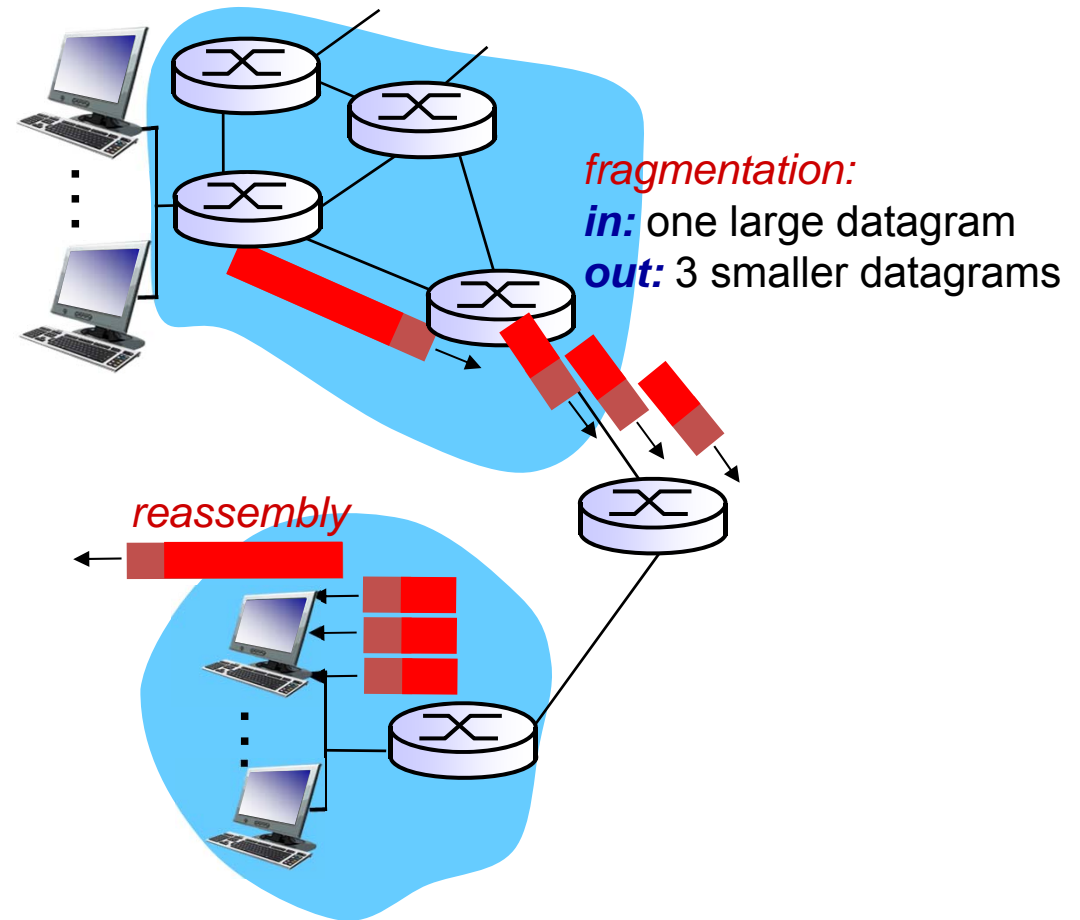


IP Fragmentation

IP fragmentation, reassembly

- network links have MTU (max.transfer size) - largest possible link-level frame
 - different link types, different MTUs
- large IP datagram divided (“fragmented”) within net
 - one datagram becomes several datagrams
 - “reassembled” only at final destination
 - IP header bits used to identify, order related fragments



IP fragmentation, reassembly

example:

- ❖ 4000 byte datagram
- ❖ MTU = 1500 bytes

	length =4000	ID =x	fragflag =0	offset =0	
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*one large datagram becomes
several smaller datagrams*

1480 bytes in
data field

offset =
 $1480/8$

	length =1500	ID =x	fragflag =1	offset =0	
--	-----------------	----------	----------------	--------------	--

	length =1500	ID =x	fragflag =1	offset =185	
--	-----------------	----------	----------------	----------------	--

	length =1040	ID =x	fragflag =0	offset =370	
--	-----------------	----------	----------------	----------------	--

IP fragmentation: example



Router 1 fragments datagrams larger than 600 B

Total leng. 1620	Identif. 32	DF=0 MF=0	Offset. 0	Data 1 (600 bytes)	Data 2 (600 bytes)	Data 3 (400)
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Total leng. 620	Identif. 32	DF=0 MF=1	Offset. 0	Data 1
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Total leng. 620	Identif. 32	DF=0 MF=1	Offset 75 (600)	Data 2
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Total leng. 420	Identif. 32	DF=0 MF=0	Offset 150 (1200)	Data 3
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MTU = 620 octetos