

WLAN as a Service for IoT applications

Use-case proposal, Next-Generation WLAN, Bitkom Akademie, Köln, 21. February 2018

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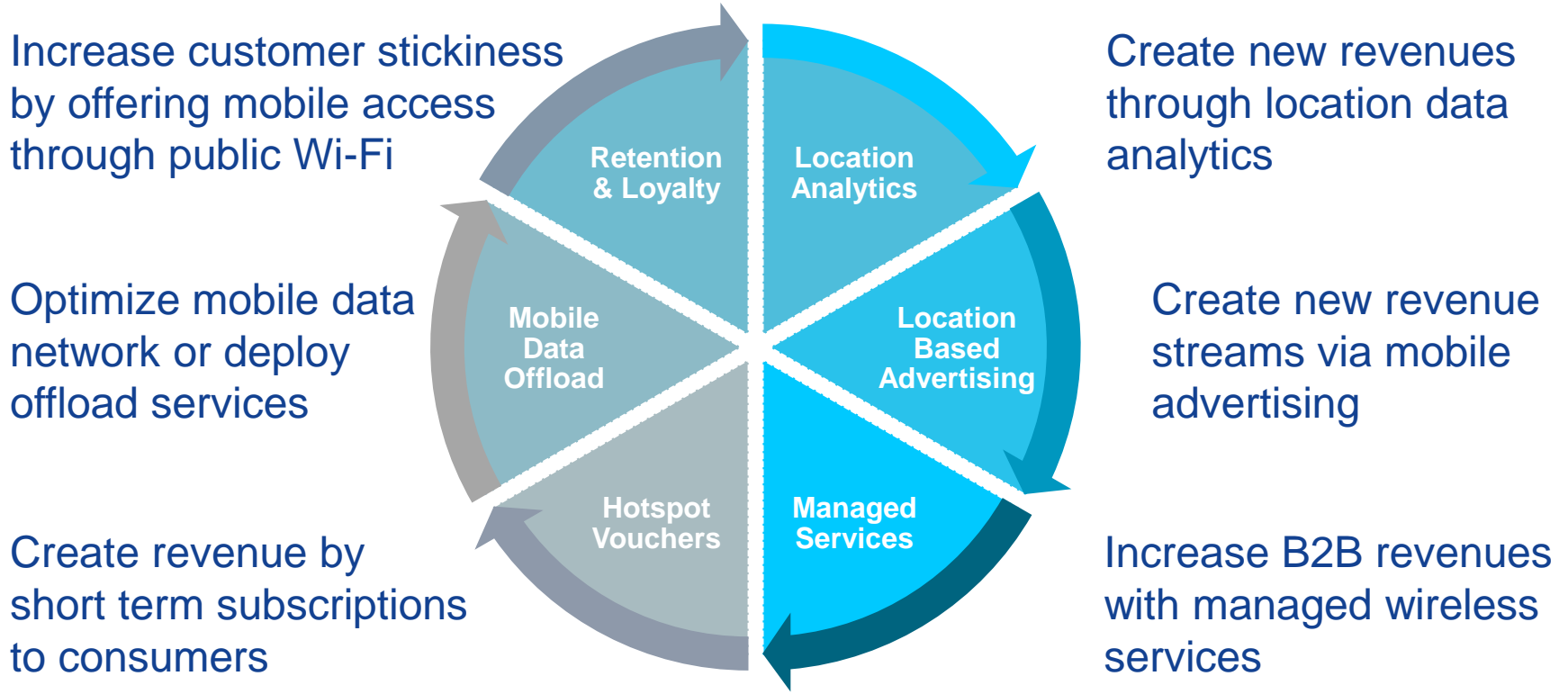
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Outline

- Operator WLAN use-cases
- WLAN for IoT
- The maintenance dilemma of IoT devices
- Protecting IoT devices through virtualized WLAN access
- WLAN virtualization – an evolving topic
- Conclusion and outlook

Operator WLAN use cases and value generation



WLAN fits well to cloud-based IoT applications

- WLAN technology fulfills IoT requirements
 - Simple, robust, broadband, low-power technology
 - Versatile, powerful, cost-effective SoCs
 - WLAN access is available nearly everywhere
- WLAN is technology of choice for integration with cloud
 - Cloud is the most dynamic environment for service creation
 - WLAN provides transparent Internet connectivity
 - No local gateway functionality needed – just put and play



The maintenance dilemma of IoT devices

- IoT devices are installed once, and might be kept forever
 - IoT devices are expected to operate 10+ years
 - Smartphones may be used for about 3 years, tablets and notebooks for 5 years
 - Btw, WLAN is keen on its long backward compatibility (20+ years)
- How to maintain secure operation over long periods
 - Most likely, security bugs in the firmware will be discovered
 - Maintenance will suffer due to rare availability of updates
 - In particular, when the devices are getting older
- If you can't correct it, you might have to protect it!

Protecting sensitive things in a hostile environment

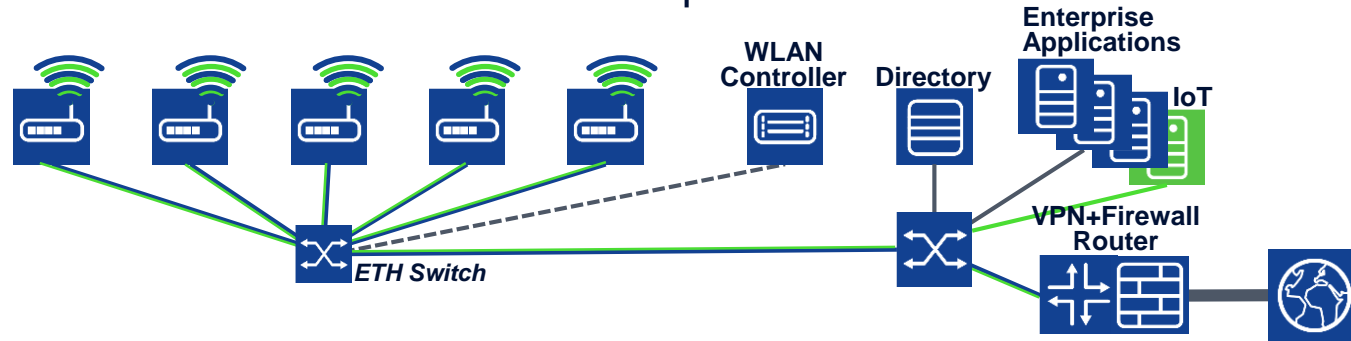
- Isolate, separate, build walls around, and gate access
 - Well proven principles of protection for centuries
- Protection of IoT devices can follow the same principles.
 - Strictly control the communication of WLAN IoT devices.
 - Operating IoT devices in a dedicated WLAN access network might even allow for secure operation of vulnerable firmware.



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Virtualized WLAN access networks

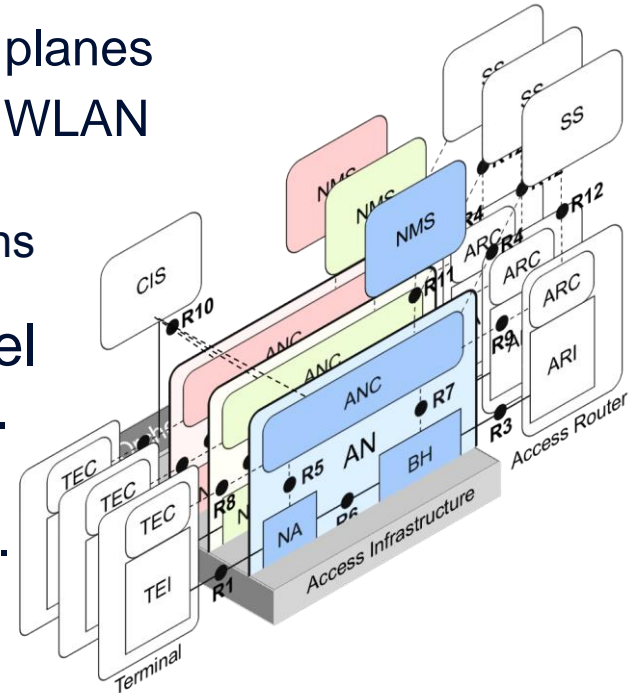
- Multiple WLAN accesses through 'multi SSID' configuration
 - WLAN has build-in virtualization capabilities.



- Network virtualization allows for multiple separate access infrastructures on a common infrastructure.
 - Network virtualization is promising technology to create 'cloud economy' also for network infrastructures.
- Virtualized WLAN creates remarkable business potential for operators.

WLAN virtualization – an evolving topic

- Enterprise WLAN solutions and Community WLAN are early examples of virtual WLAN access networks.
 - Not yet really virtualized, only secondary user planes
 - BBF TR-181 allows for configuration of virtual WLAN access in CPE devices.
 - Like ‘assembler programming’ for web applications
- IEEE 802.1 group works on abstract model of virtualized WLAN access infrastructure.
 - P802.1CF defines architecture and functional model of virtualized IEEE 802 access network.
 - Covering complete network lifecycle: Operation, Administration, Maintenance, Provisioning



Conclusion and outlook

- WLAN will play a big role in IoT applications.
- Long-term system security of IoT devices is the real challenge.
- Virtualized WLAN access infrastructures can mitigate the issue.
- Broad demand for virtualized WLAN access creates business potentials for operators.
- Still a mile to go to develop and mature the technology
 - BBF TR181 and IEEE 802.1CF pave the path.
- IMHO, WLAN as a service for IoT is an emerging topic with very bright future.

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