnection	ReadWrite
Testing the network connectivity	ugo::testNetworkConnection	ReadWrite
Pre-checking an evaluation project	ugo::evaluationpreCheck	ReadWrite
Saving the SQL statements of the object collection	ugo:evaluationJob:saveSQL	ReadWrite
Querying evaluation project details	ugo::getDetails	ReadOnly
Resuming database evaluation	ugo:evaluationJob:resumeEvaluationProject	ReadWrite
Stopping database evaluation	ugo:evaluationJob:stopEvaluationProject	ReadWrite
Querying source database information	ugo:evaluationJob:getSrcDbInfos	ReadOnly
Incremental evaluation	ugo:evaluationJob:startDeltaEvaluation	ReadWrite
Querying database evaluation results	ugo:evaluationJob:getSrcAnalysisResult	ReadOnly
Re-collecting source database information	ugo:evaluationJob:recollect	ReadWrite
Deleting an evaluation project	ugo:evaluationJob:delete	ReadWrite
Downloading an evaluation report	ugo:evaluationJob:download	ReadOnly
Specifying a type for evaluation	ugo:evaluationJob:analyzeType	ReadWrite
Updating an evaluation project	ugo:evaluationJob:updateEvaluationProject	ReadWrite
Re-evaluation	ugo:evaluationJob:reanalyze	ReadWrite

Updating a migration project	ugo:migrationJob:update	ReadWrite
Starting syntax conversion	ugo:migrationJob:startConvert	ReadWrite
Re-conversion	ugo:migrationJob:reconvert	ReadWrite
Stopping conversion	ugo:migrationJob:stopConvert	ReadWrite
Batch update	ugo:migrationJob:updateBulk	ReadWrite
Skipping migration	ugo:migrationJob:skipVerification	ReadWrite
Starting migration result verification	ugo:migrationJob:startVerify	ReadWrite
Stopping migration	ugo:migrationJob:stopVerify	ReadWrite
Skipping conversion	ugo:migrationJob:skipObjects	ReadWrite
Setting a user password	ugo:migrationJob:setPassword	ReadWrite
Uploading a file	ugo:migrationJob:upload	ReadWrite
Downloading a migration report	ugo:migrationJob:download	ReadOnly
Querying migration projects	ugo::listMigration	ReadOnly
Querying migration project details	ugo:migrationJob:getDetails	ReadOnly
Deleting a tablespace mapping	ugo:migrationJob:deleteTablespaceMapping	ReadWrite
Updating a tablespace	ugo:migrationJob:updateTablespaceMapping	ReadWrite
Querying the tenant VPCEP server list	ugo::listVpcepServers	ReadOnly
Querying conversion configuration templates	ugo::listConversionTemplates	ReadOnly
Creating a conversion configuration template	ugo::createConversionTemplate	ReadWrite

Updating a conversion configuration template	ugo::updateConversionTemplate	ReadWrite
Querying details about a conversion configuration template	ugo::getConversionTemplate	ReadOnly
Exporting a conversion configuration template	ugo::exportConversionTemplate	ReadOnly
Checking whether a project name exists	ugo::checkProjectInfo	ReadOnly
Uploading an SSL Certificate	ugo::uploadCertFile	ReadWrite
Converting SQL statements	ugo::convert	ReadOnly
Queries the UGO quota of a tenant	ugo::getQuotas	ReadOnly
Listing a data source	ugo::listDatasource	ReadOnly
Creating a data source	ugo::createDatasource	ReadWrite
Deleting a data source	ugo::deleteDatasource	ReadWrite
Updating a data source	ugo::updateDatasource	ReadWrite
Creating a SQL audit task	ugo:auditJob:create	ReadWrite
Deleting a SQL audit project	ugo:auditJob:delete	ReadWrite
Updating a SQL audit task	ugo::update	ReadWrite
Querying the SQL audit task list	ugo::listAudit	ReadOnly
Retrying a SQL audit task	ugo:auditJob:restartAuditTask	ReadWrite
Querying SQL audit project details	ugo:auditJob:getDetails	ReadOnly

Exporting a SQL audit task	ugo:auditJob:export	ReadOnly
Auditing a single statement	ugo::auditSingleStatement	ReadWrite
Querying the rule template list	ugo::listRuleTemplates	ReadOnly
Creating a rule template	ugo::createRuleTemplate	ReadWrite
Deleting a rule template	ugo::deleteRuleTemplate	ReadWrite
Exporting a rule template	ugo::exportRuleTemplate	ReadOnly
Importing a rule template	ugo::importRuleTemplate	ReadWrite
Querying a rule template	ugo::getRuleTemplate	ReadOnly
Updating a rule template	ugo::updateRuleTemplate	ReadWrite
Querying a specified resource tag	ugo::listTagsForResource	ReadOnly
Canceling tagging a specified resource	ugo::unTagResource	ReadOnly
Creating a tag	ugo::tagResource	ReadOnly
Querying a resource tag	ugo::listTags	ReadOnly
Modifying a resource tag	ugo::modifyTag	ReadOnly
Querying projects by resource tag	ugo::listProjectsByTag	ReadOnly
Querying SMN topics	ugo::listTopics	ReadOnly
Querying enterprise projects	ugo::listEPs	ReadOnly
Querying the evaluation task status	ugo::getCreateevalProject-Status	ReadOnly
Querying the migration project status	ugo::getCreateMigrationpro-jectStatus	ReadOnly

Creating an evaluation project	ugo:evaluationJob:createEvalProject	ReadWrite
Querying the target database type	ugo::getTargetDbType	ReadOnly
Listing source database schemas	ugo::listSchema	ReadOnly
Querying the migration status	ugo:migrationJob:getMigrationProcessStatus	ReadOnly
Querying target database information	ugo:migrationJob:getTargetDatabaseInfo	ReadOnly
Querying the schema list	ugo:migrationJob:getSchListWithObjTypes	ReadOnly
Querying the migration project history	ugo:migrationJob:getMigrationHistory	ReadOnly
Querying distribution column information	ugo:migrationJob:getDistributedColumnInfo	ReadOnly
Querying migration project details	ugo:migrationJob:getVerificationStatus	ReadOnly
Querying syntax conversion statistics	ugo:migrationJob:getMigrateSummary	ReadOnly
Querying the converted object type	ugo:migrationJob:getObjectType	ReadOnly
Querying the migration project type	ugo:migrationJob:getMigrationProjectTypes	ReadOnly
Querying the conversion configuration	ugo:migrationJob:getConversionConf	ReadOnly
Querying a tablespace	ugo:migrationJob:getTablespace	ReadOnly
Querying migration user information	ugo:migrationJob:getUserInfo	ReadOnly
Querying the number of migration objects	ugo:migrationJob:getMigrationObjCount	ReadOnly

Querying the status of a migration object	ugo:migrationJob:getMigrationObjStatus	ReadOnly
Querying the statement for object migration	ugo:migrationJob:getMigrationSqlCode	ReadOnly
Querying the correction information of a migration object	ugo:migrationJob:getObjectCorrection	ReadOnly
Querying correction records	ugo:migrationJob:getModifyHistory	ReadOnly
Listing searched objects	ugo:migrationJob:listQueryObj	ReadOnly
Listing migration history	ugo:migrationJob:listHistory	ReadOnly
Listing migration history information	ugo:migrationJob:listHistoryInfo	ReadOnly
Listing migration history objects	ugo:migrationJob:listHistoryObj	ReadOnly
Listing migration result verification history	ugo:migrationJob:listVerificationHistory	ReadOnly
Listing objects in the migration result verification history	ugo:migrationJob:listVerificationHistoryObj	ReadOnly
Querying migration history information	ugo:migrationJob:getHistoryInfo	ReadOnly
Querying migration history details	ugo:migrationJob:getHistoryDetails	ReadOnly
Querying the number of migrated rows	ugo:migrationJob:getSourceLine	ReadOnly
Listing migration objects	ugo:migrationJob:listVerification	ReadOnly
Querying migration configurations	ugo:migrationJob:getVerificationConfig	ReadOnly
Viewing migration details	ugo:migrationJob:getVerificationDetail	ReadOnly
Querying SQL audit project details	ugo:auditJob:getAuditResult	ReadOnly

Querying objects that fail to be audited	ugo:auditJob:getErrorObjects	ReadOnly
Querying audit object statistics	ugo:auditJob:getStatisticObjects	ReadOnly
Querying risky statements of an audit object	ugo:auditJob:getStatisticRiskSqls	ReadOnly
Querying statistics on object types involved in risky statements that violate rules	ugo:auditJob:getViolationRuleObjectTypes	ReadOnly
Querying violated rules	ugo:auditJob:getViolationRules	ReadOnly
Querying information about users who use data sources	ugo::getApplyUser	ReadOnly
Deleting a distribution key mapping	ugo:migrationJob:deleteMappedDistributedkey	ReadWrite
Deleting a conversion configuration template	ugo::deleteConversionTemplates	ReadWrite
Creating a migration project	ugo:migrationJob:createMigrationProject	ReadWrite
Querying evaluation project schemas	ugo::getSchemaListStatus	ReadWrite
Checking a migration project	ugo::migrationpreCheck	ReadWrite
Deleting a migration project	ugo:migrationJob:deleteMigrationProject	ReadWrite
Creating an evaluation project	ugo:evaluationJob:createEvaluationProjects	ReadWrite
Querying evaluation projects	ugo:evaluationJob:list	ReadOnly
Querying evaluation project details	ugo:evaluationJob:getDetails	ReadOnly
Querying migration projects	ugo:migrationJob:list	ReadOnly

Creating a migration project	ugo:migrationJob:createMigrationProjects	ReadWrite
Checking permissions for creating a migration project	ugo::permissionCheck	ReadWrite
Deleting a migration project	ugo:migrationJob:delete	ReadWrite
Differentiated analysis	ugo:evaluationJob:collectDiffAnalysis	ReadWrite
Obtaining differentiated analysis results	ugo:evaluationJob:getCollectDiffAnalysis	ReadOnly
Querying index recommendation statistics	ugo:auditJob:getRecommendIndexsStatistic	ReadOnly
Querying the index recommendation table	ugo:auditJob:getRecommendIndexsTable	ReadOnly
Querying redundant indexes of an audit task	ugo:auditJob:getRedundancyIndexs	ReadOnly
Querying risky SQL statements of an audit task	ugo:auditJob:getRecommendIndexsRiskSql	ReadOnly
General download	ugo::download	ReadWrite
Querying the predefined tag of a resource	ugo::listPreTags	ReadOnly

11 Relationship Between UGO and Other Services

VPC Endpoint

VPC Endpoint secures access to source and target databases.

Data Replication Service (DRS)

UGO migrates heterogeneous database schemas, such as tables, views, and stored procedures, to the cloud, resolving the incompatibility problem of database syntax conversion.

DRS supports database data synchronization in milliseconds. It supports data transmission and migration between homogeneous and heterogeneous databases, simplifying data transmission between databases and reducing data transmission costs.

You can use UGO and DRS to migrate heterogeneous databases with complex stored procedures and functions to Huawei Cloud.

Identity and Access Management (IAM)

Identity and Access Management (IAM) manages permissions for UGO.

Only users with the UGO administrator permissions can use UGO. To obtain UGO administrator permissions, contact a user with the security administrator permissions or apply for a user with UGO administrator permissions.

For more information about IAM, see *Identity and Access Management User Guide*.

Cloud Trace Service (CTS)

Cloud Trace Service (CTS) records operations related to UGO, facilitating additional queries, audits, and retrievals.

For more information about CTS, see *Cloud Trace Service User Guide*.