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# **OpenStack-Ansible Documentation: galera\_server role**

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Ansible role to install and configure a Galera cluster powered by MariaDB

To clone or view the source code for this repository, visit the role repository for [galera\\_server](#).



## DEFAULT VARIABLES

```
# Set the package install state for distribution packages
# Options are 'present' and 'latest'
galera_package_state: "latest"

galera_cluster_members: "{{ groups['galera_all'] }}"
galera_server_bootstrap_node: "{{ galera_cluster_members[0] }}"
galera_ignore_cluster_state: false
galera_upgrade: false
galera_force_bootstrap: false

galera_wsrep_node_name: "{{ inventory_hostname }}"
galera_cluster_name: openstack_galera_cluster
galera_server_bind_address: "{{ openstack_service_bind_address | default('0.0.
→0.0') }}"

# The galera server-id should be set on all cluster nodes to ensure
# that replication is handled correctly and the error
# "Warning: You should set server-id to a non-0 value if master_host is
# set; we will force server id to 2, but this MySQL server will not act
# as a slave." is no longer present.
# galera_server_id: 0

# These are here to stub out the internal ROLE API.
# if these are used they should be set within the
# distro specific variable files found in vars/
galera_debconf_items: []
galera_mariadb_service_name: mariadb
galera_mariadb_server_package: "{{ _galera_mariadb_server_package }}"

# The major version used to select the repo URL path
galera_major_version: 10.6
galera_minor_version: 10

# Set the URL for the MariaDB repository
galera_repo_host: "downloads.mariadb.com"
galera_repo_url: "{{ _galera_repo_url }}"

# Set the repo information for the MariaDB repository
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```
galera_repo: "{{ _galera_repo }}"

# Set the gpg keys needed to be imported
# This should be a list of dicts, with each dict
# giving a set of arguments to the applicable
# package module. The following is an example for
# systems using the apt package manager.
# galera_gpg_keys:
#   - id: '0xF1656F24C74CD1D8'
#     keyserver: 'hkp://keyserver.ubuntu.com:80'
#     validate_certs: no
galera_gpg_keys: "{{ _galera_gpg_keys | default([]) }}"

galera_monitoring_user: monitoring
galera_monitoring_user_password: ""
galera_monitoring_port: 3307
galera_monitoring_max_connections: 10

# WARNING: Set this to open IP rules for galera monitoring.
# This is REQUIRED to run a working openstack-ansible deployment.
# If it's undefined the galera cluster state can't be reported,
# and haproxy would fail to do proper load balancing on the cluster.
# Because this opens connections to the cluster status, this
# should be restricted, which we do in the integrated build.
# Please override accordingly to your use case.
# This can be replaced with other hostnames, cidr, ips, and ips + wildcards.
# See https://www.freedesktop.org/software/systemd/man/systemd.resource-
↳control.html
#
#galera_monitoring_allowed_source: "0.0.0.0/0"

# Enable or disable the installation of galera development packages
galera_install_devel: false

# Enable or disable the installation of galera server
galera_install_server: false

# Enable or disable the galera monitoring check capability
galera_monitoring_check_enabled: true

# Set the monitoring port used with the galera monitoring check.
galera_monitoring_check_port: 9200

galera_root_user: root

# WARNING: This option is deprecated and will be removed in v12.0
galera_gcache_size: 1024M

galera_data_dir: /var/lib/mysql
```

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galera_max_heap_table_size: 32M
galera_tmp_table_size: 32M
galera_tmp_dir: /var/lib/mysql/#tmp
galera_ignore_db_dirs:
  - '#tmp'
  - "lost+found"

galera_file_limits: 164679
galera_wait_timeout: "{{ openstack_db_connection_recycle_time | default('600
↪') }}"
# Increase this value if large SST transfers cause mysql startup to fail due
# to timeout
galera_startup_timeout: 1800

## innodb options
galera_innodb_buffer_pool_size: 4096M
galera_innodb_log_file_size: 1024M
galera_innodb_log_buffer_size: 128M

## wsrep configuration
galera_wsrep_address: "{{ ansible_host }}"
galera_wsrep_address_port: "{{ galera_wsrep_address }}:3306"
galera_wsrep_cluster_port: 4567
galera_wsrep_cluster_address: >-
  {% set _var = [] -%}
  {% for cluster_host in galera_cluster_members -%}
  {% set _addr = hostvars[cluster_host]['galera_wsrep_address']
    | default(hostvars[cluster_host]['ansible_host']) -%}
  {% if _var.append(_addr) %}{% endif -%}
  {% endfor -%}
  {# If only 1 cluster member is present output an empty string so the
    single-node member will re-bootstrap correctly upon restart #}
  {{ _var | join(',') if galera_cluster_members | length > 1 else '' }}

galera_wsrep_node_incoming_address: "{{ galera_wsrep_address }}"
## Cap the maximum number of threads / workers when a user value is_
↪unspecified.
galera_wsrep_slave_threads_max: 16
galera_wsrep_slave_threads: "{{ [[ansible_facts['processor_vcpus']|default(2),
↪ 2] | max, galera_wsrep_slave_threads_max] | min }}"
galera_wsrep_retry_autocommit: 3
galera_wsrep_debug: NONE
galera_wsrep_sst_method: mariabackup
galera_wsrep_provider_options:
  - { option: "gcache.size", value: "{{ galera_gcache_size }}" }
  - { option: "gmcaster.listen_addr", value: "tcp://{{ galera_wsrep_node_
↪incoming_address }}:{{ galera_wsrep_cluster_port }}" }
galera_wsrep_sst_auth_user: "{{ galera_root_user }}"
galera_wsrep_sst_auth_password: "{{ galera_root_password }}"

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# mariabackup parallel/sync threads
galera_mariabackup_threads: 4

# Galera slow/unindexed query logging
galera_slow_query_logging: 0
galera_slow_query_log_file: "/var/log/mysql/mariadb-slow.log"
galera_unindexed_query_logging: 0

## Tunable overrides
galera_my_cnf_overrides: {}
galera_cluster_cnf_overrides: {}
galera_debian_cnf_overrides: {}
galera_encryption_overrides: {}
galera_init_overrides: {}

# Set the max connections value for galera. Set this value to override the
# computed value which is (100 x vCPUs) with a cap of 1600. If computed, the
# lowest value throughout the cluster will be used which is something to note
# if deploying galera on different hardware.
# galera_max_connections: 500

# This is only applied if the ansible_facts['pkg_mgr'] is 'apt'
galera_distro_package_pins:
  - package: '*'
    release: MariaDB
    priority: 1001

# Galera Server SSL functionality.

# Storage location for SSL certificate authority
galera_pki_dir: "{{ openstack_pki_dir | default('/etc/pki/galera-ca') }}"

# Create a certificate authority if one does not already exist
galera_pki_create_ca: "{{ openstack_pki_authorities is not defined | bool }}"
galera_pki_regen_ca: ''

galera_pki_authorities:
  - name: "MariaDBRoot"
    country: "GB"
    state_or_province_name: "England"
    organization_name: "Example Corporation"
    organizational_unit_name: "IT Security"
    cn: "MariaDB Root CA"
    provider: selfsigned
    basic_constraints: "CA:TRUE"
    key_usage:
      - digitalSignature
      - cRLSign
```

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- keyCertSign
not_after: "+3650d"
- name: "MariaDBIntermediate"
  country: "GB"
  state_or_province_name: "England"
  organization_name: "Example Corporation"
  organizational_unit_name: "IT Security"
  cn: "MariaDB Intermediate CA"
  provider: ownca
  basic_constraints: "CA:TRUE,pathlen:0"
  key_usage:
    - digitalSignature
    - cRLSign
    - keyCertSign
  not_after: "+3650d"
  signed_by: "MariaDBRoot"

# Installation details for certificate authorities
galera_pki_install_ca:
- name: "MariaDBRoot"
  condition: "{{ galera_pki_create_ca }}"

# Galera server certificate
galera_pki_keys_path: "{{ galera_pki_dir ~ '/certs/private/' }}"
galera_pki_certs_path: "{{ galera_pki_dir ~ '/certs/certs/' }}"
galera_pki_intermediate_cert_name: "{{ openstack_pki_service_intermediate_
↳cert_name | default('MariaDBIntermediate') }}"
galera_pki_intermediate_cert_path: "{{ galera_pki_dir ~ '/roots/' ~ galera_
↳pki_intermediate_cert_name ~ '/certs/' ~ galera_pki_intermediate_cert_name ~
↳ '.crt' }}"
galera_pki_regen_cert: ''
galera_pki_certificates:
- name: "galera-{{ ansible_facts['hostname'] }}"
  provider: ownca
  cn: "{{ ansible_facts['hostname'] }}"
  san: "{{ 'DNS:' ~ ansible_facts['hostname'] ~ ',' ~ ((galera_address |_
↳ansible.utils.ipaddr) is string) | ternary('IP', 'DNS') ~ ':' ~ galera_
↳address }}"
  signed_by: "{{ galera_pki_intermediate_cert_name }}"

galera_use_ssl: false
galera_ssl_verify: true
galera_ssl_cert: /etc/ssl/certs/galera.pem
galera_ssl_key: /etc/mysql/ssl/galera.key
galera_ssl_ca_cert: /etc/ssl/certs/galera-ca.pem

## These options should be specified in user_variables if necessary,
↳otherwise self-signed certs are used.
# galera_user_ssl_cert: /etc/openstack_deploy/self_signed_certs/galera.pem

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# galera_user_ssl_key: /etc/openstack_deploy/self_signed_certs/galera.key
# galera_user_ssl_ca_cert: /etc/openstack_deploy/self_signed_certs/galera-ca.
↳pem

# This option is used for creating the CA and overriding the Galera address_
↳on the clients side.
# Should be set to either internal VIP or VIP FQDN, depending on what is_
↳currently used in the env.
galera_address: "{{ ansible_host }}"

# Installation details for SSL certificates
galera_pki_install_certificates:
  - src: "{{ galera_user_ssl_cert | default(galera_pki_certs_path ~ 'galera_'
↳~ ansible_facts['hostname'] ~ '-chain.crt') }}"
    dest: "{{ galera_ssl_cert }}"
    owner: "root"
    group: "root"
    mode: "0644"
  - src: "{{ galera_user_ssl_key | default(galera_pki_keys_path ~ 'galera_' ~
↳ansible_facts['hostname'] ~ '.key.pem') }}"
    dest: "{{ galera_ssl_key }}"
    owner: "mysql"
    group: "root"
    mode: "0600"
  - src: "{{ galera_user_ssl_ca_cert | default(galera_pki_intermediate_cert_
↳path) }}"
    dest: "{{ galera_ssl_ca_cert }}"
    owner: "root"
    group: "root"
    mode: "0644"

# MariaDB 10.1+ ships with 'PrivateDevices=True' in the systemd unit file. This
# provides some additional security, but it causes problems with systemd 219.
# While the security enhancements are helpful on bare metal hosts with_
↳multiple
↳services running, they are not as helpful when MariaDB is running in a
# container with its own isolated namespaces.
#
# Related bugs:
# https://bugs.launchpad.net/openstack-ansible/+bug/1697531
# https://github.com/lxc/lxc/issues/1623
# https://github.com/systemd/systemd/issues/6121
#
# Setting the following variable to 'yes' will disable the PrivateDevices
galera_disable_privatedevices: "{{ _galera_disable_privatedevices }}"

#install and configure the galera client as well as the server
galera_install_client: false

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galera_client_package_install: "{{ galera_install_client }}"
galera_client_package_state: "latest"
galera_client_drop_config_file: "true"
galera_client_my_cnf_overrides: {}

# Delegated host for operating the certificate authority
galera_ssl_server: "{{ openstack_pki_setup_host | default('localhost') }}"

## Database info
galera_db_setup_host: "{{ openstack_db_setup_host | default(galera_cluster_
↳members[0] | default('localhost')) }}"
galera_db_setup_python_interpreter: "{{ openstack_db_setup_python_interpreter_
↳| default((galera_db_setup_host == 'localhost') | ternary(ansible_playbook_
↳python, ansible_facts['python']['executable'])) }}"

# Configure backups of database
# copies is the number of full backups to be kept, the corresponding
# incremental backups will also be kept. Uses systemd timer instead of cron.
galera_mariadb_backups_enabled: false
#galera_mariadb_backups_group_gid: <specify a GID>
galera_mariadb_backups_group_name: backups
galera_mariadb_backups_path: "/var/backup/mariadb_backups"
galera_mariadb_backups_full_copies: 2
galera_mariadb_backups_full_on_calendar: "*-*-* 00:00:00"
galera_mariadb_backups_full_init_overrides: {}

galera_mariadb_backups_increment_on_calendar:
- "*-*-* 06:00:00"
- "*-*-* 12:00:00"
- "*-*-* 18:00:00"

#galera_mariadb_backups_user is the name of the mariadb database user
galera_mariadb_backups_increment_init_overrides: {}
galera_mariadb_backups_user: galera_mariadb_backup
galera_mariadb_backups_suffix: "{{ inventory_hostname }}"
galera_mariadb_backups_cnf_file: "/etc/mysql/mariabackup.cnf"
galera_mariadb_backups_nodes: ["{{ galera_cluster_members[0] }}"]
galera_mariadb_backups_compress: False
galera_mariadb_backups_compressor: gzip

galera_mariadb_encryption_enabled: false
galera_mariadb_encryption_plugin: "file_key_management"
galera_db_encryption_tmp_dir: ""

```



## REQUIRED VARIABLES

To use this role, define the following variables:

```
galera_root_password: secrete
```





## EXAMPLE PLAYBOOK

```
---  
- name: Install Galera server  
  hosts: galera_all  
  user: root  
  roles:  
    - galera_server  
  vars:  
    galera_install_server: true  
    galera_install_client: true  
    galera_root_password: secrete
```