

Chapter 55.1 Plesiochronous Digital Hierarchical Systems

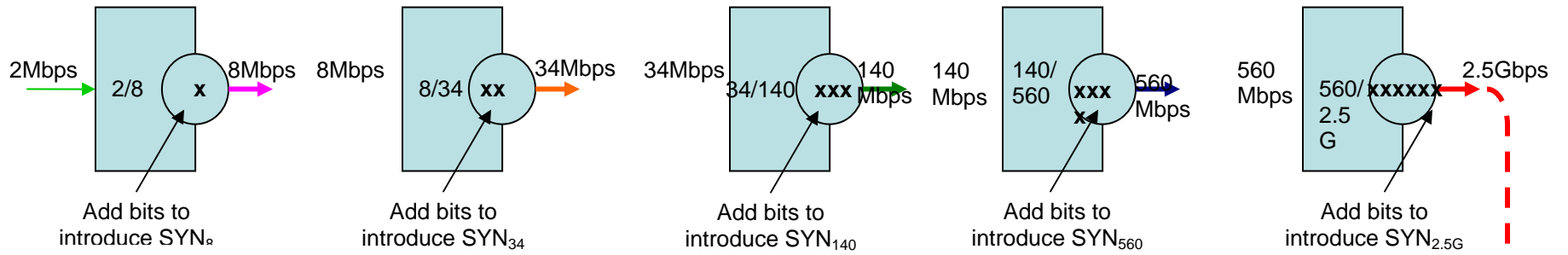
Plesiochronous Digital Hierarchical System means multiple synchronous systems. What is meant by multiple Synchronous System?

PDH higher order system is as follows

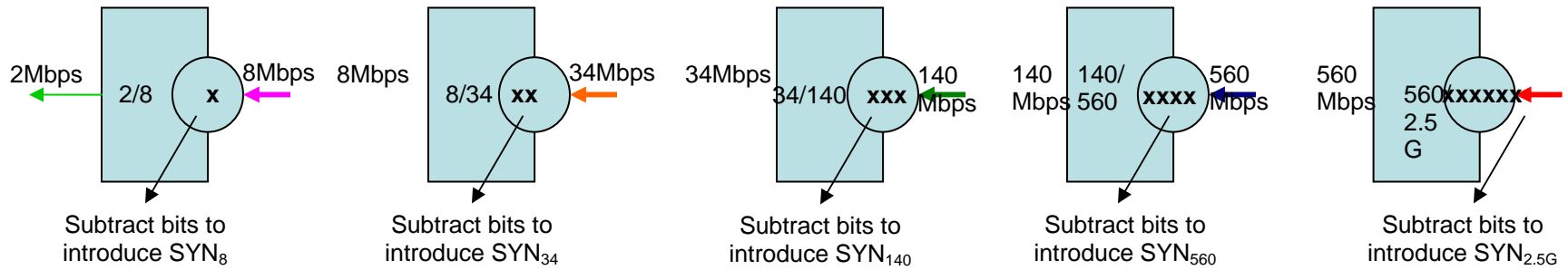
1 <sup>st</sup> Order	2-8 Mbps
2 <sup>nd</sup> Order	8-34 Mbps
3 <sup>rd</sup> Order	34-140 Mbps
4 <sup>th</sup> Order	140- 560 Mbps
5 <sup>th</sup> Order	560- 2.5Gbps

The system operates as follows

### MULTIPLEXING



### DE-MULTIPLEXING



### PRINCIPLES OF PDH

Figure: 5.1

From the above diagram the following can be visualized

1. A 2Mbps stream at a give Station x will go through multiplexers of 2/8, 8/34, 34/140, 140/560 and 560/2.5G. Then the same stream will pass through at the Station Y the De-multiplexers of 2.5G/560, 560/140, 140/34, 34/8 and 8/2.
2. From 8Mbps multiplexer at Station X to the 8Mbps de-multiplexer at Station Y is synchronized. But 8Mbps multiplexer at Station X to 2.5G/560 de-multiplexer it is not synchronized, hence an 8Mbps stream can not be extracted from the same de-multiplexer.
3. The multiplexer and the de-multiplexer hierarchy is following a ladder format and if for example 34Mbps is to be extracted from the de-multiplexer it can not be achieved from the 2.5G/560 or 560/140 de-multiplexers.
4. In this format synchronization has been achieved from the same hierarchical multiplexer to the de-multiplexer. Hence this system is called Multiple Synchronous System or “Plesiochronous Digital Hierarchical” system.

The PDH systems were widely used until end 1990s and these systems has been developed to synchronous Digital Hierarchical Systems where it does not follow a ladder multiplexing and uses a word interleaving with positive and negative justifications.