

A Comparative Study on Video Conferencing Platforms- Zoom, Google Meet and Microsoft Teams

¹Mr. Ravinder Singh, ²Soumya Awasthi

¹Assistant Professor, ²BCA Student

^{1,2}CS Department, Maharaja Surajmal Institute,

^{1,2}Guru Gobind Singh Indraprastha University, New Delhi, India

Email - ¹ravindersingh@msi-ggsip.org, ²soumya08114902018@msi-ggsip.org

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 and Microsoft Teams.

Key Words: Zoombombed, hacked, loopholes, ATP, TAP, Encryption, G-Suite, Office 365.

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.

1.1. 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.



Figure 1: CHART FOR COMPARISON

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.

2. Way to a safe video call:

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. 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.

2.3. 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.

3. 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.

4. 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.

4.1. 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.

4.2. 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.

5. 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.

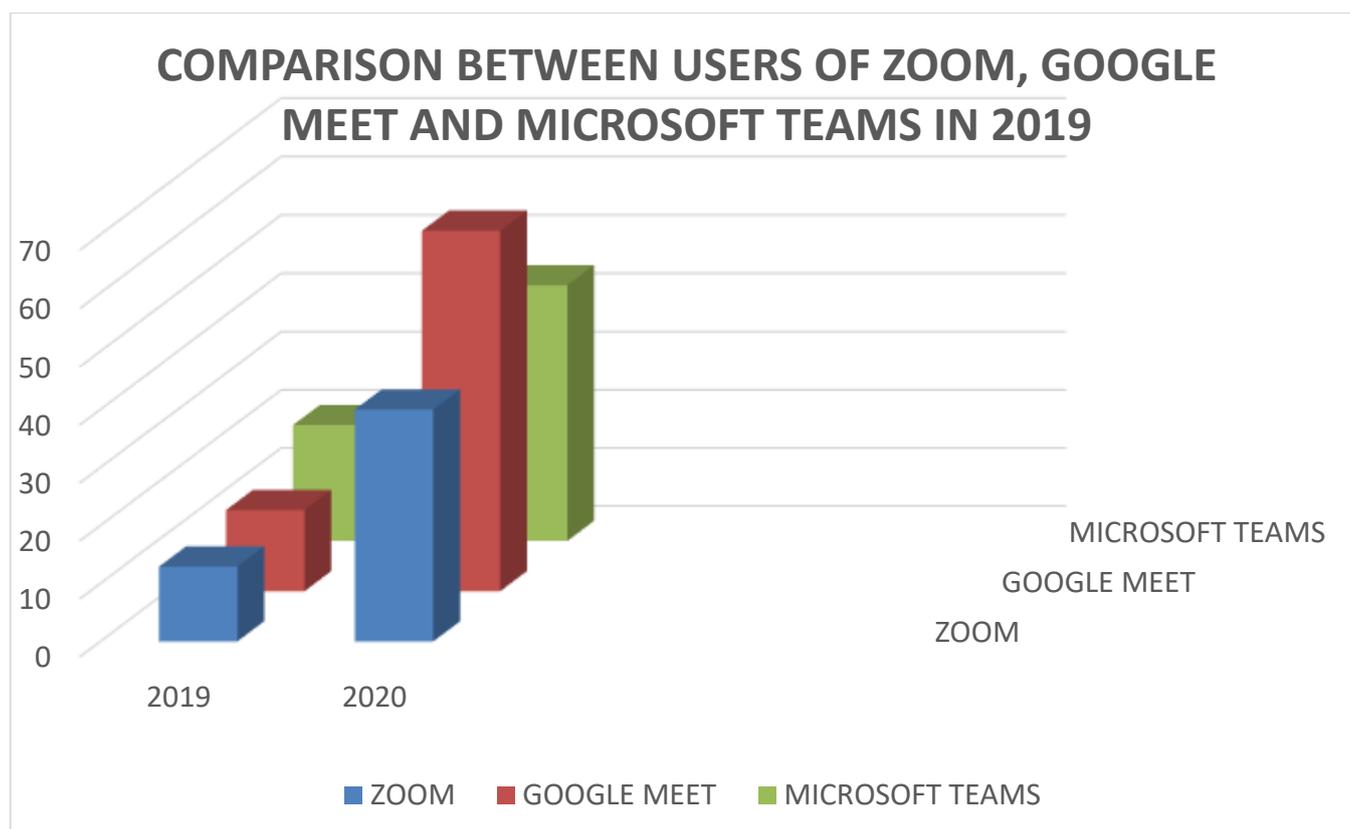


Figure 2: GRAPHS FOR NO. USERS IN 2019 AND 2020

5.1. 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. 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:

- 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.
- 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].
- Google meet recordings stored in Google Drive and are encrypted at rest by default.

TABLE: A COMPARISON TABLE FOR ZOOM, GOOGLE MEET AND MICROSOFT TEAMS ^[21]

<i>Parameters</i>	<i>Zoom</i>	<i>Google Meet</i>	<i>Microsoft Teams</i>
No. of participant	50-500 ,10000 (webinar)	25, 100 (for G-suite users)	250-10000 (paid)
Authentication mechanism	Poor authentication mechanism	Uses SHA-1 HMAC for authentication	Uses OAuth 2.0 for authentication
Authorisation mechanism	No	Yes	Yes
Encrypted Communication	No	Yes	Yes
Compatibility	IOS, Android, Microsoft, Linux (partial)	IOS, Android, Microsoft, Linux	IOS, Android, Microsoft, Linux
Whiteboard	Yes	No	Yes
Recording Capabilities	Yes	Yes	Yes (paid)
Video quality	HD	HD	VGA, HQ
Chat support	Yes	Yes	Yes
Desktop Sharing	Yes	Yes	Yes

6. LITERATURE REVIEW:

One of the most high-profile issues in which “**Zoombomb**” is named under, where some uninvited guests crashes the whole meeting. This led to stop in the use of Zoom by various school, college, companies and various institutes. Also, a news came up with a **debate in UK** in the use of Zoom for cabinet meeting in Government. **ATP** or we can say **Advance Threat Protection** safeguards our company or organisation against **malicious threats** issued by e-mail or link and some other collaboration tools.

Encryption in video calling means end-to-end encryption. When a call is encrypted from someone’s device the encrypted data can only be decoded by a **Shared Secret Key**.

Data is encrypted using some stronger **AES** or we can say **Advanced Encryption Standard**. Google encrypts the data **G-Suite** data while, whether it is travelling over the user’s internet connection between google and customer, or travelling between google as it **transfers the data** from one centre to another.

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.

REFERENCES:

1. <https://www.sylamtechgroup.com%2Fwp-content%2Fuploads%2F2019%2F04%2Fintro-video-conferencing-wp-engb.pdf&usg=AOvVaw2G1bpURRMhsNYvr2GiSONQ>
2. <https://www.hindustantimes.com/tech/zoom-vs-google-meet-vs-microsoft-teams-which-video-conferencing-app-to-for/story-wnBch1dX58MAC66uCVln3N.html>
3. <https://www.hindustantimes.com/tech/zoom-responds-to-mha-deeming-the-app-not-safe/story-u3UpbcF4Iym2zMYISqi6FK.html>
4. <https://www.hindustantimes.com/tech/zoom-tips-how-to-make-video-conferencing-safer/story-xdfEjOZNbxShjpLE3iEt6l.html>
5. <https://www.hindustantimes.com/tech/microsoft-teams-gets-zoom-like-custom-backgrounds-for-video-calls/story-yaE864PePADvBdoR7uIkmo.html>
6. <https://www.hindustantimes.com/tech/microsoft-teams-witnessed-video-calls-increase-by-1-000-during-march/story-2EcIljZz5ArDvoRvG4reGK.html>
7. <https://www.hindustantimes.com/tech/google-overhauls-its-video-calling-app-brings-meet-to-gmail-likely-to-add-zoom-like-gallery-soon/story-0CiGbGm5YM1dwm0uOJgOON.html>
8. <https://www.hindustantimes.com/tech/google-meet-s-free-access-to-premium-features-extended-till-september/story-uaNajq9eJ4L8AMtNOWAIHO.html>
9. <https://docs.microsoft.com/en-us/microsoftteams/security-compliance-overview>
10. <https://cloud.google.com/blog/products/g-suite/how-google-meet-keeps-video-conferences-secure>
11. Videoconferencing as a Mode of Communication: A Comparative Study of the Use of Videoconferencing and Face-to-Face Meetings
12. Augmented reality for immersive remote collaboration
13. <https://www.businesstoday.in/technology/news/9-video-conferencing-apps-to-use-if-youre-looking-for-alternatives-to-zoom/story/401304.html>
14. <https://cloud.google.com/blog/products/g-suite/how-google-meet-supports-two-million-new-users-each-day>
15. Comparing Zoom, Microsoft Teams and Google Meet
16. Google Meet adds more than 2 million new users daily globally: Report - tech - Hindustan Times
17. Video Conferencing Definition
18. Authenticate a user in Teams - Teams | Microsoft Docs
19. How Meet encrypts information - G Suite Admin Help - Google ...
20. Work Anywhere with your G Suite digital workplace I Fourcast.
21. https://en.wikipedia.org/wiki/Comparison_of_web_conferencing_software