Review Map

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About the IT Administrator

This section will describe the general intention of the IT Administrator role.

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It won't list detailed responsibilities (that's in a subsection). But it will give the general purview of the IT Admin.

It will also distinguish the IT admin from the DB admin (PHEMI Administrator, in our terminology).

Assumptions

An individual responsible for maintaining the PHEMI Central system should have experience in the following:

- System administration and network security in general
- Database administration in general
- Administration of the Hadoop ecosystem, including the Hadoop Distributed File System (HDFS), YARN, Ambari, and Accumulo.

Platform Prerequisites

In describing the tasks of the IT Administrator, this guide assumes that PHEMI Professional Services has installed and set up your base system of cluster nodes and your management node, and has installed and configured all PHEMI Central components on the cluster.

PHEMI Professional Services will also have installed and configured Docker as part of your PHEMI Central deployment. Docker is an open-source engine that automates deploying applications as portable, self-sufficient images. The PHEMI Central Docker containers you will be interacting with include the following:

- The Ambari server. Apache Ambari is an open-source interface for provisioning, managing, and monitoring Hadoop clusters.
- MongoDB. MongoDB is a high-performance, high availability, scalable document database.
- Tornado. Tornado is a Python-based web server and web application framework.
- Ningx. Nginx is an open-source reverse proxy server for the HTTP, HTTPS, SMTP, POP3, and IMAP protocols.

Starting and Stopping the System

Start the System

From a cold state, the components of PHEMI Central must be started in order.

First, start the Hadoop cluster.

1. Start the Ambari server.

   Log on to the node running the Ambari server as a user with sudo privileges. At the command line, enter the following command:

   ```
   sudo service ambari-server start
   ```

2. Access the Ambari console.

   Use a web browser to log on to the node running the Ambari server. The console runs on port 8080.

3. Start Hadoop services managed by Ambari. These include the Hadoop Distributed File System, YARN, MapReduce, Zookeeper, Nagios, Ganglia, Hive and Kafka.

   In the Ambari console, select the cluster. On the left side of the Ambari dashboard, click the **Actions** button and select **Start All**. Ambari begins sending "service start" requests to each node in the cluster. After a few minutes, all services will have been started and the Ambari dashboard will show green.

4. Start the Accumulo, Thrift, Accumulo-Proxy, and Raindrop services.

   Using SSH, log on to the Accumulo master node as a user with sudo privileges. At the command line, issue the following commands:

   ```
   sudo su accumulo
   /usr/lib/accumulo/bin/start-cluster.sh
   ```

After the Hadoop cluster is started, start PHEMI Central Docker containers.

5. Start Docker.

   Log on to the server running PHEMI Central as a user with sudo privileges. At the command line, issue the following command:

   ```
   sudo service docker.io. start
   ```

6. Start MongoDB.

   From the PHEMI Central server, start the Docker container for MongoDB, using the following command:

   ```
   sudo docker start phemi_mongo
   ```

7. Start the Tornado web application framework.

   The Tornado framework runs the PHEMI Central Management and Governance Console. From the PHEMI Central server, start the Docker container for the PHEMI Central Management and Governance Console, using the following command:

   ```
   sudo docker start phemi_central
   ```

8. Start Nginx.

From the PHEMI Central server command line, start the Docker container for Nginx, using the following command:

```
sudo docker start phemi_nginx
```

Stop the System

Stop the PHEMI Central platform using the reverse sequence to when you start the system.

First, stop the PHEMI Central Docker containers.

1. Log on to the server running PHEMI Central as a user with sudo privileges. Stop Nginx.

   From the PHEMI Central server command line, stop the Docker container for Nginx, using the following command:

   ```
   sudo docker stop phemi_nginx
   ```

2. Stop the Tornado web application framework.

   The Tornado web application framework runs the PHEMI Central Management and Governance Console. From the PHEMI Central server command line, start the Docker container for the PHEMI Central Management and Governance Console, using the following command:

   ```
   sudo docker stop phemi_central
   ```

3. Stop MongoDB.

   From the PHEMI Central server command line, stop the Docker container for MongoDB, using the following command:

   ```
   sudo docker stop phemi_mongo
   ```

4. Stop Docker.

   From the PHEMI Central server, stop the Docker, using the following command:

   ```
   sudo service docker.io. stop
   ```

After the PHEMI Central Docker containers have been stopped, stop the Hadoop cluster.

5. Stop the Accumulo, Thrift, Accumulo-Proxy, and Raindrop services.

   Using SSH, log on to the Accumulo master node as a user with sudo privileges. At the command line, issue the following commands:

   ```
   sudo su accumulo
   /usr/lib/accumulo/bin/stop-cluster.sh
   ```

6. Stop the Hadoop services managed by Ambari. These include the Hadoop Distributed File System, YARN, MapReduce, Zookeeper, Nagios, Ganglia, Hive and Kafka.

   Use a web browser to access the Ambari console. The console runs on port 8080. In the Ambari console, select the cluster. On the left side of the Ambari dashboard, click the **Actions** button and select **Stop All**. Ambari begins sending "service stop" requests to each node in the cluster. After a few minutes, all services will have been stopped and the Ambari dashboard will show red.

7. Stop the Ambari server.

Log on to the node running the Ambari server as a user with sudo privileges. At the command line, enter the following command:

```
sudo service ambari-server stop
```