**1.) Network Virtualization and benefits**

Network Virtualization is a software which acts and works as a hardware for networking devices such as it can acts as a switch, router etc. by using the network virtualization we can use the physical network given in the device and the independent virtual network. With the help of network virtualization it can deploy the applications within few minutes which is not the same case when deploying with the physical network. The network virtualization divides the network and the core of the hardware and it will then use the software from the core of the hardware to create, monitor and manage network. This is very helpful technology invented because it has decreased the load carried by the servers and the benefits of using network virtualizations are as follows:

1.)  It will increase the time of network because what physical network can take weeks it can do that within minutes

2.) It can achieve the greater numbers in efficiency of the network operator by using the automation in the network virtualization.

3.) It can easily handle the network workloads and it can separate it to the physical part easily.

4.)  The network virtualization can actually improve the cloud networking and networking security.

**3.) IoTivity and Services**

The Internet of Things is the actual concept of connecting the devices with the internet where the data collected by the connected devices report to their users. As we all know, internet is the medium through which it connects all the people and it can be called as "Internet of People" and in that IoT connects all things such as smart devices, sensors, actuators, smart appliances, mobile devices etc.

The IoT offers a wide range of services some of them are as follows:

1.) Smart Device: The smart devices are the low powered devices that has the capability to monitor the physical environment and effects happening around the devices. The smart devices has limited time period battery power and it consumes very little battery power for their operations.

2.) IoT Gateways: IoT gateways manages the data traffic between the different networks by bridging the gap between the local environment and the destination environment. This process is done using the translation of the network protocols running between the local and destination platforms. In some IoT gateways their is also edge computing devices which act as a middle layer of the system.

3.) Cloud: Cloud is the storage and the networking system in a centralized location such as data center. IoT cloud is a high performance network of servers and it is used to perform high speeds data processing for traffic management and it can deliver accurate analytics.

4.) Analytics: This involves the processing of the data collected by the sensor nodes so that it can be easily interpreted and used for the detailed analysis which helps to find out the thing's researchers are looking for from the data. It also helps in identifying the irregularities in the IoT devices after looking in to the devices data sent by the user. The analysis done carefully in the organization is used to predict the trends in the market and it can lead to successful implementation.

5.) User Interface: User Interface is the application which is used by users by monitor and control the data collected by the IoT devices and it could be an interface of the mobile app, a website, a desktop application and even a passive experience and the interface encourages users to ease the IoT system and some of them include the touch panel instead of mechanical knobs and switches in household appliances.