

Wireless Training at Sonapur, Assam

Summary

The workshop, perhaps first of its kind in Assam, in terms of wireless knowledge dissemination and training, discussed critical aspects of wireless technology and deployment. Specifically, it brought out the importance of IP address and its significance, the characteristics of class A, class B and class C Address.

It discussed concepts of Subnet Mask, Network Address, Broadcast Address and how to calculate each of them for class A, B and C Address and finally for every kind of network using VLSM i.e. for /24, /25, /26.... The discussion was also on public and private IP address.

It introduced and worked on the concept of wireless standards, that is what IEEE is and what are the standards that IEEE made for wireless technology. It discussed about 802.11 b/g/a/n according to modulation technique, speed and frequency.

The discussion and exercise was on features and characteristics of electromagnetic wave. It discussed speed and data dependency with frequency that is with more frequency one can transmit more data but at smaller distance. Trainees were given training on Fresnel zone and free space loss associated with the radio wave and also how to calculate them. Training were provided on how power is received at the receiver end when transmitter with certain dBm power, certain dBi gain antenna is transmitting wave and how much data throughput one get from it. The workshop discussed about the basic unit of radio that are needed to remember while configuring any radio of any company. It also worked on the line of sight calculation with software called Motorola PTP software in which were given longitude and latitude of two locations and it automatically found the possible of radio link between them.

The workshop focused on the security (WEP/WPA) subject and also associated client with MAC filtering, focused on what is basic of router and how to configure the router. Trainees with help of trainers setup a Hotspot in mikrotik router which provides the IP address automatically to client while associating the Mac address of client to mikrotik router.

Demonstrations were made while giving different user a different speed and monitoring the network according to user.

Training Date: 24th December 2010 to 29th December 2010
Venue: Sonapur, Kamrup District, Assam
Trainers: SANTOSH BARAL (Nepal Wireless) and SHAHID AHMAD

Objective:

The objective of the training was to set up temporary mesh wireless network, with testing and live demonstration with all essential wireless equipments within a range of 5 KM with one relay station and two nodes.

Training Imparted:

The five days programme imparted the following wireless knowledge with theory and practice and live demonstration:

- a) Fundamental computer
- b) Inter networking basic
- c) Basic network topologies
- d) The OSI Reference models
- e) Ethernet networking
- f) Ethernet cabling
- g) TCP/IP Protocols
- h) IP Addressing
- i) Subnetting, Variable Length Subnet Masks (VLSMs), and Troubleshooting TCP/IP
- j) IP Routing
- k) Wireless Standard
- l) Radio Physics
- m) Radio Link
- n) Radio device configuration
- o) User account creation
- p) Security (WEP/WPA, MAC authentication)
- q) Troubleshooting wireless network

Trainees:

1. TAPAN TALUKDAR
2. BANESWAR DEKA
3. BIKASH BORO
4. DENSON BORO
5. MRIDUL DAS
6. SHAHID AHMAD
7. MAHANTA TUMUNG
8. JADUMONI BORO

Achievement:

At the end of the training the trainees gained skills on the following and were able to perform the following tasks:

- i. Trainees were able to make all kind of cabling like state cabling, cross cabling etc.
- ii. Trainees skilled to make link analysis between two nodes.
- iii. Trainees gained knowledge to configure radio (Mikrotik and Engenus) as Access Point, Client and as Mesh
- iv. Trainees now can configure the Mikrotik router as DHCP Server, Router, and Hotspot server
- v. Trainees can create user profile of different varieties and connect the client with Security (WPA/WEP) and Mac authentication.

Limitations:

There were limitations as emerged during the training / workshop:

- i. Selection of trainees could have been better and numbers enhanced
- ii. Distance between training centre & the place for stay / accommodation
- iii. Language and explanation difficulty in communication for trainer / translation and explanation was carried out by second person
- iv. Duration was short by 2-3 days

Feedback:

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|---------------------------------|---|---------------|-----------|
| i. About venue: | Excellent (60%) | Average (40%) | Poor (0%) |
| ii. Communication skills: | Excellent (30%) | Average (70%) | Poor (0%) |
| iii. About personal qualities: | Excellent (60%) | Average (40%) | Poor (0%) |
| iv. About content: | Excellent (70%) | Average (30%) | Poor (0%) |
| v. About training method: | Excellent (60%) | Average (40%) | Poor (0%) |
| vi. About duration of training: | 100% feel, it should be at least for 10 days. | | |