Network Message Bus

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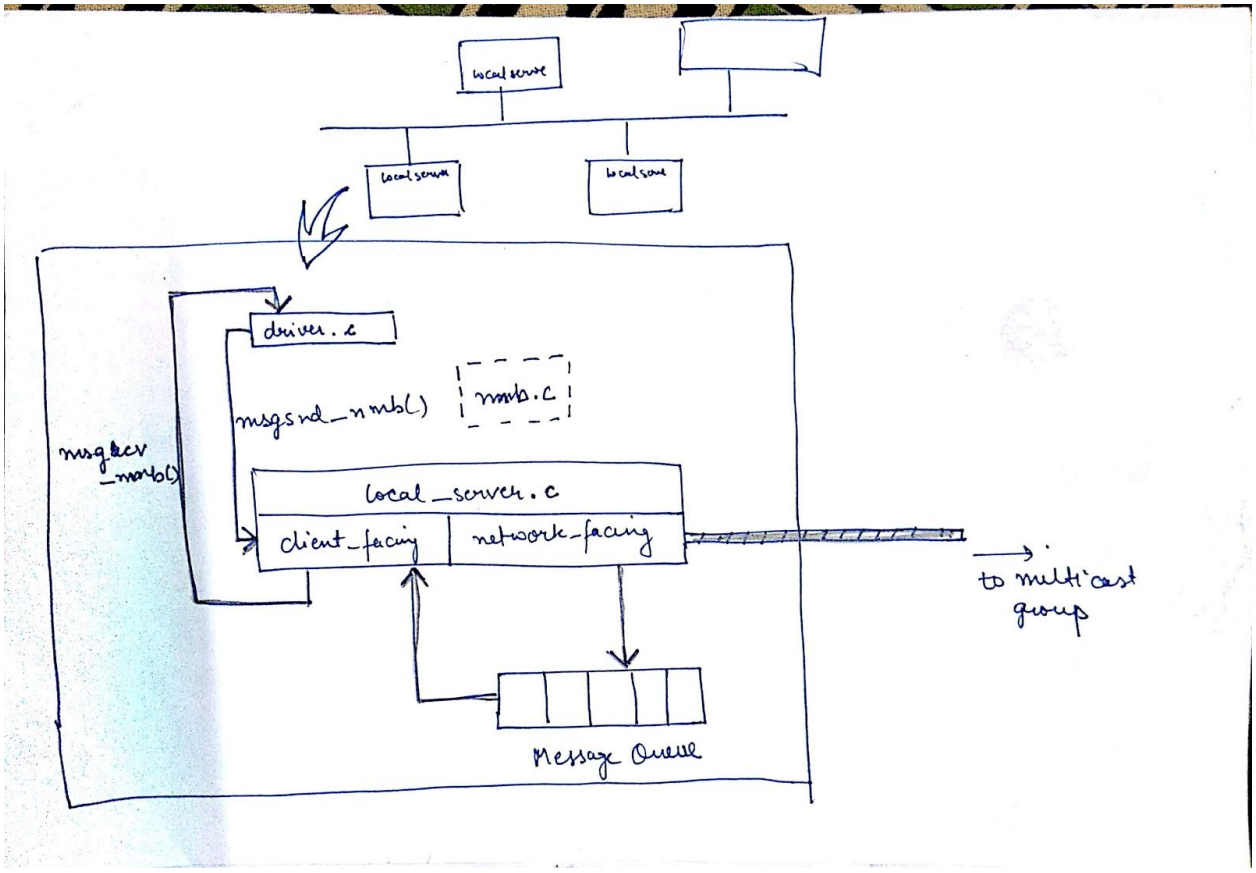

Basic Diagram Showing Working of NMB

All the function declarations are in nmb.h and definitions are in nmb.c

Files Supplied: driver.c
local_server.c
nmb.h and nmb.c
Makefile

Usage: Run $ make all
Run $ ./local_server on the machine
Now run $ ./driver <your_ip> <app_port>

You can run any number of drivers on same machine as long as their port numbers are different.

In each machine, a local server will be running. It'll be listening to port 1111 for incoming TCP connections from within the machine and will be listening to port 1112 for incoming multicast packets from the network.

Upon starting the local_server, it first creates a message queue. Then it forks a child. In parent process, client_facing( ) function starts executing and in child process, network_facing( ) function starts executing.

Network facing function first registers itself into the "239.0.0.1" multicast group and starts an infinite loop to listen to incoming packets. If any packet is received, it checks if its destination IP address matches the IP address of machine, then it is directly sent to the message queue.

The incoming packets consist of destination IP address (first 4 bytes), destination port no. (following 2 bytes), 2 bytes padding (to enable casting into long mtype which is 8 bytes) and message string (202 bytes).

Upon startup, driver first calls msgget_nmb( ) function which return **nmb_id**. It is actually the ***socket fd*** for the TCP connection between the driver and local server. It can then use msgsnd_nmb( ) and msgrcv_nmb( ) functions by supplying **nmb_id**.

Client facing function in local server listens to all the requests made by the drivers. Select( ) is used to achieve non-blocking transmission. If a message is sent by a driver, it is directly multicasted on the network group. If a *msgrcv_nmb( )* call is made by a driver, it call msgrcv on the Message Queue and returns the message object (if available) on the TCP socket.