Configuring the Private LAN to the RPi

Use the following procedure to configure the host interface for the private LAN connected to the Rpi. The procedure assumes eth1 is the

Ethernet port on the host PC connected to the CDAC board.

To configure the private LAN to the target

1. Determine which host eth<n> port is connected to the target, where <n> is the port instance.

• Find the eth device with the following command:

dmesg | grep -i eth

• In the grep results, identify the eth<n> port for the smsc95xx or similar USB Ethernet adapter.

2. On the host, find and edit the following file:

/etc/network/interfaces

This file is read-only, so you must open it with administrative privileges, for example:

sudo vim /etc/network/interfaces

3. Depending on your connection to the target, modify the interfaces file:

• Additional NIC card/adapter: Add the following to the interfaces file:

auto eth1

iface eth1 inet static

address 10.0.0.1

netmask 255.255.255.0

post-up /etc/init.d/isc-dhcp-server restart

4. Restart the host’s networking with the following command:

sudo /etc/init.d/networking restart

5. Hard reboot the host system.

Configuring the DHCP and NFS Server on the Host

This topic explains the installation and configuration of DHCP and NFS servers. The DHCP server on the host is used to assign the IP address to CDAC

Rpi board and the NFS server is used to mount the root file system on the CDAC RPi board via NFS.

If the DHCP and NFS servers are not yet installed on the host, the SDK/PDK installer installs and configures them. Alternatively, those servers can be

installed and configured as explained in the following procedures.

To set the DHCP server

1. Install the DHCP server on the host:

sudo apt-get install isc-dhcp-server

2. Specify the interface on which the server should listen for leasing an IP address from the RPi over the private LAN.

• Locate and edit the following file:

/etc/default/isc-dhcp-server

This file is read-only, so you must open it with administrator privileges.

• Modify the isc-dhcp-server file to set INTERFACES to the eth<n> connection you determined when connecting your network interface.

For example, add the following line if the DHCP server should listen on eth1 interface.

INTERFACES="eth1"

Note: Changing the interface to “eth3” can result in the following error. To resolve this error, delete the

/etc/udev/rules.d/70-persistent-net.rules file.

udevd[148]: error changing net interface name eth0 to eth3: Device or resource busy

3. Configure your host DHCP server for the RPi interface.

• Locate and edit the following file:

/etc/dhcp/dhcpd.conf

Because the file is read-only, open it with administrator privileges.

• Modify the dhcpd.conf file to contain the following:

ddns-update-style none;

allow bootp;

subnet 10.0.0.0 netmask 255.255.255.0 {

option routers 10.0.0.1;

default-lease-time 345600;

max-lease-time 31557600;

range 10.0.0.2 10.0.0.254;

}

subnet 10.0.0.0 netmask 255.255.255.0 {option routers 10.0.0.1; default-lease-time 345600; max-lease-time 31557600; range 10.0.0.2 10.0.0.254;}

Where:

• <domain\_name> is your company domain name.

• <DNS1>, <DNS2> are the DNS servers that you already added to the /etc/resolv.conf file on your host system. Multiple DNS servers are

separated by commas. For example, the Google public DNS IP addresses are formatted as:

8.8.8.8, 8.8.4.4

4. Restart the DHCP server:

sudo /etc/init.d/isc-dhcp-server restart

To set the NFS server

1. Install the NFS server on the host using apt-get:

sudo apt-get install nfs-kernel-server nfs-common portmap

2. Locate and edit the following file:

/etc/exports

Add the corresponding path to the target file system:

/home/iot/any\_folder \*(async,rw,no\_root\_squash,no\_all\_squash,no\_subtree\_check)

This change exports the target file system.

3. Restart the NFS server:

sudo /etc/init.d/nfs-kernel-server restart

sudo exportfs -a

Mounting the Directories on the Client

Now that we have some place to put the remote shares and we've opened the firewall, we can mount the shares by addressing our host server, which in this guide is 10.0.0.1, like this:

* sudo mount 10.0.0.1:/var/nfs/general /nfs/general
* sudo mount 10.0.0.1:/home /nfs/home

Enabling Internet Access from the Target

This topic contains instructions for setting up the Linux host and the target for accessing the Internet from the target.

The target file system is apt-get compatible, so with Internet access you can download and install additional packages using apt-get directly from

the Ubuntu server (Ubuntu ARM port).

Note: Online versions can change; hence, it cannot be guaranteed that the latest server pulled from the online

repository works with your product.

Applies to: Releases supporting X Windows only: For X installations, the board must be booted before attempting to set up Internet connectivity.

This ensures that the X server and other packages are installed from the local repository instead of online.

To enable Internet access from the target

1. On the Linux host, enter the following commands to enable settings on the host:

$ sudo sysctl -w net.ipv4.ip\_forward=1

$ sudo iptables -F

$ sudo iptables -t nat -A POSTROUTING -o wlp3s0 -j MASQUERADE

Where wlp3s0 is the interface connected to the network that is connected to the Internet on the host.

$ sudo iptables -t nat -A POSTROUTING -o eno1 -j MASQUERADE

Where eno1 is the private LAN interface connected to target from the host.

2. On the ***RPi***, enter the following commands to enable settings on the target device:

$ sudo ip route add default via 10.0.0.1

$ dhclient <ethernet interface>

/etc/resolv.conf 🡪 nameserver 8.8.8.8 4.4.4.4

Where 10.0.0.1 is the IP address of the host as seen from the target.

The dhclient command also generates the name server configuration in the file:

/etc/resolv.conf

Note: If you trying to enable Internet access from on NFS mounted system and the dhclient initially fails or

hangs, you must manually add an /etc/resolv.conf file. For more information, contact your CDAC

customer engineer.

3. On the target, resynchronize the package index files with the following command:

apt-get update