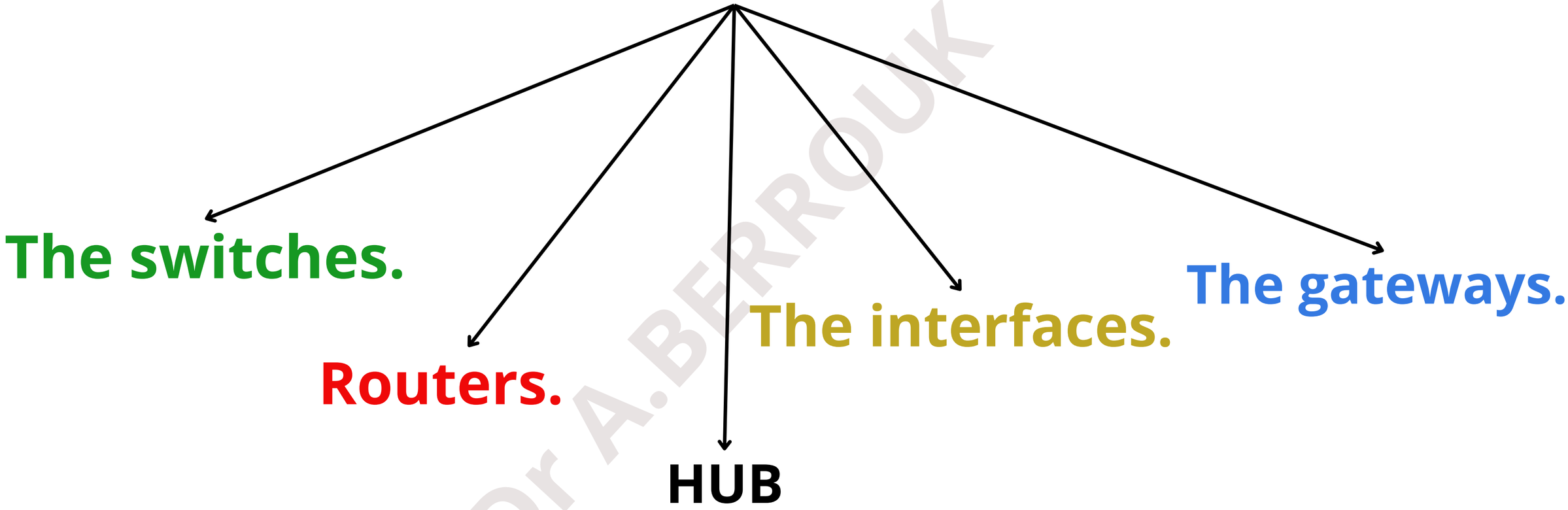
CHAPtER- 5

Equipements D'interconnexion En Téléphonie - Les commutateurs, les routeurs, les interfaces, les passerelles -

To set up a network (computer, PSTN telephone, mobile telephone), several interconnection equipment are used. Each of these components plays a specific role, such as connecting two network entities, routing calls and information, performing transit links

The interconnection equipment in telephony



HUB

is a physical layer device which has multiple ports that are used to connect multiple computers or segments in a network

advantage:

-the Hub can broadcast the message
-it is less expensive
-easy installation
-robust

Dis-advantage:

-We can’t send private or personal data through hub
- is not secure and safe
-copying the data packets on all the interfaces makes it slower and more congested

to overcome this problem we use switch

The switches.

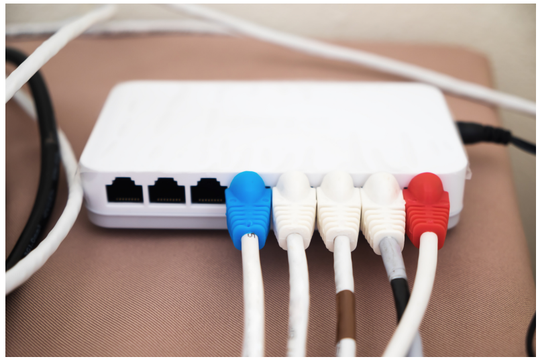
public switches.

A subscriber switch provides the following functions:

- A local link: link between two subscriber lines connected to it.
- An outgoing call: Connect a subscriber line to a junction connected to another switch.
- An incoming call: Connect a trunk from another switch to a subscriber line.
- A transit switch: It performs transit links;

PBX

for private enterprise customers of telephone operators.



Routers.

A router is an equipment that connects several networks, ie it will receive messages from the network machines and will address them to the desired machines. Its role is to transit packets from one network interface to another through its routing table (indicates which gateway to use to join a network), to automatically configure the IP addresses of all the elements of a network when connecting to the router.

Difference Between Hub, Switch and Routers

Hub	Switch	Router
- Works in Physical Layer	- Data/Network Layer	- Network Layer
- Broadcasts messages	- Multicast messages	- Routes messages
- Sends data as Bits	- Sends data as Frames	- Sends data as Packets
- Connect devices within the same network	- Connect devices to network	- Connect two different network
- Does not store MAC addresses	- Store MAC addresses	- Store MAC addresses

The interfaces.

An interface is a link between two entities of the network, on which particular information. It is also a connection point between two networks.
Example 1: the connection between two network devices.
Each interface in the GSM mobile phone network is designated by a letter as shown in the table below. Most of the interfaces in the telephone network are MIC links and are defined by two types of channels .
-Traffic channels: they are reserved for voice or user data.
-Signalling channels: they are reserved for signalling, meaning dialogue between different network entities

GSM INTERFACES

Nom	Localisation	Utilisation
Um	MS-BTS	Interface radio
Abis	BTS-BSC	Divers
A	BSC-MSC	Divers
C	GMSC-HLR	Interrogation HLR pour appel entrant
	SM/GMSC-HLR	Interrogation HLR pour message court entrant
D	VLR-HLR	Gestion des informations d'abonnés et de localisation
	HLR-VLR	Services supplémentaires
E	MSC-SM/GMSC	Transport des messages courts
	MSC-MSC	Exécution des handovers
G	VLR-VLR	Gestion des informations d'abonnés
F	MSC-EIR	Vérification de l'identité du terminal
B	MSC-VLR	Divers
H	HLR-AUR	Echange des données d'authentification

The gateways.

is a hardware and software system that connects two networks, in order to interface between different network protocols.

***Example 1*- to connect local networks of different types, for example the GMSC (Gateway Mobile Switching Centre), acts as a gateway between the fixed network and the mobile network.**

Example 2- A VoIP gateway to easily connect a VoIP telephone system to the public network. The main functions of this gateway are compression/ decompression, paquetisation, call routing and signaling control .

Example 3- A gateway is a server between microphones of the same network, it allows to connect networks with different protocols, it is the router IP address on the internal network side that allows you to connect to another external internet network