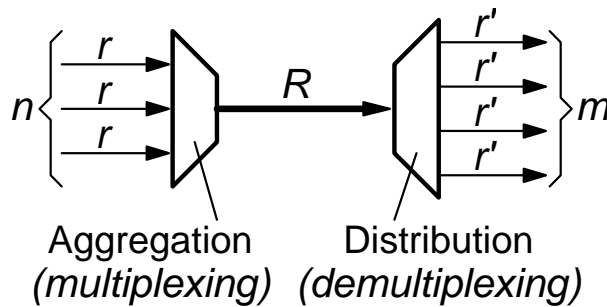


### 1.3 Multiplexing, Time-Switching, Point-to-Point versus Buses

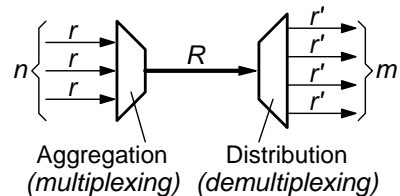


- Simplest Networking, like simplest programming:  
Sequential !

CS-534, Copyright Univ. of Crete

1

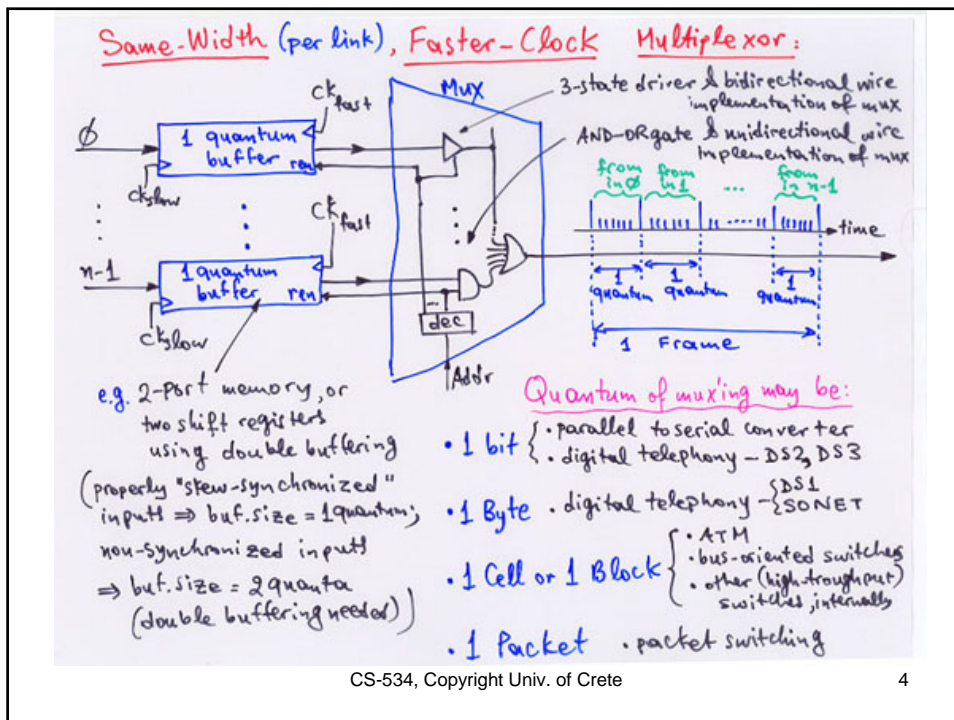
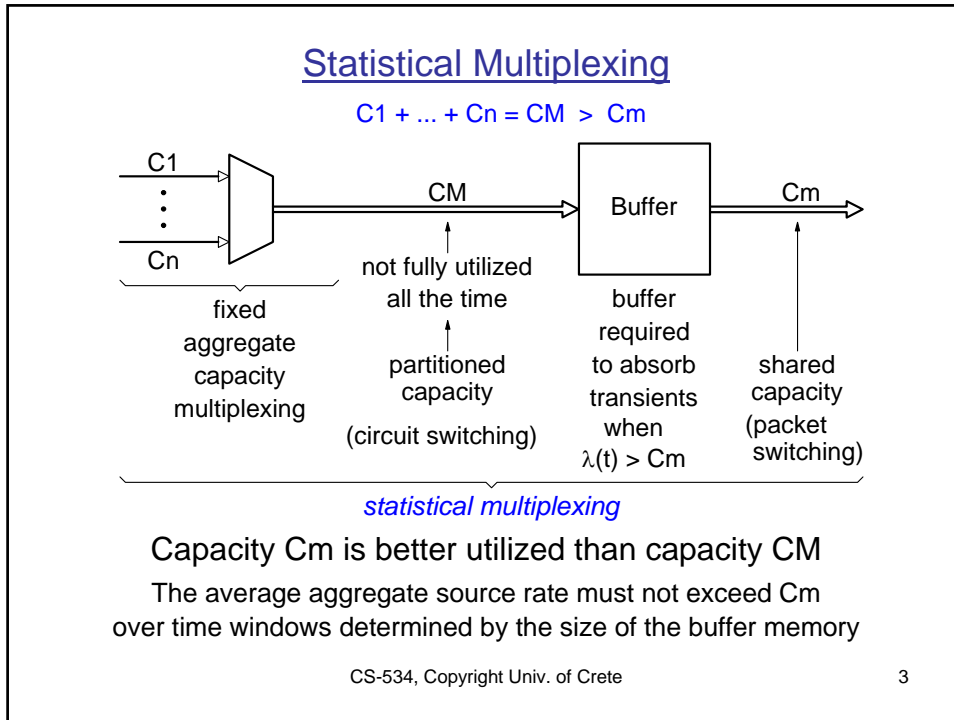
### Time-Switching

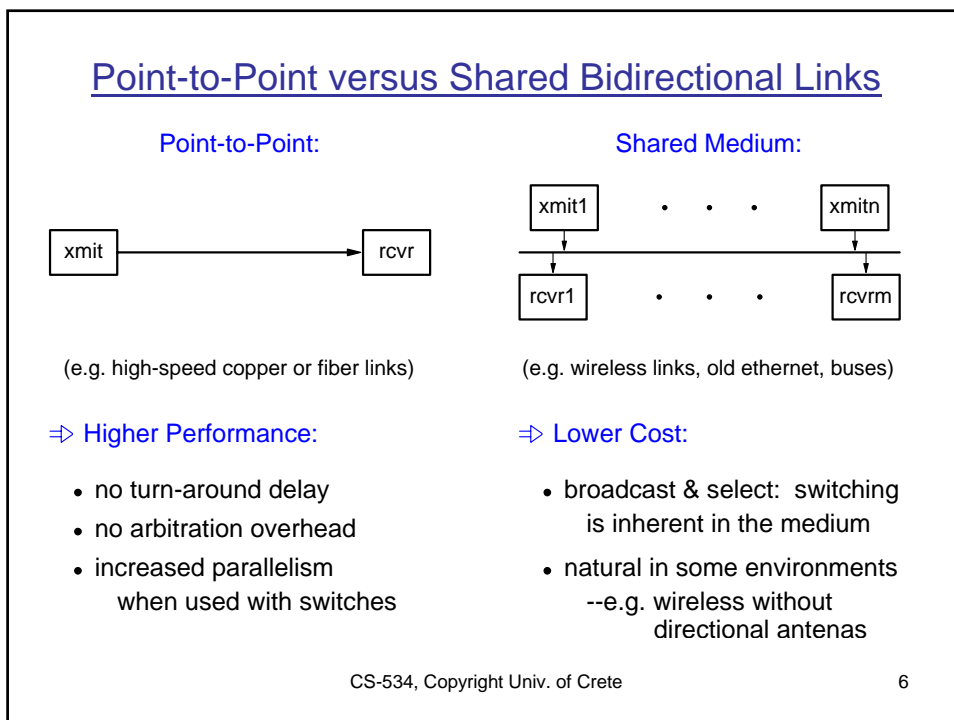
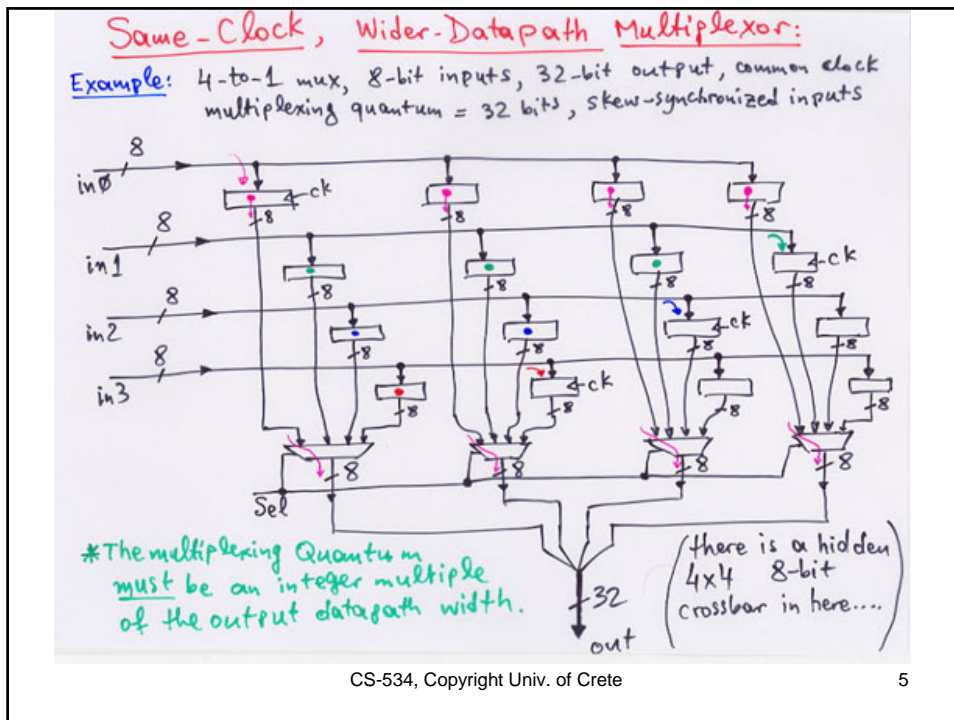


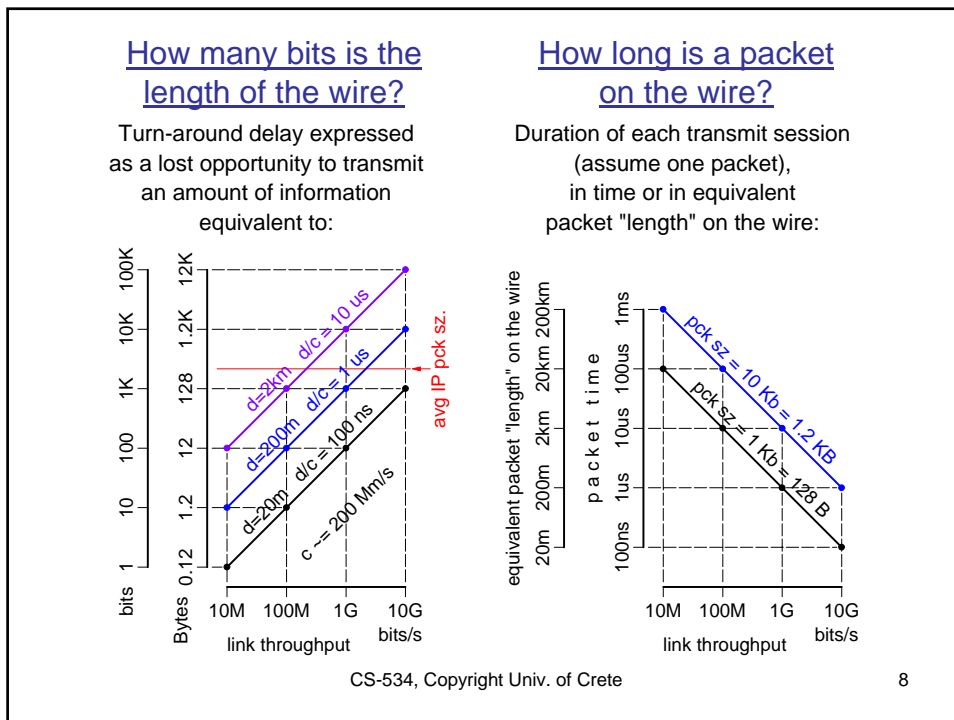
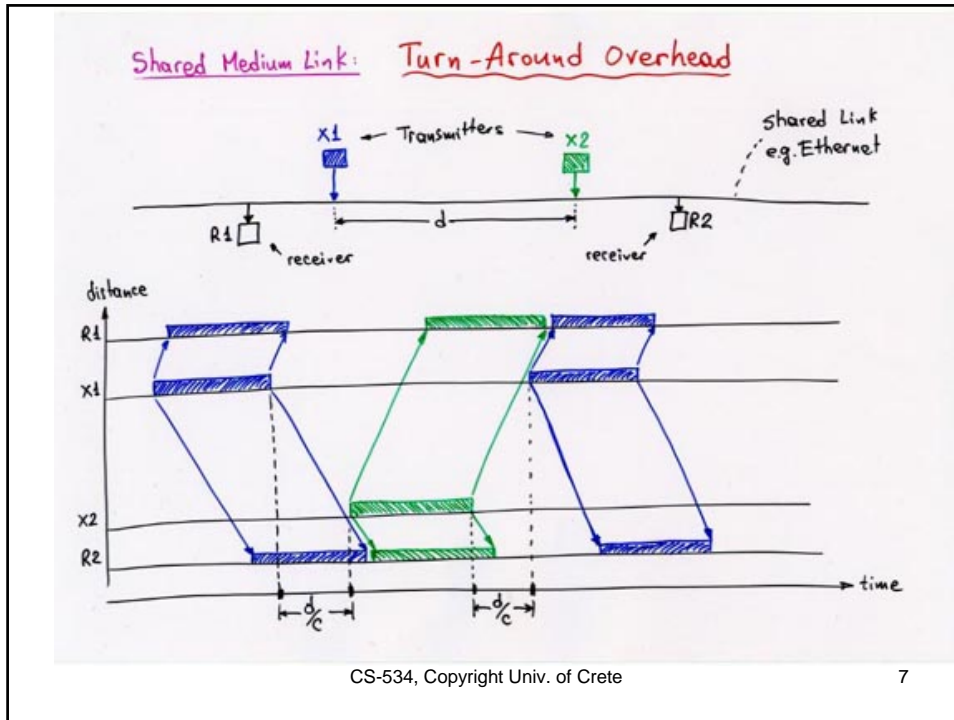
- Shared Medium Communication
- Demultiplexor determines where each piece of information is routed to by selecting the time at which each output receives information from the shared medium
- Simplicity: one thing at a time – no parallelism
- Non-scalable! – cannot increase  $R$  indefinitely
- Full-capacity ( $R = n \cdot r$ ) or Statistical Multiplexing ( $R < n \cdot r$ )
- Implementation issues, point-to-point links versus bidirectional, shared physical medium

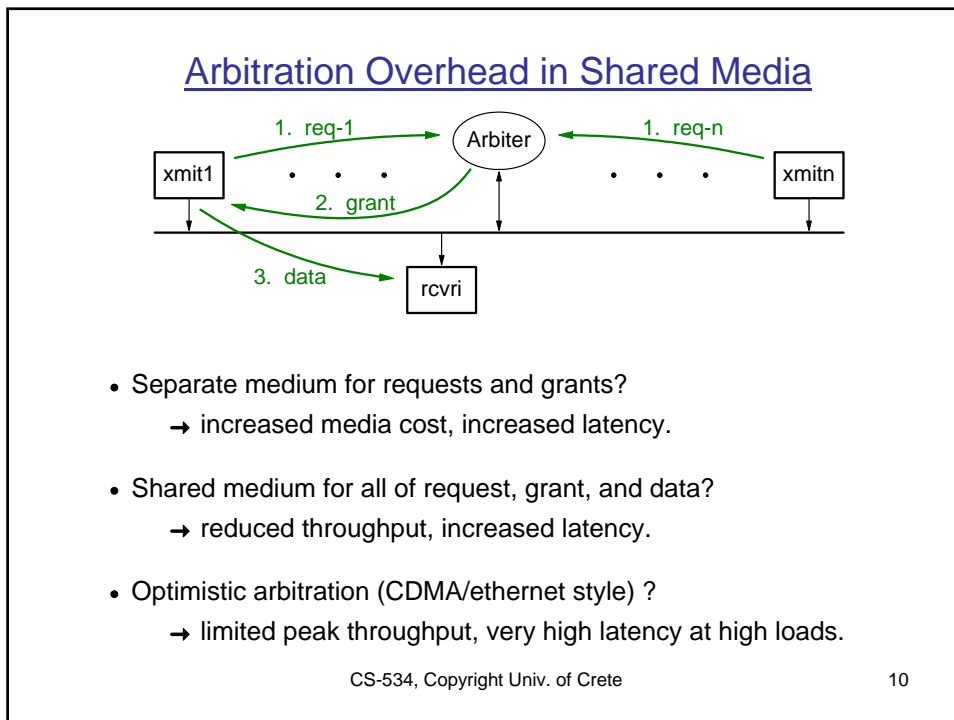
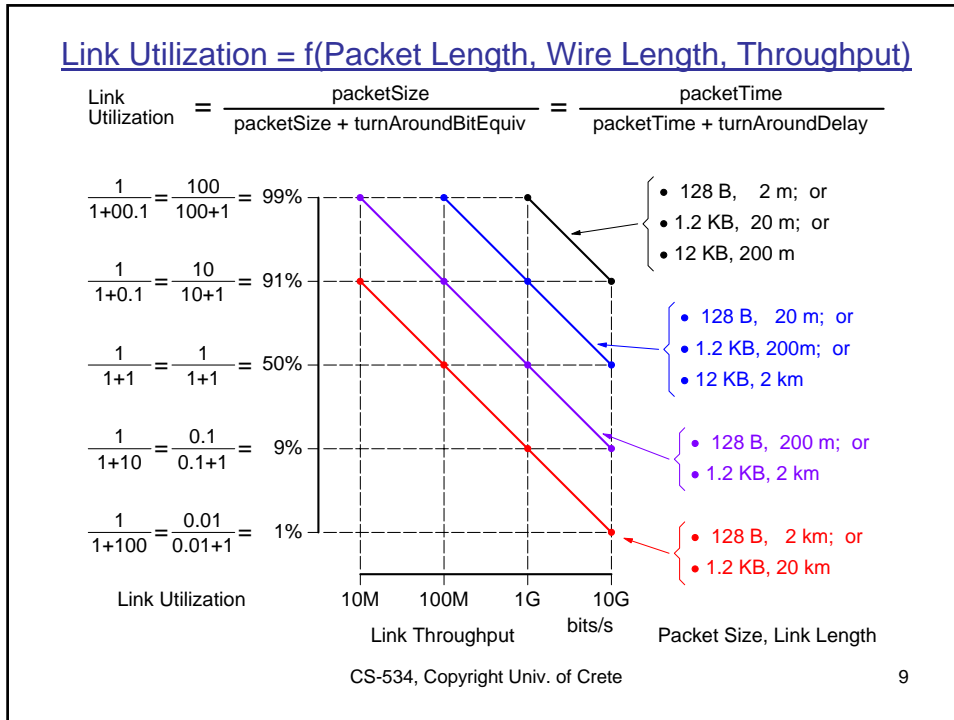
CS-534, Copyright Univ. of Crete

2



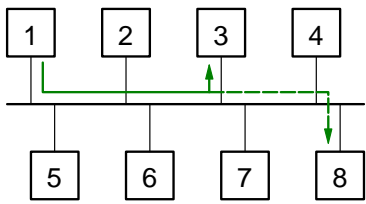






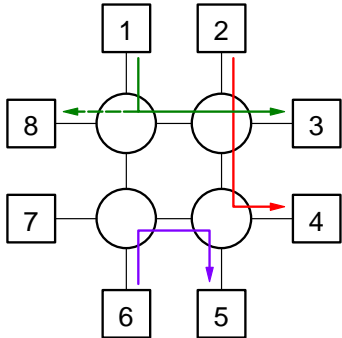
### Sequential versus Parallel Transmissions

**Shared Medium:**



*Single transmission at a time*

**Point-to-Point Links + Switches:**



*Multiple transmissions in parallel*

CS-534, Copyright Univ. of Crete 11

### This Course: Point-to-Point Links

- Throughput in shared media is rather low
  - time switching (simpler), protocols usually in software, with little, if any, & simple H/W support
- Shared media in modern networking: almost expelled, except in wireless
  - wireless MAC protocols are a major topic in other courses, and differ significantly from the hardware architecture of high-speed switches

CS-534, Copyright Univ. of Crete 12