

BEMOSS and Its Enhanced Applications

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Outline

- 1 Install Ubuntu 16.04
 - On Disk
 - Virtual Machine
- 2 Install BEMOSS Launcher Wizard
- 3 Launch BEMOSS Launcher Wizard
- 4 Install BEMOSS System
- 5 Post-Installation
 - Configure PostgreSQL database
- 6 Problems

Install Ubuntu 16.04

On Disk

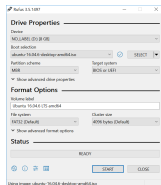


Figure: Rufus USB Formatting Utility

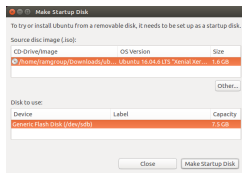


Figure: Startup Disk Creator

Link

<http://releases.ubuntu.com/16.04/>

Create Bootable Flash Medium

- Rufus (Windows)
- SanDisk Cruzer Media (MacOS)
- Startup Disk Creator (Linux)

Install Ubuntu 16.04

Virtual Machine

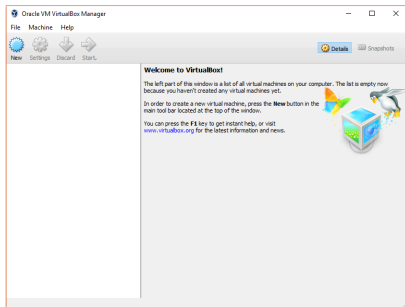


Figure: Oracle VM VirtualBox Manager, courtesy of https://github.com/bemoss/wiki_images/

Links

- 1 <https://www.virtualbox.org/wiki/Downloads>
- 2 <https://github.com/bemoss/BEMOSS3.5/wiki/Ubuntu-Installation>

Install BEMOSS Launcher Wizard

```
ramgroup@ramgroup-Latitude-E6510: ~  
ramgroup@ramgroup-Latitude-E6510:~$ sudo apt-get update  
Hit:1 http://us.archive.ubuntu.com/ubuntu xenial InRelease  
Hit:2 http://us.archive.ubuntu.com/ubuntu xenial-updates InRelease  
Hit:3 http://us.archive.ubuntu.com/ubuntu xenial-backports InRelease  
Hit:4 http://security.ubuntu.com/ubuntu xenial-security InRelease  
Reading package lists... Done  
ramgroup@ramgroup-Latitude-E6510:~$
```

Figure: Updating the system

```
ramgroup@ramgroup-Latitude-E6510: ~  
ramgroup@ramgroup-Latitude-E6510:~$ sudo apt-get install git  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
git is already the newest version (1:2.7.4-0ubuntu1.6).  
0 upgraded, 0 newly installed, 0 to remove and 172 not upgraded.  
21 not fully installed or removed.  
After this operation, 0 B of additional disk space will be used.
```

Figure: Installing git

```
ramgroup@ramgroup-Latitude-E6510: ~/temp  
ramgroup@ramgroup-Latitude-E6510:~/temp$ git clone -b master https://github.com/  
bemoss/BEMOSS3.5.git  
Cloning into 'BEMOSS3.5'...  
remote: Enumerating objects: 2689, done.  
remote: Total 2689 (delta 0), reused 0 (delta 0), pack-reused 2689  
Receiving objects: 100% (2689/2689), 5.89 MiB | 954.00 KiB/s, done.  
Resolving deltas: 100% (1013/1013), done.  
Checking connectivity... done.  
ramgroup@ramgroup-Latitude-E6510:~/temp$
```

Figure: Cloning BEMOSS

Steps

- 1 Open a terminal
- 2 Update the system
- 3 Install git
- 4 Clone BEMOSS repo

Launch BEMOSS Launcher Wizard

```
ramgroup@ramgroup-Latitude-E6510: ~/BEMOSS3.5/GUI
ramgroup@ramgroup-Latitude-E6510:~/BEMOSS3.5/GUI$ ./startBEMOSS_GUI.sh
/home/ramgroup/BEMOSS3.5/GUI/startBEMOSS_GUI.sh
/home/ramgroup/BEMOSS3.5/GUI
Install ok installed
Package Installed
Installing Package...
[sudo] password for ramgroup:
```

Figure: Running `startBEMOSS_GUI.sh` using a relative path

Steps

- 1 Run `startBEMOSS_GUI.sh` in `/#bemoss_folder/BEMOSS3.5/GUI`
- 2 Enter system password



Figure: BEMOSS Launcher Wizard

Install BEMOSS System

```
Terminal
Applying bemoss_applications.0001_initial... OK
Applying buildinfos.0001_initial... OK
Applying deviceinfos.0001_initial... OK
Applying device.0001_initial... OK
Applying discovery.0001_initial... OK
Applying dos_secure.0001_initial... OK
Applying schedule.0001_initial... OK
Applying sessions.0001_initial... OK
/home/rangroup/temp/BEMOSS3.5/web_server
OS settings imported
No cassandra settings file. Using current IP
No cassandra settings file. Using the default cassandra user/pass
Cannot establish connection
Connection cannot be established
('Unable to connect to any servers', ('192.168.1.111:9042': error(111, "Tried co
nnecting to [('192.168.1.111', 9042)]. Last error: Connection refused"))
System check identified some issues:

WARNINGS:
?: (urls.0001) Your URL pattern 'as' uses include with a regex ending with a 's'
... Remove the dollar from the regex to avoid problems including URLs.
accounts.UserProfile.models: (fields.M2O4) null has no effect on ManyToManyField.
username: (Leave blank to use 'rangroup'): admin
Email address: 
```

Figure: Prompt for Django Superuser

```
rangroup@rangroup-Latitude-E6510: ~/temp/BEMOSS3.5/GUI
PlatformInitiator >> Done 6: database bemossdb connection is closed
rm: cannot remove '/home/rangroup/temp/BEMOSS3.5/log/voltron.log': No such file
or directory
rm: cannot remove '/home/rangroup/temp/BEMOSS3.5/log/cassandra.log': No such fil
e or directory
PlatformInitiator >> Done 7: clear voltron log file, kill voltron process, kil
l all BEMOSS processes
OS settings imported
creating a new cassandra_settings file
Enter a unique name for Cassandra cluster-name:
using default clustername: bemosscluster
Enter database username:
using default username: bemoss
Enter database password:
using default password: bemoss
*****
* Congratulations! BEMOSS Installation is complete!
* Before running BEMOSS for the first time, please refer the following link
* For post installation configuration:
* https://github.com/bemoss/BEMOSS3.5/wiki/Post-Installation-Instruction
*****
rangroup@rangroup-Latitude-E6510:~/temp/BEMOSS3.5/GUIS
```

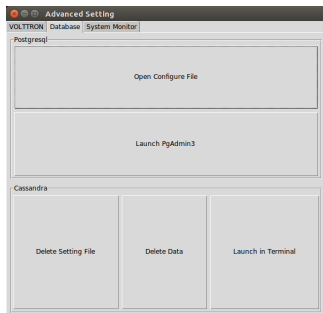
Figure: Cassandra database login info

Steps

- 1 Click "Run BEMOSS"
- 2 Define Django Superuser
- 3 Define parameters for Cassandra database

Post-Installation

Configure PostgreSQL database



Steps

- 1 Click "Advanced Setting"

Figure: Advanced Settings window

Post-Installation

Configure PostgreSQL database

```
57 # - Connection Settings -  
58  
59 listen_addresses = '*'           # what IP address(es) to listen on;  
60                                # comma-separated list of addresses;
```

Figure: postgresql.conf lines 57-60

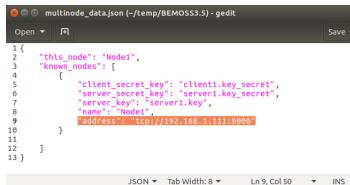
```
92 host      all             all             127.0.0.1/32     nds  
93 host      all             all             192.168.1.111/32 nds
```

Figure: pg_hba.conf lines 92-93

Steps (Cont.)

- 2 Change line 59 of postgresql.conf to `listen_addresses = '*'`
- 3 Copy line 92 of pg_hba.conf and paste on line 93
- 4 Change IP address on line 93 to system's IP address

Post-Installation



```
1 {
2   "this_node": "Node1",
3   "known_nodes": [
4     {
5       "client_secret_key": "client1.key_secret",
6       "server_secret_key": "server1.key_secret",
7       "server_key": "server1.key",
8       "name": "Node1",
9       "address": "tcp://192.168.1.111:9000"
10    }
11  ]
12 }
13 }
```

Figure: multinode_data.json open in gedit



```
1 192.168.1.111
```

Figure: parent_ip.txt open in gedit

Steps (Cont.)

- 5 Modify multinode_data.json in
/#bemoss_folder/BEMOSS3.5
with system's IP address
- 6 Modify parent_ip.txt in
/#bemoss_folder/BEMOSS3.5
with system's IP address

Problems

```
ramgroup@ramgroup-Latitude-E6510: ~/BEMOSS3.5/GUI
PlatformInitiator >> Done 7: clear volttron log file, kill volttron process, kill all BEMOSS processes
OS settings imported
Not found:/home/ramgroup/BEMOSS3.5/cassandra/conf/cassandra.yaml
Traceback (most recent call last):
  File "bemoss_lib/databases/cassandraAPI/initialize.py", line 186, in <module>
    init()
  File "bemoss_lib/databases/cassandraAPI/initialize.py", line 99, in init
    cassanFile = open(settings.PROJECT_DIR+"/cassandra/conf/cassandra.yaml",'r')
IOError: [Errno 2] No such file or directory: '/home/ramgroup/BEMOSS3.5/cassandra/conf/cassandra.yaml'
sudo: bemoss_lib/utlils/increase_open_file_limit.sh: command not found
rm: cannot remove 'bemoss_lib/utlils/increase_open_file_limit.sh': No such file or directory
*****
* Congratulations! BEMOSS Installation is complete!
* Before running BEMOSS for the first time, please refer the following link *
* for post installation configuration:
* https://github.com/bemoss/BEMOSS3.5/wiki/Post-Installation-Instruction
*****
ramgroup@ramgroup-Latitude-E6510:~/BEMOSS3.5/GUIS
```

Figure: Error raised by BEMOSS during installation

Description

- Cassandra directory non-existent
- Broken link on line 48 of bemoss_install_v3.5.sh in /#bemoss_folder/BEMOSS3.5/GUI

```
48 wget http://downloads.datastax.com/community/dsc-cassandra-3.0.9-bin.tar.gz
49 tar -xzf dsc-cassandra-3.0.9-bin.tar.gz
50 sudo rm dsc-cassandra-3.0.9-bin.tar.gz
51 sudo rm -rf cassandra/
52 sudo mv dsc-cassandra-3.0.9 cassandra
```

Figure: Lines 48-52 of bemoss_install_v3.5.sh

Problems

```
bemoss_install_v3.5.sh (~/BEMOSS3.5/GUI) - gedit
Open Save
45 sudo apt-get install openjdk-8-jre libjna-java --assume-yes
46 # Install Cassandra
47 cd $projectpath
48 # replaced link
49 wget https://archive.apache.org/dist/cassandra/3.0.9/apache-
cassandra-3.0.9-bin.tar.gz
50 tar -xzf apache-cassandra-3.0.9-bin.tar.gz
51 sudo rm apache-cassandra-3.0.9-bin.tar.gz
52 sudo rm -rf cassandra/
53 sudo mv apache-cassandra-3.0.9 cassandra
54 # Install Cassandra Driver
55 # (For better performance of Cassandra, the install-option can be
removed but might cause installation failure in some boards.)
56 CASS_DRIVER_NO_CYTHON=1 pip install cassandra-driver
57 # Go to the bemoss web ui and run the syncdb command for the
```

Possible Solution

Replace

[http://downloads.datastax.com/
community/dsc-cassandra-3.0.8-
bin.tar.gz](http://downloads.datastax.com/community/dsc-cassandra-3.0.8-bin.tar.gz) with

[https://archive.apache.org/
dist/cassandra/3.0.9/apache-
cassandra-3.0.9-bin.tar.gz](https://archive.apache.org/dist/cassandra/3.0.9/apache-cassandra-3.0.9-bin.tar.gz)


Problems

```
ramgroup@ramgroup-Latitude-E6510: ~/BEMOSS3.5
r/lib/python2.7/logging/_init_.py", line 861, in emit
2019-06-14 11:20:03,773 (TSDagent-3.0 5453) <stderr> ERROR: msg = s
elf.format(record)
2019-06-14 11:20:03,773 (TSDagent-3.0 5453) <stderr> ERROR: File "/usr
r/lib/python2.7/logging/_init_.py", line 734, in format
2019-06-14 11:20:03,773 (TSDagent-3.0 5453) <stderr> ERROR: return
fmt.format(record)
2019-06-14 11:20:03,774 (TSDagent-3.0 5453) <stderr> ERROR: File "/home/ramgroup/BEMOSS3.5/volttron/platform/agent/utils.py", line 242, in format
2019-06-14 11:20:03,774 (TSDagent-3.0 5453) <stderr> ERROR: return
jsonapi.dumps(dct)
2019-06-14 11:20:03,774 (TSDagent-3.0 5453) <stderr> ERROR: File "/home/ramgroup/BEMOSS3.5/env/local/lib/python2.7/site-packages/zmq/utils/jsonapi.py", line 40, in dumps
2019-06-14 11:20:03,775 (TSDagent-3.0 5453) <stderr> ERROR: s = jsonmod.dumps(o, **kwargs)
2019-06-14 11:20:03,775 (TSDagent-3.0 5453) <stderr> ERROR: File "/home/ramgroup/BEMOSS3.5/env/local/lib/python2.7/site-packages/simplejson/_init_.py", line 399, in dumps
2019-06-14 11:20:03,775 (TSDagent-3.0 5453) <stderr> ERROR: **kw).encode(obj)
2019-06-14 11:20:03,776 (TSDagent-3.0 5453) <stderr> ERROR: File "/home/ramgroup/BEMOSS3.5/env/local/lib/python2.7/site-packages/simplejson/encoder.py", line 296, in encode
2019-06-14 11:20:03,777 (TSDagent-3.0 5453) <stderr> ERROR: chunks
= self.iterencode(o, _one_shot=True)
2019-06-14 11:20:03,777 (TSDagent-3.0 5453) <stderr> ERROR: File "/home/ramgroup/BEMOSS3.5/env/local/lib/python2.7/site-packages/simplejson/encoder.py", line 378, in iterencode
2019-06-14 11:20:03,778 (TSDagent-3.0 5453) <stderr> ERROR: return
self.iterencode(o, 0)
2019-06-14 11:20:03,778 (TSDagent-3.0 5453) <stderr> ERROR: File "/home/ramgroup/BEMOSS3.5/env/local/lib/python2.7/site-packages/simplejson/encoder.py", line 273, in default
2019-06-14 11:20:03,778 (TSDagent-3.0 5453) <stderr> ERROR: o.__class__.__name__)
2019-06-14 11:20:03,779 (TSDagent-3.0 5453) <stderr> ERROR: TypeError:
Object of type DefaultEndPoint is not JSON serializable
2019-06-14 11:20:03,779 (TSDagent-3.0 5453) <stderr> ERROR: Logged from
file connection.py, line 1120
2019-06-14 11:20:04,872 (multinodeagent-0.1 5559) <stdout> INFO: Sendin
```

Figure: Error raised by BEMOSS during operation

Additional Problems

- Error reported by TSDagent (Time Series Database Agent) when server is running
- Additional changes may need to be made

-  BEMOSS Team
BEMOSS Installation Guide
<https://github.com/bemoss/BEMOSS3.5/wiki/BEMOSS-Installation-Guide>
-  BEMOSS Team
BEMOSS Wiki Images
https://github.com/bemoss/wiki_images/