Pole Position Installation Guide And Internals

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1.Pre-Installation

1.1-Rocky Linux 8 Installation

In this program, we used Rocky Linux 8 due to the availability of support and due to it being open-source. Before starting up the installer, you must have a properly working internet connection. Our hardware requirement for each server is (at least):

RAM: 8GB

CPU: 2 Core

STORAGE: 100GB

After the Rocky Linux 8 installation, all servers must be updated to the latest release.

```
sudo yum -y update
```

Then you need to close the firewall service for each server.

```
systemctl stop firewalld.service
systemctl status firewalld.service
```

After that, we need to define a hostname. We recommend FQDN for servers. We can use the comments below for each server:

```
hostamectl set-hostname examplexx.beartell.com
hostname
```

Next, We must disable IPv6 service for all servers. We can use these comments:

```
sudo sysctl -w net.ipv6.conf.all.disable_ipv6=1
sudo sysctl -w net.ipv6.conf.default.disable_ipv6=1
```

Finally, we need to check IP address for all servers:

```
ip addr

1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group
default qlen 1000

    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00

    inet 127.0.0.1/8 scope host lo

       valid_lft forever preferred_lft forever

2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP
group default qlen 1000

    link/ether 08:00:27:6d:30:1a brd ff:ff:ff:ff:ff:ff

    inet 10.0.2.15/24 brd 10.0.2.255 scope global dynamic noprefixroute
enp0s3

       valid_lft 84417sec preferred_lft 84417sec

3: enp0s8: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP
group default qlen 1000

    link/ether 08:00:27:03:f1:d5 brd ff:ff:ff:ff:ff:ff

    inet 192.168.56.187/24 brd 192.168.56.255 scope global noprefixroute
enp0s8

       valid_lft forever preferred_lft forever
```

1.2-SSH Configuration

Pole Position connects remote machines using ssh protocol. There must be an SSH port in order for an application to establish a connection. Each server machine's hostname and IP address must be configured on the host's file on the host-machine before starting the installation.

For Windows, it is under the directory:

```
C:\Windows\System32\drivers\etc\
```

For Linux Distros, it is under the directory:

```
/etc/hosts/
```

Then, we need to configure the host file for each server machine. We must remove default host configurations. Then, we add the hostname and IP address to the host's file for the SSH connection to the servers.

Installation Machine:

../hosts

```
127.0.0.1 localhost localhost.localdomain localhost4
localhost4.localdomain4
::1 localhost localhost.localdomain localhost6
localhost6.localdomain6
192.168.56.140 example01.beartell.com
192.168.56.141 example02.beartell.com
192.168.56.142 example03.beartell.com
```

After adding hosts, We need an SSH connection on the host machine to all servers. Thus, we create the SSH key.

```
ssh-keygen -t rsa
```

Then, we need to copy the SSH-key file to all servers.

```
ssh-copy-id -i ~/.ssh/id_rsa.pub root@examplexx.beartell.com
```

Next, We need to configure the host file on server machines. We must first remove the default host's configuration. Then, we add the hostname and IP address to /etc/hosts file for the intercommunication of servers.

Servers:

/etc/hosts

```
192.168.56.140 example01.beartell.com
192.168.56.141 example02.beartell.com
192.168.56.142 example03.beartell.com
```

2-Installation

2.1-Downloading Pole Position Installer Packages

If you are using Windows, please download the Installer below:
https://github.com/beartell/PolePosition/releases/download/objectification/poleposition-v1.msi

Double click MSI file and install accordingly. Run Installed Pole Position application.

If you are using Linux, please download the tar.gz package below:
https://github.com/beartell/PolePosition/releases/download/objectification/poleposition-v1.tar.gz

```
tar zxvf poleposition-v1.tar.gz -C poleposition
cd poleposition
./poleposition.sh
```

2.2-Installation Steps

2.2.1) Starting Page

When the application starts running, the first page gives necessary information about Pole Position. To continue your installation, click the "next" button on the bottom-right corner.

2.2.2) Server Selection page

We can add the server(domain) name in the **Server Selection** page. You can increase or decrease the server number by using the add/remove button. After adding Server names, we can click "next" to continue to the following page.

2.2.3) Master Node Selection page

We can choose a master node using the list on the Master **Node Selection** page. Master Node is really important for clusters because all master services (Namenode, Hbase Master ,etc..) are inside this server.

After choosing the master node we can continue to the next page.

2.2.4) Cluster Components page

We can choose the necessary components for cluster installation on the Cluster **Components page**. Pole Position has 9 components and Hadoop ,Yarn and Zookeeper come as default components for our Pole Position installer. After choosing the components, we can move on to the next page.

2.2.5) Repo URL page

In the **Repo URL page**, we choose the OS for our cluster. Pole Position has Rocky Linux 8 and Rhel 8 as available cluster options.

If you check "Advanced", the "Text" menu will open and you can change the URL for installation.

2.2.6) Storage Path page

We can add a storage directory or directories in the **Storage Path page**. You need to define the path where the data is for services. You can increase or decrease the path number by using the add/remove button.

2.2.7) Configuration page

Here, we must choose the configuration method on the **Configuration Page**. We have two methods. In the first method, you choose Credentials. In this case, you need to give a username and password to your installation method. We recommend that usernames be rooted and the password be the same for all servers. In the second method, you can choose the SSH-Key file for the connection. This file could be in different directories for each OS. After choosing your configuration, you can click the "Install" button and the installation will be started.

2.2.8) Installation page

Pole Position installation starts on this page. Firstly, Installation start to set up monitoring tools. The program sets up Prometheus and Grafana to be installed on the last server on the **Server Selection Page**. This takes a few minutes and you can see the logs on the page. Then, the installation log opens along with the monitoring tools on the same page. You can see logs for all services and installation percentages on this page. Installation start and components are set up for all given servers. This part may take a while depending on the number of components and services. When it's ready, the green progress bar will be full and percentage will be %100. This means that the installation is finished. Now, you can see and check logs for each server. After finishing the installation, the check button will be activated.

3-Post-Installation Part

3.1-Service Life Checking

On this page, the installation is completed and the check services are opened. You can see the status of service for each of the servers. If a service has a green circle, the service is working and the port is active. But if a service has a red circle, it is not working or it has an issue installing that part of the service. After the life-checking part installation is finished. You can click the finish button for ending the installation. If you click the back button installation starts again and you turn the installation page. The installer starts the same configuration and set up for the cluster.