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Försättsblad tentamen / Examination cover

Anonymitetskod / Anonymous code

S	-	0	0	0	1	-	D	F	U

Kurskod / Course code	Provkod/ Test code	Tentamensdatum / Examination date
D T 0 6 6 A	T 1 0 1	2 0 2 3 - 0 8 - 2 5

Kursnamn / Course name
Datateknik AV, TCP/IP-nät

Provnamn / Test name
Tentamen

Skriv din anonymitetskod på varje inlämnat papper
Write your anonymous code on each sheet submitted

Sätt ett kryss (x) för varje inlämnad uppgift
Use an x to indicate which questions has been submitted

Casio fx-9750GII

Markera nedan med X / Mark below with an X	Poäng / Credit	Lärarens anteckningar / Teacher's notes	Markera nedan med X / Mark below with an X	Poäng / Credit	Lärarens anteckningar / Teacher's notes
1 X	2.5		16		
2 X	3		17		
3 X	1.5		18		
4 X	2		19		
5 X	1		20		
6 X	2		21		
7 X	2		22		
8 X	2		23		
9 X	0		24		
10			25		
11			26		
12			27		
13			28		
14			29		
15			30		

Poängsumma / Points	16	Betyg / Grade		Lärarsign./ Teachers sign	

Fylls i av tentamensvakt / To be filled in by the invigilator

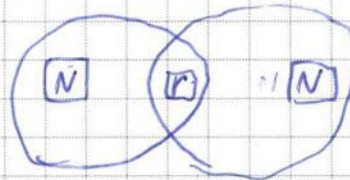| Antal lösa blad/ No. of sheets submitted	9	Inlämnad tentamen / Submitted exam	Leg kontroll / Control identification ✓	Sign. tentamensvakt / Sign. invigilator

Försättsbladet skall alltid lämnas in även om ingen uppgift behandlats
Examination cover should always be submitted even if no questions are answered

Utskriven 2023-08-23 kl. 10:49:57

Lärarens anteckning /
Teachers note:

① a) • Wireless uses 802.11 Standard. (?)

• wireless links has lower range.

• wireless are more likely to corruption due to noice.

2.5

b) The hidden node problem means that nodes Signals can't sense each other.

To eliminate the problem, CSMA/CA is used.

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a) The purpose of handoffs is
to de-load the base station
or if the signal strength
to the device is to weak.

b) the difference is that
4G and 5G can send both
voice and data the same
way. They also have lower
latency and deliver faster
speeds.

③ Centralized routing algorithm:

a) direct routing. It takes a
direct path to route a
device to a network.

Decentralized routing algorithm:

Indirect routing. It takes an
indirect path to route a
device to a network. meaning
that it connects to one
network through another one.

b) —

(4) It is when packets gets
lost somewere in transit.
This happens for example because
packets gets corrupted.
Some techniques used are
TCP tahoe, reno or vegas.

TCP Tahoe: slow start, Multiplicative
            increase, fast re-transmit

TCP Reno: Same as tahoe but
            fast start.

Slow start: Gradually increase
data transmission to avoid
network flooding.

fast start: divide window size
by 2 when duplicate acks occurrs.

multiplicative increase: Double window
size utill duplicate acks occurrs.

fast re-transmit: Quickly addresses
packet loss by retransmitting
packets.

Lärarens anteckning /
Teachers note:

(5) NAT translates source IP-header
to a private IP and arbitrarily
choses a port number. By doing
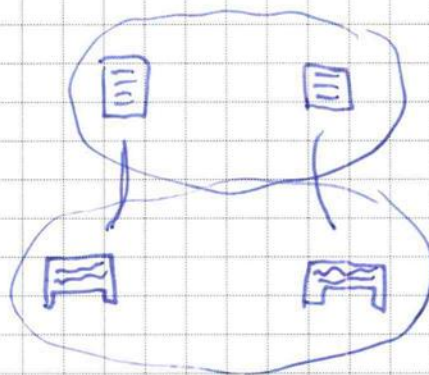this, it knows where to send
packets in its network.

Lärarens anteckning /
Teachers note:

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(6) Control plane: usualy a server,
it decides where to send traffic.

data plane: it forwards the traffic
and consists of forwarding tables.

control plane

data plane

(7) a) Fast retransmit is employed.
it quickly addresses packet
loss by resending packets.
Packet loss means that
some packets don't reach its
destination, so some content is
missing.

b) Multiplicative increase is used.
it doubles the window size until
duplicate acks occurrs. when
duplicate acks occurrs, then
the system needs to recover
and get back to maximum
window size.

c) It can take speed down to zero.

Lärarens anteckning /
Teachers note:

2

(8) Alice connects to Bob's home network, which is connected to the wide area network. Bob's visiting network is also connected to the wide area network, meaning that Alice is indirectly routed to communicate with Bob.

Lärarens anteckning /
Teachers note:

(9) $\lambda = 15$ customers per hour

$L = 10$

Little's Law: $L = \lambda \cdot W \Rightarrow W = L/\lambda$

$W = 10/60 = 0,167$