

Concepts of Common Channel Signaling

Chapter 1

Common Channel Signaling

1.1 The differences between Channel Associated Signaling and Common Channel Signaling

With common channel signaling there are no supervisory signals instead of that, message will be sent to establish /release connections.

With the conventional signaling (analog type) TS 16 is formed in association with the voice time slot i.e. TS 1 supervisory signaling is sent in frame 1 TS16 first 4 bits, Hence voice channel is associated with a signaling channel. But when common channel signaling is introduced calls will be established by sending messages. Since messages contain all the details, it is not necessary to send them in the associate mode. Hence signaling time slot of a PCM i.e. TS16 will be commonly used to send messages regarding the management of calls. Management means connection, charging, releasing, number identification etc.

1.2 Concepts behind messages

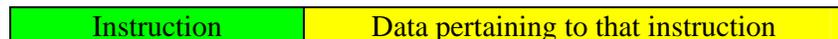
1.2.1 Simple message

What is a basic message to a computer? It is instructions and data. Let us analyze the evolution of these messages with respect to the network evolution.

A simple message in computer comprises of two components i.e.

- i. Instruction field – fixed length
- ii. Data field - Variable field according to the instruction.

Hence the basic or simple message will be as follows.



Say this message is **K**

1.2.2 Messages pertaining to homogeneous network

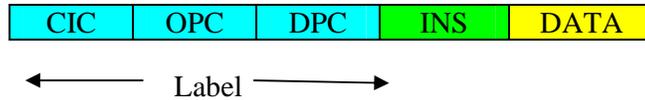
Assume few computers have been connected for a particular purpose in a given network. Then if we want to send a message from a computer to another computer, that message should have an additional field called “**label**” in addition to the above message **K**. This will include the following information.

- (i) Originating Point Code - **OPC**
- (ii) Destination Point Code - **DPC**
- (iii) Circuit Identification Code - **CIC**

This requires each equipment to be numbered. Also in the message the following information to be provided

- the originating equipment number and terminating equipment number
- The number of the circuit to be used for communication

Hence the basic message will have three fields.
i.e. label Instruction Data Say this message is **K1**



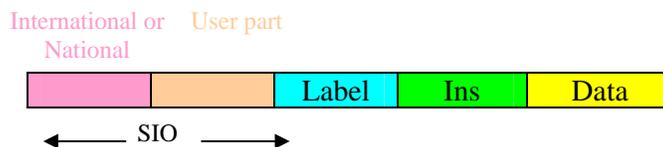
1.2.3 Messages Pertaining to non – homogeneous network

Assume that a complete network provides many (integrated) services. This requires to inclusion of an additional field to the above message K1. This field will have two sub fields, Network Sub field and User sub field. User Sub field will identify for which user type this message belongs to, while network sub field indicates whether this message belongs to domestic or international. The typical user types of a message can be either telephone user part, Data User Part or ISDN User Part etc. **Telephone User Part is now becoming obsolete and for understanding purposes examples of telephone user part is described in this presentation.**

Hence messages pertaining to non-homogeneous network should include an additional field of “service information octet’ which includes the following information.

- (i) Type of message (which user part)
- (ii) Application (National or International)

Hence the message becomes



This message is message **K2**.

In summary the basic message K has been evolved to message K1 to accommodate homogeneous Networking and to message K2 to accommodate non- homogeneous Networking.

1.3 Practical implementation of non-homogeneous Network

A non homogeneous message of K2 has to be transmitted from one station to another station. **The recipient of the station should be able to receive the message without any distortion.** Hence constraints that has to be considered to achieve the message K2 the following points has to be considered

- a. When a message is transmitted from one equipment to another equipment in a non homogeneous network, it is important to indicate the length of the actual message to the other station. Hence a separate field LI to be appended to indicate the message length.

- b. When transmitting a message through a transmission medium, the equipment which receives the message should first find out whether it has received the message correctly. If there is an error the receive station should be able to correct the error either by the information available in the error control field or requesting the transmitter to retransmit the message again. In any case the message K2 to be introduced an additional field named Error Control. Hence message K2 will be evolved to message K3 to accommodate the error control field to a complete message.