



■ connecting your business

Robust wireless Link and Interference minimizing Channel assignment utilizing multi-radio Access Points

Bachelor Thesis

Konstantin Manna

Supervisors: Christoph Wollgarten, Jó Ágila Bitsch

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Comsys.rwth-aachen.de



Communication &
Distributed
Systems

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www.lancom.de

LANCOM
Systems

Introduction to Lancom & Topic

Dummy-slide (not part of presentation later)

What is a Lancom?

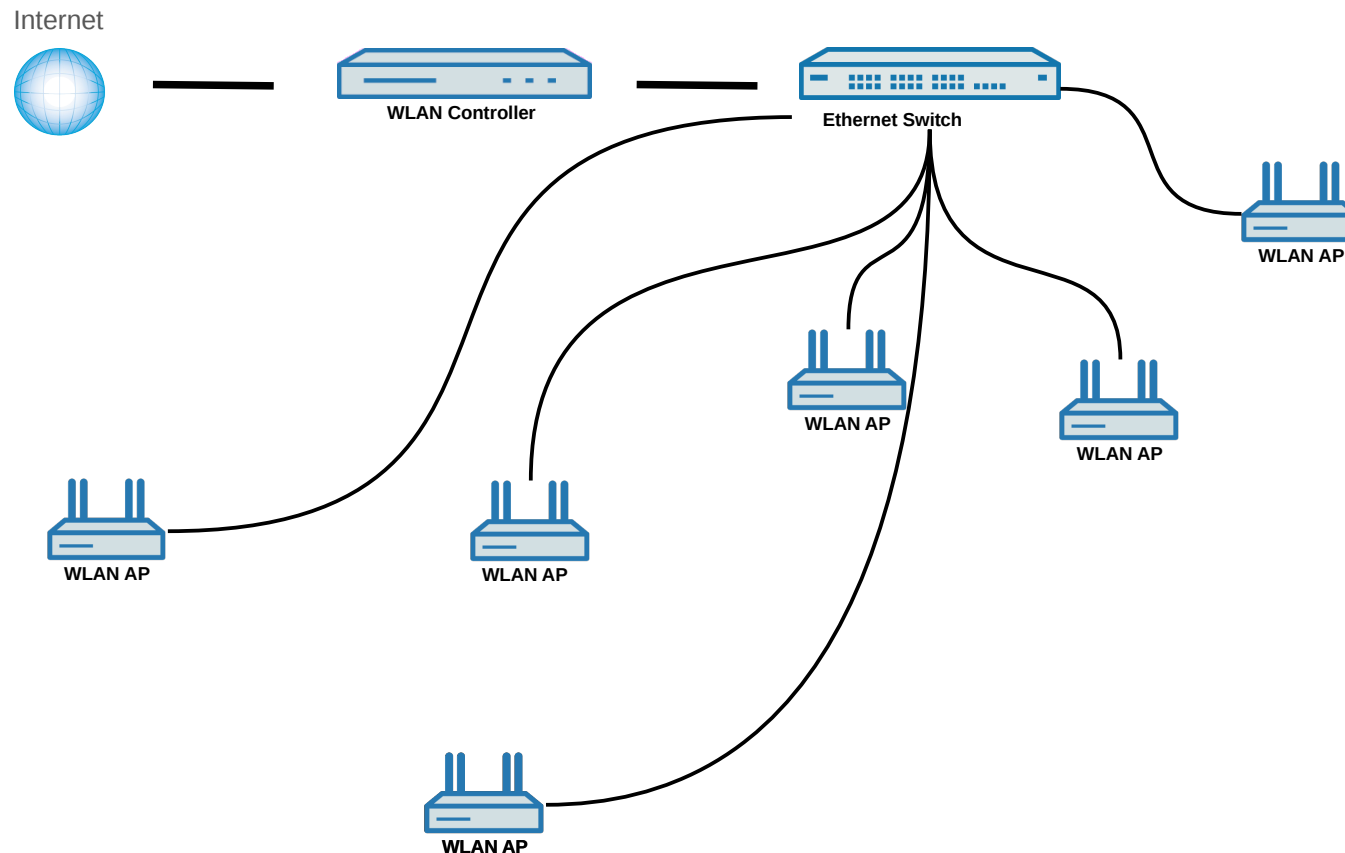
<http://lancom.eu/en/solutions/>

What is the szenario?

<http://lancom.eu/en/solutions/wireless-lan/hotspot-solutions/hotspots-in-schools-and-universities/>

Common Access Point deployment

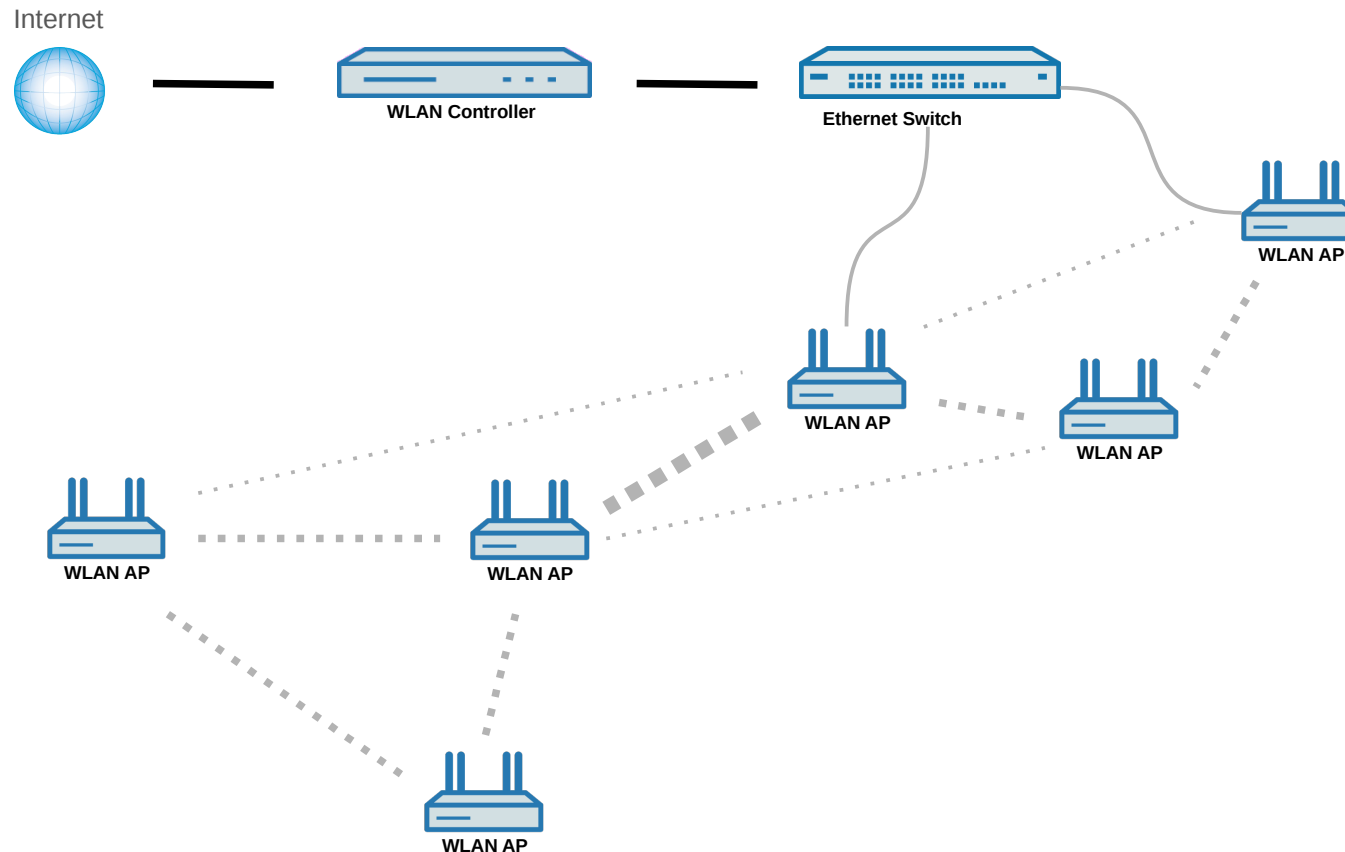
The way it has been done so far (connect APs by cable to backbone)



Access Point deployment with AutoWDS

Automatic Wireless Distribution System

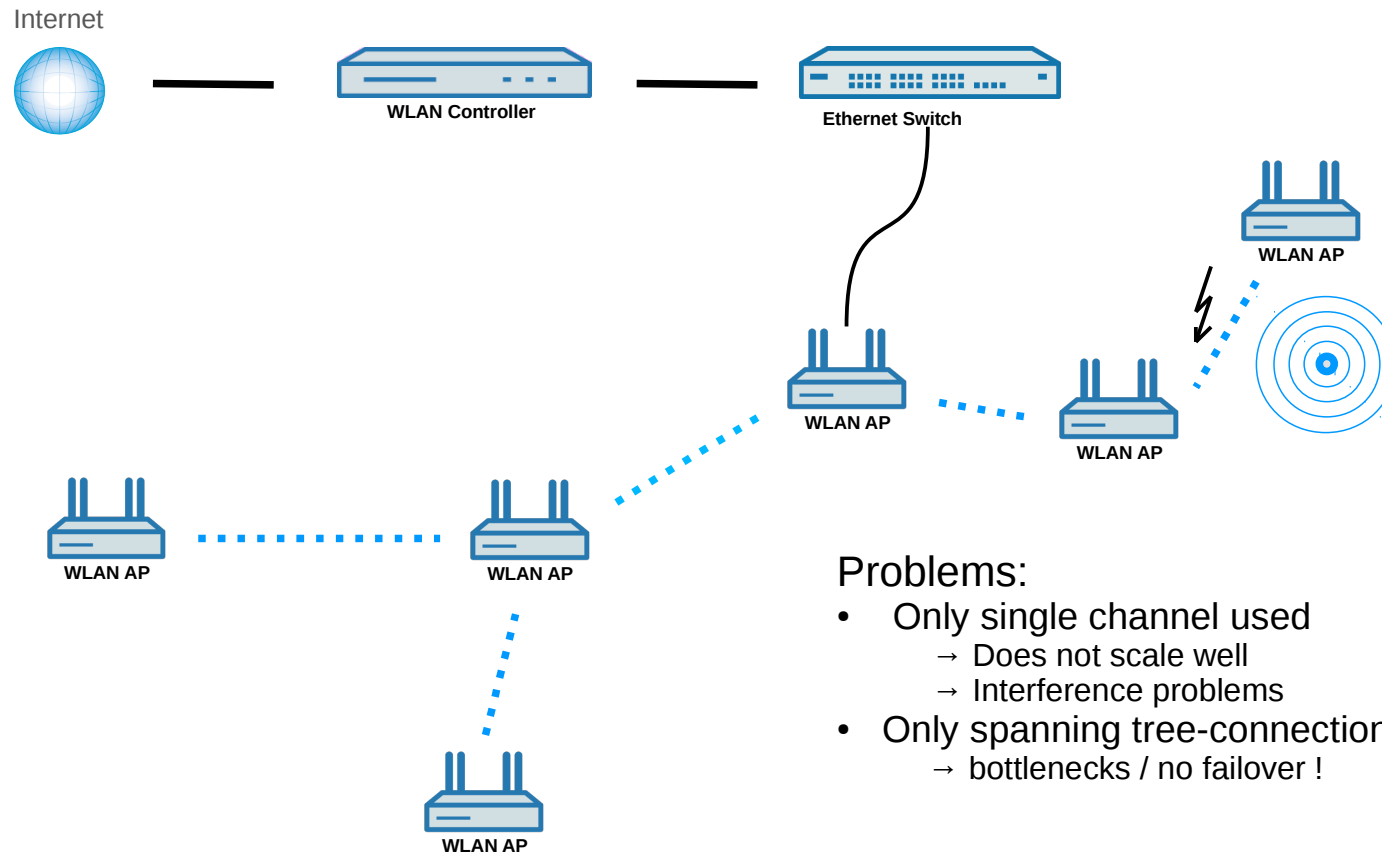
Connecting APs by cable for some reason not possible
→ use wireless radios instead (APs equipped with multi-radios)



Access Point deployment with AutoWDS

Automatic Wireless Distribution System

What AutoWDS already does:



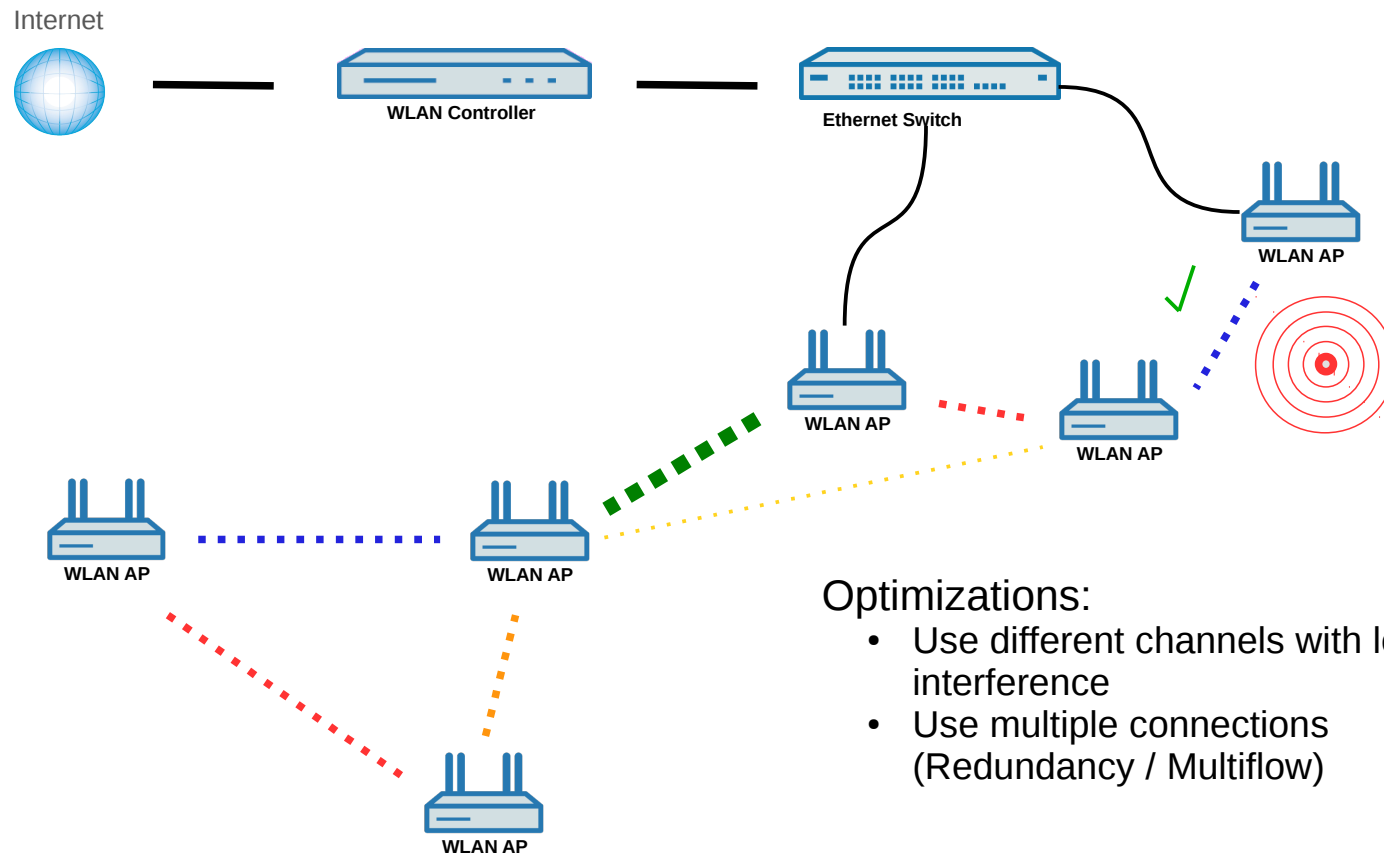
Problems:

- Only single channel used
 - Does not scale well
 - Interference problems
- Only spanning tree-connections used
 - bottlenecks / no failover !

Access Point deployment with optimized AutoWDS

Automatic Wireless Distribution System

Extended AutoWDS (my job):

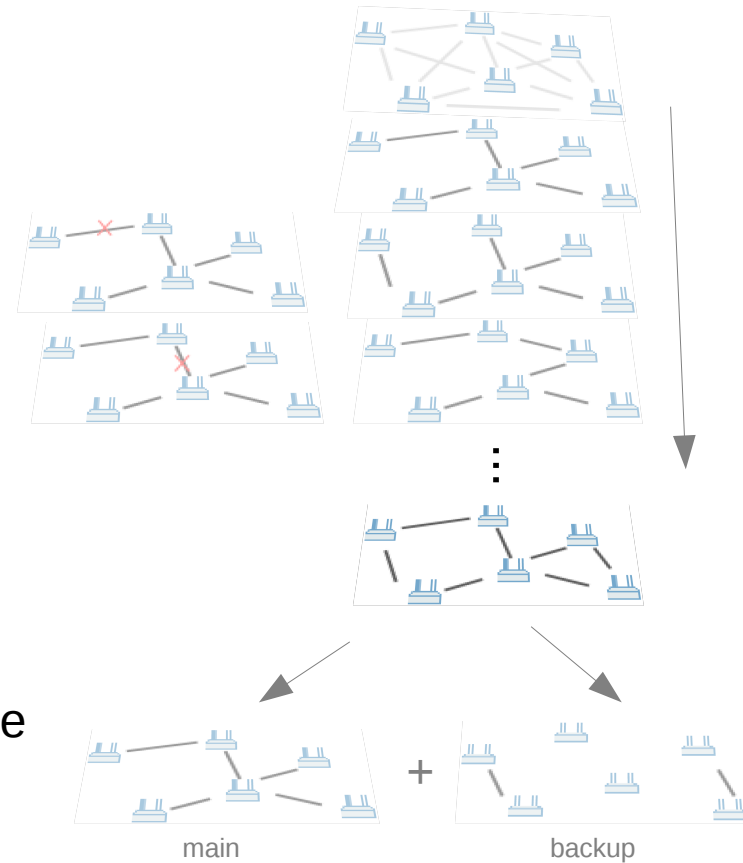


Optimizations:

- Use different channels with least interference
- Use multiple connections (Redundancy / Multiflow)

How to get there ?

- Selecting the best links
 - Intention: 1 mainlink + 1 backuplink for each AP
 - Mainlinks easy: Minimal Spanning Tree
 - Backuplinks more difficult: Multi MST
- Assigning the channels to the links
 - Various papers with different approaches
 - Our scenario:
 - Non-dynamic
 - centralized system (**W**Lan**C**ontroller decides, not the APs)
 - Only one channel per Wlan-radio (No channel switching)
 - Avoid already used channels
- Getting the data from the Devices
 - Interfaces to WLC / APs exist and are usable
 - Nothing to do here
- Still a lot of little unanswered questions to solve
 - What is the link-quality (use Score)
 - Usage of radios for clients ?



General schedule

