

## Högskolan i Halmstad

### Sektionen för Informationsvetenskap, Data- Och Elektroteknik (IDÉ)

#### TENTAMEN DK2004: Trådlösa nätverk

12 januari 2011

#### Del1, WLAN

Denna del av tentamen kan ge maximalt 30 poäng. Alla resultat skall redovisas och motiveras för att erhålla full poäng. Varje svar skall redovisas på ny sida.

##### 1.1 WLAN Säkerhet (6 poäng).

*Jämför WEP och WPA2*

| WEP  | WPA2  |
|--|---|
| RC4 encryption<br>no strong authentication<br>static, breakable keys | 802.1x authentication:<br>Strong, user authentication (e.g., LEAP, PEAP, EAP-FAST)<br>AES block cipher encryption |

##### 1.2 WLAN topologier (6 poäng).

*Beskriv WLAN topologier(Access, Repeater, Bridge)*

###### Access

The access point attaches to the Ethernet backbone and communicates with all the wireless devices in the cell area. The access point is the master for the cell, and controls traffic flow to and from the network. The remote devices do not communicate directly with each other; they communicate to the access point.

###### Repeater

Wireless repeater are a way to extend the range of an existing wireless LAN. This topology requires a 50 percent overlap of the access point on the wired LAN and the wireless repeater. The receive and retransmit time involved decreases the throughput by approximately half. The SSID of the root access point must be configured on the repeater access point. The repeater access point uses the same channel as the root access point.

###### Bridge

Bridge connects remote workgroups to a wired LAN. Wireless bridges allow two or more networks that are physically separated to be connected on one LAN. Wireless bridges also allow wireless NIC connections in the same fashion as access points. Bridges can be point-to-point or point-to-multipoint.

### 1.3 WLAN topologier (6 poäng).

*När användes roaming. Hur fungerar roaming?*

When user need to have the ability to move freely across the special area. Roaming maintains network connectivity while moving from one access point to another. Roaming without service interruption requires the identical configuration of SSID, VLANs, and IP subnets on all access points.

### 1.4 Virtuella Lokala nätverk(6 poäng).

*Nämna alla fördel att använda VLAN med WLAN.*

Virtualization, flexibility, security.

Access points can extend VLANs to the wireless LAN by mapping VLANs to SSIDs. The wireless VLANs share the same wireless cell and channel. The result is a **virtualization** of the access points. The access point appears as **multiple different access points**. The VLAN deployment may be used to segregate user groups and provide **unique access policies and improve security**.

### 1.5 Quality of Service (QoS) (6 poäng).

*Nämn tre QoS modeller.*

Best Effort  
Differentiated Services (DiffServ)  
Integrated Services (IntServ)

*Hur kan implementeras Qos i WLAN?*

First, the wireless access point must prioritize the data into four access categories (from highest to lowest: platinum, gold, silver, and bronze).  
Second, the lower-priority traffic must use longer random backoff time to allow higher-priority traffic access to the wireless network first.