

# A Study of Cloud Video Conferencing Security in India using Decision Tree Analysis

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## Abstract

Cloud Video Conferencing/Virtual Meetings/Online Meetings brings multiple people at different physical locations to meet in the same virtual room using their devices connected to the internet. It facilitates direct communication, increased engagement, saves time, reduces travel costs, and stimulates participation everywhere. Social events, workshops, instructional courses, webinars, webcasts and other multi-session events can be organized remotely without the need to assemble at a single physical location. With the development of this niche technology, it has become an inevitable part of our day to day lives, especially during the covid-19 pandemic. Cloud video conferencing is a relatively safe technology without much place for cyber crimes. But there is a huge gap between basic security in Cloud video conferencing and its impacts on society. These gaps need to be analyzed to improve this situation. Accordingly, when 243 samples were explored through the Tree test for the safety of the primary video conferencing type, various advantages emerged. This research method shows separate box layers related to primary video conferencing security. Various companies make HD video calls from their favorite gadgets that can be connected to the Internet from anywhere and run with security functions in minutes. This research clarifies its applications through amazingly advanced cloud video conferencing.

**Keywords:** *Cybersecurity, Cloud Video Conferencing, Virtual Meetings, Online Meetings, Decision Trees, Cyber Crime, Cyber Forensics, Application Security, Information Security, and Data Security.*

## Introduction

Millions of people resorted to using Virtual Meeting Technologies like Zoom during the Covid-19 pandemic [1]. There were many reports of threats, racism, homosexuality, anti-semitic messages, pornography and other uninvited guests showing up in Zoom calls and other virtual meetings. The FBI and other federal law enforcement agencies have taken note of these attacks [2]. For example, a zoom call in Massachusetts High School was reported

to have been interrupted by someone in a virtual classroom, slandered, and the teacher's home address was revealed. In New York [3], Attorney General Leticia James sent a letter to Zoom with a number of questions about how the privacy and security of video conferencing users are protected [4]. In response to this, Zoom suggested that people hosting large, public meetings should ensure that only they can share their screen and use features such as mute control. To that end, Zoom recently updated the default screen sharing settings for

educational users so that only authors can share content. Also, "Zoom and all other businesses have a primary responsibility for the safety of their users [5-7]."

### General Purpose of Virtual Meetings

Video conferencing or online conferencing or cloud video conferencing is an online technology that allows users in different locations to conduct virtual meetings without having to be present in the same physical location [8]. This niche technology is especially convenient for business users located in different cities or different countries because it saves time, costs, and other hassles associated with business travel [9].

Video conferencing technologies such as Zoom, Skype, and Microsoft groups boomed, and many people started using these technologies during the Covid-19 pandemic, because the lockdown implemented by many governments and local authorities forced many people around the world to work from home and attend online classes. In fact, many business and education conferences have moved completely to holding their meetings and seminars virtually.

In addition, cloud video conferencing allows professionals like financial advisors, therapists, teachers, and lawyers to meet and consult virtually with their clients. In fact, some legal proceedings and court cases were hosted entirely virtually during the Covid-19 pandemic. Physicians and other medical professionals have embraced the tele-health system on a much larger scale than it was before the pandemic.

The main advantage of cloud video conferencing over traditional teleconferencing is that users can view each other, share their screens, which enables them to be more engaged and intuitive. Cloud video conferencing refers to online virtual meetings that take place on the Internet that connect

video conferencing systems in meeting rooms with personal devices such as laptops or embedded webcams. Using a simple, integrated video conferencing solution with the support for screen sharing allows to further connect and engage global teams.

Today's employees prioritize mobility, flexibility, and other new technologies for connecting with their co-workers and working remotely. Bringing workers in different parts of the globe under a single platform can increase productivity, foster more collaboration and dramatically reduce travel costs. A comparison of commute costs and virtual meeting expenses shows that virtual meetings a real winner. A company which is built by remote employees, scattered globally, or emphasizes a healthy work/life balance.

### Video Conferencing Security

In a recently completed survey, Zoom advanced from the 10th most popular platform in 2019 to 2nd in 2020, falling just behind Cisco Webex groups. Zoom has recently received rave reviews for its conferencing security blocks. However, even Slack, Cisco Webex teams, Google Meet and Microsoft teams are certainly not short on security function intervals.

First, we need to identify the relevant use cases for video conferencing in the corporate world. Realistically, businesses use these technologies to discuss confidential information. In a typical organization, about 5 percent of all calls in a day consists of confidential information encompassing financial updates, or mergers and acquisitions (M&A) conversations.. The remaining 95 percent of business meetings are not considered sensitive.

### Mandatory and Advanced Video Conferencing Security

A lot of schools and businesses around the world use the Google Suite to stay connected and get their business done. Google designs,

builds, and operates its products on a very secure platform which thwarts attacks and keeps its products and data very safe. Google Meet's security controls are enabled by default, and in most cases, companies and users do not have to do anything more to ensure proper security. Google Meet uses code with 10 characters or 25 characters, and when a malicious person tries to guess the ID of the meeting and make an unauthorized attempt, the powerful counter IDs become permanently brutal. The ability of outdoor participants to join a meeting is controlled 15 minutes in advance, minimizing the window where a brute force attack can be attempted. External participants cannot join meetings unless invited by calendar or by in-house participants. Otherwise, they must ask to join the meeting and their request must be accepted by the member of the host organization. This is to control the attack surface and eliminates the need to push out security patches frequently, Google Meet works perfectly in the browser without the use of any additional plug-ins or software.

#### Balancing Security with Ease of Use

A white paper on The future of telehealth and its security implications and ease of use is beginning to make healthcare companies think about what telehealth can do. Patients and providers have looked at the benefits of telehealth applications, including how to cope after a Covid-19 infection. Leaders of several Healthcare organizations are beginning to think about where, when, and how to use such technologies. Experts have conducted a survey of healthcare companies to understand what the future holds for healthcare and telehealth. While balancing security with an essential utility in life may seem like an endless endeavor, finding a balance between these two key factors is essential and a unique challenge facing every business today.

#### Basic Cloud Video Conferencing Security

One of the popular video conferencing platforms is BlueJeans. Here, only the most basic customer data, including usernames, passwords, emails etc are hashed and stored in their customer databases. BlueJeans provides secure meetings with standardized encryption, ensuring the highest level of confidentiality and security for our business communications, regardless of the hardware environment. Logs are stored in secure containers in the cloud. The meeting videos are encrypted and only the recording source can access these.

#### METHODOLOGY

In this research, we will approach the problem by using a scientific method of analysis. We use a research survey and collect samples from targeted academicians by questioning them. This will help us better understand the expert perception of a Basic security of cloud video conferencing. Here a collection of 234 samples will be processed and analyzed with relevant statistical methods which will be used to substantiate the objectives.

#### RESULT:

The survey of 234 research samples has been analyzed by non-parametric variables, and will be studied for the following factors - General idea in Video Conferencing Security, Mandatory Video Conferencing Security, Basic Video Conferencing Security, Advanced Video Conferencing Security, Balancing security with ease of use, Key Aspect of Cloud Video Conferencing Security and Overall Rating and Inference.

In the research survey, with regards to gender, males represent 62.60% and females constitute 37.40% of the total population surveyed. Moreover, 91.40% of the samples are from a population (both males and females) whose age is less than 30 years. Furthermore, students represent 72.40%, Tech and Bank employees represent 18.90%, and teachers represent

4.50% of the total research samples. The most familiar Video Conferencing Services in the above research population were Google

Hangouts (2.90%), Skype (9.10%), Microsoft Teams (8.20%), Zoom (11.90%) and Cisco Webex Meetings (62.60%).

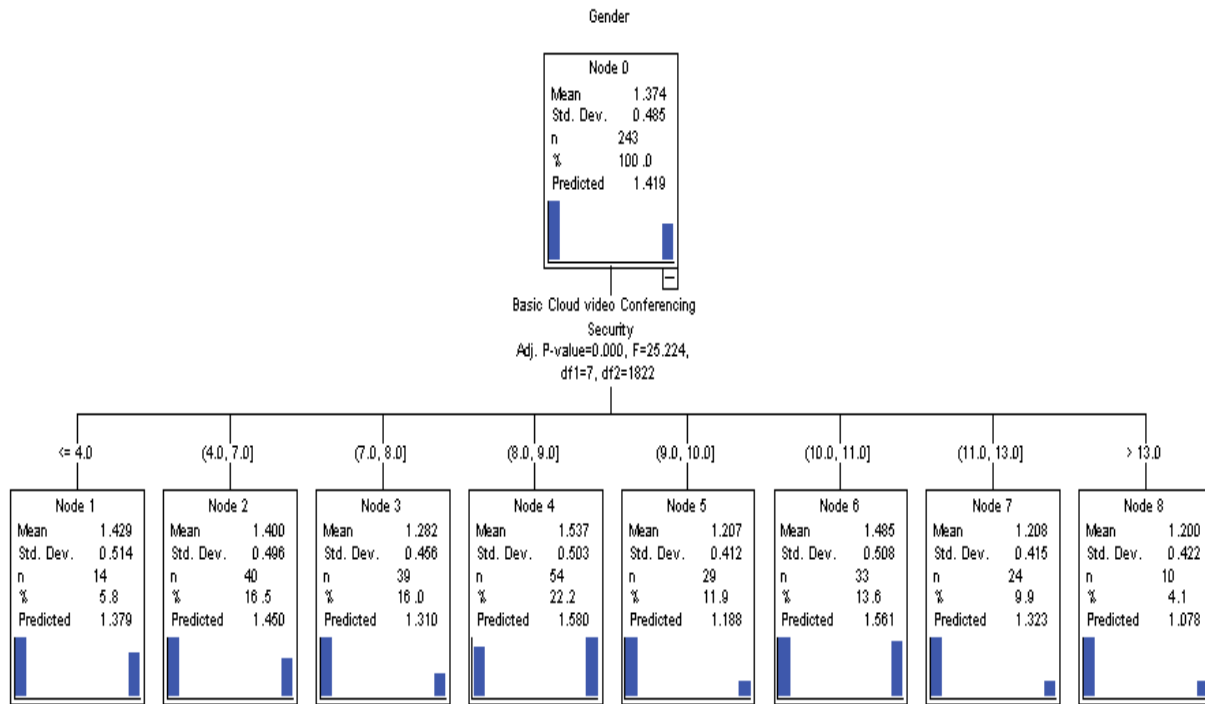
**Table:1 Tests of Model Effects**

Source	Type III		
	Wald Chi-Square	df	Sig.
(Intercept)	292.030	1	.000
General Idea in video Conferencing Security	27.139	15	.028
Mandatory Video Conferencing Security	7.677	6	.263
Basic Video Conferencing Security	5.246	8	.731
Advanced Video Conferencing Security	6.404	8	.602
Balancing security with ease of use	10.087	4	.039
Basic Cloud Video Conferencing Security	32.096	11	.001
Key Aspect of Cloud Video Conferencing Security	39.891	21	.008
Overall Rating and Inference	6.330	8	.610
Dependent Variable: Gender			
Model: Intercept			

For Intercept, the Wald Chi-Square value is 292.030, and Sig. value is 0.001. For General idea in video conferencing security, Wald Chi-Square value is 27.139 and Sig. value is 0.028. For Mandatory video Conferencing Security, Wald Chi-Square value is 7.677 and Sig. value is 0.263. For Basic video Conferencing Security, Wald Chi-Square value is 5.246 and Sig. value is .731. For Advanced video Conferencing Security, Wald Chi-Square value is 6.404 and Sig. value is 0.602. For Balancing

security with ease of use, Wald Chi-Square value is 10.087 and Sig. value is 0.039. For Basic Cloud video Conferencing Security, Wald Chi-Square value is 32.096 and Sig. value is 0.001. For Key Aspect of Cloud Video Conferencing Security Aspect, Wald Chi-Square value is 39.891 and Sig. value is 0.008. For Overall rating and inference Wald Chi-Square value is 6.330 and Sig. value is 0.610. Here the dependent variable is Gender and the Model used is Intercept.

## Decision Tree

**Fig:1 Tree Model****Table:2 Tree Table**

Node	Mean	Std. Deviation	N	Percent	Predicted Mean	Parent Node	Variable	Primary Independent Variable	Sig. <sup>a</sup>	F	df1	df2	Split Values
0	1.37	.485	243	100.0%	1.42								
1	1.43	.514	14	5.8%	1.38	0	Basic Cloud video Conferencing Security		.000	25.224	7	1822	<= 4.0
2	1.40	.496	40	16.5%	1.45	0	Basic Cloud video Conferencing Security		.000	25.224	7	1822	(4.0, 7.0]
3	1.28	.456	39	16.0%	1.31	0	Basic Cloud video Conferencing Security		.000	25.224	7	1822	(7.0, 8.0]
4	1.54	.503	54	22.2%	1.58	0	Basic Cloud video Conferencing Security		.000	25.224	7	1822	(8.0, 9.0]

5	1.21	.412	29	11.9%	1.19	0	Basic Cloud video Conferencing Security	.000	25. 224	7	1822	(9.0, 10.0]
6	1.48	.508	33	13.6%	1.56	0	Basic Cloud video Conferencing Security	.000	25. 224	7	1822	(10.0, 11.0]
7	1.21	.415	24	9.9%	1.32	0	Basic Cloud video Conferencing Security	.000	25. 224	7	1822	(11.0, 13.0]
8	1.20	.422	10	4.1%	1.08	0	Basic Cloud video Conferencing Security	.000	25. 224	7	1822	> 13.0

Growing Method: CHAID  
Dependent Variable: Gender  
a. Bonferroni adjusted

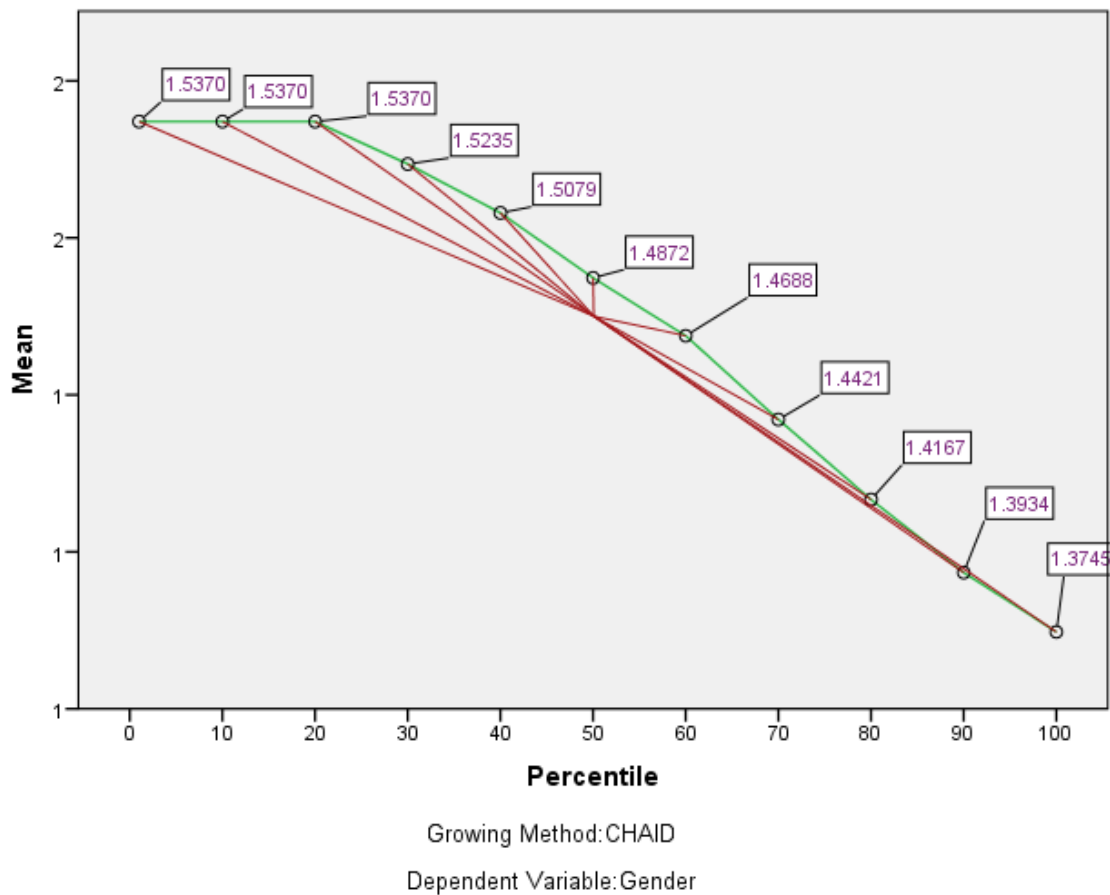
Table:2 lists the different parameters in the Tree Table. Table:3 represents gain summary for Nodes and Table:4 represents Risks. In Fig:2, predicted mean is 1.42 for Node 1 and sum is 14 (5.8%), whereas predicted mean for Node 2 is 1.38, and sum is 40 (16.5%), predicted mean for Node 3 is 1.45 and sum is

39 (16.0%), and predicted mean is 1.31 for Node 4 and sum is 54 (22.2%), predicted mean is 1.58 for Node 5 and sum is 29 (11.9%), predicted mean is 1.19 for Node 6 and sum is 33 (13.6%), predicted mean is 1.56 for Node 7 and Sum is 24 (9.9%), and predicted mean is 1.32 for Node 8 and sum is 10 (4.1%).

**Table:3 Gain Summary for Nodes**

Node	N	Percent	Mean
4	54	22.2%	1.54
6	33	13.6%	1.48
1	14	5.8%	1.43
2	40	16.5%	1.40
3	39	16.0%	1.28
7	24	9.9%	1.21
5	29	11.9%	1.21
8	10	4.1%	1.20

Growing Method: CHAID  
Dependent Variable: Gender

**Fig:2 Mean Value of Growing Method**

**Table: 4 Risk**

Method	Estimate	Std. Error
Re-substitution	.222	.010
Cross-Validation	.252	.011

Growing Method: CHAID  
Dependent Variable: Gender

### Conclusion:

Video conferencing has and Lightweight cloud video systems have grown exponentially in the past couple of years making it extremely easy for people in different parts of the world to be connected and engaged with each other without the need to assemble at a single physical location. convenient to communicate with each other. With the advent of new cloud

technologies, these platforms are becoming increasingly more secure, and with a very extra precautions, there could be more added safety.

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