Mansoura University
Faculty of Computers and Information Sciences
Department of Computer Science
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[CS412P] Distributed Systems

Grade : Fourth grade

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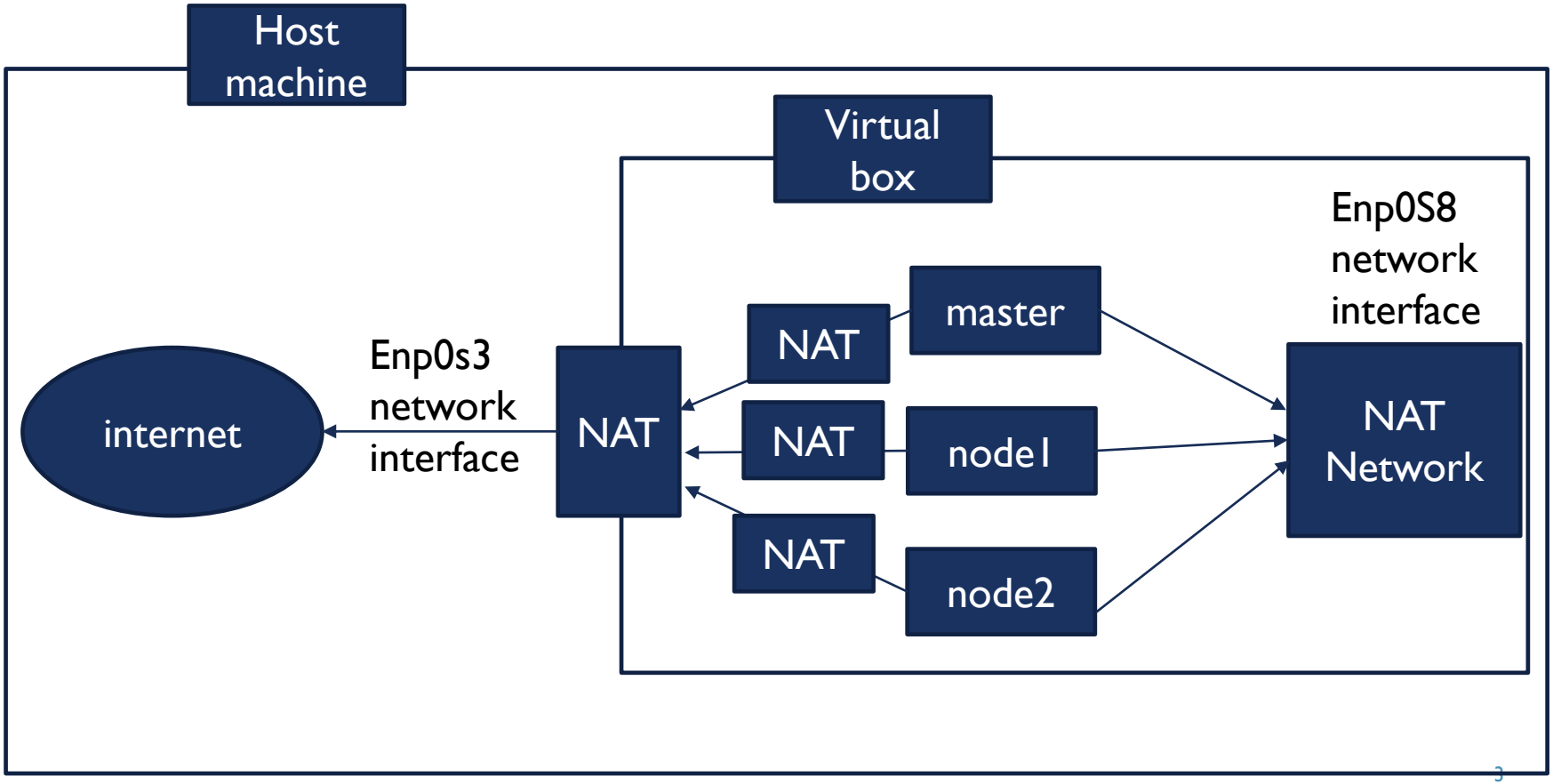
NETWORK SETUP FOR VIRTUAL MACHINES CLUSTER



NETWORK SETUP FOR VIRTUAL MACHINES CLUSTER

Create the NAT network interface in virtual box. It has the name of enp0s8 in ubuntu.
From file menu by selecting pre ferences|network|add
Name it as local.cluster.nat.
Open each machine and assign the second adapter to local.cluster.nat
-Configure anew a static iface network interface enp0s8 of each virtual machines to:
Auto enp0s8
Iface enp0s8 inet static
Address 192.168.1.100
Netmask 255.255.255.0
Network 192.168.1.0
Broadcast 192.168.1.255

NETWORK SETUP FOR VIRTUAL MACHINES CLUSTER

-By using a command : nano /etc/network/interfaces
This setting will provide ip address range from 192.168.1.1 to 192.168.1.254
-Install the network tools using apt-get package with the following command :
Sudo apt-get install net.tools
-Run the commands:
Sudo ifup enp0s8 // makes the enp0s8 interface up.
Sudo Ifconfig //checks that the new enp0s8 interface is added with anew static ip address for the virtual machine .
-Repeat the same steps for the remaining machines.

SSH SETUP IN VIRTUAL MACHINE CLUSTER

- Setup hostname (name to identify the cluster nodes,Instead of using the ip address each time .
- Name the master machine as : master.cluster.local
- Name node1as :node1.cluster.local
- Name n2 as:node2.cluster.local
- Run the following commends in all machines :
- hostnamectl set-hostname name of the machine
- Change the ip address of each node in /etc/hosts
- By the running the command :nano /etc/hosts for example for the master node add:
- 192.168.1.110 master.cluster.local
- And save the file.

SSH SETUP

- To let the master node access the other nodes as an entry point add the ip address and hostname of those nodes in the /etc/hosts for the master machine.
- 192.168.1.120 node1.cluster.local
- 1192.168.1.130 node2.cluster.local
- Then run the ping command to check for the connection:
- Ping node1.cluster.local
- Ping node2.cluster.local

SSH SETUP CONTD…

- Master machine should be able to ssh(log in) to all other machines(nodes).
- Install ssh server on both nodes by the commands:
- Sudo apt install openssh-server(to install the ssh-server package in the node).
- Sudo systemctl status ssh (to check the status of the service)
- Sudo systemctl enable ssh (to register for the service at the startup)
- Generate ssh key for master machine using ssh-keygen command.
- Check for the generated key by:
- Cd .ssh/
- Ls
- Cd

SSH SETUP CONTD…

- Add the ssh key of master machine to node1 and node2
- Copy the generated key i to the other nodes by running the commands:
- Ssh-copy-id - i ~/.ssh/id_rsa.pub node1@node1.cluster.local
- Ssh node1.cluster.local
- It will access node1 from the master machine
- To logout type : exit
- Do the same steps in node2.
- Master now have a direct access on both nodes without having to enter the password because the keys is already copied.

SSH SETUP

- Shut down the machines(nodes) by:
- Sudo poweroff .
- Run the both nodes in headless mode from start.
- On the terminal at the master node type:
- Clear
- Ping nod1.cluster.local
- Ssh node1.cluster.local
- Exit to log out.

CLUSTER BUILDING

Thanks