This Vagrant script defines a multi-node environment using Docker as the provider to create an Ubuntu-based cluster with LAMP (Linux, Apache, MySQL, PHP) stack components. The configuration is made up of a "master" and a "slave" node, which are networked using a private network for internal communication. Below is a detailed documentation of the script:

Node Configuration

"master" Node:
- The "master" node is configured using a Docker provider and uses the "philemonnwanne/ubuntu-mod:20.04" Docker image. It is a customised container that has SSH enabled.
- A private network is established with DHCP for internal communication between "master" and "slave" nodes.

"slave" Node:
- Similar to the "master" node, the "slave" node is also configured using the Docker provider with the same Docker image, network setup, and privileged status.

Software Installation

"master" Node:

SSH Server Installation:
- The script updates the package lists and installs the OpenSSH server with minimal user interaction.
- The SSH server is started to enable remote access.

User Management:
- A user named "altschool" is created with a home directory and `/bin/bash` as the default shell.
- The password for the "altschool" user is set to "password."
- "altschool" is added to the "sudo" group to grant root privileges.

SSH Key-Based Authentication:
- SSH key pair generation is initiated for the "altschool" user.
- The public key is copied to the "slave" node to enable passwordless SSH.
- SSH configurations are adjusted to allow key-based authentication and disallow password-based authentication.

Data Management and Transfer:
- The script ensures that the target directory on the "slave" node exists.
- Data is copied from the "master" to the "slave" node using rsync over SSH.

Process Monitoring:

- The script executes the `ps aux` command to display an overview of currently running processes.

LAMP Stack Deployment:
- The LAMP stack (Linux, Apache, MySQL, PHP) components are installed on the "master" node.
- Apache is set to start on boot.
- Apache and MySQL services are started.
- MySQL is secured and initialized.
- A PHP file (`info.php`) is created to validate PHP functionality with Apache.

"slave" Node:

Process Monitoring:
- Similar to the "master" node, the script executes the `ps aux` command on the "slave" node to display an overview of currently running processes.

Inter-Node Communication

Communication between the "master" and "slave" nodes is handled by Docker networking when Docker is used as the Vagrant provider. Docker containers are connected to the same Docker network and can communicate using container names or IP addresses.

This script sets up a basic environment for a LAMP stack and demonstrates how to configure and manage Docker-based nodes in a multi-node Vagrant setup.