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### Internal Assessment - 3

#### Integrated Services Digital Network

The integrated services digital network (ISDN) is a type of telecommunication that allows you to transfer data, speech, video and other network services. ISDN transfers this digital information in a minimum of two channels through copper wires.

The network's history began over forty years ago when the work started on ISDN at Bell Labs and was formally standardised in 1998.

However, this telecommunication system was difficult to implement since analog systems had been replaced on the provider side but not the customer. To resolve the issue phone system providers needed to agree on a way to digitise the customer's equipment.

Telecommunication companies researched how to integrate the two systems but could not find a solution for how to convert "twisted pair" analog lines to higher bandwidth. And so, there were disagreements on which concept they should utilise.

It took eight years to standardise this system. The reason behind it is that there were slower and faster types of networks on the market. And so many telecommunication companies phased out this network. Nevertheless, this system is still in use in some regions.



## Major Types Of ISDN

This network's configuration are based on the speed of the transmission as well as the type of data transferred.

The main types are:-

### 1) Primary Rate Interface

The most popular type is the Primary Rate Interface (PRI). Typically, PRI is implemented in large businesses and institutions as it is the main service in this network.

On the top of offering 64 Kbps speed at up to 2.94 Mbps capacity, it is quite a reliable service.

### 2) Basic Rate Interface

The Basic Rate Interface / Access (BRI or BRA) is an inferior version of PRI. BRI offered voice as well as other digital services over long distances. So, this network only provides 64 Kbps in each of its two B channels, as well as an additional 16 Kbps through its D channel. In total, this network transmits a maximum of 128 Kbps of data.

### 3) Narrowband ISDN

The Narrowband ISDN offers the slowest speed among the different types. Specifically, narrowband requires a lower frequency and has a speed of 64 Kbps. It was designed only to digitise analog speech data. And so, it only requires a small bandwidth of other networks.



#### 4) Broadband ISDN

This network is called 'Broadband' ISDN because it surpasses 1.544 Mbps. It can transmit 2 Mbps - 1 Gbps. And so, it typically uses fiber optics instead of copper since it has much wider bandwidth of around 10 Gbps. Through these fiber optic cables, this network allows you to manage different types of services and transmits constant information from one source to multiple users.

In addition, it connects to the Asynchronous Transfer Mode technology, which reduces delays. However, the users can't send information back - they can only receive it.

#### Working Of ISDN and its Uses

This type of network relies on two types of channels:-

- 1) Bearer (B): This channel transmits data such as voice.
- 2) Data (D): This channel transfers signals and controls. However, D channels can also transmit data packets.

#### For Example:->

Let's say you call a friend. Your "Hello" is encoded and transmitted on this network through one of the B channels. On the other end, your friend will receive your greeting and say hello back.



However, your friend's 'Hello' will pass through a different B channel. This is because B channels transfer data in one direction.

After talking and pressing the 'End Call' button, the D channel will transmit this signal, and so your call will end.

As many people can join the call as you have B channels, and so this network is popular with large groups such as businesses and institutions. Businesses often use this network as a backup way to communicate. This network is also a good option for rural residents since other networks are often unavailable in those regions.

### Advantages Of ISDN

Some benefits of using this network are:-

- 1) Faster Connection
- 2) Multiple Digital Services
- 3) Faster Installation
- 4) Clearer Communication

### Conclusion

ISDN is a Network that operates using B and D channels to transfer data. It offers a speed of up to 1 Gbps and a variety of digital communication services like faxing and the internet. Its having a capability to connect multiple devices makes it ideal for businesses and large groups.