# Updated Comparative Analysis on Video Conferencing Platforms- Zoom, Google Meet, Microsoft Teams, WebEx Teams and GoToMeetings

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## Abstract –

In recent times, video conferencing apps are becoming a daily need for not only those who are working but for online interview too. The sudden increase in the traffic for these apps has both its cons and pros. Nowadays, there are many ups and downs in security, privacy of many popular video conferencing platforms. So, this paper will provide a comparative study of various video conferencing platforms mainly focused on Google Meet, Zoom, Microsoft Teams, Cisco WebEx Teams and GoToMeetings.

## Index Terms -

Zoombombed, hacked, loopholes, ATP, TAP, Encryption, G-Suite, Office365, SHA, VoIP.

## 1. Introduction –

In today's world, there are many news relating which platform to use for video conferencing. Video conferencing apps are witnessing a huge rise in downloads due to lockdowns across the globe. These apps are used by working professionals for meetings, students for online calls and for just casual group video calls as well.

There are a very few options available for the users to choose from like Google Meet, Zoom and Microsoft Teams. Each app offers almost the same features but with exceptions in some.[1]

Video conferencing users are seeing an exponential growth as millions of people are working remotely due to COVID-19 pandemic. According to a report, video conferencing platforms downloads topped 62 million in the month of March 2020.[2] Now if the user is confused which video conferencing platform to use, here's a comparison between Google Meet, Zoom and Microsoft Teams.

## 2. Zoom –

Nowadays, zoom is the most popular video conferencing app. [2] It has over 200 million daily users. Also, zoom is plagued with a huge number of security and privacy issues which they are trying to fix with regular updates. But it's still one of most preferred video conferencing platforms due to its ease of use. Zoom has great features like supporting 100 video participants and allowing 49 videos on screen. Also, it has extremely good features like screen sharing, screen recording, team chats and searchable history. Not only these but you can add custom backgrounds to your meetings.

This app which was once touted for its easy interface is now used along with terms like "hack" and "security issues". [2] For the very main reason this news is because last month zoom was hacked or "zoombombed".

Although, Zoom has fixed several security loopholes but still it will take time for the users to trust again.
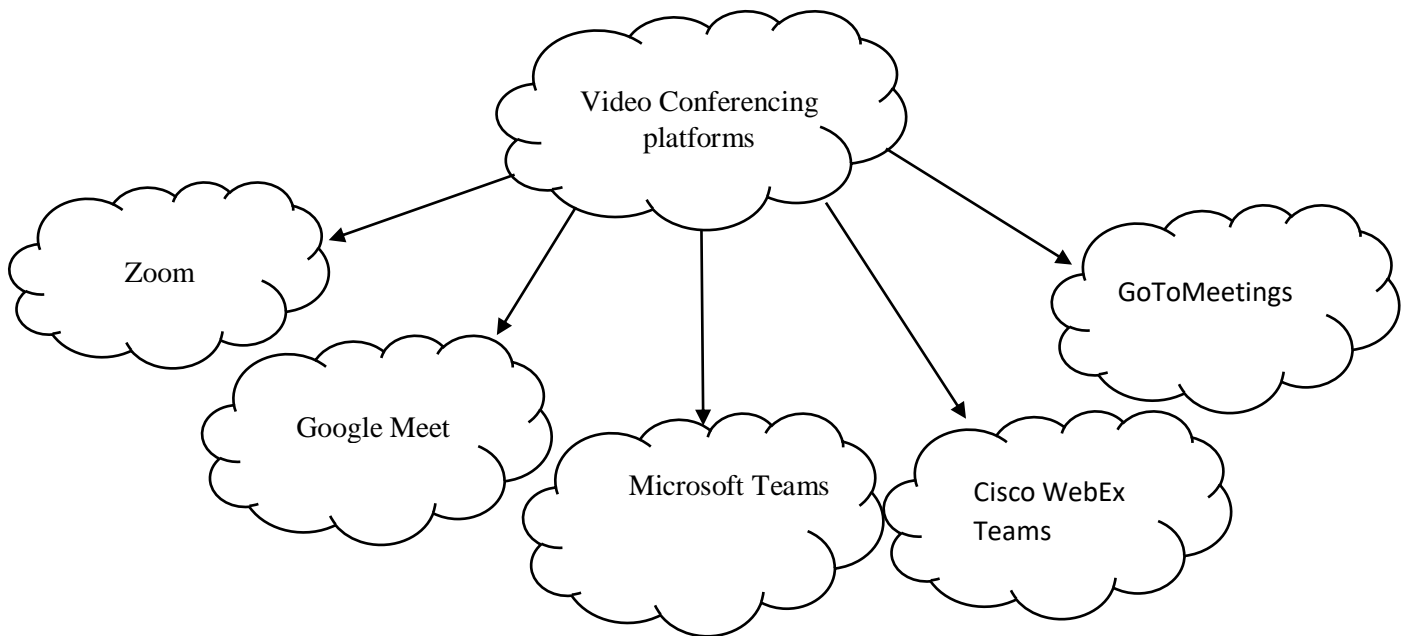
**FIG. 1.1 CHART FOR COMPARISON**

## 2.1 Way to a safe video call –

### 2.2.1 Password protect your meetings

Password protection is always been a best option for anything to hide. The user can prevent unwanted attendees from entering into the meeting as these will be password protected.
[3] Not only for one time but set a unique password every time the user starts a meeting.
Option is available in the settings tab.

### 2.2.2 Locking up the meetings

After the meeting starts, locking up the meeting prevents unwanted users to participate to join-randomly. This feature is available in "manage participants" tab.

### 2.2.3 Switch off participant screen sharing

This feature is the most important one as many of the users such issues that anything suddenly appears on the screen without even authorising by that particular reason.

So, this feature allows you to allow only those who want to share the screen only with a particular authorisation from the head of the meeting.

## 2.2 Security and privacy issues –

Zoom has been in a privacy storm lately with companies and many governmental agencies asking their employees to refrain from using zoom. Even the Ministry of Home Affairs has issued a two-page long document awaring users about the app's security issues.[3] Notably, this is not for the first time that Indian Government has cautioned people against using the popular video conferencing app. Earlier, Computer Emergency Response Team of India issued an advisory relating to app's security issues.

Zoom as part of their 90-day feature freeze has updated there adding a host of new features to their platform. In the part of changes, the company added a new ability for the users of zoom to set minimum meeting password and other requirements.

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## 3. Microsoft Teams –

As zoom users the able to add custom backgrounds to their video meetings making it more interesting. Microsoft Teams has announced to launch custom backgrounds to Teams over a year back. [4] Also, Microsoft said that video conferencing on teams, which competes with other platforms, were up 1000% in the month of March 2020, with no absolute figure.

The latest feature for this comes at time the time when the platform gets a hike in user activity. Recently, Microsoft revealed that it has a daily user of 2.7 billion meeting minutes in one day. This is a total increase of 200% from 900 million revealed March 16 2020.

Microsoft Teams said that calls on their application, which competes with apps such as Slack Technologies and Zoom Communications, rose very high, with no particular figure. Microsoft also said 183,000 education organization, which include many schools, in 175 countries were now using Microsoft teams for education, although did not give a previous baseline.

### 3.1 Security and compliance –

This platform is built on office 365, enterprise – grade cloud, delivering user the advance security and its compliance capabilities which a user expects.

Team enforces organization-wide and team-wide two factor authentication, single sign-on with active Directory, and also encryption of data in transit and at rest. [5] Notes are stored in app called OneNote and are backed with OneNote encryption.

### 3.2 Advance threat protection –

ATP is available for Microsoft teams, along with OneDrive and SharePoint for business, also the applications that integrate with teams for the content management. [5] ATP allows the user to determine if content in these apps is malicious in nature, and also block this content from the user access.

While at this time, ATP safe links are not available in Microsoft Teams, these are now in public preview through there TAP (technology adoption program).[5] Safe attachments are a feature in Microsoft Teams is designed to enhance user security to check for, detection, malicious attachments.

## 4. Google Meet –

Google hangouts Meet, or just meet is a Google's video conferencing software. Also, Google meet allows user to share their screen. Even it provides the feature to either share whole screen or just a tab.

All over the world, business, schools and other users depend on G suite to allow them to stay connected and get work done. Google designs, builds and operate their products on a secure connection, aimed at thwarting attacks and providing the securities to keep the users safe. Google Meet's security operators are turned on by default. In most cases, organizations users are don't have to ensure the right protections are in place.

Google Meet alloys an array of counter-abuse protections to keep user's meetings safe. These include anti-hijacking measures for the web meetings and also dial-ins. [6] Google Meet makes it hard to programmatically brute force meeting IDs by using codes that are 10 characters long, and 25 characters in the set. They limit the ability of external participants to join a meeting more than 15 minutes in advance, resizing the window in which a brute force attack could even be attempted.

### 4.1 Google Meet Security and Privacy –

They protect by keeping a control over the user's data. It adheres to the same robust commitments and data protections are the rest of Google Cloud's enterprise services.

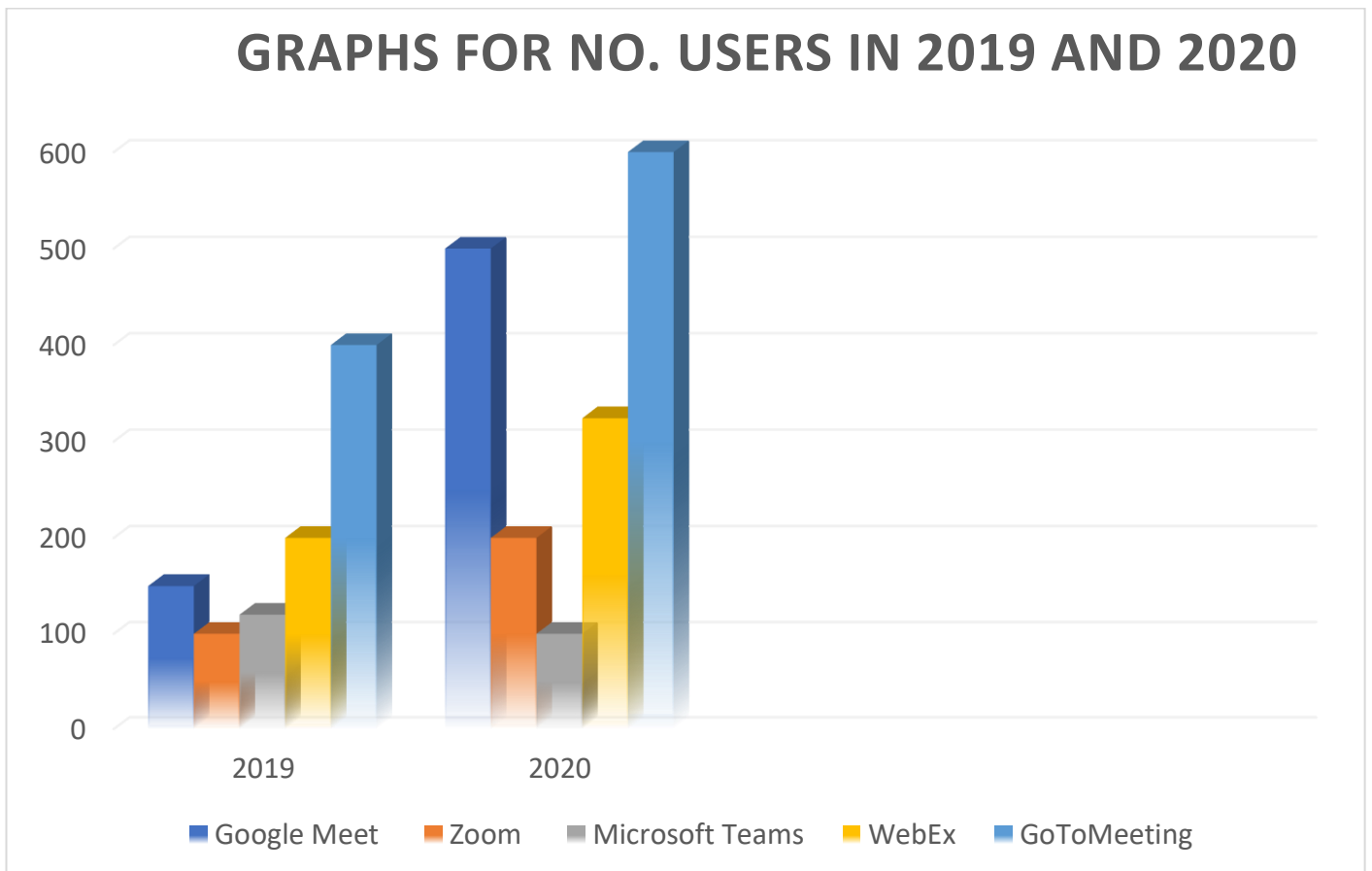# GRAPHS FOR NO. USERS IN 2019 AND 2020



**FIG: 2 GRAPHS FOR NO. USERS IN 2019 AND 2020**

Customers own their data. It doesn't use customer data to sell customer data to third party. Also, to help ensure data security and privacy, Google Meet supports the following encryption measures:

1. All of the data is encrypted in transit by default in between the Google and client for video meetings on web, on the android version and apple IOS apps, and also in meeting rooms with meeting room hardware.
2. If someone join the video call by their phone, the audio used for that will use the telephone carrier's network and that might not be encrypted [6].
3. Google meet recordings stored in Google Drive and are encrypted at rest by default.

## 5. Cisco WebEx Teams –

Cisco WebEx Teams is a video conferencing and web conferencing software developed by Cisco's subsidiary WebEx. It allows the user with the feature of creating secure virtual work places for short term projects to solving long term problems. Using WebEx Teams, we can start and join

meetings instantly without needing to schedule them in advance. It provides native support for external video as up to 200 video users can join the team meeting this includes Cisco's own video devices and industry standard SIP endpoints

It's significant ability to integrate with third party applications like OneDrive, Google Cloud and salesforce's cloud for an uninterrupted workflow gives it a bit of edge over other contenders. It is mostly preferred by the enterprises and major companies. It also links with Microsoft Office 365, Microsoft Exchange and Google cloud Integration is also supported for proper workplace feel.

Cisco WebEx makes it easier for the for everybody to join the conference sessions even if there is absence of any kind of video equipment like webcams or any other equipment. Teleconferencing is one of the most prominent features added to the application as it allows its reach expand to a vast a region. It gives the

participant the ability to request call-backs for joining meetings with ease.

Since, it is mostly used by corporates, it offers a great deal of security features alongside general security features which can be found in any other application. WebEx Teams offer end-to-end encryptions of all the data that is shared and all the messages that are passed in the meetings hosted on it before sending it to the cloud.

## 5.1 Cisco WebEx Teams Security and Privacy-

Alongside end-to-end encryptions WebEx Teams also uses the secure HTTPS (Hypertext Transfer Protocol) for encrypting the data while in transit between the device and servers which is helpful in protecting the identity of both sender and receiver. Alongside such measures WebEx also uses "Advanced Encryption Standards (AES) 128,256", "Secure Hash Algorithm (SHA)1,256 and RSA"

With WebEx Teams we can add other layer of security in form of the moderators (member of the meeting who can act as administrator controlling over the information in that particular space) for teams and spaces.

Also, if any space or team has any member which is not a member of the host organization than some area like a border, background etc will be highlighted to bring attention towards the member which is not a member.

## 5.2 Password Security Standards –

The password requirement or standards can be set according to one preferred choice to match with the company or industry standard for security. The WebEx Teams application supports identity provider that deploys "Security Assertion Mark-up Language (SAML)" and "Open Authorization 2.0 protocols (OAuth)"

## 6. GoToMeeting –

GoToMeeting is a web-hosted service created and marketed by LogMeIn. It is a online software package which is used for online meetings, sharing desktop screens and video conferencing.

There are various features that are provided in the package with the priced subscription of GoToMeeting pack which ranges from free of cost to $16 and upwards. Many features like Smart Meeting Assistant which is used to transcribe meetings from voice to text just like voice over dictation feature in windows, creating an external link for further sharing.

Similar to WebEx Teams, GoToMeetings can also integrate with many third-party applications and software which is used for increased productivity in the office and online meetings.

One of the most interesting features of the GoToMeetings web conferencing and video conferencing meeting is the "Call Me" feature. In this feature, we can save our contact number in the software and as soon as meeting starts, we will be receiving a call to notify us about that. It is in addition to the GoToMeeting VoIP, in which we can attend meetings on the phone call as soon as we answer the call made to us.

There are other numerous features available in the software such as Siri Integration, Dial Out, Commuter mode, Risk-Based Authentication in which it is made sure that no third party can enter the meeting with any kind of malicious intentions and many other features

## 6.1 Security and privacy concerns –

Alongside basic security features provided such as locked meeting and password security for the meetings, GoToMeeting uses TLS encryption protecting the private chats, sessions and control the transmission of the data along the network. 256-bit AES (Advanced Encryption standards) are deployed for session cloud recording, transcription and meeting notes.

Similar to WebEx, we can also remove the attendees who doesn't belong to the organization. But this feature is also given to the host of the meeting.

## 6.2 Account Authentication Features –

To gain access to the GoToMeeting conferencing rooms, the user must provide a valid e-mail id first

and then a corresponding user account password to complete the login formality.

The passwords are not stored as simple text files or with any kind of lower encryption methods. The company deploys a cryptographic hash function which is highly resilient to dictionary attacks.

For medical practitioners, the GoToMeetings video conferencing and web conferencing app provides the HIPAA (Health Insurance Portability and Accountability Act) compliance which are set of conditions which accounts for privacy of patient's personal information protection. This facility the safe exchange of critical documents between medical professional without the risk of any third party able to access the data.

# 7. Conclusion –

These apps are basically used to ensure connectivity amongst people virtually. Author has concluded that with every application, there are certain disadvantages. Especially, the security concerns arising with the usage of these application are the ones that should be dealt with top most priority. Author also suggest that an independent third party should provide a security rating depending on the security features being implemented by every application.
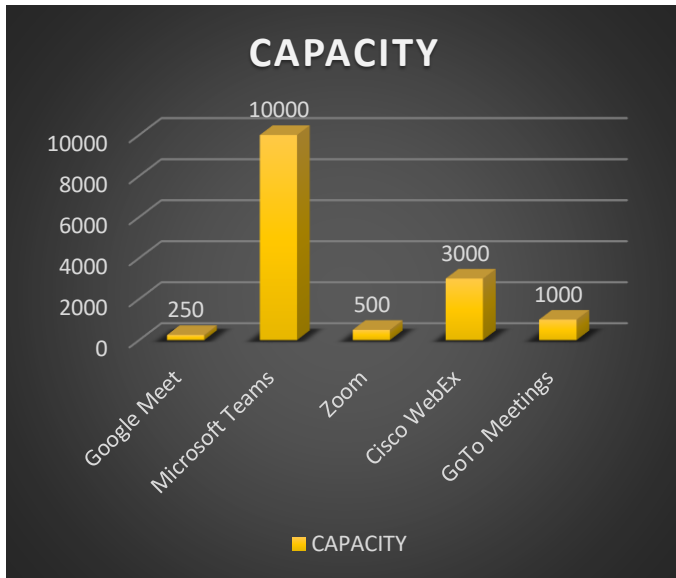
**A COMPARISON TABLE FOR ZOOM, GOOGLE MEET AND MICROSOFT TEAMS** [21]

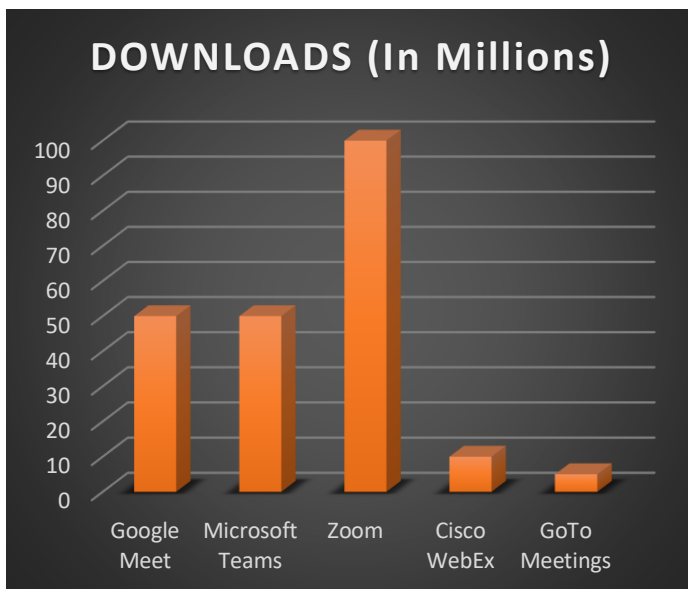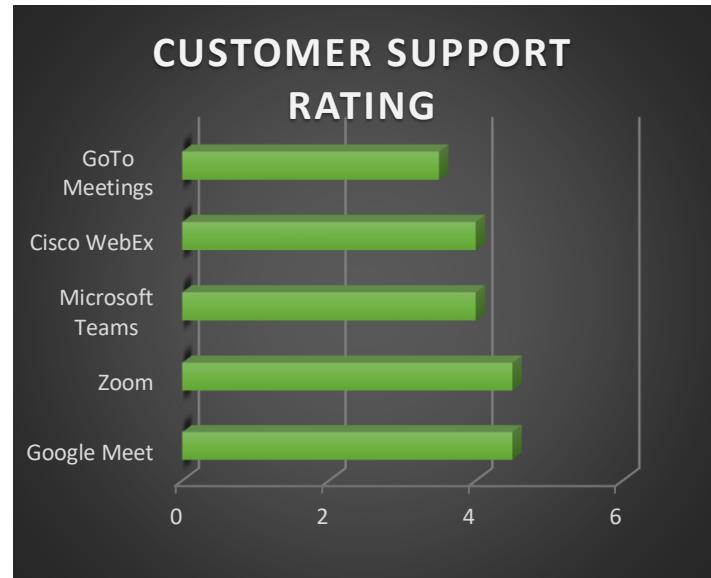| Parameters | Zoom | Google Meet | Microsoft Teams | Cisco Web Ex Teams | GoTo Meetings |
|---|---|---|---|---|---|
| Authentication mechanism | Poor authentication mechanism | Uses SHA-1 HMAC for authentication | Uses OAuth 2.0 for authentication | NA | NA |
| Authorisation mechanism | No | Yes | Yes | NA | NA |
| Encrypted Communication | No | Yes | Yes | 256-bit AES ,PKI | Yes |
| Compatibility | IOS, Android, Microsoft, Linux (partial) | IOS, Android, Microsoft, Linux | IOS, Android, Microsoft, Linux | IOS, Android, windows, MacOS Not Linux | IOS, Android, Windows, MacOS, linux |
| Whiteboard | Yes | No | Yes | Yes | Yes |
| Recording Capabilities | Yes | Yes | Yes (paid) | Computer and services based | Yes |
| Video quality | HD | HD | VGA, HQ | VGA, HQ, HD | VGA, HD |
| Chat support | Yes | Yes | Yes | Yes | Yes |
| Desktop Sharing | Yes | Yes | Yes | Yes | Yes |
| No. of participant | 50-500 ,10000 (webinar) | 25, 100 (for G-suite users) | 250-10000 (paid) | 1-3000 | 1 -1000 |

# 8. Analysis Through Python-
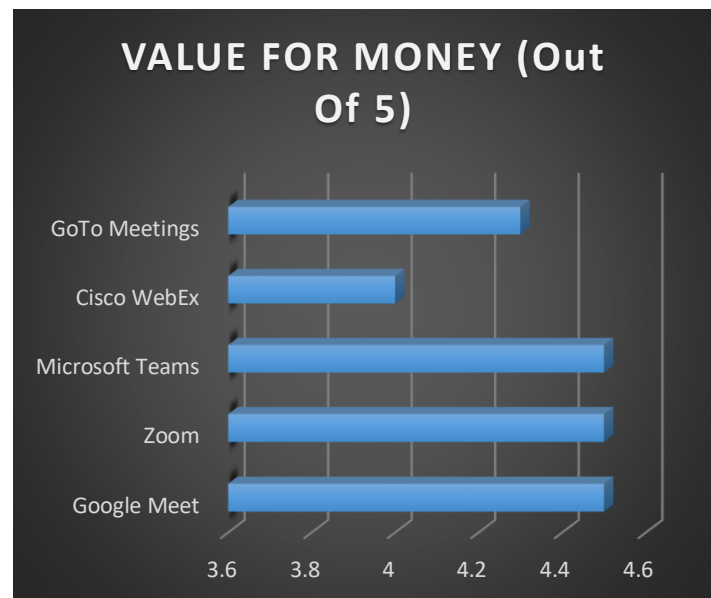
## 8.1 Total users allowed



## 8.2 Total Download on Play Store



## 8.3 Customer Support Rating



## 8.4 Rating For value for money

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