Research on cloud based virtualization techniques and Internet of Things (IoT).

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Abstract

In this article, we will study virtualization technique over cloud and challenges faced in IoT. Cloud computing is a technology that provides service on-demand such as resource availability, hosted services etc. Further, these services are divided into three categories IaaS,PaaS and SaaS.Virtualization is the central part of cloud computing that is used by many organizations. So, we have included different types of virtualization and challenges faced in internet -of-things(IoT). Today cloud computing is the reason for success of IoT.
IoT is a growing technology that includes the infrastructure, servers and storage for real time operations. The growth of sensor based electronic devices has led to the realization of IoT model. Now days Smart apps requires parallel processing and dynamic resource sharing,

Keywords: Virtualization,IOT

1. Introduction

Cloud computing is an on-demand availability of computing resources, and computing power without direct active management by the user. Virtualization is an essential part of cloud computing. Virtualization is a virtual version of something instead actual. The different types of virtualization are shown below that we will discuss later in the section**.**
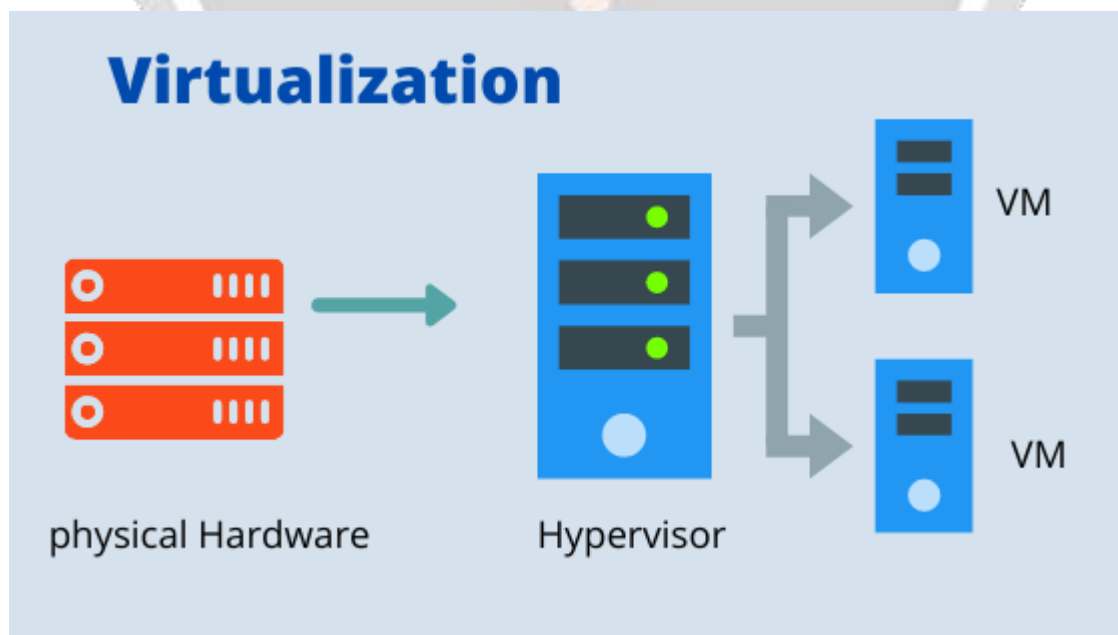

Fig.1 Virtualization

Virtualization for cloud
As we have already studied what virtualization is? So in this section we will go through the types of virtualization.

Desktop virtualization-
Desktop virtualization is the process of replacing traditional physical desktop environments with remotely controlled computing environments. It is mainly revolves around access to a single hardware so that ,multiple computers can share that hardware.

Data Virtualization
It is an approach to integrate data from numerous sources of different types without moving it physically.
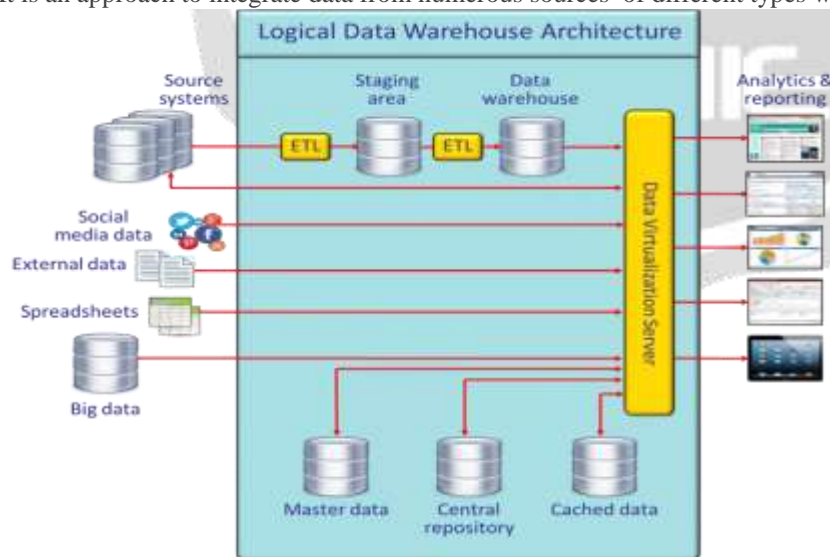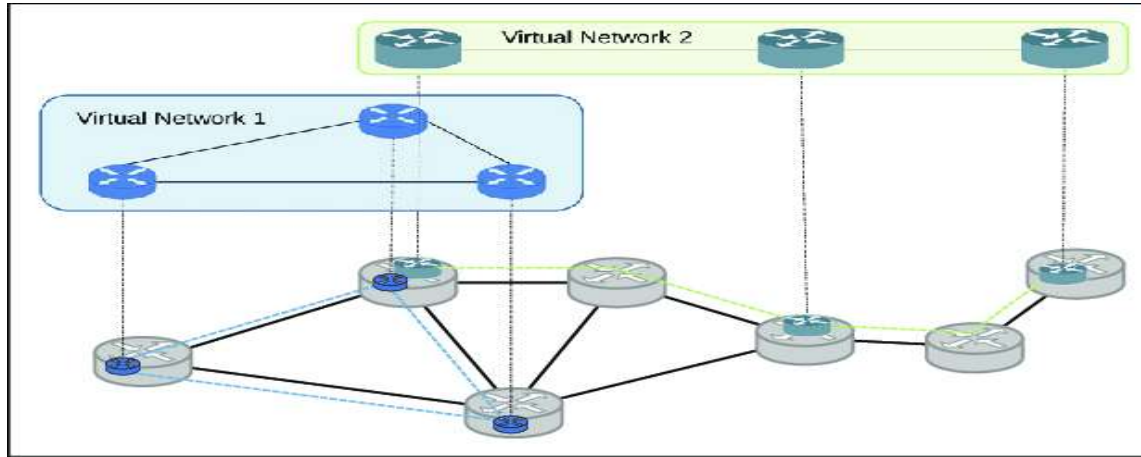

Fig.3 Data Virtualization

Network Virtualization-It is a process of grouping Physical network making them operate as single network.Some features of network virtualization includes that it restricts traffic ,it encourages the virtual network to share network
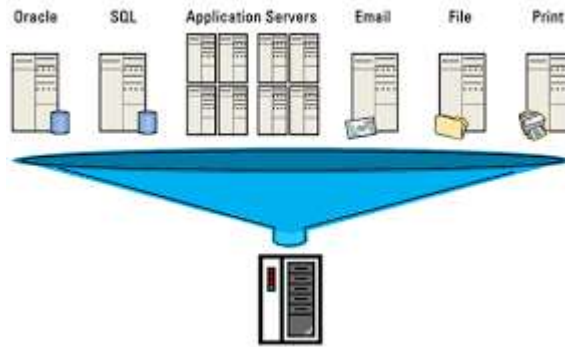
resources.

Storage virtualization-It is a process of collecting the physical storage from many network so that it acts like a single storage, It provides better utilization ,improves storage management.

Fig.4

Server Virtualization-It is a process that creates many virtual instances on a single server.

Pros and cons
Pros
Availability increases with virtualization-One of the main benefit of virtualization it provides virtual instances available all the time.
Cheaper-Virtualization doesn't need any hardware to execute,hence it is a
low-cost system to execute.
**Portability-**Virtualization of one host server to the new host server with a very high cost.
Cons
Security- In virtualization, server is handled by third-party. So the risk of losing data is high. Thus, it is essential to use virtualization technique carefully.
Limitations-Since, each software and server is not virtualization adaptable.So there are limited options available to use virtualization.

Internet of Things(IoT)
Now, IoT is the million of millions devices connected to the internet ,all of which are   collecting and sharing the data. For example a light bulb that is connected to the smartphone app is an IoT device or the smart Tvs etc.
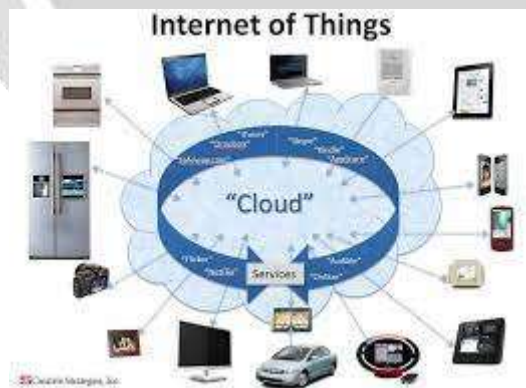
The main objective of IoT is creating an environment of interconnected things and ability to sense, touch and communicate with others.
How IoT works?
A typical IoT works by the collection and exchange of data .It has three components smart devices ,IoT application, A GUI interface.

Example of IoT

•   Assume a smart modular kitchen connected to a internet. So s smartphone can check whether the fridge is cooling or not.

•   Assume a car connected to the internet, through dashcams, or even the vehicle connected gateway. It can collect the data from brakes,accelerator speedometer to monitor vehicle performance.

Advantages of IoT

•   Reduced Cost

•   Higher productivity

•   Increased mobility

•   Increased business opportunities

Issues in IoT

security-Because of the variety and scale of IoT devices integrating them into security systems

Low Testing-Because most IoT developers do not focus on security,they fail to form effective testing to identify weakness in IoT systems.

Weak Passwords-IoT devices are commonly shipped with default passwords gives hackers easy access.

Conclusion and future work

In this article we have discussed different forefronts of virtualization and utility of Internet of things and problems with Internet of Things. Subsequently , now our plan is to make new policies, techniques to maintain resources ,data availability, which would result in enhanced performances of cloud services such as virtualization it would be a step into future.

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