

Cloud-Based Phone System

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Abstract:- This paper discusses the advantages and disadvantages of running a cloud-based phone system for small businesses. A case study of cloud-based phone system will be explored to assess the efficiency and reliability of utilizing such technology in a small enterprise.

Keywords:- Cloud-Based, Phone System, Cloud PBX, VoIP PBX, AWS.

I. INTRODUCTION

The invention of telephones introduced a new era of distant communication around the world. Year 1876 marked the first phone call and the number have been dramatically blooming ever since. [1]. During the coronavirus pandemic, various digital communication technologies further proved their vitality for the world. In fact, a single US service provider, Verizon, reported an average of 800 million calls per day. Additionally, the length of the voice calls during the same period showed an increase of 33%. [2]. The number of smart phone users in the world is currently estimated to be around 6.648 billion representing 83.72% of the world population. This marks around 33% increase in the percentage when compared to the number of users in 2016. [3]. It wouldn't be surprising to find the number of digital connections supersedes the number of the world population given the many connected Internet of Things (IoT) devices.

Mobile phones are dominating this market compared to landlines. The number of American homes with landlines dropped from 90% in 2005 to around 50% in 2015. [4].

This even expected to be much lower in recent years specially that younger generation is very much less dependent on land lines. According to a uSwitch research in the United States, even though 95% of 65+ aged individuals have a landline, only 52% aged 24-28 years owns them. Additionally, around 5 million landline users reported that they didn't use their landlines and many only have them as part of the broadband internet package. [5]. According to a 2021 report by Statista, around 37% of American homes still have landlines. [6].

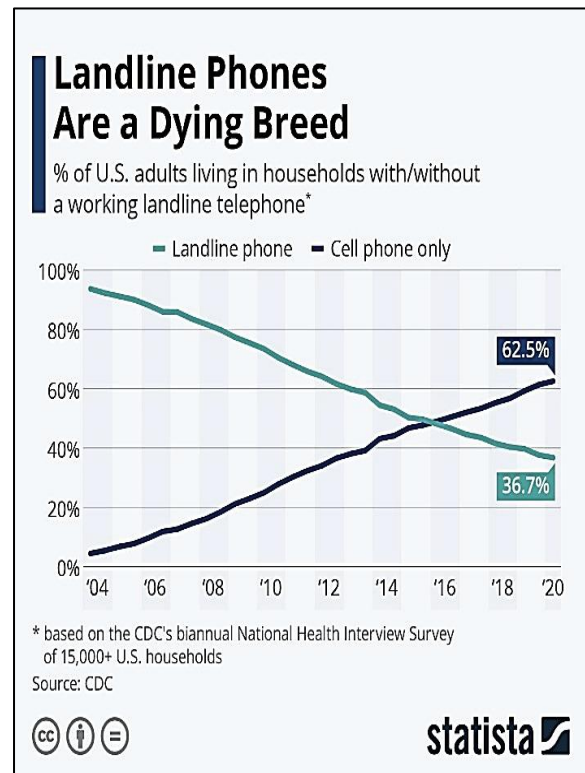


Fig. 1: % of U.S. Adults Living in Households With/Without a Working Landline Telephone [6]

When it comes to landline phones technologies, Voice over Internet Protocol (VoIP) technology is increasingly being adopted in place of analog phones. This technology utilizes the internet connectivity to transmit voice communication without the need for a standalone telephony system. The common implementations of VoIP include H.323 standard which is part of ITU-T set of standards that governs multimedia communication and IP Multimedia Sub System (IMS) which merges internet capabilities with mobile communication. [7].

VoIP technology enabled a new generation of telephony services; cloud phones. Skype, the Estonian company, was able in 2003 to provide audio calls online free of charge to the software users or through telephone billing if a call is made to hard line. It was later able to implement video calling; which it is best known for today. Gartner estimates that around 90% of IT entities will be adopting cloud telephony within the next few years. [8]. Unified Communications as a Service (UCaaS) covers the online offering of telephony services in addition to more capabilities such as instant messaging, collaboration, file sharing, and video calls. This enables seamless digital communication through multiple devices over the internet without the need for in-premise costly infrastructure. [9].

II. CLOUD-BASED PHONE SYSTEM ADVANTAGES

There are several advantages for adopting Cloud-Based Phone system. To start with, its Portability as cloud PBX systems are simply walkable and usually help an infinite number of users. Combining users (new phone numbers) is immediate and only needs a few clicks of a mouse. Secondly, it is Low down cost since they do not want equipment or continuing updates and preservation because cloud phone systems rely on your internet connection. Moreover, Resilience is also there when you want a unique phone system, it's easy to change as well as it provides high Scalability, as the phone system runs across the Internet, your workers can be somewhere in the world but operate as one unified call center. All your phone numbers can follow the similar design, and features such as auto attendant, voicemail and call allocation will function the same for all inbound calls, no matter who is taking them. In addition, it is less upkeep given that off-site VoIP provider maintains the preservation of your cloud-based phone system. They deal with infrastructure upgrades, hardware care, and fixes. Even if there is a trouble with their system, your business's PBX generally won't have to go offline while they fix it because they will have built several backups and fail safes into their network. Support is almost always 24/7 given the global nature of Internet users. It is obviously triggering Easy to update call flows when you can adjust your call forwarding to accommodate new personnel or roles with a few clicks. Finally, one additional feature as it is Easily maintaining remote work. everyone on your team can keep the same phone number and remain available to customers and coworkers and also, make and receive phone calls with a VoIP softphone app as well as benefiting from advanced features like call forwarding, virtual voicemail, and call recording.

III. CLOUD-BASED PHONE SYSTEM DISADVANTAGES

As every technology has it is dark sight defiantly, there will be a few possible drawbacks that come with running your business phone system totally over the internet. At first, you will have to ensure High-speed Internet is a necessity since the virtual phone systems depend upon reliable, powerful Internet service to function well. Also, as any data fellow on the internet you will have to be watchful about Security as cloud PBX system can be more vulnerable to security violations than a server-based system because it's connected to the Internet. In additional to the Latency is another valid factor which will defiantly affecting your calling quality. Lastly, location info is limited for emergency calls. When calls are directed to an emergency call center, operators may not know of your location or even your phone number.

IV. CLOUD-BASED PHONE SYSTEM CASE STUDY

To demonstrate the performance of a typical cloud-based phone system for small business, 3CX platform which is a phone system that works on IP Internet protocols and supports Voice over Internet servicesthat runs on Windows, Linux, and Raspberry Pi have been used for this study.The 3CX system is developed by 3CX Corporation, an international VoIP IP PBX software developer. It was first published as a free communications system in 2006.The product was intended to provide a VoIP solution for use in a Microsoft windows environment.

Under the study, 3CX platform was linked with a leased could server through Amazon Cloud Services (AWS). For small enterprise consist of less than 10 thousand users, 4 digits extensions (0000-9999) was used to create several numbers to measure the speed and reliability of the could-based phone system. Under the 3CX platform system status dashboard, it was easy to monitor the system performance, logs, user status, etc. Also, call sessions were running smoothly in an average internet speed of 2Mbps. Different could phone features were explored, such as call waiting, recording, and conference call. Overall, the performance of the cloud-based phone system was very good for the small enterprise.

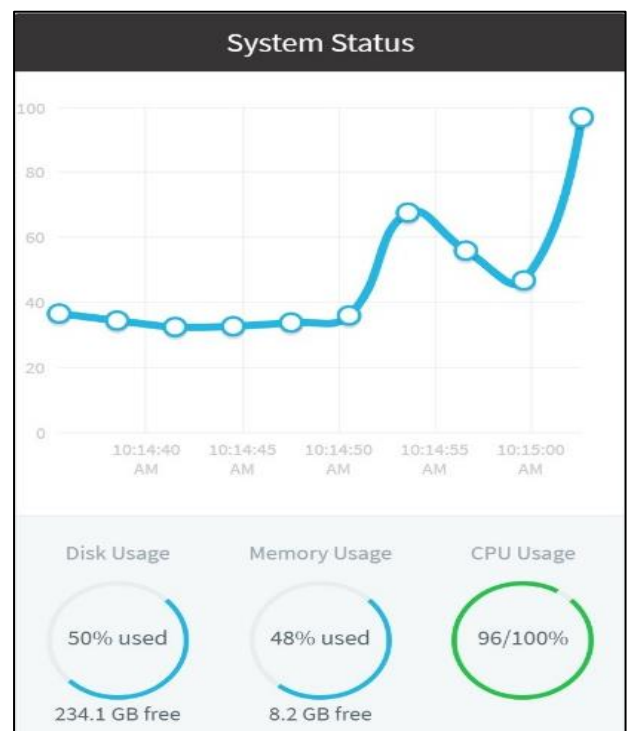


Fig. 2: 3CX System Status

PBX Status	
Trunks Up	1/1
Extensions Up	1/2
Number of calls in use	0/4
Blacklisted IPs	0
Call history	Purge 0 calls
Chat logs	Disabled
Audit Log	Enabled
Automatic Backups	OFF
Recording	- / 5.0 GB
! Firewall	✓ Trunks
✓ Services	✓ Phones
✓ System Extensions	

Fig. 3: PBX Status

V. CONCLUSION

Cloud computing has enhanced information technology service presentation especially communication and data exchange. Cloud PBX system has emerged to overcome the old telephone system weakness and provides more scalability, lower cost, ease accessible and availability. However, it is still suffering from the general cloud drawbacks such as correlation to fast connectivity, security concerns and dependability. The best solution will be implementing private cloud PBX fulfilling by high reliable service provider. Over long term, this system is more effective for business expansion and process continuity. In addition, private cloud intended to promote control and privacy over the system. [10].

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