

Alibaba Cloud AnalyticDB for PostgreSQL

Product Introduction

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Generic conventions

Table -1: Style conventions

Style	Description	Example
	This warning information indicates a situation that will cause major system changes, faults, physical injuries, and other adverse results.	 Danger: Resetting will result in the loss of user configuration data.
	This warning information indicates a situation that may cause major system changes, faults, physical injuries, and other adverse results.	 Warning: Restarting will cause business interruption. About 10 minutes are required to restore business.
	This indicates warning information, supplementary instructions, and other content that the user must understand.	 Notice: Take the necessary precautions to save exported data containing sensitive information.
	This indicates supplemental instructions, best practices, tips, and other content that is good to know for the user.	 Note: You can use Ctrl + A to select all files.
>	Multi-level menu cascade.	Settings > Network > Set network type
Bold	It is used for buttons, menus, page names, and other UI elements.	Click OK .
Courier font	It is used for commands.	Run the <code>cd / d C :/ windows</code> command to enter the Windows system folder.
<i>Italics</i>	It is used for parameters and variables.	<code>bae log list --instanceid <i>Instance_ID</i></code>
[] or [a b]	It indicates that it is an optional value, and only one item can be selected.	<code>ipconfig [-all -t]</code>

Style	Description	Example
<code>{}</code> or <code>{a b}</code>	It indicates that it is a required value, and only one item can be selected.	<code>swich {stand slave}</code>

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1 What is AnalyticDB for PostgreSQL

AnalyticDB for PostgreSQL is a distributed cloud database that is composed of multiple **group** to provide online MPP (Massively Parallel Processing) data warehousing service. AnalyticDB for PostgreSQL is developed based on the Greenplum Open Source Database program and is enhanced with some in-depth extensions by Alibaba Cloud. This service includes the following features:

- Compatible with Greenplum, allowing you to directly use all the tools that support Greenplum.
- Uses exclusive MetaScan and SortKey technologies to optimize your experience.
- Supports features including OSS storage, JSON data type, and HyperLogLog approximating analysis.
- Complies with SQL 2008 standard query syntax and OLAP aggregate functions, providing a flexible hybrid analysis capability.
- Supports hybrid storage mode with data stored in both rows and columns, enhancing analytics performance.
- Supports Data compression techniques to reduce storage costs.
- Provides online expansion and performance monitoring services to free you from complicated MPP cluster O&M and enable DBAs, developers, and data analysts to focus on improving enterprise productivity through SQL and creating core value.

2 Instance types

AnalyticDB for PostgreSQL instances are categorized into the following type families:

- **High-performance:** The name of this type family starts with `gpdb.group.segsdx`. This type family features a better I/O capability that secures higher performance.
- **High-capacity:** The name of this type family starts with `gpdb.group.seghdx`. This type family features a larger and more affordable space to meet higher storage demands.

When selecting a type family, you only need to take the storage space and computing capability into consideration.

Besides, AnalyticDB for PostgreSQL supports OSS-based external table extensions and data compression in external storage through gzip. You can store data that is not required for real-time computation in an external storage to further reduce storage costs.

Instance types

The high-performance instances offer the following types:

Instance type	CPU	Memory	Disk
<code>gpdb.group.segsdx1</code>	1 Core	8 GB	80 GB SSD
<code>gpdb.group.segsdx2</code>	2 Cores	16 GB	160 GB SSD
<code>gpdb.group.segsdx16</code>	16 Cores	128 GB	1.28 TB SSD

The high-capacity instances offer the following types:

Instance type	CPU	Memory	Disk
<code>gpdb.group.seghdx4</code>	4 Cores	32 GB	2 TB HDD
<code>gpdb.group.seghdx36</code>	36 Cores	288 GB	18 TB HDD

Related information

[#unique_6](#)

3 Features and limitations

This document lists the basic features and limits of AnalyticDB for PostgreSQL.

Features

- Covers the key functions of Greenplum Database. For details, see [Summary of Greenplum Features](#).
- Supports MetaScan and SortKey.
- Supports the ORCA optimizer.
- Supports distributed stored procedures in PL/PGSQL and PL/JAVA.
- Supports multiple extensions, such as PostGIS, MADlib, fuzzystrmatch, orafunc, pgcrypto, and intarray. (You can use the `CREATE EXTENSION` command to create them.)
- Supports using OSS_EXT extension to read data from or write data to Alibaba Cloud OSS (Object Storage Service), and supports the gzip compression to reduce the external table storage cost.
- Supports the JSON data type and the HyperLogLog type. (You can use the `CREATE EXTENSION` command to create them.)



Note:

Only support json data type of JSON, and not support jsonb data type of JSON.

Limits

- For limits of the core functions, see [Summary of Greenplum Features](#).
- **Permission limits:** The initial user of AnalyticDB for PostgreSQL (the root user) has the permission for creating databases (`CREATEDB`) and users (`CREATEROLE`), but does not have the super user permission (`SUPERUSER`). That is,
 - The root user cannot perform operations requiring the super user permission. For example, the root user cannot run file functions such as `pg _ls _dir`.
 - The root user has the permission to view and modify the data of all other non-super users, and terminate (`Kill`) the connections of other non-super users.
- Not support the PL/R extensions.

- Supports creating the PL/Python extensions, but does not support creating functions by using PL/Python.
- Not support the gpfdist tool.
- Not support MapReduce interfaces, gphdfs storage interfaces and local external tables.
- Not support automatic backup and recovery. AnalyticDB for PostgreSQL keeps two copies of data, and you can back up data by using the pg_dump tool.

4 Concepts

The following table lists the basic concepts involved in AnalyticDB for PostgreSQL.

Term	Description
Group	<p>The operation unit in AnalyticDB for PostgreSQL.</p> <ul style="list-style-type: none">• A AnalyticDB for PostgreSQL instance is composed of multiple groups.• Increasing the number of groups can improve the linear performance.
Group type	<p>The package of computing resources available.</p> <ul style="list-style-type: none">• Each group type includes CPU, I/O, memory, and disk resources. Different group types have different performance.• Resources in one group are allocated to the same physical host•
Number of groups	<p>The number of purchased groups.</p> <ul style="list-style-type: none">• The minimum unit is two.• Each group type has different group number limit.
MPP	<p>Massively Parallel Processing, a distributed Shared Nothing computing architecture. MPP improves the performance by parallel computing of multiple shared-nothing nodes (known as groups in AnalyticDB for PostgreSQL).</p>