

Configure Cisco Meeting Server Call Bridge Database Cluster

Contents

[Introduction](#)

[Prerequisites](#)

[Requirements](#)

[Components Used](#)

[Configure](#)

[Part 1. Certificate Creation](#)

[Part 2. Call Bridge Configuration](#)

[Network Diagram](#)

[Verify](#)

[Troubleshoot](#)

[Related Information](#)

Introduction

This document describes the steps to configure the database (DB) clustering on Cisco Meeting Server (CMS) or Acano call bridges (CB).

Prerequisites

Requirements

- Cisco recommends that you have at least 3 CMS nodes to be able to create a viable DB cluster

Note: It's recommended to have an odd number of DB cluster nodes as it is important for the master selection and the active failover mechanism. Another reason for this is that the master DB node would be the node that has connections to the most of the DB in the cluster. You can have a maximum of 5 nodes in a DB cluster.

- Port 5432 opened on firewall

Note: The DB cluster master listens on port 5432 for connections from the client nodes, so if there's a firewall (FW) between the nodes, ensure that this port is opened.

Components Used

This document is not restricted to specific software and hardware versions.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is

live, ensure that you understand the potential impact of any command.

Configure

There are two types of certificates for the DB clustering:

1. Client: The client certificate, as the name suggest, is used by the DB clients to connect to the DB server (Master). This certificate must contain the string, postgres, in its Common Name (CN) field.
2. Server: The server certificate, as the name suggest, is used by the DB server to connect to the postgres DB.

Part 1. Certificate Creation

1. Connect with a Secure Shell (SSH) with the admin credentials to the server MMP.
2. Generate Certificate Signing Request (CSR):

a. For the databasecluster client certificate:

```
pki csr <key/cert basename> CN:postgres
```

For example: **pki csr databasecluster_client CN:postgres**

b. For the databasecluster server certificate:

```
pki csr <key/cert basename> CN:<domainname>
```

For example: **pki csr databasecluster_server CN:vngtpres.aca**

3. Send the CSRs to your Certificate authority (CA) to have them signed. Ensure that the CA provides you with the Root CA (and any intermediate CA) certificates.
4. Upload the signed certificates, Root CA (and any intermediate CA) certificates onto all the DB nodes using an Secure File Transfer Protocol (SFTP) client (for example WinSCP).

Note: The CN for Part A must be postgres and Part B can be the domain name of the call bridge, no Subject Alternate Name (SAN) entries are required.

Part 2. Call Bridge Configuration

On the CB that runs the master DB, follow these steps:

1. To select the interface to use, enter the command:

```
database cluster localnode a
```

This enables interface “a” to be used for the DB clustering.

2. Define the client, server and root ca certificates as well as the private keys to be used by the DB cluster with these commands:

```
database cluster certs <client_key> <client_cert> <ca_cert>
```

```
database cluster certs <server_key> <server_cert> <client_key> <client_cert> <ca_cert>
```

Note: The same client and server certificates can be used on other CB nodes to be clustered when you copy the private keys and certificates across to the other nodes. This is possible because the certificates contain no SAN tying them to a specific call bridge. However, it's recommend to have individual certificates for each DB node.

3. Initialize this DB on the local CB as the master for this DB cluster:

```
database cluster initialize
```

4. On the CallBridges that would be part of the clustered DB and become the DB slaves run this command after you complete Steps 1 and 2 for Part 2:

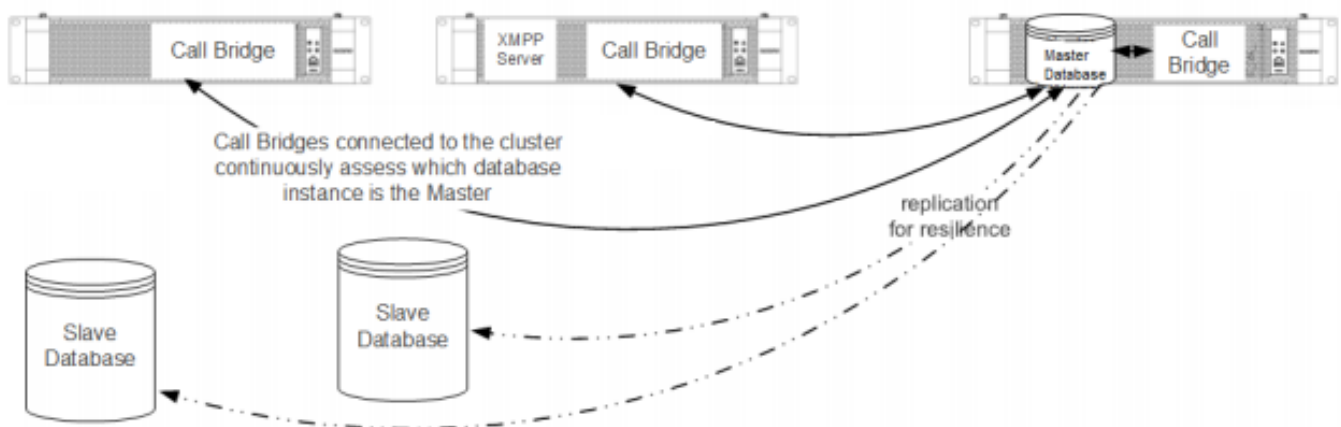
```
database cluster join <Master CB IP address>
```

For example: **database cluster join <10.48.36.61>**

This initiates the DB synchronization and copy the DB from the master peer.

Note: The local DB that existed before the **database cluster join** command was initiated, continues to exist until the node is removed from the clustered DB. So as long as the node is in the DB cluster, its local DB is not used.

Network Diagram



Verify

Use this section to confirm that your configuration works properly.

To check the clustered DB status, run this command on any of the nodes in the DB cluster:

database cluster status

The output is similar to:

```
Status                : Enabled
Nodes:
  10.48.36.61         : Connected Master
  10.48.36.118        : Connected Slave ( In Sync )
  10.48.36.182 (me)   : Connected Slave ( In Sync )
Node in use           : 10.48.36.61

Interface             : a

Certificates
Server Key            : dbclusterserver.key
Server Certificate     : dbclusterserver.cer
Client Key            : dbclusterclient.key
Client Certificate     : dbclusterclient.cer
CA Certificate         : vngtpRootca.cer
Last command          : 'database cluster join 10.48.36.61' (Success)
```

Troubleshoot

This section provides information you can use in order to troubleshoot your configuration.

Use this command, on the CLI, to view the current logs related to the DB clustering:

syslog follow

Log outputs for the DB usually contain the postgres string, examples as follows:

```
Mar 30 12:39:04 local0.warning DBMaster postgres[20882]: [2-7] #011SQL statement "INSERT INTO
domains(domain_id, domain_name, tenant_id, target, priority, passcode_separator) VALUES
(inp_domain_id, inp_domain_name, inp_tenant_id, existing_target, inp_priority,
inp_passcode_separator)"
Mar 30 12:39:04 local0.warning DBMaster postgres[20882]: [2-8] #011PL/pgSQL function
create_or_update_matching_domain(boolean,uuid,text,boolean,uuid,integer,integer,integer,text)
line 61 at SQL statement
Mar 30 12:39:04 local0.warning DBMaster postgres[20882]: [2-9] #011SQL statement "SELECT * FROM
create_or_update_matching_domain(TRUE, inp_domain_id, inp_domain_name, TRUE, inp_tenant_id,
inp_target_true, 0, inp_priority, inp_passcode_separator)"
Mar 30 12:39:04 local0.warning DBMaster postgres[20882]: [2-10] #011PL/pgSQL function
create_matching_domain(uuid,text,uuid,integer,integer,text) line 3 at SQL statement
```

The [CMS log collector](#) provides an easy and user-friendly User Interface (UI) to collect logs from the CMS server.

Here are some typical DB issues and solutions:

Problem: DB schema error on a non-master peer

```
ERROR                : Couldn't upgrade the schema
Status               : Error

Nodes:
  10.48.54.75         : Connected Master
```

```
10.48.54.76      : Connected Slave ( In Sync )
10.48.54.119 (me) : Connected Slave ( In Sync )
Node in use      : 10.48.54.75

Interface       : a

Certificates
Server Key      : dbclusterServer.key
Server Certificate : dbserver.cer
Client Key      : dbclusterClient.key
Client Certificate : dbclient.cer
CA Certificate   : Root.cer

Last command    : 'database cluster upgrade_schema' (Failed)
```

Solution:

1. First, run this command to clear the error:

database cluster clear error

2. Followed by this command to upgrade the DB schema:

database cluster upgrade_schema

3. Then check to the status of the DB clustering with:

database cluster status

The logs show output similar to this:

```
Mar 30 11:22:45 user.notice acanosrv05 schema_builder: Upgrading schema with connect line
'connect_timeout=4 user=postgres host=127.0.0.1 port=9899 sslmode=verify-ca
sslcert=/srv/pgsql/client.crt sslkey=/srv/pgsql/client.key sslrootcert=/srv/pgsql/ca.crt '

Mar 30 11:22:45 user.notice acanosrv05 schema_builder: Using database name 'cluster'
Mar 30 11:22:45 user.notice acanosrv05 schema_builder: schema build on database cluster
complete
Mar 30 11:22:45 user.notice acanosrv05 schema_builder: Using CiscoSSL 1.0.1u.4.13.322-fips
(caps 0x4FABFFFF)
Mar 30 11:22:45 user.notice acanosrv05 schema_builder: Using 0x1000115F
Mar 30 11:22:45 user.notice acanosrv05 schema_builder: INFO      : Waiting for database cluster
to settle...
Mar 30 11:22:45 user.notice acanosrv05 schema_builder: INFO      : Database cluster settled
Mar 30 11:22:45 user.notice acanosrv05 schema_builder: Schema upgrade complete
Mar 30 11:22:45 user.info acanosrv05 dbcluster_watcher: Operation Complete
```

Problem: Peer nodes unable to connect to DB master node

```
Mar 31 10:16:59 user.info acanosrv02 sfpool: Health check 10.48.54.119: error (up = 1): could
not connect to server: Connection refused|#011Is the server running on host "10.48.54.119" and
accepting|#011TCP/IP connections on port 5432?|
```

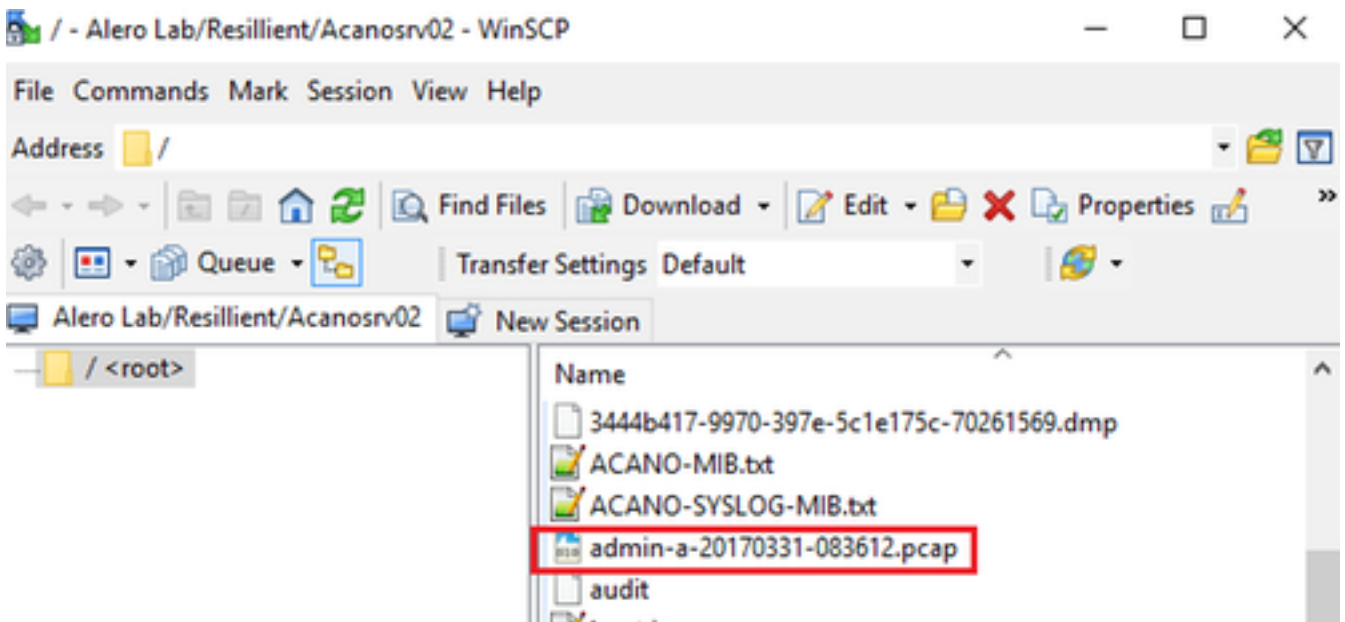
Solution:

Use these steps to collect traces to troubleshoot the connection issues:

1. Run the command **pcap <interface>** on the non-master (slave) node and after a few minutes,

stop the capture with **Ctrl-C**.

2. Connect with a Secure File Transfer Protocol (SFTP) client to the server and download the **.pcap** file from the root directory:

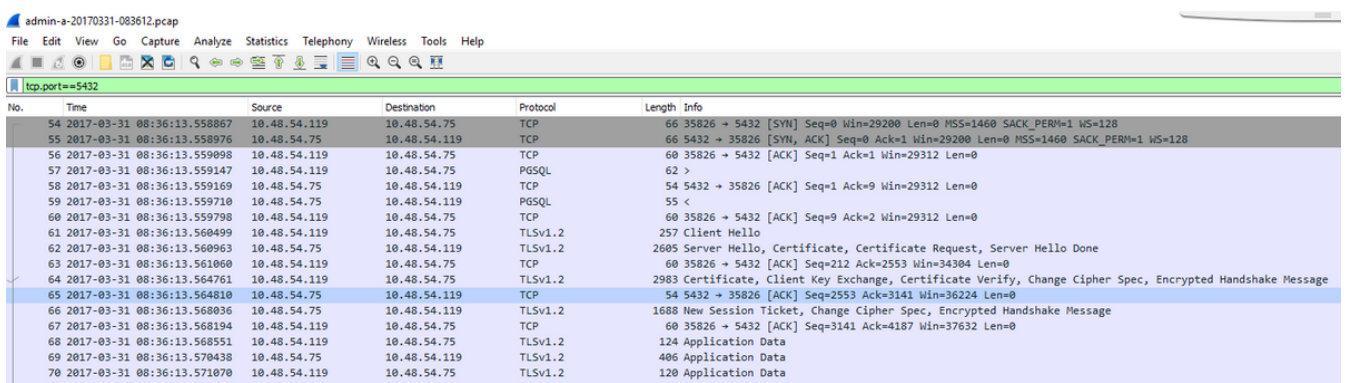


3. Open the capture file on Wireshark and filter on port 5432 with **tcp.port==5432** to check for traffic between the non-master peer and the DB master.

4. If there's no return traffic from the server then it's likely that a FW might be blocking the port between the two servers' logical location.

Here is a typical packet capture from a working connection between the client and server:

In this example the client's IP is 10.48.54.119 and the server is 10.48.54.75.



Related Information

For more information how to troubleshoot issues, and other questions on Database clustering, refer to the FAQs in these links:

- [When clustering database servers, why do I need to place them on different locations](#)
- [We have a database cluster, and I see a database error or warning in the log. What should I do](#)

- [One or more of the database servers are not connected or in "Sync" state. What should I do](#)
- [What do I do if there is no master database](#)
- [How do I move the master database](#)
- [Technical Support & Documentation - Cisco Systems](#)