Sensor Networks Lab (PR WS14/15)

Lab 5: IPv6 Multicast

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Excercise 5.1: *Link Local Multicast* Can all nodes be addressed using the link local multicast or has a special message to be sent in order to address the router?

We use FF02::1 as multicast address for all nodes connected to Router and for router we used FF02::2 as specified in *rfc4291* page 15. In this experiment we got all nodes reply as Motes are configured as routing device as well.

Excercise 5.2: *Local setting changes* Extend the set command to allow an additional option local, so that the changes are only saved locally and no multicast message is sent out. Example:

set th 3000 local

In this application we have appended shell set command with parsing of one more argument "local and post a task *report_settings_local()* which saves saves the configuration but does not brodcast to neighbour nodes.

Excercise 5.3: *Theft Application*

This application has been made with different small blocks.

New Node Action

1. After booting askForConfiguration() task is posted asking for new configuration from existing network if it exists.It sends settings_report with type SETTINGS_REQUEST .
2. RequestTimer is one shot timer added for 5 sec of time span where Nodes reply is listened and if replied packet has settings_report type SETTINGS_RESPONSE then its saved and PER sensor sampling is started .
3. In case RequestTimer is over it sets default setting from the enum from implementation.
4. Leds lighting all, (RED, GREEN, BLUE) tells its waiting for configuration.
5. Leds lighting binary 1, JUST RED, means it has got no configuration and has set to default.
6. Leds lighting binary 2, JUST GREEN, means it has got new setting from network.

Settings Exchange for existing nodes

Settings report is sent via 4000 port as well as recieve configuration for this these things are checked

1. If SETTINGS_USER is set in recieved configuration packet , its just saved locally.

2. If current node configuration is changed via shell, saveConfigurationAndSend , Sensor sampling is restarted using new configuration as well. Its multicasted vis 4000 and type is set to SETTINGS_USER.

3. If new node with SETTINGS_REQUEST type is recieved then sendConfiguration task sends the current setting configuration with SETTINGS_RESPONSE as type to port 4000 on multicast address.

4. Settings.recvfrom also accepts the configuration from another node , current node being new to network, and saves in configuration. Sensor sampling is restarted using new configuration as well.

Node Theft

Theft report is sent via 7000 port using the report_sensor task in case threshold condition is filled

1. Node sets its TOS_NODE_ID in theft_report.who and sends it to multicast address FF02::1 on port 7000.

2. Recieving nodes lights up recieving id on led as binary code and if its above 7 it starts same number in blinking its last three bits.