Spørsmål 1

10 poeng Lagret

What is framing in link layer?

- ○ Laying structural restrictions on the data
- ○ Interpretation of data
- ○ Prepare data to be sent on Ethernet
- ◉ Packing data according to a specific protocol

Spørsmål 2

10 poeng Lagret

Name the three error-detection strategies employed by link layer

- (selected) Parity Checks, Checksumming Methods, Cyclic Redundancy Methods
- Forward Error Correction, IPv4/IPv6 Checksum, TCP Checksum
- Parity Checks, Forward Error Correction, Cyclic Redundancy Methods
- IPv4/IPv6 Checksum, TCP Checksum, Cyclic Redundancy Methods

Hvis du flytter til et annet spørsmål, lagres denne tilbakemeldingen.

Spørsmål 3

10 poeng Lagret

How big is the MAC address space? The IPv4 address space? The IPv6 address space? (Review Questions R9, Chapter 5, page 502)

- ( ) 2^{32} MAC addresses; 2^{48} IPv4 addresses; 2^{128} IPv6 addresses.
- (•) 2^{48} MAC addresses; 2^{32} IPv4 addresses; 2^{128} IPv6 addresses.
- ( ) 2^{128} MAC addresses; 2^{32} IPv4 addresses; 2^{48} IPv6 addresses.

Spørsmål 4

10 poeng **Lagre svar**

When a company wants to manufacture adapters, it purchases a chunk of the address space consisting of 2^{24} addresses for a nominal fee. IEEE allocates the chunk of 2^{24} addresses by fixing the first 24 bits of a MAC address. How many adapters can such a company manufacture?

- (•) 2^{24} Adapters
- ( ) 2^{48} Adapters
- ( ) 2^{32} Adapters
- ( ) The address space is just used to indicate what producer manufactured the adapter. There is no need for unique address, since MAC is not routable, and hence no limit

Consider the figure below. How many subnetworks are there, in the addressing sense of Section 4.4? (Review Question R14, Chapter 5, page 503)

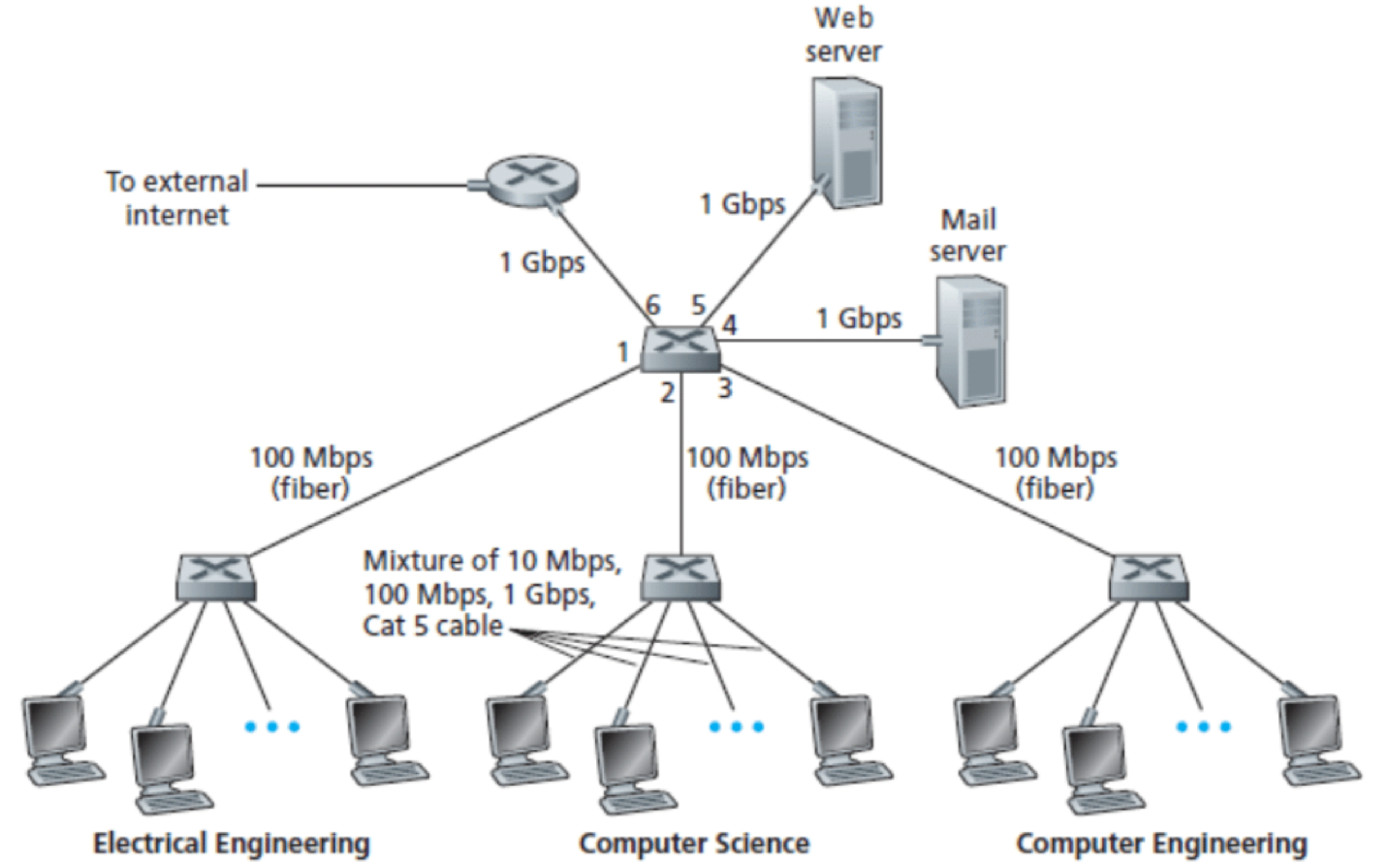


Figure 5.15 ♦ An institutional network connected together by four switches

- ( ) 1
- (•) 2
- ( ) 3
- ( ) 4

Spørsmål 6

10 poeng Lagret

Suppose the information content of a packet is the bit pattern 1010 0111 0101 and an even parity scheme is being used. What would the value of the field containing the parity bits be for the case of a two-dimensional parity scheme? Your answer should be such that a minimum-length checksum field is used. (Problem P1, Chapter 5, page 503.)

In the answers, the leftmost column and bottom row are for parity bits.

- (selected)
  0 **1 0 1 0**
  1 **0 1 1 1**
  0 **0 1 0 1**
  1 1 0 0 0

- 1 **1 0 1 0**
  0 **0 1 1 1**
  1 **0 1 0 1**
  1 0 1 1 1

- 1 **1 0 1 0**
  0 **0 1 1 1**
  1 **0 1 0 1**
  0 0 1 1 1

- 0 **1 0 1 0**
  1 **0 1 1 1**
  0 **0 1 0 1**
  0 1 0 0 0

Spørsmål 7

10 poeng Lagret

Consider the generator, G = 1001, and suppose that D has the value 11000111010. What is the value of R? (Problem P5, Chapter 5, page 503.)

- ○ R = 101
- ◉ R = 110
- ○ R = 10
- ○ R = 11

Hvis du flytter til et annet spørsmål, lagres denne tilbakemeldingen.

Spørsmål **7** av **14**

Spørsmål 8

10 poeng Lagret

In Section 5.3, we provided an outline of the derivation of the efficiency of slotted ALOHA. In this problem we'll complete the derivation. (Problem P8, Chapter 5, page 504.)

Recall that when there are N active nodes, the efficiency of slotted ALOHA is $Np(1-p)^{N-1}$. Find the value of p that maximizes this expression. (P8.a)

- (x) 1/N
- ( ) 2/N
- ( ) 4/N
- ( ) Cannot be determined.

Spørsmål 9

10 poeng ✓ Lagret

In Section 5.3, we provided an outline of the derivation of the efficiency of slotted ALOHA. In this problem we'll complete the derivation. (Problem P8, Chapter 5, page 504.)

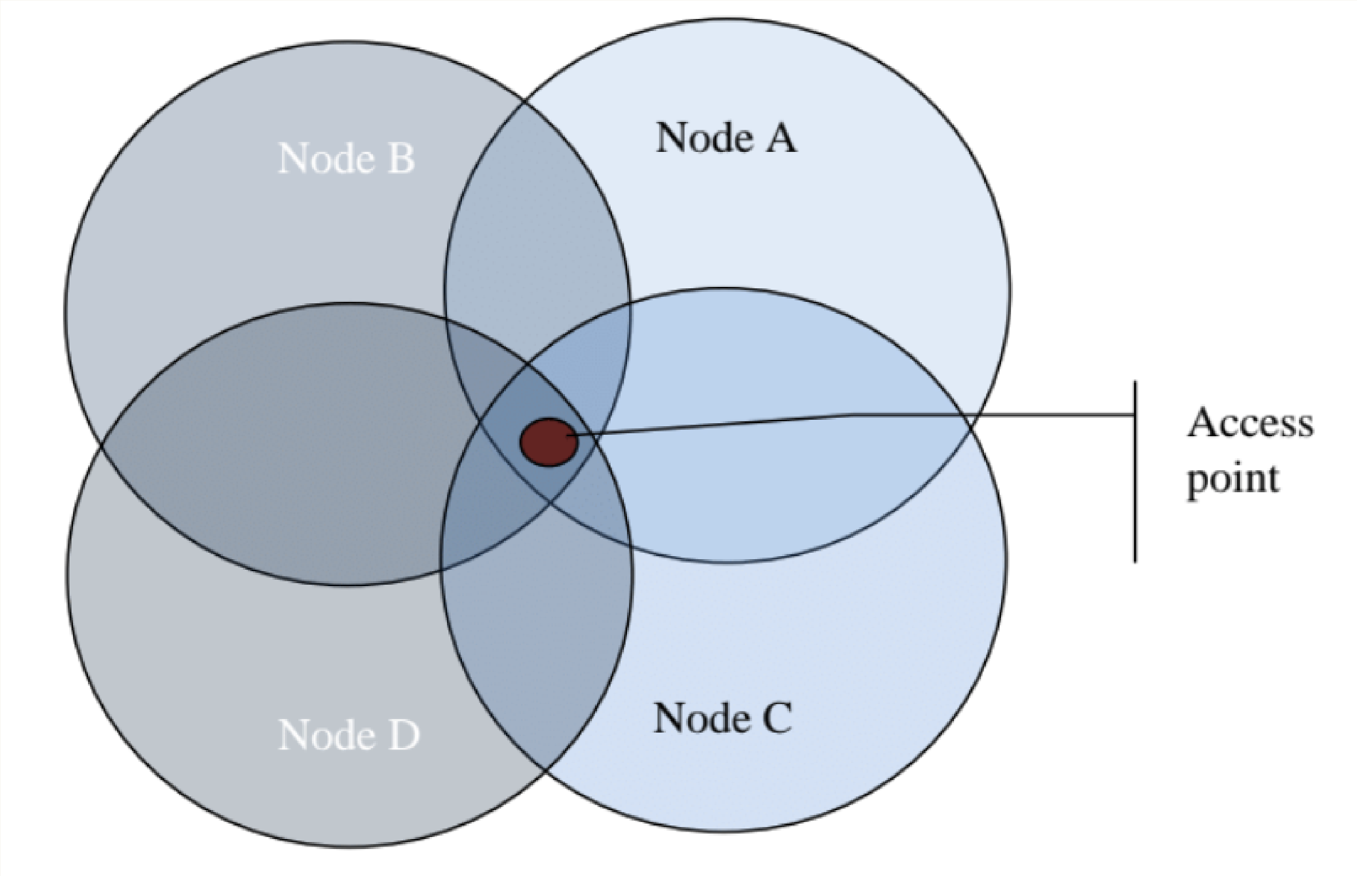
Using the value of p found in (4.a), find the efficiency of slotted ALOHA by letting N approach infinity. Hint: $(1 - 1/N)^N$ approaches 1/e as N approaches infinity. (P8.b)

- (•) 1/e
- ( ) 2/e
- ( ) 1/(2e)
- ( ) Cannot be determined.

⚠ Hvis du flytter til et annet spørsmål, lagres denne tilbakemeldingen.

Status for fullføring av spørsmål:

Suppose four active nodes - nodes A, B, C and D - are competing for access to a channel using slotted ALOHA. Assume each node has an infinite number of packets to send. Each node attempts to transmit in each slot with probability p. The first slot is numbered slot 1, the second slot is numbered slot 2, and so on. (Problem P11, Chapter 5, page 504.)



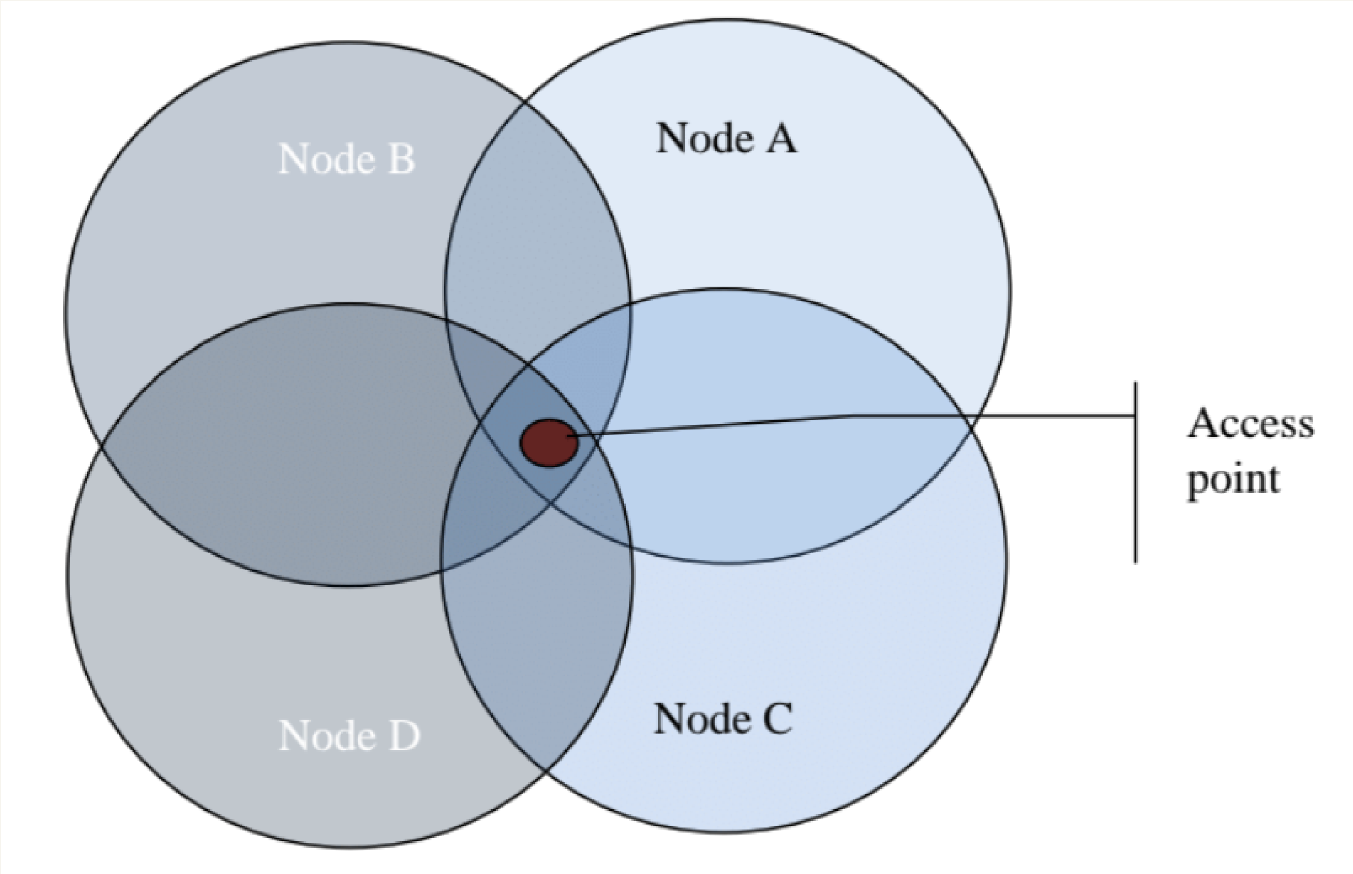
What is the probability that node A succeeds for the first time in slot 4? (P11.a)

Options:

5.a.1 $p(1-p)^3$
5.a.2 $p(1-p)^3\,(1-p(1-p)^3)^3$.
5.a.3 $(1-p(1-p)^3)^3$
5.a.4 $4p(1-p)^3$

- ○ 5.a.1
- ◉ 5.a.2
- ○ 5.a.3

Suppose four active nodes - nodes A, B, C and D - are competing for access to a channel using slotted ALOHA. Assume each node has an infinite number of packets to send. Each node attempts to transmit in each slot with probability p. The first slot is numbered slot 1, the second slot is numbered slot 2, and so on. (Problem P11, Chapter 5, page 504.)



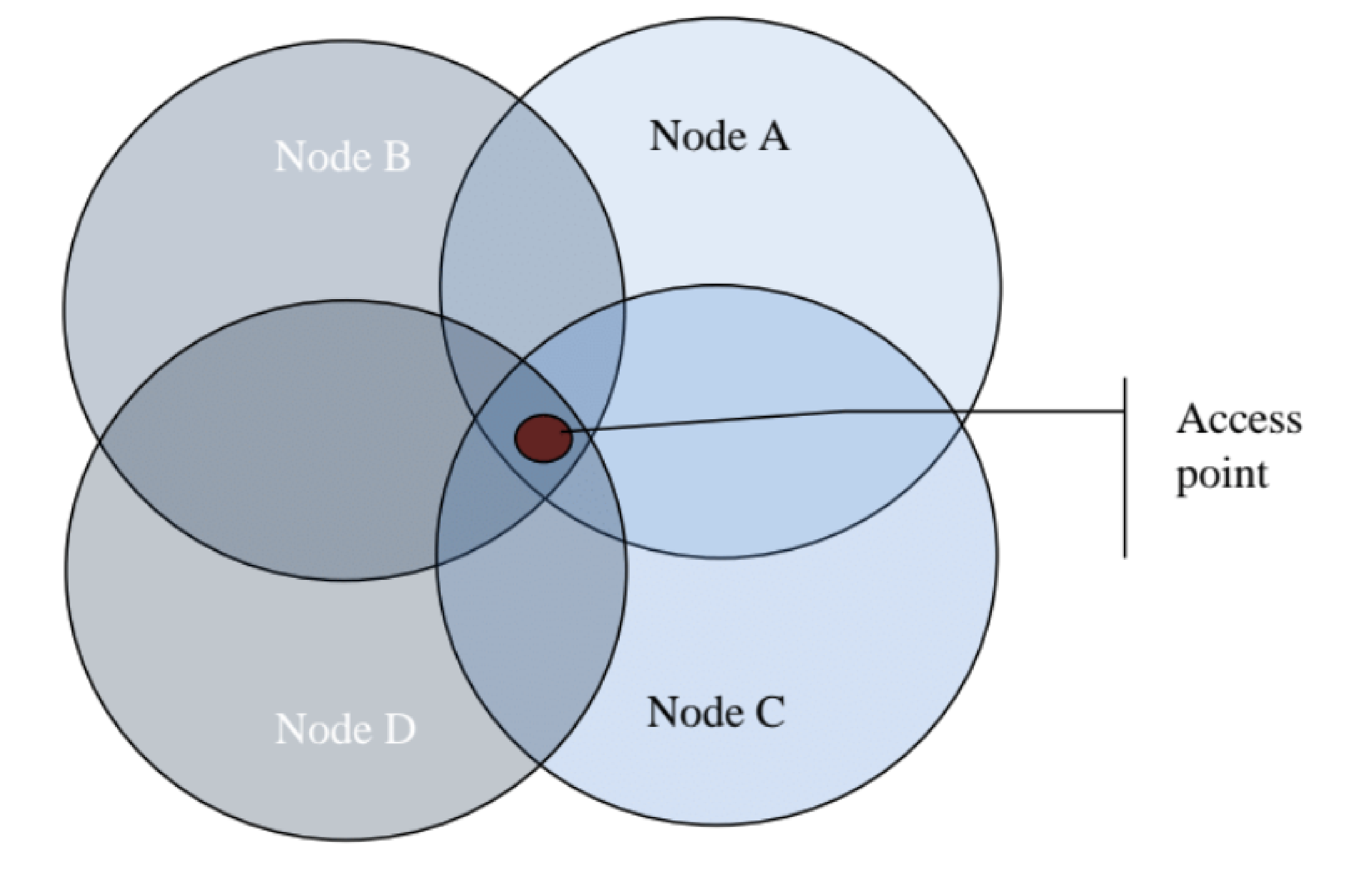
What is the probability that some node (either A, B, C or D) succeeds in slot 2? (P11.b)

Options:

5.b.1 $p(1-p)^3$
5.b.2 $p(1-p)^3\,(1-p(1-p)^3)^3.$
5.b.3 $(1-p(1-p)^3)^3$
5.b.4 $4p(1-p)^3$

- ○ 5.b.1
- ○ 5.b.2
- ○ 5.b.3
- ◉ 5.b.4

Suppose four active nodes - nodes A, B, C and D - are competing for access to a channel using slotted ALOHA. Assume each node has an infinite number of packets to send. Each node attempts to transmit in each slot with probability p. The first slot is numbered slot 1, the second slot is numbered slot 2, and so on. (Problem P11, Chapter 5, page 504.)



What is the probability that the first success occurs in slot 4? (P11.c)

Options:

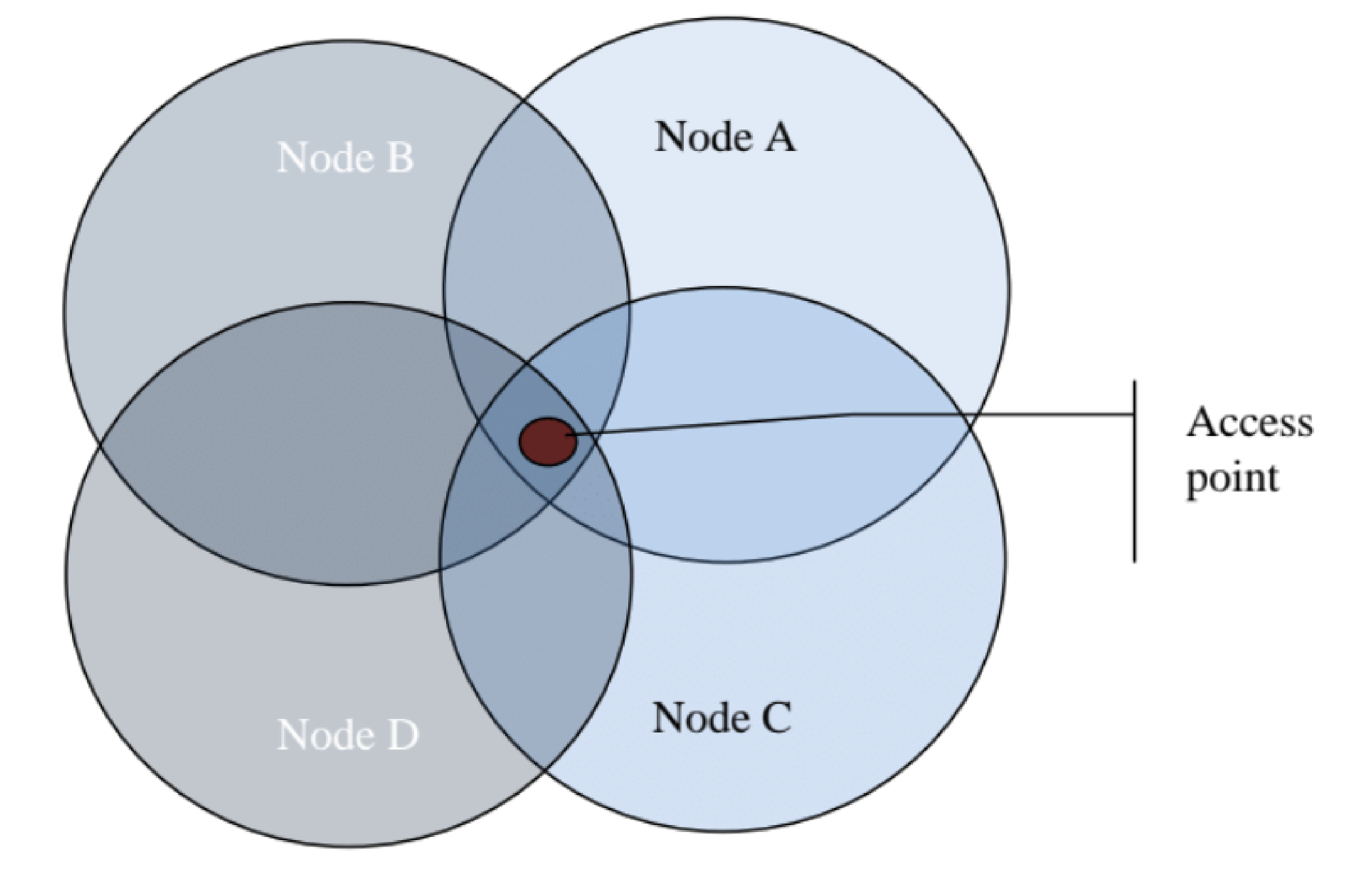
5.c.1 $p(1-p)^3$
5.c.2 $p(1-p)^3\,(1-p(1-p)^3)^3$.
5.c.3 $(1-p(1-p)^3)^3$
5.c.4 $4\,p(1\text{-}p)^3\,(1 - 4\,p(1\text{-}p)^3)^3$

- ○ 5.c.1
- ○ 5.c.2
- ○ 5.c.3
- ◉ 5.c.4

Spørsmål 13

10 poeng ✔ Lagret

Suppose four active nodes - nodes A, B, C and D - are competing for access to a channel using slotted ALOHA. Assume each node has an infinite number of packets to send. Each node attempts to transmit in each slot with probability p. The first slot is numbered slot 1, the second slot is numbered slot 2, and so on. (Problem P11, Chapter 5, page 504.)



What is the efficiency of this four-node system? (P11.d)

Options:

5.d.1 $p(1-p)^3$
5.d.2 $4p(1-p)^3$
5.d.3 $(1-p(1-p)^3)^3$
5.d.4 $4\,p(1-p)^3\,(1-4\,p(1-p)^3)^3$

- ○ 5.d.1
- ◉ 5.d.2
- ○ 5.d.3

Status for fullføring av spørsmål:

6. Consider the figure. Suppose that all links are 120 Mbps. What is the maximum total aggregate throughput that can be achieved among 12 hosts (4 in each department) and 2 servers in this network? You can assume that any host or server can send to any other host or server. (Problem P23, Chapter 5, page 508.)

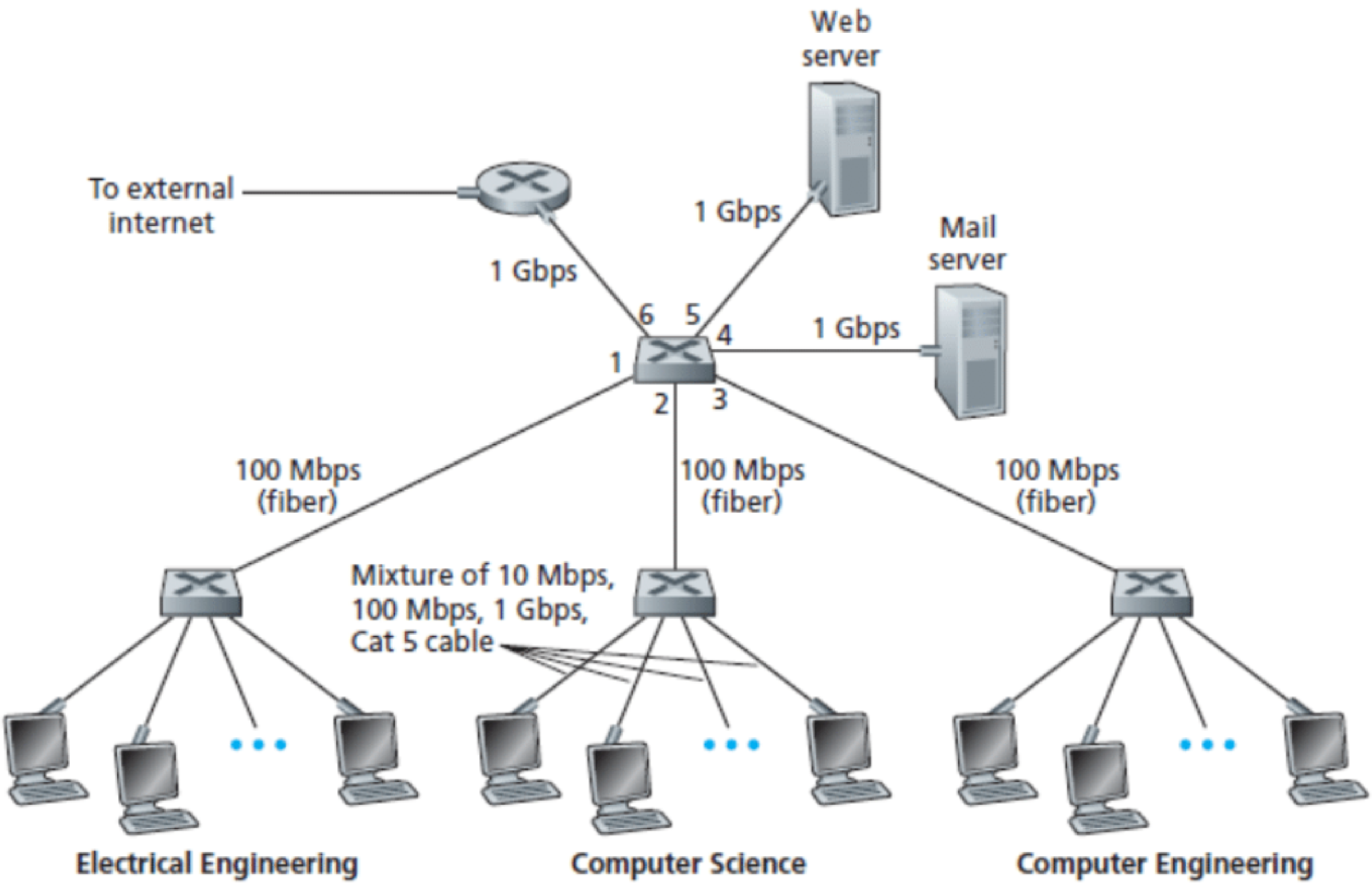


Figure 5.15 ♦ An institutional network connected together by four switches

- ○ 120 Mbps
- ○ 240 Mbps
- ○ 480 Mbps
- ◉ 840 Mbps