

The Telephone System

By telephone system, we broadly mean using a duplex-mode, transmits in real time the voice data between two geographically distant locations. Hence, the users are able to converse in the real time.

The telephone system model is a redundant and hierarchical model having a multilevel hierarchy. It comprises of the following components -

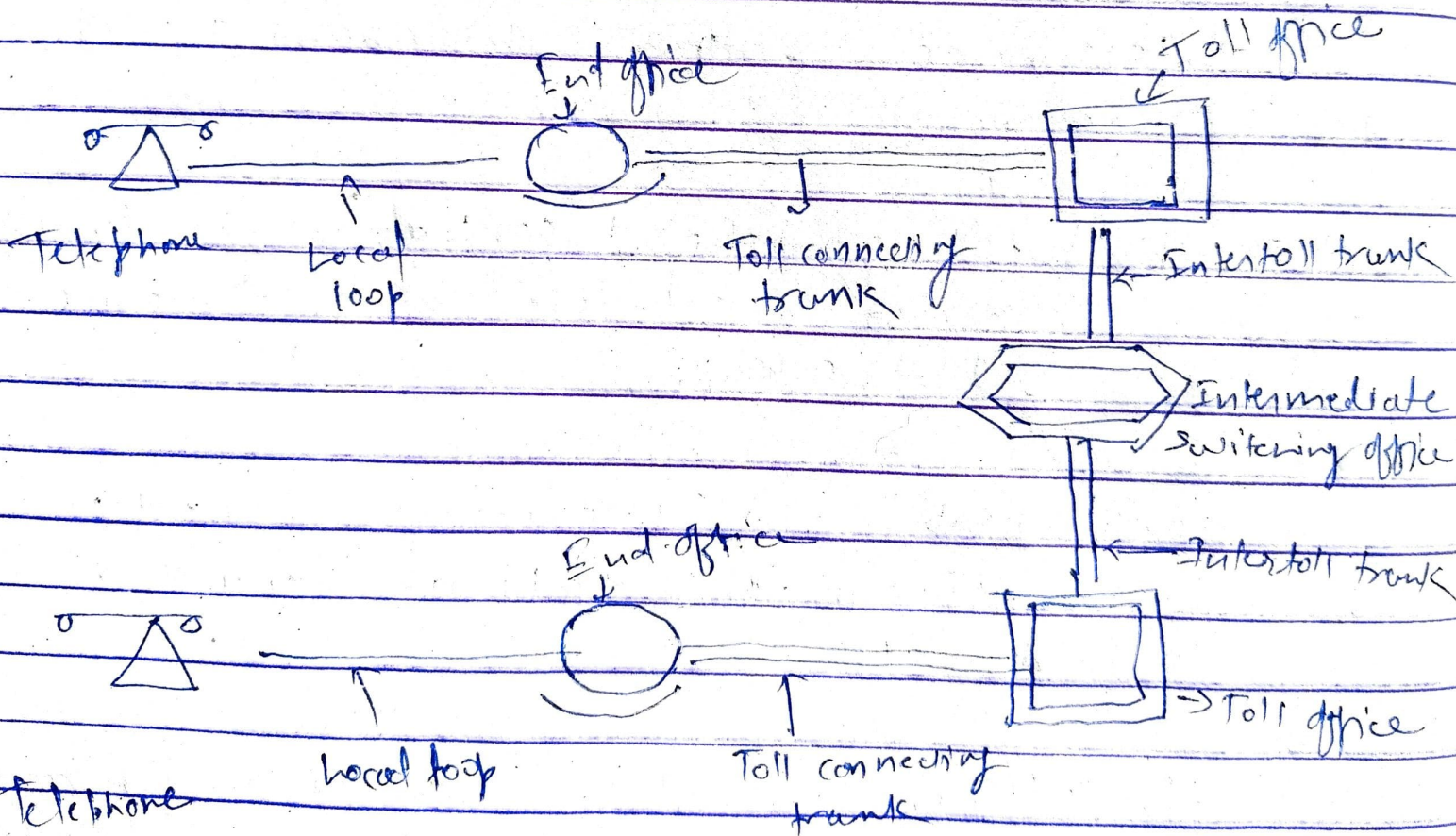
- Telephone of the subscriber or end user.
- End office - Local central office directly connected to end user at a distance of 1 - 10 km.
- Local loop - A two-way connection between the telephone and the end office.
- Toll office - Switching centres which are called tandem offices when located within the same local area.
- Toll connecting trunks - Lines that connect

end offices with toll offices.

→ Intermediate switching offices - Interconnected

non-hierarchical switching offices for connecting toll offices.

→ Inter toll trunk: Very high bandwidth channels that connect either two toll offices via intermediate switching offices.



Model of the telephone structure

Now, there may two cases, when a connection is established between the caller and the callee.

(a) Both caller and callee are attached to the same office end office.
- In this case, a direct electrical connection is set up between the local loops of the subscribers.

(b) Caller and callee are attached to different end offices -
In this case the end office of the caller sets up a connection with one or more connected toll offices, which then perform the switching job.

The transmission media used in local loop is usually twisted pair cables, while that between toll connection trunks is fibre optic links.