

VoIP: Enterprise Adoption Trends in India  
and  
Grey Market Traction in India

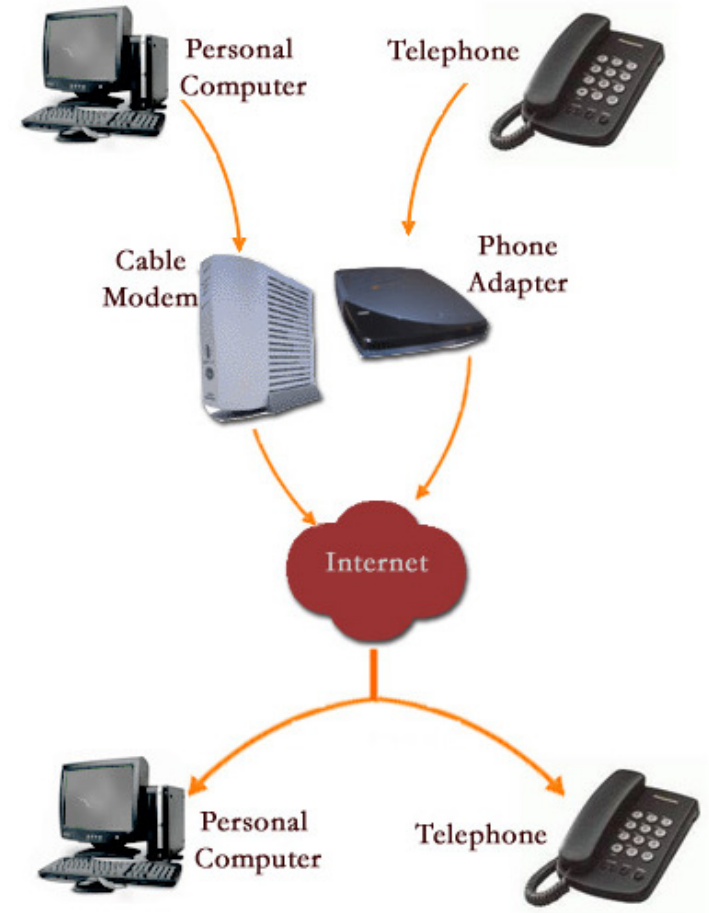
# Index

---

- ❖ **VoIP: An Introduction**
- ❖ **Classification of VoIP**
- ❖ **Global Presence of Enterprises**
- ❖ **Consolidation of PSTN and VoIP Networks**
- ❖ **Factors Affecting Adoption**
- ❖ **Biggest Factor Affecting Growth: Operational Cost**
- ❖ **Grey Market Traction**
- ❖ **Summary**

# VoIP: An Introduction

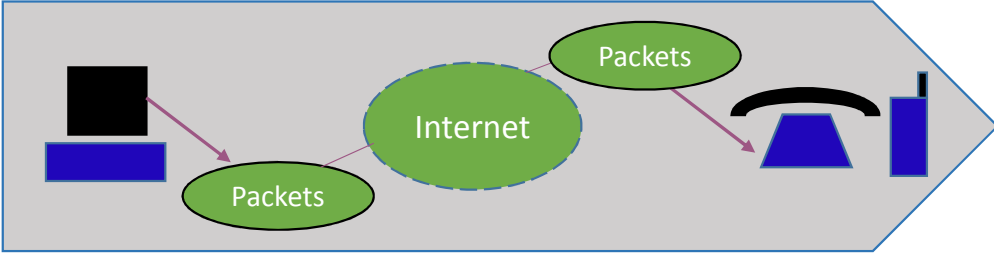
- ❑ VoIP is an acronym for Voice over Internet Protocol . VoIP is the process of transporting voice traffic on a network by dividing the traffic into small pieces, called packets, and sending it over the same networking infrastructure technology used by the data network.
- ❑ Internet protocol (IP) has been used for a long time (in various forms) for transporting Internet traffic, both on the public Internet and within enterprise networks.
- ❑ A VoIP session consists of two parts: the signaling and the media.
  - 1) The signaling makes the actual call and arranges for the registration and authentication of the caller.
  - 2) The media is the content of call once both sides are connected.
- ❑ It uses more efficient route of Internet to transmit voice after breaking them into packets unlike PSTN which uses a dedicated line.
- ❑ Additional features such as Call Forwarding, Caller ID, etc. are available at no extra cost.
- ❑ Quality of service through VoIP depends primarily on quality of Internet connections used.
- ❑ Power failure result in non-functioning of VoIP.



# Classification of VoIP

## Classification of VoIP by Terminal Used:

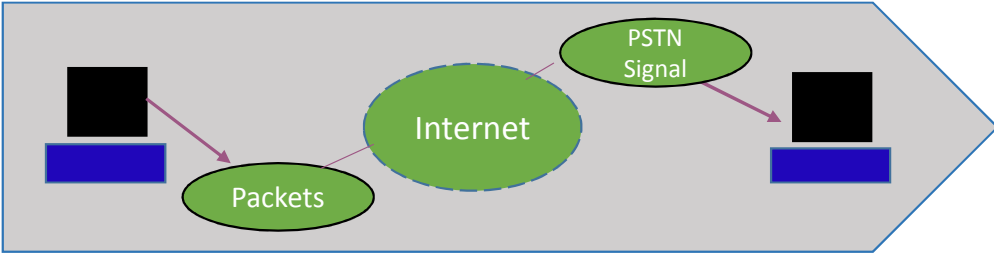
Net Connected Instrument to Net Connected Instrument



Voice Packets are transmitted over Internet.

| Terminations Allowed in India |               |
|-------------------------------|---------------|
| Domestic                      | International |
| ✓                             | ✓             |

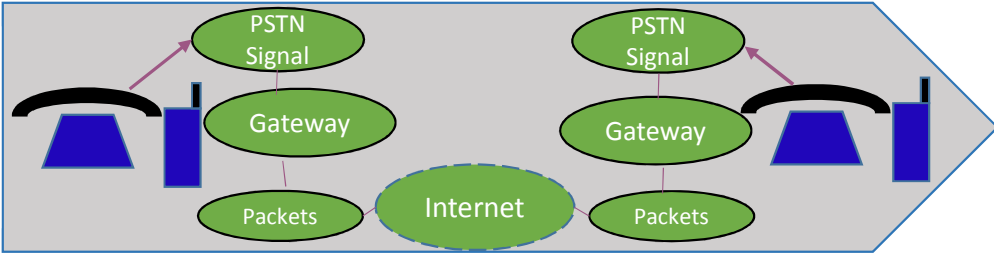
Net Connected Instrument to Conventional Phone



- Voice packets travel to gateway over internet.
- Converted into PSTN Signal.
- Transmitted by local telephone infrastructure to receiver.

|   |   |
|---|---|
| ✗ | ✓ |
|---|---|

Conventional Phone to Conventional Phone

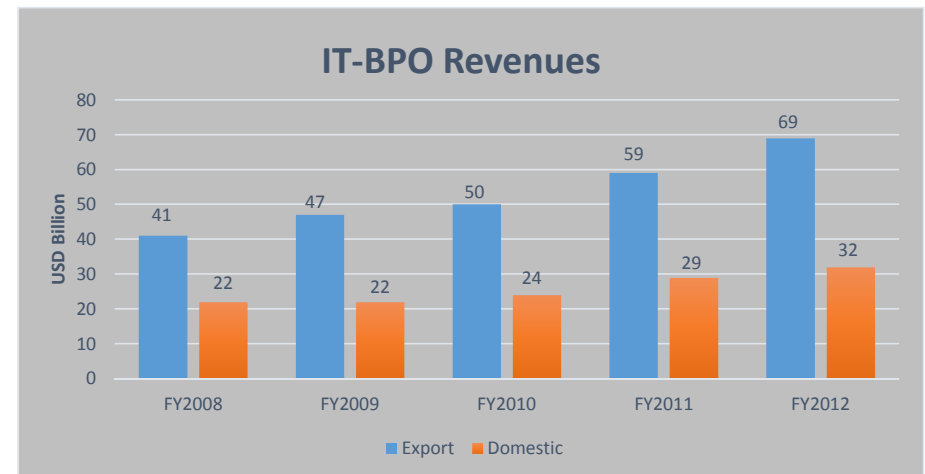
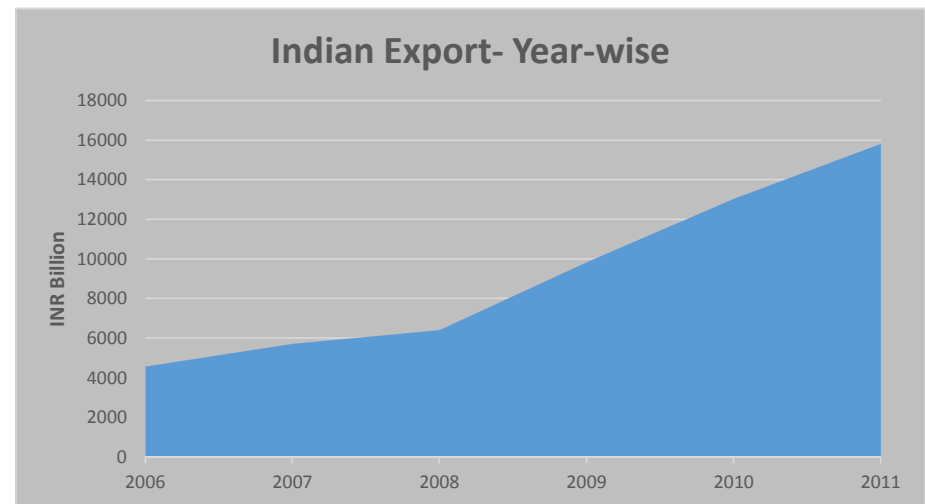


- PSTN Signal travel to gateway over local telephone infrastructure.
- Converted to packets which travel over internet.
- Follows the reverse process to reach receiver's end

|   |   |
|---|---|
| ✗ | ✗ |
|---|---|

# Global Presence of Enterprises in India:

- ❑ The VoIP user in enterprise segment range from large MNC's operating in the country to the small and medium enterprise(SMEs)
- ❑ The primary reasons which drive VoIP usage in the enterprise segment are a need to have an integrated phone system across multiple locations, scalability, operational cost savings and a need to converge voice and data networks.
- ❑ India has been a major hub for outsources work; developing nature of the country has attracted large MNC's to setup their offices in the country.
- ❑ The domestic market on the other hand, is primarily SME driven, which operates on a region wise basis or on a pan-India basis.
- ❑ Captive networks or close user groups(CUGs) in India, have been allowed to use Voip services ever since 1999, promoting acceptability of the services across enterprises.
- ❑ These factors coupled with a healthy GDP rate has fueled sustainability.



# Consolidation of PSTN and VoIP Networks

- ❑ Enterprise that operate globally are switching to VoIP network as they realize their benefits of VoIP over traditional PSTN networks.
- ❑ However in India, it is illegal to terminate a call on VoIP gateways inside India. This requires them to have a separate PSTN network for local calls and a VoIP network for international calls.
- ❑ However instead of having two separate network for local and international calls, enterprises today are integrating PSTN and VoIP using a logical partitioning.
- ❑ Logical Partitioning merges the physical aspects of the two network infrastructures without merging the calls.
- ❑ Infosys, Accenture, Cognizant and Wipro are some of the major user of VoIP services in India. All these enterprises have a logical partitioning between their PSTN side and VoIP side



# Factors Affecting Adoption

| Drivers   | Restraints   |
|---|--|
| <ul style="list-style-type: none"><li data-bbox="96 495 1010 625">❑ <b>Flexibility:</b> Increased flexibility and easy scalability are reasons that many enterprises are looking at the VoIP solution.</li><li data-bbox="96 636 1010 912">❑ <b>Operation Cost:</b> Enterprises are looking towards a VoIP solution due to cost reduction and resource maximization. Many enterprises already have a dedicated MPLS/VPN infrastructure, thereby implementing a VoIP solution over the existing network leads to lower operating costs.</li><li data-bbox="96 924 1010 1005">❑ <b>Portability</b> - A person can receive a phone call wherever there is a broadband connection.</li><li data-bbox="96 1016 1010 1237">❑ <b>Additional Services:</b> Using VoIP also means benefitting from its abundant features which can make for a rich and sophisticated experience. Example-Caller ID, Contact Lists, Voicemail, extra-virtual numbers etc.</li></ul> | <ul style="list-style-type: none"><li data-bbox="1050 495 1963 771">❑ <b>Regulation:</b> Telecom Regulatory Authority of India (TRAI) requires that voice traffic over the enterprise data network and the Public Switched Telephone Network (PSTN) must be strictly separated and no mixing of calls between the two networks can occur for the purpose of toll bypass.</li><li data-bbox="1050 782 1963 961">❑ <b>Security:</b> Security is one of the biggest concern associated with VoIP. Some of the threats being VoIP hopping, remote eavesdropping, vishing, VoIP spam, etc.</li><li data-bbox="1050 972 1963 1183">❑ <b>Initial Cost:</b> Switching to VoIP from legacy TDM equipment requires a lot of investment. Even the cost of security systems for VoIP are expensive, often costing more than what was saved by switching to VoIP.</li><li data-bbox="1050 1195 1963 1334">❑ <b>Quality of Service(QoS):</b> The quality of a VoIP call depends on the speed and quality of the internet connection.</li></ul> |

# Biggest Factor Driving Growth: Operational Cost

- ❑ Low-cost call-rates are the biggest driver of Internet Telephony in the enterprise sector.
- ❑ In the current India scenario, International callers are the biggest gainers from VoIP based services.
- ❑ Call-rates from VoIP to most countries are priced equivalent to a local call in India.
- ❑ Current VoIP providers in India offer service packages which allow unlimited calls to locations like USA, UK and Canada with a flat monthly fee that reduces the enterprise telephone bills by a large factor.
- ❑ Opening up of the Indian markets to unrestricted telephony would drive down call rates to minimal, hence promoting stiff competition.

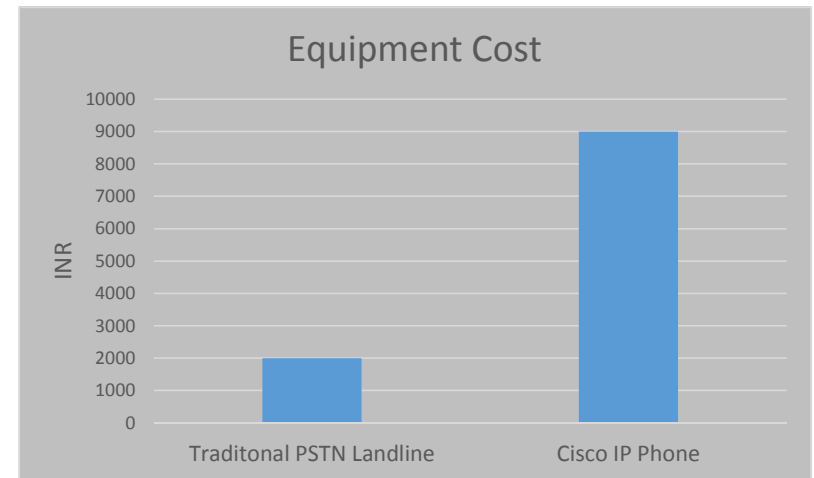
| INR/min.    | Bharti Airtel | Vodafone (Wireless) | VSNL (VoIP) |
|-------------|---------------|---------------------|-------------|
| USA         | 6             | 6.4                 | 1           |
| Middle East | 10            | 11                  | 1           |
| Singapore   | 8             | 7.4                 | 1           |
| Europe      | 10            | 10                  | 1           |

| Word Phone                          | Tariff   |
|-------------------------------------|----------|
| Unlimited calls to USA, & Canada    | INR 1995 |
| Unlimited Calls to UK, USA & Canada | INR 2995 |
| Swiftfone                           | Tariff   |
| 6000 minutes to US, Canada and UK   | INR 4000 |
| 500 minutes to US, UK and Canada    | INR 600  |



# Biggest Factor Restraining Growth: Regulation

- ❑ In India it is illegal to have VoIP gateways inside India. This effectively means that people who have PCs can use them to make a VoIP call to any number, but if the remote side is a normal phone, the gateway that converts the VoIP call to a POTS call should not be inside India.
- ❑ Telecom Regulatory Authority of India (TRAI) requires that voice traffic over the enterprise data network and the Public Switched Telephone Network (PSTN) must be strictly separated and no mixing of calls between the two networks can occur for the purpose of toll bypass.
- ❑ Enterprises need to have a separate PSTN and VoIP network or have a logical partitioning between them which prevent a mix-up between them. However switching from traditional PSTN network to VoIP network is a costly affair and often costing more than what was saved by switching to VoIP.



# Grey Market Traction

---

- ❑ A **grey market** also known as parallel market, is the trade of a commodity through distribution channels which are unofficial, unauthorized, or unintended by the original manufacturer.
- ❑ It is illegal to have VoIP gateways inside India. This effectively means that people who have PCs can use them to make a VoIP call to any number, but if the remote side is a normal phone, the gateway that converts the VoIP call to a POTS call should not be inside India.
- ❑ A quick explanation of the effect of a grey route in India. When a call is made from an overseas destination, the legal operator pays Rs 5.50 as termination charges to the domestic basic operator. The illegal operator passes off the incoming traffic as a local call and incurs a cost of 0.50 paise as he skips termination charges. This also means that the revenue margins shift from the local operator to the overseas operator, who pays 7-8 cents against 13 cents through the legal route.
- ❑ Many BPOs and other call centers use VoIP services. These companies use services of unlicensed service providers including Skype, Vonage, Yahoo!, Net2Phone, Dialpad, Impetus, Novanet and Euros. According to DoT, the above-unlicensed service providers offer 30 million minutes of IP telephony services every month to corporate sectors, call centers and BPOs in India. They do not pay 12 percent service tax and six percent of revenue share.

# Summary

---

- VoIP is the process of transporting voice traffic on a internet by dividing the traffic into small pieces. VoIP is better than the traditional PSTN network in terms of quality of call and additional features.
- In India, it is illegal to have VoIP gateways inside India. This is regulation is a major setback to the growth of VoIP sector in India.
- VoIP has huge growth potential in India, as it is one of the major hubs for outsourcing work. A large number of global MNC's have also set up their offices in our country with global presence.
- Enterprises are consolidating PSTN and VoIP network using logical partioning for a more efficient and better network setup. Eliminating the need for physical partitioning to meet government regulations. Some of the examples being Infosys, Accenture, Cognizant, etc.
- The biggest factor that is affecting growth of VoIP in enterprise sector is cost. Indian enterprises having large volume of voice international traffic are switching to VoIP.
- Grey Market service providers offer 30 million minutes of IP telephony services every month to corporate sectors. This has an overall negative effect on the economy and on the VoIP market.