1. 下载5.0.0安装包，预安装

/home/omm2/opengauss/install/install/script/gs_preinstall -U omm2 -G omm2 -X /home/omm2/opengauss/install/install/opengauss_single_config_template.xml --non-interactive

```
[root@node1_hostname script]# /home/omm2/opengauss/install/install/script/gs_preinstall -U omm2 -G omm2 -X /home/omm2/opengauss/install/install/opengauss_single_config_template.xml --non-interactive
/home/omm2/opengauss/install/install/script/domain_utils/sql_handler/../../../lib/cryptography/hazmat/bindings/_openssl.abi3.so: symbol SSLv3_method, version OPENSSL_1_1_0 not defined in file libssl.s
rence
Parsing the configuration file.
Successfully parsed the configuration file.
Installing the tools on the local node.
Successfully installed the tools on the local node.
Setting host ip env
Successfully set host ip env.
Preparing SSH service.
Successfully prepared SSH service.
Checking OS software.
Successfully check os software.
Checking OS version.
Successfully checked OS version.
Creating cluster's path.
Successfully created cluster's path.
Set and check OS parameter.
Setting OS parameters.
Successfully set OS parameters.
Warning: Installation environment contains some warning messages.
Please get more details by "/home/omm2/opengauss/install/install/script/gs_checkos -i A -h node1_hostname --detail".
Set and check OS parameter completed.
Preparing CRON service.
Successfully prepared CRON service.
Setting user environmental variables.
Successfully set user environmental variables.
Setting the dynamic link library.
Successfully set the dynamic link library.
Setting Core file
Successfully set core path.
Setting pssh path
Successfully set pssh path.
Setting Cgroup.
Successfully set Cgroup.
Set ARM Optimization.
No need to set ARM Optimization.
Fixing server package owner.
Setting finish flag.
Successfully set finish flag.
Preinstallation succeeded.
[root@node1_hostname script]# chown -R omm2. /home/omm2/opengauss/install/install
```

2. 安装gs_install -X /home/omm2/opengauss/install/install/opengauss_single_config_template.xml

```
[omm2@node1_hostname install]$ gs_install -X /home/omm2/opengauss/install/install/opengauss_single_config_template.xml
Parsing the configuration file.
Check preinstall on every node.
Successfully checked preinstall on every node.
Creating the backup directory.
Successfully created the backup directory.
begin deploy..
Installing the cluster.
begin prepare Install Cluster..
Checking the installation environment on all nodes.
begin install Cluster..
Installing applications on all nodes.
Successfully installed APP.
begin init Instance..
encrypt cipher and rand files for database.
Please enter password for database:
Please repeat for database:
begin to create CA cert files
The sslcert will be generated in /home/omm2/opengauss/install/app/share/sslcert/om
NO cm_server instance, no need to create CA for CM.
Non-dss_ssl_enable, no need to create CA for DSS
Cluster installation is completed.
Configuring.
Deleting instances from all nodes.
Successfully deleted instances from all nodes.
Checking node configuration on all nodes.
Initializing instances on all nodes.
Updating instance configuration on all nodes.
Check consistence of memCheck and coresCheck on database nodes.
Configuring pg_hba on all nodes.
Configuration is completed.
The cluster status is Normal.
Successfully started cluster.
Successfully installed application.
end deploy..
(reverse-i-search)`gsql': ^Cql -dtestdb -r
[omm2@node1_hostname install]$ gs_om -t status --detail
[   Cluster State   ]

cluster_state   : Normal
redistributing  : No
current_az      : AZ_ALL

[  Datanode State   ]

    node          node_ip         port      instance                                  state
-----------------------------------------------------------------------------------------------------
1  node1_hostname [redacted]  15432      6001 /home/omm2/opengauss/install/data   P Primary Normal
[omm2@node1_hostname install]$
```

3. 查看版本

```
[omm2@node1_hostname install]$ gs_ssh -c "gaussdb -V"
Successfully execute command on all nodes.

Output:
[SUCCESS] node1_hostname:
gaussdb (openGauss 5.0.0 build a07d57c3) compiled at 2023-03-29 03:07:56 commit 0 last mr
[omm2@node1_hostname install]$ gsql -d postgres -r -p 15432
gsql ((openGauss 5.0.0 build a07d57c3) compiled at 2023-03-29 03:07:56 commit 0 last mr  )
Non-SSL connection (SSL connection is recommended when requiring high-security)
Type "help" for help.

openGauss=# create database db1 dbcompatibility 'b';
CREATE DATABASE
openGauss=# \c db1
Non-SSL connection (SSL connection is recommended when requiring high-security)
You are now connected to database "db1" as user "omm2".
db1=# set dolphin.b_compatibility_mode to on;
SET
db1=# select oid, * from pg_operator where (oprleft = 114 or oprright = 114);
 oid  | oprname | oprnamespace | oprowner | oprkind | oprcanmerge | oprcanhash | oprleft | oprright | oprresult | oprcom | oprnegate |          oprcode          | oprrest | oprjoin
------+---------+--------------+----------+---------+-------------+------------+---------+----------+-----------+--------+-----------+---------------------------+---------+---------
 3962 | ->      |           11 |       10 | b       | f           | f          |     114 |       25 |       114 |      0 |         0 | json_object_field         | -       | -
 3963 | ->>     |           11 |       10 | b       | f           | f          |     114 |       25 |        25 |      0 |         0 | json_object_field_text    | -       | -
 3964 | ->      |           11 |       10 | b       | f           | f          |     114 |       23 |       114 |      0 |         0 | json_array_element        | -       | -
 3965 | ->>     |           11 |       10 | b       | f           | f          |     114 |       23 |        25 |      0 |         0 | json_array_element_text   | -       | -
 3966 | #>      |           11 |       10 | b       | f           | f          |     114 |     1009 |       114 |      0 |         0 | json_extract_path_op      | -       | -
 3967 | #>>     |           11 |       10 | b       | f           | f          |     114 |     1009 |        25 |      0 |         0 | json_extract_path_text_op | -       | -
(6 rows)

db1=#
```

4．更新需求版本安装包，预安装

/home/omm2/opengauss/install/install/script/gs_preinstall -U omm2 -G omm2 -X /home/omm2/opengauss/install/install/opengauss_single_config_template.xml --non-interactive

```
[root@node1_hostname script]# /home/omm2/opengauss/install/install/script/gs_preinstall -U omm2 -G omm2  -X /home/omm2/opengauss/install/install/opengauss_single_config_template.xml --non-interactive
Parsing the configuration file.
Successfully parsed the configuration file.
Installing the tools on the local node.
Successfully installed the tools on the local node.
Setting host ip env
Successfully set host ip env.
Preparing SSH service.
Successfully prepared SSH service.
Checking OS software.
Successfully check os software.
Checking OS version.
Successfully checked OS version.
Creating cluster's path.
Successfully created cluster's path.
Set and check OS parameter.
Setting OS parameters.
Successfully set OS parameters.
Warning: Installation environment contains some warning messages.
Please get more details by "/home/omm2/opengauss/install/install/script/gs_checkos -i A -h node1_hostname --detail".
Set and check OS parameter completed.
Preparing CRON service.
Successfully prepared CRON service.
Setting user environmental variables.
Successfully set user environmental variables.
Setting the dynamic link library.
Successfully set the dynamic link library.
Setting Core file
Successfully set core path.
Setting pssh path
Successfully set pssh path.
Setting Cgroup.
Successfully set Cgroup.
Set ARM Optimization.
No need to set ARM Optimization.
Fixing server package owner.
Setting finish flag.
Successfully set finish flag.
Preinstallation succeeded.
[root@node1_hostname script]#
```

5．升级

gs_upgradectl -t auto-upgrade -X /home/omm2/opengauss/install/install/opengauss_single_config_template.xml

```
[omm2@node1_hostname install]$ gs_upgradectl -t auto-upgrade -X /home/omm2/opengauss/install/install/opengauss_single_config_template.xml
Static configuration matched with old static configuration files.
Performing inplace rollback.
Rollback succeeded.
Checking upgrade environment.
Successfully checked upgrade environment.
Successfully started cluster.
Start to do health check.
Successfully checked cluster status.
Backing up current application and configurations.
Successfully backed up current application and configurations.
Stop cluster with gs_om successfully.
Backing up cluster configuration.
Successfully backup hotpatch config file.
Successfully backed up cluster configuration.
Installing new binary.
Restoring cluster configuration.
Successfully restored cluster configuration.
Successfully started cluster.
Start check CMS parameter.
Stop cluster with gs_om successfully.
Modifying the socket path.
Successfully modified socket path.
Successfully started cluster.
copy certs from /home/omm2/opengauss/install/app_a07d57c3 to /home/omm2/opengauss/install/app_81f7a295.
Successfully copy certs from /home/omm2/opengauss/install/app_a07d57c3 to /home/omm2/opengauss/install/app_81f7a295.
Stop cluster with gs_om successfully.
Switch symbolic link to new binary directory.
Successfully switch symbolic link to new binary directory.
Successfully started cluster.
Stop cluster with gs_om successfully.
Successfully started cluster.
Waiting for the cluster status to become normal.
.
The cluster status is normal.
Start to do health check.
Successfully checked cluster status.
Upgrade main process has been finished, user can do some check now.
Once the check done, please execute following command to commit upgrade:

    gs_upgradectl -t commit-upgrade -X /home/omm2/opengauss/install/install/opengauss_single_config_template.xml

[omm2@node1_hostname install]$ gs_om -t status --detail
[   Cluster State   ]

cluster_state   : Normal
redistributing  : No
current_az      : AZ_ALL

[  Datanode State   ]

    node          node_ip         port      instance                                  state
-----------------------------------------------------------------------------------------------------
1  node1_hostname [redacted]      6001 /home/omm2/opengauss/install/data   P Primary Normal
[omm2@node1_hostname install]$
```

6. 查看版本

```
[omm2@node1_hostname install]$ gs_ssh -c "gaussdb -V"
Successfully execute command on all nodes.

Output:
[SUCCESS] node1_hostname:
gaussdb (openGauss 5.1.0 build 81f7a295) compiled at 2023-08-10 19:45:36 commit 0 last mr  debug
[omm2@node1_hostname install]$ gsql -d postgres -r -p 15432
gsql ((openGauss 5.1.0 build 81f7a295) compiled at 2023-08-10 19:45:36 commit 0 last mr  debug)
Non-SSL connection (SSL connection is recommended when requiring high-security)
Type "help" for help.

openGauss=# \c db1
Non-SSL connection (SSL connection is recommended when requiring high-security)
You are now connected to database "db1" as user "omm2".
db1=# set dolphin.b_compatibility_mode to on;
SET
db1=# select oid, * from pg_operator where (oprleft = 114 or oprright = 114);
  oid  | oprname | oprnamespace | oprowner | oprkind | oprcanmerge | oprcanhash | oprleft | oprright | oprresult | oprcom | oprnegate |          oprcode          | oprrest | oprjoin
-------+---------+--------------+----------+---------+-------------+------------+---------+----------+-----------+--------+-----------+---------------------------+---------+---------
  3962 | ->      |           11 |       10 | b       | f           | f          |     114 |       25 |       114 |      0 |         0 | json_object_field         | -       | -
  3963 | ->>     |           11 |       10 | b       | f           | f          |     114 |       25 |        25 |      0 |         0 | json_object_field_text    | -       | -
  3964 | ->      |           11 |       10 | b       | f           | f          |     114 |       23 |       114 |      0 |         0 | json_array_element        | -       | -
  3965 | ->>     |           11 |       10 | b       | f           | f          |     114 |       23 |        25 |      0 |         0 | json_array_element_text   | -       | -
  3966 | #>      |           11 |       10 | b       | f           | f          |     114 |     1009 |       114 |      0 |         0 | json_extract_path_op      | -       | -
  3967 | #>>     |           11 |       10 | b       | f           | f          |     114 |     1009 |        25 |      0 |         0 | json_extract_path_text_op | -       | -
 11036 | +       |        18339 |       10 | l       | f           | f          |       0 |      114 |       114 |      0 |         0 | dolphin_catalog.json_uplus | -       | -
 11038 | =       |        18339 |       10 | b       | f           | f          |     114 |     2276 |        16 |      0 |         0 | dolphin_catalog.json_eq   | -       | -
 11040 | =       |        18339 |       10 | b       | f           | f          |      25 |      114 |        16 |      0 |         0 | dolphin_catalog.json_eq   | -       | -
 11042 | =       |        18339 |       10 | b       | f           | f          |    1560 |      114 |        16 |      0 |         0 | dolphin_catalog.json_eq   | -       | -
 11044 | =       |        18339 |       10 | b       | f           | f          |   16511 |      114 |        16 |      0 |         0 | dolphin_catalog.json_eq   | -       | -
 11046 | <>      |        18339 |       10 | b       | f           | f          |     114 |     2276 |        16 |      0 |         0 | dolphin_catalog.json_ne   | -       | -
 11048 | <>      |        18339 |       10 | b       | f           | f          |      25 |      114 |        16 |      0 |         0 | dolphin_catalog.json_ne   | -       | -
 11050 | <>      |        18339 |       10 | b       | f           | f          |    1560 |      114 |        16 |      0 |         0 | dolphin_catalog.json_ne   | -       | -
 11052 | <>      |        18339 |       10 | b       | f           | f          |   16511 |      114 |        16 |      0 |         0 | dolphin_catalog.json_ne   | -       | -
 11054 | >       |        18339 |       10 | b       | f           | f          |     114 |     2276 |        16 |      0 |         0 | dolphin_catalog.json_gt   | -       | -
 11056 | >       |        18339 |       10 | b       | f           | f          |      25 |      114 |        16 |      0 |         0 | dolphin_catalog.json_gt   | -       | -
 11058 | >       |        18339 |       10 | b       | f           | f          |    1560 |      114 |        16 |      0 |         0 | dolphin_catalog.json_gt   | -       | -
 11060 | >       |        18339 |       10 | b       | f           | f          |   16511 |      114 |        16 |      0 |         0 | dolphin_catalog.json_gt   | -       | -
 11062 | >=      |        18339 |       10 | b       | f           | f          |     114 |     2276 |        16 |      0 |         0 | dolphin_catalog.json_ge   | -       | -
 11064 | >=      |        18339 |       10 | b       | f           | f          |      25 |      114 |        16 |      0 |         0 | dolphin_catalog.json_ge   | -       | -
 11066 | >=      |        18339 |       10 | b       | f           | f          |    1560 |      114 |        16 |      0 |         0 | dolphin_catalog.json_ge   | -       | -
 11068 | >=      |        18339 |       10 | b       | f           | f          |   16511 |      114 |        16 |      0 |         0 | dolphin_catalog.json_ge   | -       | -
 11070 | <       |        18339 |       10 | b       | f           | f          |     114 |     2276 |        16 |      0 |         0 | dolphin_catalog.json_lt   | -       | -
 11072 | <       |        18339 |       10 | b       | f           | f          |      25 |      114 |        16 |      0 |         0 | dolphin_catalog.json_lt   | -       | -
 11074 | <       |        18339 |       10 | b       | f           | f          |    1560 |      114 |        16 |      0 |         0 | dolphin_catalog.json_lt   | -       | -
 11076 | <       |        18339 |       10 | b       | f           | f          |   16511 |      114 |        16 |      0 |         0 | dolphin_catalog.json_lt   | -       | -
 11078 | <=      |        18339 |       10 | b       | f           | f          |     114 |     2276 |        16 |      0 |         0 | dolphin_catalog.json_le   | -       | -
 11080 | <=      |        18339 |       10 | b       | f           | f          |      25 |      114 |        16 |      0 |         0 | dolphin_catalog.json_le   | -       | -
 11082 | <=      |        18339 |       10 | b       | f           | f          |    1560 |      114 |        16 |      0 |         0 | dolphin_catalog.json_le   | -       | -
 11084 | <=      |        18339 |       10 | b       | f           | f          |   16511 |      114 |        16 |      0 |         0 | dolphin_catalog.json_le   | -       | -
(31 rows)

db1=#
db1=# create database db2 dbcompatibility 'b';
ERROR:  cannot execute CREATE DATABASE in a read-only transaction
db1=#
```

7. 回滚

gs_upgradectl -t auto-rollback -X /home/omm2/opengauss/install/install/opengauss_single_config_template.xml

```
[omm2@node1_hostname install]$ gs_upgradectl -t auto-rollback  -X /home/omm2/opengauss/install/install/opengauss_single_config_template.xml
Static configuration matched with old static configuration files.
Performing inplace rollback.
Checking static configuration files.
Successfully checked static configuration files.
Successfully started cluster.
Restoring cluster configuration.
Successfully rollback hotpatch config file.
Successfully restored cluster configuration.
Start roll back CM instance.
Switch symbolic link to old binary directory.
Successfully switch symbolic link to old binary directory.
Successfully started cluster.
Stop cluster with gs_om successfully.
Restoring application and configurations.
Successfully restored application and configuration.
Restoring cluster configuration.
Successfully rollback hotpatch config file.
Successfully restored cluster configuration.
Clean up backup catalog files.
Successfully started cluster.
Successfully cleaned new install path.
Rollback succeeded.
[omm2@node1_hostname install]$ gs_om -t status --detail
[   Cluster State   ]

cluster_state   : Normal
redistributing  : No
current_az      : AZ_ALL

[  Datanode State   ]

    node          node_ip         port      instance                                state
-----------------------------------------------------------------------------------------
1  node1_hostname [redacted]  15432      6001 /home/omm2/opengauss/install/data   P Primary Normal
[omm2@node1_hostname install]$
```

8. 查看版本

```
[omm2@node1_hostname install]$ gs_ssh -c "gaussdb -V"
Successfully execute command on all nodes.

Output:
[SUCCESS] node1_hostname:
gaussdb (openGauss 5.0.0 build a07d57c3) compiled at 2023-03-29 03:07:56 commit 0 last mr
[omm2@node1_hostname install]$ gsql -d postgres -r -p 15432
gsql ((openGauss 5.0.0 build a07d57c3) compiled at 2023-03-29 03:07:56 commit 0 last mr  )
Non-SSL connection (SSL connection is recommended when requiring high-security)
Type "help" for help.

openGauss=# \c db1
Non-SSL connection (SSL connection is recommended when requiring high-security)
You are now connected to database "db1" as user "omm2".
db1=# set dolphin.b_compatibility_mode to on;
SET
db1=# select oid, * from pg_operator where (oprleft = 114 or oprright = 114);
 oid  | oprname | oprnamespace | oprowner | oprkind | oprcanmerge | oprcanhash | oprleft | oprright | oprresult | oprcom | oprnegate |          oprcode          | oprrest | oprjoin
------+---------+--------------+----------+---------+-------------+------------+---------+----------+-----------+--------+-----------+---------------------------+---------+---------
 3962 | ->      |           11 |       10 | b       | f           | f          |     114 |       25 |       114 |      0 |         0 | json_object_field         | -       | -
 3963 | ->>     |           11 |       10 | b       | f           | f          |     114 |       25 |        25 |      0 |         0 | json_object_field_text    | -       | -
 3964 | ->      |           11 |       10 | b       | f           | f          |     114 |       23 |       114 |      0 |         0 | json_array_element        | -       | -
 3965 | ->>     |           11 |       10 | b       | f           | f          |     114 |       23 |        25 |      0 |         0 | json_array_element_text   | -       | -
 3966 | #>      |           11 |       10 | b       | f           | f          |     114 |     1009 |       114 |      0 |         0 | json_extract_path_op      | -       | -
 3967 | #>>     |           11 |       10 | b       | f           | f          |     114 |     1009 |        25 |      0 |         0 | json_extract_path_text_op | -       | -
(6 rows)

db1=#
db1=# create database db2 dbcompatibility 'b';

CREATE DATABASE
db1=# \c db2
Non-SSL connection (SSL connection is recommended when requiring high-security)
You are now connected to database "db2" as user "omm2".
db2=#
```

9. 预安装

/home/omm2/opengauss/install/install/script/gs_preinstall -U omm2 -G omm2 -X /home/omm2/opengauss/install/install/opengauss_single_config_template.xml --non-interactive

```
[root@node1_hostname script]# /home/omm2/opengauss/install/install/script/gs_preinstall -U omm2 -G omm2  -X /home/omm2/opengauss/install/install/opengauss_single_config_template.xml --non-interactive
Parsing the configuration file.
Successfully parsed the configuration file.
Installing the tools on the local node.
Successfully installed the tools on the local node.
Setting host ip env
Successfully set host ip env.
Preparing SSH service.
Successfully prepared SSH service.
Checking OS software.
Successfully check os software.
Checking OS version.
Successfully checked OS version.
Creating cluster's path.
Successfully created cluster's path.
Set and check OS parameter.
Setting OS parameters.
Successfully set OS parameters.
Warning: Installation environment contains some warning messages.
Please get more details by "/home/omm2/opengauss/install/install/script/gs_checkos -i A -h node1_hostname --detail".
Set and check OS parameter completed.
Preparing CRON service.
Successfully prepared CRON service.
Setting user environmental variables.
Successfully set user environmental variables.
Setting the dynamic link library.
Successfully set the dynamic link library.
Setting Core file
Successfully set core path.
Setting pssh path
Successfully set pssh path.
Setting Cgroup.
Successfully set Cgroup.
Set ARM Optimization.
No need to set ARM Optimization.
Fixing server package owner.
Setting finish flag.
Successfully set finish flag.
Preinstallation succeeded.
[root@node1_hostname script]#
```

10. 升级

gs_upgradectl -t auto-upgrade -X /home/omm2/opengauss/install/install/opengauss_single_config_template.xml

```
[omm2@node1_hostname install]$ gs_upgradectl -t auto-upgrade -X /home/omm2/opengauss/install/install/opengauss_single_config_template.xml
Static configuration matched with old static configuration files.
Performing inplace rollback.
Rollback succeeded.
Checking upgrade environment.
Successfully checked upgrade environment.
Successfully started cluster.
Start to do health check.
Successfully checked cluster status.
Backing up current application and configurations.
Successfully backed up current application and configurations.
Stop cluster with gs_om successfully.
Backing up cluster configuration.
Successfully backup hotpatch config file.
Successfully backed up cluster configuration.
Installing new binary.
Restoring cluster configuration.
Successfully restored cluster configuration.
Successfully started cluster.
Start check CMS parameter.
Stop cluster with gs_om successfully.
Modifying the socket path.
Successfully modified socket path.
Successfully started cluster.
copy certs from /home/omm2/opengauss/install/app_a07d57c3 to /home/omm2/opengauss/install/app_81f7a295.
Successfully copy certs from /home/omm2/opengauss/install/app_a07d57c3 to /home/omm2/opengauss/install/app_81f7a295.
Stop cluster with gs_om successfully.
Switch symbolic link to new binary directory.
Successfully switch symbolic link to new binary directory.
Successfully started cluster.
Stop cluster with gs_om successfully.
Successfully started cluster.
Waiting for the cluster status to become normal.
.
The cluster status is normal.
Start to do health check.
Successfully checked cluster status.
Upgrade main process has been finished, user can do some check now.
Once the check done, please execute following command to commit upgrade:

    gs_upgradectl -t commit-upgrade -X /home/omm2/opengauss/install/install/opengauss_single_config_template.xml

[omm2@node1_hostname install]$ gs_om -t status --detail
[   Cluster State   ]

cluster_state   : Normal
redistributing  : No
current_az      : AZ_ALL

[  Datanode State   ]

    node          node_ip         port      instance                                    state
-----------------------------------------------------------------------------------------------
1  node1_hostname[redacted]15432      6001 /home/omm2/opengauss/install/data   P Primary Normal
[omm2@node1_hostname install]$
```

11. 提交升级

gs_upgradectl -t commit-upgrade -X /home/omm2/opengauss/install/install/opengauss_single_config_template.xml

```
[omm2@node1_hostname install]$ gs_upgradectl -t commit-upgrade  -X /home/omm2/opengauss/install/install/opengauss_single_config_template.xml
NOTICE: Start to commit binary upgrade.
Start to check whether can be committed.
Can be committed.
Start to set commit flag.
Set commit flag succeeded.
Start to do operations that cannot be rollback.
Cancel the upgrade status succeeded.
Start to clean temp files for upgrade.
Clean up backup catalog files.
Successfully cleaned old install path.
Stop cluster with gs_om successfully.
Successfully started cluster.
Clean temp files for upgrade succeeded.
NOTICE: Commit binary upgrade succeeded.
[omm2@node1_hostname install]$ gsql -d postgres -r -p 15432
gsql ((openGauss 5.1.0 build 81f7a295) compiled at 2023-08-10 19:45:36 commit 0 last mr  debug)
Non-SSL connection (SSL connection is recommended when requiring high-security)
Type "help" for help.

openGauss=# \q
[omm2@node1_hostname install]$ gs_om -t status --detail
[   Cluster State   ]

cluster_state   : Normal
redistributing  : No
current_az      : AZ_ALL

[  Datanode State   ]

    node          node_ip         port      instance                                    state
-----------------------------------------------------------------------------------------------
1  node1_hostname[redacted] 15432      6001 /home/omm2/opengauss/install/data   P Primary Normal
[omm2@node1_hostname install]$
```

12. 查看版本

```
[omm2@node1_hostname install]$ gs_ssh -c "gaussdb -V"
on;
select oid, * from pg_operator where (oprleft = 114 or oprright = 114);
Successfully execute command on all nodes.

Output:
[SUCCESS] node1_hostname:
gaussdb (openGauss 5.1.0 build 81f7a295) compiled at 2023-08-10 19:45:36 commit 0 last mr  debug
[omm2@node1_hostname install]$ gsql -d postgres -r -p 15432
gsql ((openGauss 5.1.0 build 81f7a295) compiled at 2023-08-10 19:45:36 commit 0 last mr  debug)
Non-SSL connection (SSL connection is recommended when requiring high-security)
Type "help" for help.

openGauss=# \c db1
Non-SSL connection (SSL connection is recommended when requiring high-security)
You are now connected to database "db1" as user "omm2".
db1=# set dolphin.b_compatibility_mode to on;
SET
db1=# select oid, * from pg_operator where (oprleft = 114 or oprright = 114);
  oid  | oprname | oprnamespace | oprowner | oprkind | oprcanmerge | oprcanhash | oprleft | oprright | oprresult | oprcom | oprnegate |          oprcode           | oprrest | oprjoin
-------+---------+--------------+----------+---------+-------------+------------+---------+----------+-----------+--------+-----------+----------------------------+---------+---------
  3962 | ->      |           11 |       10 | b       | f           | f          |     114 |       25 |       114 |      0 |         0 | json_object_field          | -       | -
  3963 | ->>     |           11 |       10 | b       | f           | f          |     114 |       25 |        25 |      0 |         0 | json_object_field_text     | -       | -
  3964 | ->      |           11 |       10 | b       | f           | f          |     114 |       23 |       114 |      0 |         0 | json_array_element         | -       | -
  3965 | ->>     |           11 |       10 | b       | f           | f          |     114 |       23 |        25 |      0 |         0 | json_array_element_text    | -       | -
  3966 | #>      |           11 |       10 | b       | f           | f          |     114 |     1009 |       114 |      0 |         0 | json_extract_path_op       | -       | -
  3967 | #>>     |           11 |       10 | b       | f           | f          |     114 |     1009 |        25 |      0 |         0 | json_extract_path_text_op  | -       | -
 11036 | +       |        18339 |       10 | l       | f           | f          |       0 |      114 |       114 |      0 |         0 | dolphin_catalog.json_uplus | -       | -
 11038 | =       |        18339 |       10 | b       | f           | f          |     114 |     2276 |        16 |      0 |         0 | dolphin_catalog.json_eq    | -       | -
 11040 | =       |        18339 |       10 | b       | f           | f          |      25 |      114 |        16 |      0 |         0 | dolphin_catalog.json_eq    | -       | -
 11042 | =       |        18339 |       10 | b       | f           | f          |    1560 |      114 |        16 |      0 |         0 | dolphin_catalog.json_eq    | -       | -
 11044 | =       |        18339 |       10 | b       | f           | f          |   16511 |      114 |        16 |      0 |         0 | dolphin_catalog.json_eq    | -       | -
 11046 | <>      |        18339 |       10 | b       | f           | f          |     114 |     2276 |        16 |      0 |         0 | dolphin_catalog.json_ne    | -       | -
 11048 | <>      |        18339 |       10 | b       | f           | f          |      25 |      114 |        16 |      0 |         0 | dolphin_catalog.json_ne    | -       | -
 11050 | <>      |        18339 |       10 | b       | f           | f          |    1560 |      114 |        16 |      0 |         0 | dolphin_catalog.json_ne    | -       | -
 11052 | <>      |        18339 |       10 | b       | f           | f          |   16511 |      114 |        16 |      0 |         0 | dolphin_catalog.json_ne    | -       | -
 11054 | >       |        18339 |       10 | b       | f           | f          |     114 |     2276 |        16 |      0 |         0 | dolphin_catalog.json_gt    | -       | -
 11056 | >       |        18339 |       10 | b       | f           | f          |      25 |      114 |        16 |      0 |         0 | dolphin_catalog.json_gt    | -       | -
 11058 | >       |        18339 |       10 | b       | f           | f          |    1560 |      114 |        16 |      0 |         0 | dolphin_catalog.json_gt    | -       | -
 11060 | >       |        18339 |       10 | b       | f           | f          |   16511 |      114 |        16 |      0 |         0 | dolphin_catalog.json_gt    | -       | -
 11062 | >=      |        18339 |       10 | b       | f           | f          |     114 |     2276 |        16 |      0 |         0 | dolphin_catalog.json_ge    | -       | -
 11064 | >=      |        18339 |       10 | b       | f           | f          |      25 |      114 |        16 |      0 |         0 | dolphin_catalog.json_ge    | -       | -
 11066 | >=      |        18339 |       10 | b       | f           | f          |    1560 |      114 |        16 |      0 |         0 | dolphin_catalog.json_ge    | -       | -
 11068 | >=      |        18339 |       10 | b       | f           | f          |   16511 |      114 |        16 |      0 |         0 | dolphin_catalog.json_ge    | -       | -
 11070 | <       |        18339 |       10 | b       | f           | f          |     114 |     2276 |        16 |      0 |         0 | dolphin_catalog.json_lt    | -       | -
 11072 | <       |        18339 |       10 | b       | f           | f          |      25 |      114 |        16 |      0 |         0 | dolphin_catalog.json_lt    | -       | -
 11074 | <       |        18339 |       10 | b       | f           | f          |    1560 |      114 |        16 |      0 |         0 | dolphin_catalog.json_lt    | -       | -
 11076 | <       |        18339 |       10 | b       | f           | f          |   16511 |      114 |        16 |      0 |         0 | dolphin_catalog.json_lt    | -       | -
 11078 | <=      |        18339 |       10 | b       | f           | f          |     114 |     2276 |        16 |      0 |         0 | dolphin_catalog.json_le    | -       | -
 11080 | <=      |        18339 |       10 | b       | f           | f          |      25 |      114 |        16 |      0 |         0 | dolphin_catalog.json_le    | -       | -
 11082 | <=      |        18339 |       10 | b       | f           | f          |    1560 |      114 |        16 |      0 |         0 | dolphin_catalog.json_le    | -       | -
 11084 | <=      |        18339 |       10 | b       | f           | f          |   16511 |      114 |        16 |      0 |         0 | dolphin_catalog.json_le    | -       | -
(31 rows)

db1=#
```

```
db1=# create database db3 dbcompatibility 'b';
CREATE DATABASE
db1=# \c db3
Non-SSL connection (SSL connection is recommended when requiring high-security)
You are now connected to database "db3" as user "omm2".
db3=# set dolphin.b_compatibility_mode to on;
SET
db3=# select oid, * from pg_operator where (oprleft = 114 or oprright = 114);
  oid  | oprname | oprnamespace | oprowner | oprkind | oprcanmerge | oprcanhash | oprleft | oprright | oprresult | oprcom | oprnegate |          oprcode           | oprrest | oprjoin
-------+---------+--------------+----------+---------+-------------+------------+---------+----------+-----------+--------+-----------+----------------------------+---------+---------
  3962 | ->      |           11 |       10 | b       | f           | f          |     114 |       25 |       114 |      0 |         0 | json_object_field          | -       | -
  3963 | ->>     |           11 |       10 | b       | f           | f          |     114 |       25 |        25 |      0 |         0 | json_object_field_text     | -       | -
  3964 | ->      |           11 |       10 | b       | f           | f          |     114 |       23 |       114 |      0 |         0 | json_array_element         | -       | -
  3965 | ->>     |           11 |       10 | b       | f           | f          |     114 |       23 |        25 |      0 |         0 | json_array_element_text    | -       | -
  3966 | #>      |           11 |       10 | b       | f           | f          |     114 |     1009 |       114 |      0 |         0 | json_extract_path_op       | -       | -
  3967 | #>>     |           11 |       10 | b       | f           | f          |     114 |     1009 |        25 |      0 |         0 | json_extract_path_text_op  | -       | -
 24662 | +       |        23179 |       10 | l       | f           | f          |       0 |      114 |       114 |      0 |         0 | dolphin_catalog.json_uplus | -       | -
 24664 | =       |        23179 |       10 | b       | f           | f          |     114 |     2276 |        16 |      0 |         0 | dolphin_catalog.json_eq    | -       | -
 24666 | =       |        23179 |       10 | b       | f           | f          |      25 |      114 |        16 |      0 |         0 | dolphin_catalog.json_eq    | -       | -
 24668 | =       |        23179 |       10 | b       | f           | f          |    1560 |      114 |        16 |      0 |         0 | dolphin_catalog.json_eq    | -       | -
 24670 | =       |        23179 |       10 | b       | f           | f          |   21452 |      114 |        16 |      0 |         0 | dolphin_catalog.json_eq    | -       | -
 24672 | <>      |        23179 |       10 | b       | f           | f          |     114 |     2276 |        16 |      0 |         0 | dolphin_catalog.json_ne    | -       | -
 24674 | <>      |        23179 |       10 | b       | f           | f          |      25 |      114 |        16 |      0 |         0 | dolphin_catalog.json_ne    | -       | -
 24676 | <>      |        23179 |       10 | b       | f           | f          |    1560 |      114 |        16 |      0 |         0 | dolphin_catalog.json_ne    | -       | -
 24678 | <>      |        23179 |       10 | b       | f           | f          |   21452 |      114 |        16 |      0 |         0 | dolphin_catalog.json_ne    | -       | -
 24680 | >       |        23179 |       10 | b       | f           | f          |     114 |     2276 |        16 |      0 |         0 | dolphin_catalog.json_gt    | -       | -
 24682 | >       |        23179 |       10 | b       | f           | f          |      25 |      114 |        16 |      0 |         0 | dolphin_catalog.json_gt    | -       | -
 24684 | >       |        23179 |       10 | b       | f           | f          |    1560 |      114 |        16 |      0 |         0 | dolphin_catalog.json_gt    | -       | -
 24686 | >       |        23179 |       10 | b       | f           | f          |   21452 |      114 |        16 |      0 |         0 | dolphin_catalog.json_gt    | -       | -
 24688 | >=      |        23179 |       10 | b       | f           | f          |     114 |     2276 |        16 |      0 |         0 | dolphin_catalog.json_ge    | -       | -
 24690 | >=      |        23179 |       10 | b       | f           | f          |      25 |      114 |        16 |      0 |         0 | dolphin_catalog.json_ge    | -       | -
 24692 | >=      |        23179 |       10 | b       | f           | f          |    1560 |      114 |        16 |      0 |         0 | dolphin_catalog.json_ge    | -       | -
 24694 | >=      |        23179 |       10 | b       | f           | f          |   21452 |      114 |        16 |      0 |         0 | dolphin_catalog.json_ge    | -       | -
 24696 | <       |        23179 |       10 | b       | f           | f          |     114 |     2276 |        16 |      0 |         0 | dolphin_catalog.json_lt    | -       | -
 24698 | <       |        23179 |       10 | b       | f           | f          |      25 |      114 |        16 |      0 |         0 | dolphin_catalog.json_lt    | -       | -
 24700 | <       |        23179 |       10 | b       | f           | f          |    1560 |      114 |        16 |      0 |         0 | dolphin_catalog.json_lt    | -       | -
 24702 | <       |        23179 |       10 | b       | f           | f          |   21452 |      114 |        16 |      0 |         0 | dolphin_catalog.json_lt    | -       | -
 24704 | <=      |        23179 |       10 | b       | f           | f          |     114 |     2276 |        16 |      0 |         0 | dolphin_catalog.json_le    | -       | -
 24706 | <=      |        23179 |       10 | b       | f           | f          |      25 |      114 |        16 |      0 |         0 | dolphin_catalog.json_le    | -       | -
 24708 | <=      |        23179 |       10 | b       | f           | f          |    1560 |      114 |        16 |      0 |         0 | dolphin_catalog.json_le    | -       | -
 24710 | <=      |        23179 |       10 | b       | f           | f          |   21452 |      114 |        16 |      0 |         0 | dolphin_catalog.json_le    | -       | -
(31 rows)

db3=#
```