Fiber Wireless (Fi-Wi) Network and Transmission by Fi-Wi

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Abstract: **-By looking at electronic communication device in past few years. It is clear that portable devices are mostly use by costumer as compare to stable device. Their explosive growth also poses a problem. This overcrowding problem was not unforeseen by engineers. Who have been developing new wireless technology that use different parts of electromagnetic spectrum. For maintain strong incoming wireless signal for building, many antennae base station must be built near to building. And signal between antenna base office and central office must be transmitted through long range optical fiber. This type of system contains fiber and wireless (Fi-Wi) transmission. In this paper, we focus on the transportation of millimeter-wave and sub millimeter-waveAnd characteristics or component of Fi-Wi.**

INTRODUCTION:

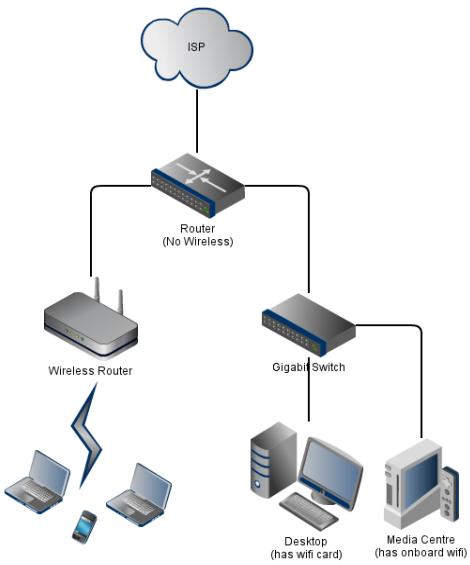
In present time uses of mobile and wireless technology is increased. So, on transmission and on communication traffic is increased. That's why speed of network is slow between user and wireless antenna base.
Current wireless network like GSM, UMTS are concentrated on low microwave region. transmission speed of low microwave region is slow as for current requirement. Wireless network like LTE, WIMAX have high speed transmission but they also work on lower microwave region. A new wireless technology can exploit unused bandwidth of sub-millimeter and millimeter waves frequency region. By this wireless technology concentrated microwave region is 57-64 GHz frequency. Which is higher than present wireless network. Due to that microwave region speed of these type network is high. That new wireless technology is called Fi-Wi.
Fi-Wi network is fiber wireless network that is combination of two type network passive optical networks and wireless mesh network. In Fi-Wi Fi represent for fiber optical network and Wi represent for wireless network. In Fi-Wi network system first signal is transmitted by optical fiber network for long rang and in last mile wireless network is connected for flexible communication in community area. Fiber network provide high bandwidth communication so it gains high speed and wireless network provide flexible and easy connection to user in community area.Fi-Wi support various type of communication such as upstream, downstream, and peer to peer communication.

OPTICAL FIBER:

Optical fiber shape is like thin glass layer. It works on principle total internal reflection. Optical fiber transmits signal in form of light. Since then, fiber found their way inn communication it also used in amplifier, laser, sensor and more. For batter communication, optical fiber is updated version of communication techniques in forms of providing high bandwidth, supporting long range/distance, and reducing overall cost. wide band multimode fiber is newest and updated fiber. These fiber's range of usable wavelengthis expended.Fiber are also used for illumination and imaging and are often wrappedbundles so they may use to carry light or image out of confined space.Those fiber which support many propagation path or fiber which access multiple data are called multi-mode fiber. And those who support single propagation path are called single-mode fiber.

WIRELESS:

When we did not use any wire for done communication between two devices. And in those devices, one must be sender which generates electromagnetic wave and another is receiver which captures that electromagnetic wave. A wireless device can be transmitter(sender), receiver and both.
In wireless communication transmission is done in form of electromagnetic wave. One device produce / create electromagnetic wave by convert provided signal and others receive that electromagnetic signal.
Wireless communication is done different type by different devices. There are few types of wireless communication



- Satellite communication
- Mobile communication
- Wireless communication
- Infrared communication
- Bluetooth communication

Wireless communication is a flexible communication type. Because in this communication not compulsory that receiver device will stable. Wireless communication is done in a range.

FI-WI:

Fi-Wi is combined network of two different type communication network. Fiber communication and wireless communication. Fiber communication is use for long range because it has higher bandwidth and wireless communication is use on last mile because it is flexible. A signal, transmitted by Fi-Wi is follow this process first signal pass through multiple wireless network to optical fiber by user. In optical fiber there is multiple optical network unit (ONU) which is connected through wireless network. Data will pass by ONU to optical line termination (OLT). By the OLT data pass /flow for long rang and end point of optical fiber OLT give that data to ONU and that ONU is connected through wireless network by wireless network data will reach to user.

ISSUES:

1. **TCP Performance: -** transmission control protocol provides reliable dates transfer in wireless networks multiple path to ONU. ONU sent it to OLT, OLT transfer it to internet or another wireless device which is in that network.Whenever multiple path provides multiple data on OLT. OLT maintain their time period of receiver. But OLT can send one data at a time in internet.
2. **Traffic routing issue: -** By the Fi-Wi their multiple data transmitted. And data is transmitted in closest path to user to receiver.so there issue generate by multi traffic demand. By multi traffic demand less delay and higher aggregate bandwidth is required.

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