MWSense – A simple home network management solution for parenting control

Amay – 000000000

Khoa Le – 009301968

Seemma – 111111111

Shruti – 222222222

Introduction:

NWSense is an integration of hardware, software, and website architecture to provide a simple solution for those who lack sufficient technical knowledge to manage their home network according to their own desire. This product solves the problem of home owners’ insufficient knowledge in network configuration to provide a simple website with elegant but intuitive UI for anyone to use. Parents can simply visit MWSense.com and block any websites they wish if using our product. A house owner can visit MWSense.com and block a strange Mac address which is unique to each computer not to allow a stranger to use his home network. Or either of them can visit MWSense.com to view internet usage professionally analyzed.

For the product to work, it is required that NWSense’s customers use our piece of preinstalled and pre-configured hardware as an internet access point and registered it with an NWSense account.

Implementation:

The application has been developed in python, python-flask html, css, java-script, node-red, nmap, using raspberry Pi model 3B as the hardware, Bluemix Cloudant and IoT Platform for communication and Twilio service for real time notification. We also use Amazon EC2 service as well as docker to deploy a custom server.

Design:

Raspberry Pi model 3B as access point. All devices need to use wireless signal from this device so that all route will be managed by preinstalled Squid and Squid-guard. Raspberry Pi will push new data to Bluemix IoT platform using Node Red with an interval of 30 seconds. Data then will be stored in Cloudant database for future analysis. In the meantime, another stream of data including strange MAC addresses using the home network will be pushed to a custom server for real time notification.

------ Squid -------------------

Custom Server: a customer server will be deployed on AWS EC2 using Docker. The server is a bridge between NWSense webserver and another Cloudant service - User database. It also accepts data from raspberry Pi and use Twilio for real time notification when there is a new device with new MAC address accessing the home network.

Webserver:

Customer:

Technology used: