

Understanding VoIP: Tom & Jerry Meets Technology

Original paper by—Author; Gideon Areo
Explained with the analogies by Vishal Dhawal- to make the concepts beginner-friendly and engaging.

Original Paper link- https://www.researchgate.net/profile/Gideon-Areo/publication/388653416_Transforming_Communication_A_Critical_Review_of_VoIP_and_Its_Role_in_Global_Networking

Technology rarely feels fun — unless Tom and Jerry explain it.
So imagine your voice is **Jerry**, the old telephone system is **Tom**, and the Internet is the **entire house** they run in.
With that picture, VoIP becomes surprisingly easy.

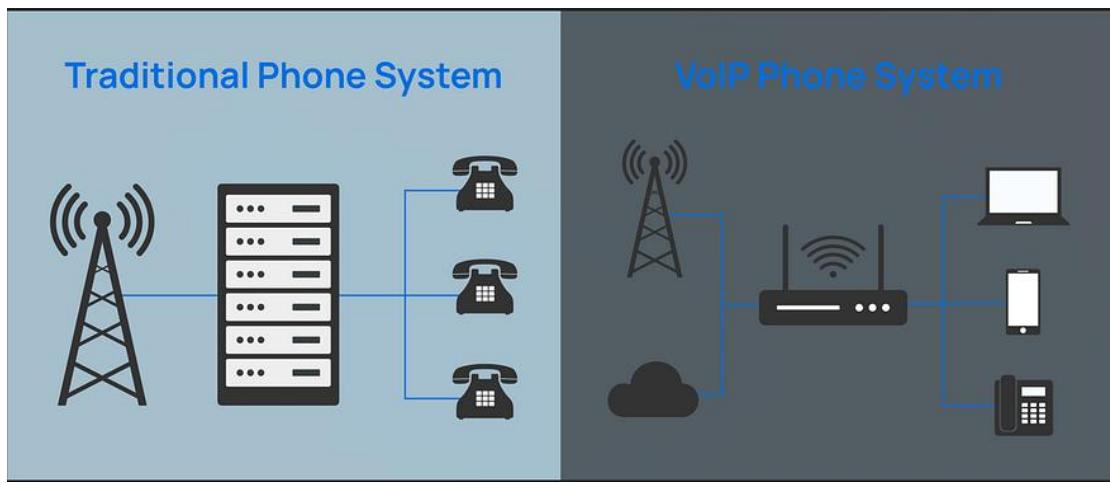
1. When Communication Was Simple... and Slow (Tom's Glory Days)

In the old telephone era, life was simple — for Tom.
Jerry had only **one small tunnel** from the kitchen to the living room.
Every message he sent had to pass through that tunnel.

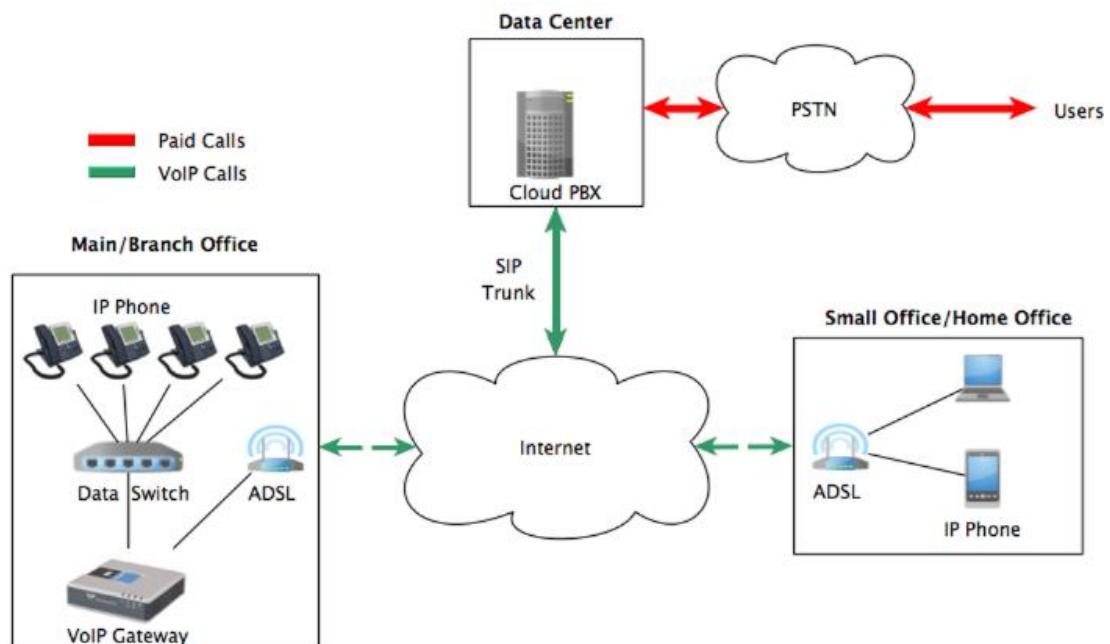
*One path
One route
One chance*

Tom just sat at the entrance like a king.
If Jerry wanted to send an important message (your voice), Tom charged him, slowed him, or blocked him entirely.

That's traditional telephony:
Rigid, controlled, expensive, single-path communication.



Tradition and VoIP Phone System



Architecture of VoIP

2. Then Came the Internet: New Holes, New Routes, New Chaos

Suddenly, cracks appeared in the walls.

Pipes opened.

Air vents widened.

Floor gaps appeared everywhere.

Jerry's eyes lit up.

**“Why use that one boring tunnel when I can
use *any* path in this whole house?”**

This is exactly what VoIP does.

It lets your voice travel through **any available Internet route**, not a fixed line.

Tom is confused.

Jerry is thrilled.

Communication becomes free, fast, and everywhere.

3. Jerry Gets Smarter: The Birth of Voice Packets

Earlier, Jerry ran whole — one message, one mouse. But to move faster and avoid Tom, Jerry comes up with genius:
He splits into **dozens of tiny Jerry clones**.

Each mini-Jerry takes a different route — some under the couch, some through the chimney, some over Tom's sleeping face.

This = VoIP packets.

*Your voice is chopped into tiny data packets.
Each packet takes whichever path is free.
All packets reunite at the destination and form your voice again.*

Tom can't catch them all. Jerry becomes unstoppable.

4. But Tom Evolves Too: Traps Everywhere (VoIP Security Problems)

Tom isn't losing this easily.

He sets:

*Mousetraps → **Eavesdropping**
Fake cheese → **Phishing / Spoofing**
Wooden blocks at door → **DoS attacks**
Entire army of robot cats → **Botnets***

Your voice packets (mini-Jerrys) are now moving in a hostile environment.

VoIP security issues start here.

5. Jerry Responds: The Tech Upgrades

To survive, Jerry upgrades himself like Iron Man.

a) SRTP = Full body armor

Mini-Jerrys are now encrypted.

Tom grabs one → can't read anything.

b) TLS = Invisible entry pass

Tom's security doors don't detect Jerry at all.

c) Firewalls = Laser-detecting goggles

Jerry sees traps before stepping in them.

d) Authentication = Secret handshake

Only the real Jerry gets allowed into safe tunnels.

Now **communication is fast and safe.**

6. Internet Quality = The State of the House

When the house is messy:

Furniture blocking routes → Latency

Uneven floors → Jitter

Broken passages → Packet loss

Mini-Jerrys trip, fall, delay, or disappear.

But with good internet (clean house):

*Jerry races
Packets arrive in sync
No one gets stuck*

Smooth, clear, HD calls.

7. The Future: Tom & Jerry Go Sci-Fi

5G → Jerry gets jet boots

He zooms across the house before Tom even looks up.

AI → Jerry can predict traps

If Tom is *thinking* of ambushing, Jerry already knows.

Blockchain → Unforgeable identity

No cat can pretend to be Jerry now.

WebRTC → Direct room-to-room teleporting

No tunnels needed.

No middlemen.

Instant arrival.

Jerry becomes a *communication superhero*.

Conclusion: The Chase Has Changed Forever

The old world was simple —
Jerry ran through one tunnel and Tom controlled it.

Today, Jerry runs through **hundreds of tunnels**, splits into tiny clones,
wears armor, reads the future, and even teleports between rooms.

That's VoIP.

A messy, clever, fast, evolving chase —
where communication escapes old limitations and becomes **smarter,
quicker, and almost impossible to stop.**
