xx network

Node and Gateway Upgrade Guide

Instructions for changes required to Node and Gateway when upgrading to version 2.0.

Version 2.0 of the Node and Gateway software require some changes if upgrading from version 1 software. The most significant change is that Gateway now requires a database. In addition, the second part of this document details some minor configuration file changes, but these should only affect Node operators with non-default setups.

NOTE: Make sure that the Gateway's port is forwarded correctly. The default port is 22840. To learn how to do this, refer to *Configuring Local Network (Port Forwarding)* in the Node Handbook.

Adding the Gateway Database

In version 1 of the software, only the Node required a PostgreSQL database. In version 2, the Gateway will require one as well to store encrypted messages for users. The following instructions detail how to install PostgreSQL and set up the required databases for the two possible setups: running the Node and Gateway on the same machine and on separate machines. Follow the case pertaining to your setup and at the end, make sure to verify the database.

Case 1: Node and Gateway Run on the Same Machine

These instructions are for Node operators who run the Node and Gateway software on the same machine. Note that a separate drive for the Gateway database is required that meets the hardware specifications outlined in the Gateway hardware requirements section of the Beta Node Handbook. Before starting, prepare the second disk for the Gateway database by mounting and partitioning it. For instructions on how to do this and other information, refer to the post Adding the Gateway Database (One Computer Configuration) on the xx network forum.

1. Create a database user with the username `cmix`, which is used to access the database. Alternately, you can use the same username and password that the Node database uses.

   ```
   $ sudo -u postgres createuser --createdb --pwprompt cmix
   ```

2. You will be asked to set a password for the `cmix` user. Create a long and secure password but note that it will only be saved into the Node and Gateway configuration files in the following steps and you will not need to remember it once everything is configured.

   ```
   Enter password for new role:
   Enter it again:
   ```

   Save this password for the next steps.

   ⚠ **WARNING:** Never store this password digitally unless directed to do so by xx network. Never provide this password to anyone.

3. Determine the location to place the Gateway database. The following directions use `/mnt/ts_gateway` as an example path; replace it with the location on the secondary drive.

4. Create a directory on the secondary drive to store the database in using `mkdir`.

   ```
   $ sudo mkdir /mnt/ts_gateway
   ```

   Change to chosen location on secondary drive.

5. Change the ownership of the directory.

   ```
   $ sudo chown -v postgres:postgres /mnt/ts_gateway
   ```

6. Switch to the `postgres` user account.

```
$ sudo su postgres
```

7. Run the Postgres client server via `psql`.

```
$ psql
psql (10.12 (Ubuntu 10.12-0ubuntu0.18.04.1))
Type "help" for help.
```

! **NOTE:** The command prompt has changed from `$` to `#`.

8. Once at the `postgres` prompt, create the tablespace and point it to the directory on the second disk drive (enter everything after the `postgres-#` part).

```
postgres=# CREATE TABLESPACE ts_gateway LOCATION '/mnt/ts_gateway';
CREATE TABLESPACE
```

Change to location on secondary drive.

9. Enter `\q` to exit the session.

```
postgres=# \q
```

10. Enter `exit` to return back to your user.

```
$ exit
```

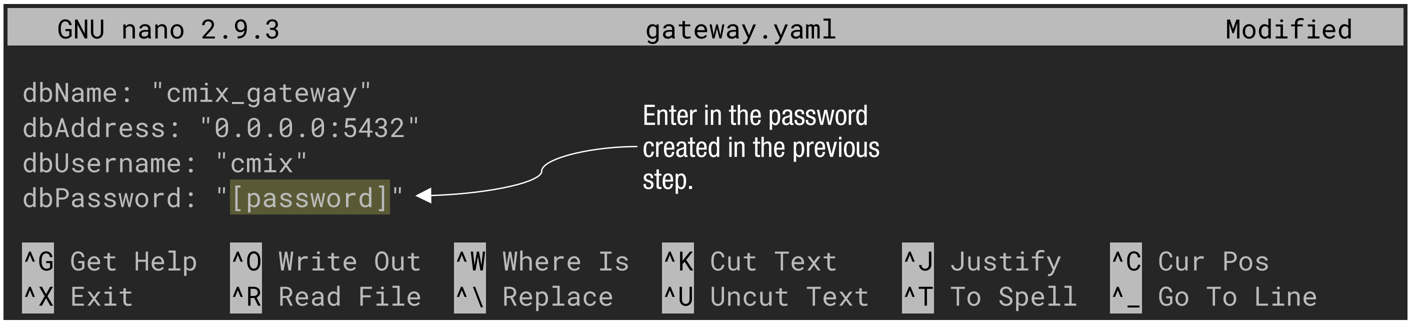
11. Create the Gateway database with the name `cmix_gateway` with the previously made tablespace.

```
$ sudo -u postgres createdb -D ts_gateway -O cmix cmix_gateway
```

12. Finally, the database details need to be added to the Gateway configuration. To do this, open `gateway.yaml` in nano or your favorite text editor.

```
$ sudo nano /opt/xxnetwork/gateway.yaml
```

13. If not already present, add the four flags `dbName`, `dbAddress`, `dbUsername`, and `dbPassword` to the configuration file. Each should be on its own line and followed by a colon (`:`) and the value in quotes (`" "`).



```
  GNU nano 2.9.3                    gateway.yaml                         Modified

dbName: "cmix_gateway"
dbAddress: "0.0.0.0:5432"
dbUsername: "cmix"
dbPassword: "[password]"

^G Get Help    ^O Write Out   ^W Where Is    ^K Cut Text     ^J Justify     ^C Cur Pos
^X Exit        ^R Read File   ^\ Replace     ^U Uncut Text   ^T To Spell    ^_ Go To Line
```

Enter in the password created in the previous step.

   a. The `dbName` should match the name specified in step 11 (e.g., `cmix_gateway`).

   b. The `dbAddress` should be `0.0.0.0:5432`.

   c. The `dbUsername` should match the name specified in step 1 (e.g., `cmix`).

   d. The `dbPassword` should match the password created in step 2.

14. Once the change is made, save the file by pressing Ctrl + X and when prompted to save buffer, press Y. Finally, when prompted with the file name, press Enter.

Case 2: Node and Gateway are Run on Separate Machines

These instructions are for Node operators who run the Node and Gateway software on the separate machines. They should be executed on the Gateway machine. For more information, refer to the post Adding the Gateway Database (Two Computer Configuration) on the xx network forum.

1. Install PostgreSQL and its dependencies.

```
$ sudo apt install -y postgresql-client postgresql postgresql-contrib
```

2. Once the installation is complete, enable the PostgreSQL service.

```
$ sudo update-rc.d postgresql enable
```

3. Next, start the service.

```
$ sudo service postgresql start
```

4. Create a database user with the username `cmix`, which is used to access the database.

```
$ sudo -u postgres createuser --createdb --pwprompt cmix
```

5. You will be asked to set a password for the `cmix` user. Create a long and secure password but note that it will only be saved into the Gateway configuration file in the following steps and you will not need to remember it once everything is configured.

```
Enter password for new role:
Enter it again:
```

Save this password for the next steps.

⚠ **WARNING:** Never store this password digitally unless directed to do so by xx network. Never provide this password to anyone.

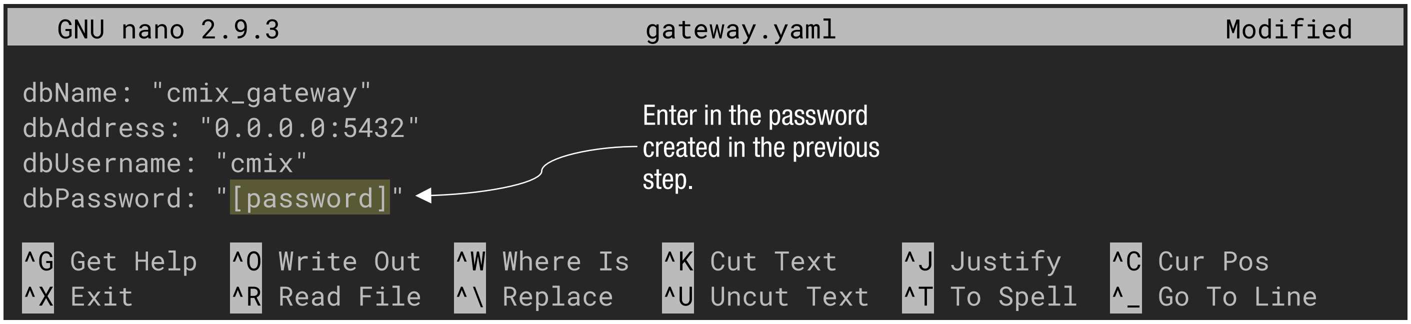
6. Create the required database with the name `cmix_gateway`.

```
$ sudo -u postgres createdb -O cmix cmix_gateway
```

7. Finally, the database details need to be added to the Gateway configuration. To do this, open `gateway.yaml` in nano or your favorite text editor.

```
$ sudo nano /opt/xxnetwork/gateway.yaml
```

8. If not already present, add the four flags `dbName`, `dbAddress`, `dbUsername`, and `dbPassword` to the configuration file. Each should be on its own line and followed by a colon (`:`) and the value in quotes (`""`).



```
  GNU nano 2.9.3                   gateway.yaml                        Modified

dbName: "cmix_gateway"
dbAddress: "0.0.0.0:5432"
dbUsername: "cmix"
dbPassword: "[password]"

^G Get Help   ^O Write Out  ^W Where Is   ^K Cut Text    ^J Justify    ^C Cur Pos
^X Exit       ^R Read File  ^\ Replace    ^U Uncut Text  ^T To Spell   ^_ Go To Line
```

Enter in the password created in the previous step.

   a. The `dbName` should match the name specified in step 11 (e.g., `cmix_gateway`).

   b. The `dbAddress` should be `0.0.0.0:5432`.

   c. The `dbUsername` should match the name specified in step 1 (e.g., `cmix`).

   d. The `dbPassword` should match the password created in step 2.

9. Once the change is made, save the file by pressing Ctrl + X and when prompted to save buffer, press Y. Finally, when prompted with the file name, press Enter.

Verify the Database

The following steps will describe how to ensure the database was created correctly. This section is optional but highly recommended.

1. Login to the user `postgres`.

```
$ sudo su postgres
```

2. Run the Postgres client server via `psql`.

```
$ psql
psql (10.12 (Ubuntu 10.12-0ubuntu0.18.04.1))
Type "help" for help.
```

❗ **NOTE:** The command prompt has changed from `$` to `#`.

3. Once at the `postgres` prompt, enter in `\l` to get a list of databases (do not enter the `postgres-#` part).

```
postgres-# \l
```

Ensure that the correct databases with the correct owners show up. If Node and Gateway are on the same machine, then the output should appear similar to below. If each is being run separately, then only the `cmix_node` or `cmix_gateway` should be displayed. Note that your database names and owner may differ.

```
                                 List of databases
     Name     |  Owner   | Encoding |   Collate   |    Ctype    | Access privileges
--------------+----------+----------+-------------+-------------+-----------------------
 cmix_gateway | cmix     | UTF8     | C.UTF-8     | C.UTF-8     |
 cmix_node    | cmix     | UTF8     | en_US.UTF-8 | en_US.UTF-8 |
 postgres     | postgres | UTF8     | en_US.UTF-8 | en_US.UTF-8 |
 template0    | postgres | UTF8     | en_US.UTF-8 | en_US.UTF-8 | =c/postgres          +
              |          |          |             |             | postgres=CTc/postgres
 template1    | postgres | UTF8     | en_US.UTF-8 | en_US.UTF-8 | =c/postgres          +
              |          |          |             |             | postgres=CTc/postgres
(4 rows)
```

4. If Node and Gateway are run off the same machine, verify the gateway tablespace points to the directory on the second disk drive by typing `\db` to get a list of available tablespaces. Ensure that the tablespace `ts_gateway` has the correct location set.

```
postgres=# \db
                List of tablespaces
    Name    |  Owner   |        Location
------------+----------+-------------------------
 pg_default | postgres |
 pg_global  | postgres |
 ts_gateway | postgres | /mnt/ts_gateway
(3 rows)
```

Verify that the path is correct and located on a secondary drive.

5. Enter `\q` to exit the command line.

```
postgres-# \q
```

6. Enter `exit` to return back to your user.

```
$ exit
```

Configuration File Changes

Some updates have been made to optional flags and documentation in the Node and Gateway YAML files. For Node operators that set up their Node and Gateway using the default configuration options, no changes should be necessary. Any depreciated options in the YAML files will be ignored.

However, for operators that have modified options such as those that modify IP addresses, changes will be required to keep their Node and Gateway functioning. Instructions for making these changes are detailed below. At the bottom you can find an overview of all changes. This is provided for informational purposes only; none of the detailed changes are required.

General changes to the configuration files:

- By default, the Node and Gateway now determine their public IP by communicating with a thirds party server. Node operators can prevent this communication using new options details below.
- A YAML file is now required to start the Node or Gateway software. It can be specified using `-c` or `--config` command line flags. Users that have moved their YAML files to a non-default location will need to specify it using the `--configoverride` flag in the service file.
- The new YAML files contain new documentation that some operators may find useful.

Change Instructions

Disable the Third Party Public IP Lookup

If you do not want your Node or Gateway to communicate with a third party service to discover its IP, it must be set manually.

To do so on the Node, in the Node YAML, under the `node` flag, add the `overridePublicIP` flag and set it. It expects an IPv4 address with or without a port. If the port is not specified, then the port from the `node.port` flag is used.

```yaml
node:
  paths:
    errOutput: "/opt/xxnetwork/node-logs/node-err.log"
    idf: "/opt/xxnetwork/node-logs/nodeIDF.json"
    cert: "/opt/xxnetwork/creds/node_cert.crt"
    key: "/opt/xxnetwork/creds/node_key.key"
    log: "/opt/xxnetwork/node-logs/node.log"
  port: 11420
  overridePublicIP: "0.0.0.0:1234"
```

To do so on the Gateway, in the Gateway YAML, add the `overridePublicIP` flag and set it. It expects an IPv4 address with or without a port. If the port is not specified, then the port from the `port` flag is used.

```yaml
logLevel: 1
log: "/opt/xxnetwork/gateway-logs/gateway.log"
port: 22840
overridePublicIP: "0.0.0.0:5678"
```

If the Gateway Public IP Address was Manually Set via `advertisedIP`

If you have specified the Gateway IP via the `gateway` > `advertisedIP` flag in the Node YAML, then that IP must now be set in the Gateway YAML. First, copy the address from the Node YAML file.

```
gateway:
    paths:
        cert: "/opt/xxnetwork/creds/gateway_cert.crt"
    advertisedIP: "0.0.0.0:5432"
```

Take the IP from that flag and create a new flag in the Gateway YAML called `overridePublicIP` with that IP. It expects an IPv4 address with or without a port. If the port is not specified, then the port from the `port` flag is used.

```
logLevel: 1
log: "/opt/xxnetwork/gateway-logs/gateway.log"
port: 22840
overridePublicIP: "0.0.0.0:5432"
```

If the Gateway Internal IP was Manually Set via `localAddress`

If the Gateway has a non-default internal IP set via `localAddress`, then it needs to be renamed to `listeningAddress`.

```
logLevel: 1
log: "/opt/xxnetwork/gateway-logs/gateway.log"
port: 22840
~~localAddress: "0.0.0.0:1234"~~
listeningAddress: "0.0.0.0:1234"
```

Change Summary

Node YAML

Added

- `overridePublicIP`
- `overrideInternalIP`

Removed

- `disableIpOverride`
- `gateway.useNodeIp`
- `gateway.advertisedIP`

Changed

- `useGPU` defaults to `true`
- `node.paths.log` defaults to `./node.log`

Details

`disableIpOverride` has been replaced with `overrideInternalIP`. When `overrideInternalIP` is set, the IP is overwritten with the IP specified in `overrideInternalIP` instead of the `listeningAddress`.

The Node's public IP address is now automatically determined by communicating with a third party server. `overridePublicIP` is used to prevent this or to set an alternate public IP. It expects an IPv4 address with or without a port. If no port is specified, then the port from the `port` flag will be used.

The Gateway now self-reports its public IP address so `gateway.useNodeIp` and `gateway.advertisedIP` are no longer necessary. To manually set the Gateway's public IP address, refer to its configuration options.

Gateway YAML

Added

- `overridePublicIP`

Removed

- `messageTimeout`

Changed

- `localAddress` is now `listeningAddress`

Detailed Changes

Gateway now self-reports its public IP instead of Node. It can be manually set via `overridePublicIP`.