LCOS 9.10

Feature Notes

LCOS 9.10
[LANCOM OPERATING SYSTEM]

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■ connecting **your business**

LCOS 9.10 [LANCOM OPERATING SYSTEM]

The LANCOM firmware LCOS and the respective managements tools (LCMS) **regularly provide new functionalities** for current LANCOM routers, access points, and gateways **– free of charge**.

LCOS 9.10 is a **true power release** with more than 100 features for **maximum performance and stability in WLAN infrastructures** and a comfortable management for networks of any scale!

Benefit from **Smart Certificate** on your LANCOM device for securely encrypted VPN connections due to a comfortable creation of certificates, from **High Availability Clustering** for highly available device groups, as well as **more than 100 further features** and several detail improvements.

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Smart Certificate

LANCOM sets a milestone for security
Maximum security for VPN accesses: As of now, all users benefit from the user-friendly functionality to create digital certificates - an external certificate authority (CA) is no longer necessary. VPN connections can be set up and securely encrypted with self-produced certificates. This maximum of security is included in all LANCOM central site VPN gateways, WLAN controllers, and all current LANCOM routers with the LANCOM VPN 25 Option.

High Availability Clustering

Grouping and central management of multiple WLAN controllers and central site VPN gateways
Group several WLAN controllers or central site VPN gateways to a high-availability cluster! With the LANCOM High Availability Clustering Options you can combine several devices to one cluster. As a consequence, there are many advantages like the central management and convenient configuration alignment (Config Sync) of all cluster devices. This is particularly beneficial for setting up intelligent backup scenarios since only one WLAN controller or central site VPN gateway has to be configured – an enormous time saver for administrators. Furthermore, you benefit from an automatic load balancing and the enrollment of cluster certificates.

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LCOS 9.10
The new highlight features

More than 100 further features

More security, more management, more virtualization
Benefit from the many new possibilities to further professionalize your network management: As of LCOS 9.10 you can choose to encrypt your configuration, flexibly connect external networks via GRE tunnel as a "virtual Ethernet cable", you grant all an equal bandwidth for WLAN users per SSID, or you set up high-performance point-to-point connections via Gigabit wireless LAN with up to 1.3 Gbps.

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LANCOM Smart Certificate
Sounds familiar?

The trouble with passwords:

- Only complex passwords are safe passwords

- Complex passwords are hard to remember and are often written down

- Password allocation is often carried out via an unsafe medium (e.g. telephone, e-mail, papers, etc.)

The users' handling with passwords has an extreme influence on the security!

Worst passwords in 2013*

1. 123456	**9.** iloveyou
2. password	**10.** adobe 123
3. 12345678	**11.** 123123
4. qwerty	**12.** sunshine
5. abc123	**13.** 1234567890
6. 123456789	**14.** letmein
7. 111111	**15.** photoshop
8. 1234567	

Source:

*http://www.m-magazin.net/2014/01/das-sind-die-meistgenutzten-passwoerter-2013-36121.html

LANCOM Smart Certificate

The extremely safe alternative

Advantages of digital certificates:

- Due to a key-lock-system certificates are way more secure than passwords (pre-shared keys)
- Certificates can be explicitly allocated per device
- Delivered certificates can be revoked

Disadvantages of digital certificates:

- External certificate authority (CA), which provides confidential certificates, is necessary, mostly via third parties
- Very extensive development process and therefore deep know-how of the administrator necessary

LANCOM Smart Certificate

Maximum security for VPN connections!

LANCOM provides for the first time:

- The comfortable generation of digital certificates – without an external certificate authority!

Advantages:

- VPN connections can be set up and encrypted securely with self-produced digital certificates
- LANCOM allows all users the creation of highly secure certificates in just a few steps

LANCOM sets a true milestone in the field of security!

SMART CERTIFICATE

LANCOM Smart Certificate

Maximum security

- With Smart Certificate, the router becomes a certificate authority and can generate and verify digital certificates for identity verification, e.g. for VPN connections

- Integrated in all LANCOM central site VPN gateways, WLAN controllers, and all current LANCOM routers with LANCOM VPN 25 Option

Quick and easy!
Highly secure VPN connections with digital certificates

SMART CERTIFICATE

easy

complicated

VPN

Note for routers:
Only in combination with the LANCOM VPN 25 Option

LANCOM Smart Certificate

- Due to a comfortable certificate wizard, certificates can be manually created by the administrator
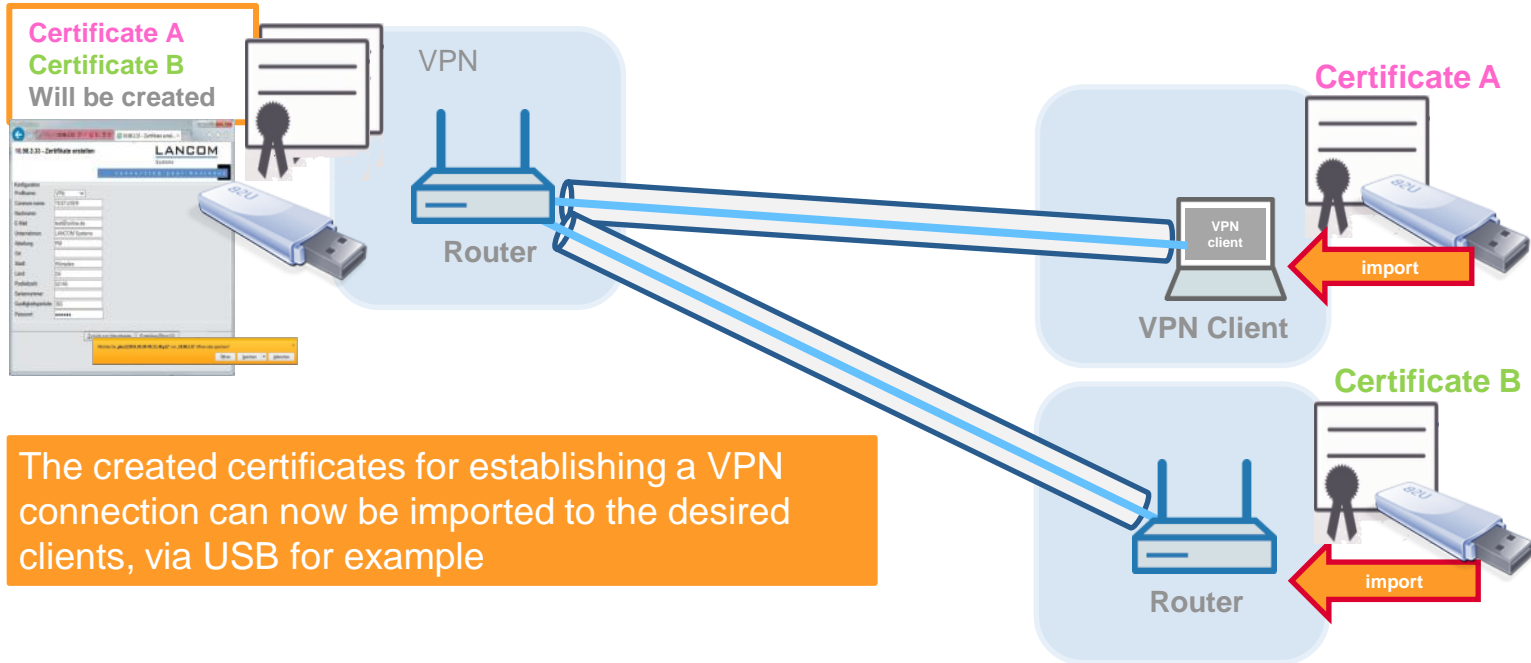

1 Generate certificate

2 Save certificate

3 Ready!

1781x with integrated CA
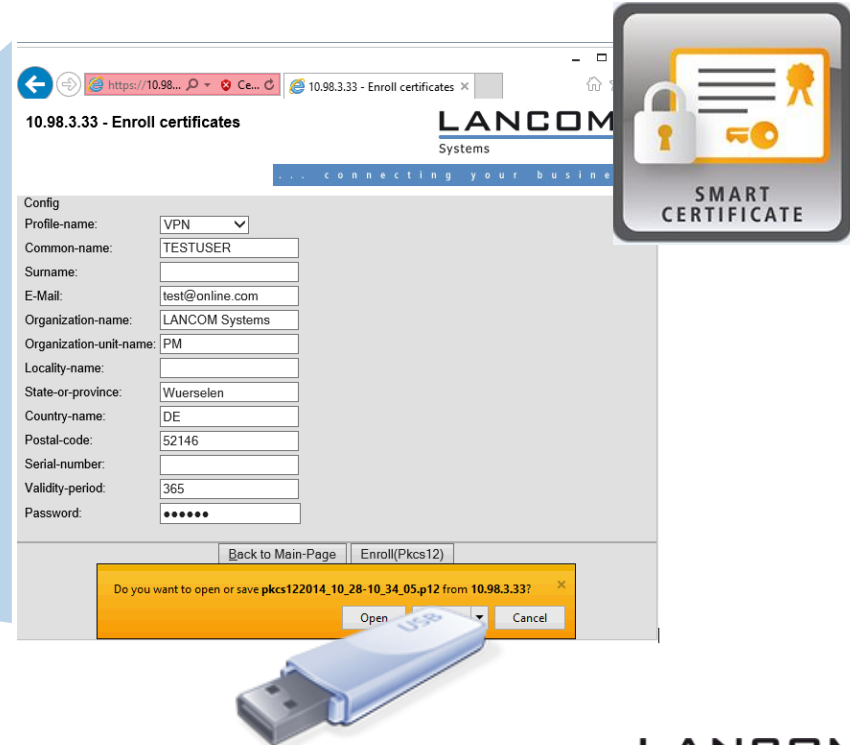
LANCOM Smart Certificate: Example of use

■ Via SCEP (*Simple Certificate Enrollment Protocol*) router certificates can be enrolled automatically, even before a VPN tunnel has been established

SMART CERTIFICATE

① Certificate Request

② Certificate generated automatically

Headquarters

③ Automatic Certificate Enrollment

④ Configure and establish VPN tunnel

Branch

CA (integrated in router)

LANCOM 1781x

Internet

LANCOM 1781x
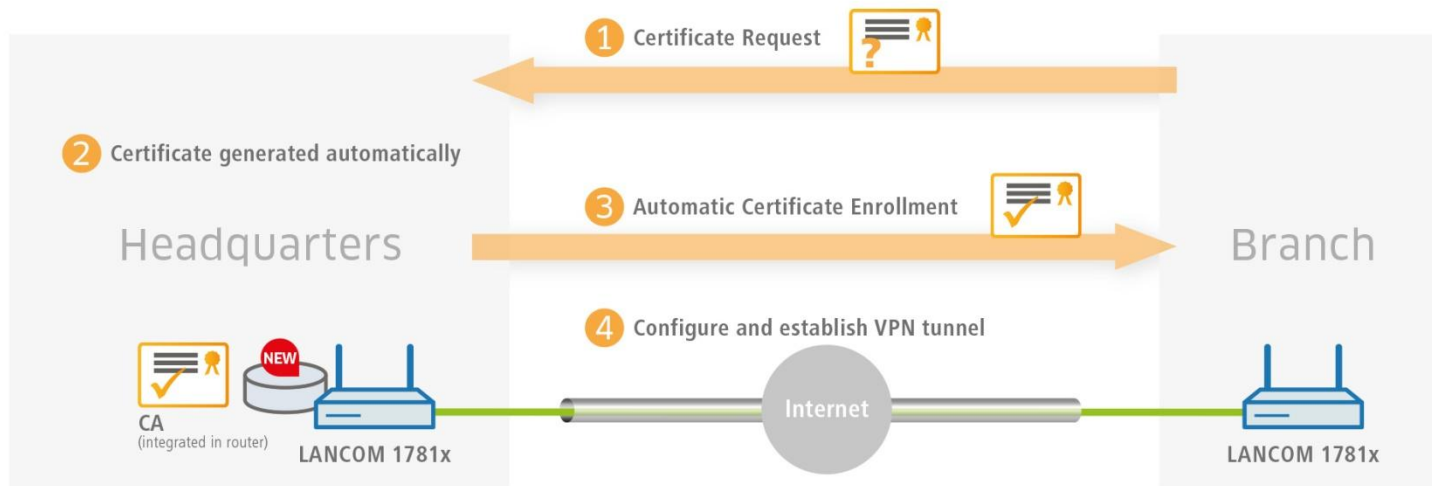
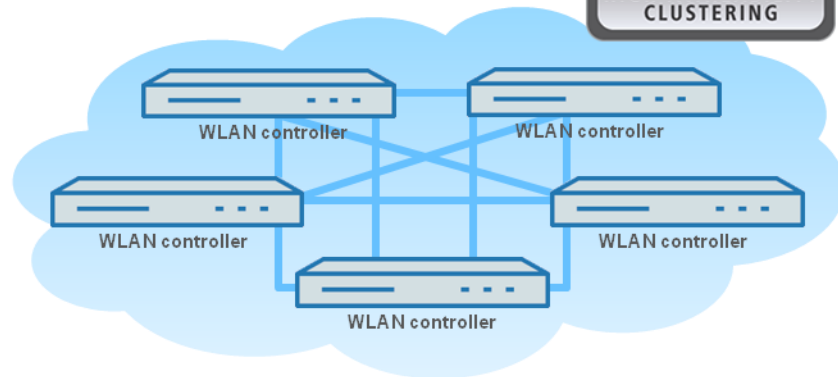LANCOM
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LCOS 9.10
The new highlight features

LANCOM High Availability Clustering

■ Create a group of several WLAN controllers and central site VPN gateways to a high-availability cluster

■ This group can be centrally configured and administered

■ **LANCOM High Availability Clustering:** Configuration changes are synchronized automatically (Config Sync)

Administer several WLAN controllers or central site VPN gateways just like one device!

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LANCOM High Availability Clustering Option

Central management and comfortable configuration synchronization of several WLAN controllers or central site VPN gateways

- Comfortable administration of highly available device clusters just like one device – even for cross-site networks

- Enables the grouping of up to 10 WLAN controllers and central site VPN gateways to a high-availability device cluster

- Available as LANCOM WLC High Availability Clustering XL Option and as LANCOM VPN High Availability Clustering XL Option for central site VPN gateways

- As of LCOS version 9.10 RC1: Available as 30 days trial version

HIGH AVAILABILITY CLUSTERING

Available for following devices

WLAN controller
– LANCOM WLC-4025+
– LANCOM WLC-4100

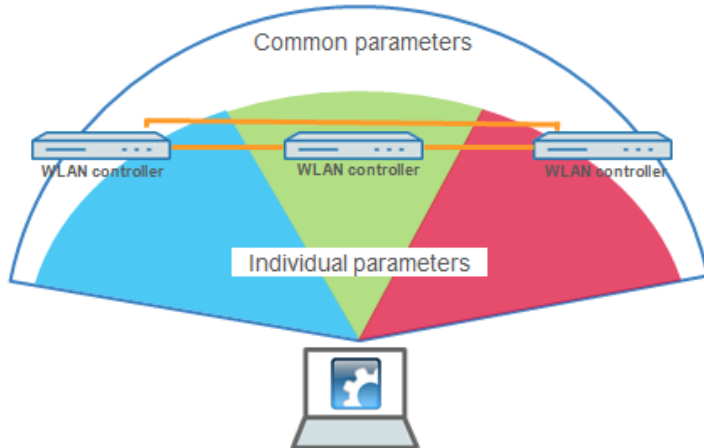**Central site VPN gateways**
–LANCOM VPN 7100+
–LANCOM VPN 9100+

LANCOM High Availability Clustering Option
Application 1: Config Sync

- Central configuration of WLAN controllers or central site VPN gateways

- Automatic configuration alignment

Common parameters

WLAN controller   WLAN controller   WLAN controller

Individual parameters

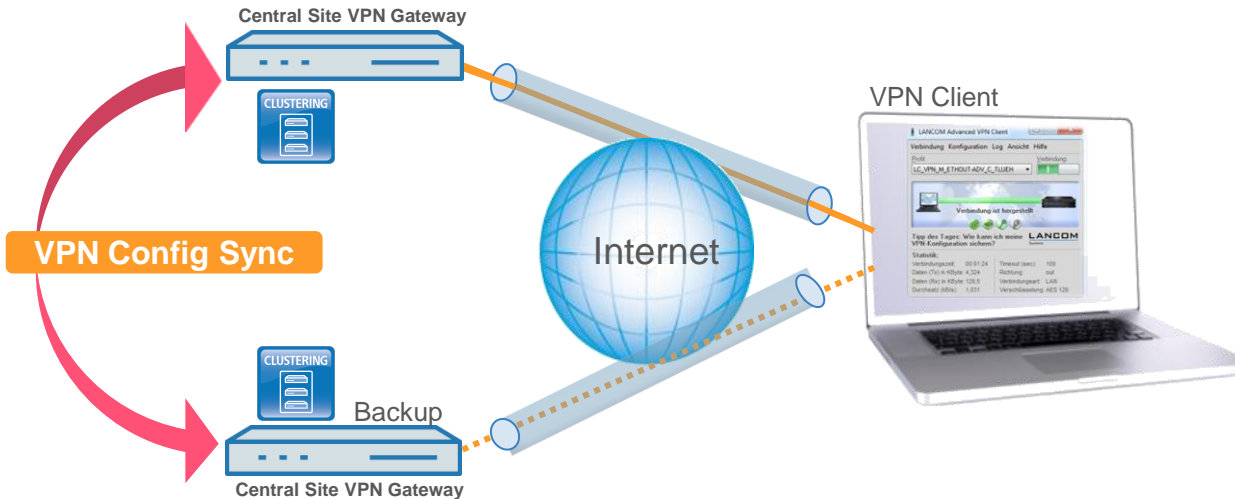| 1 | Definition of a common cluster configuration |
| 2 | Configuration of individual parameters (e.g. IP address) |

HIGH AVAILABILITY CLUSTERING

LANCOM High Availability Clustering Option
Application 1a: VPN Clustering

- Config Sync enables the configuration synchronization of all cluster devices – ideal for high-availability scenarios
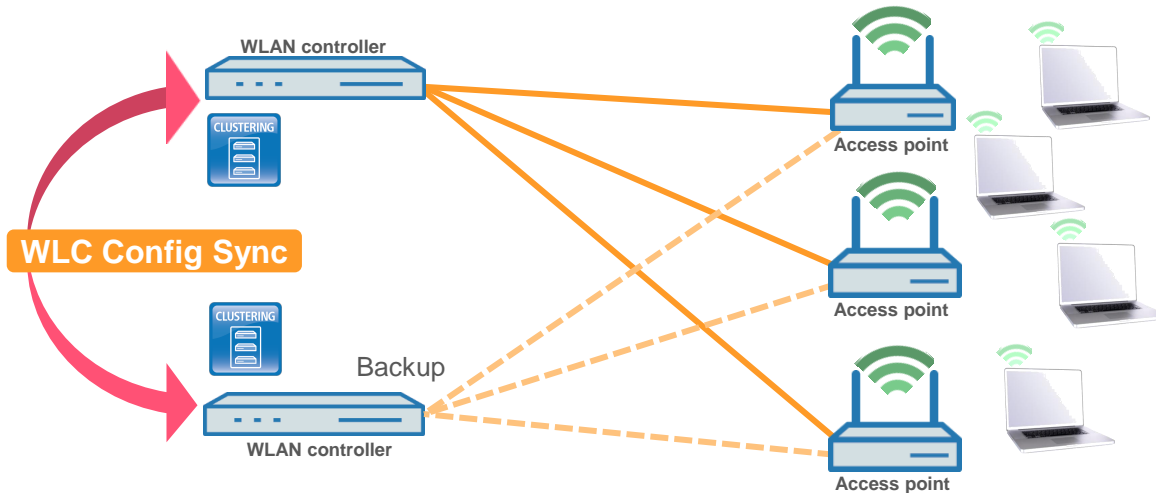
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LANCOM High Availability Clustering Option
Application 1b: WLC Clustering

- Config Sync enables the configuration synchronization of all cluster devices – ideal for high-availability scenarios
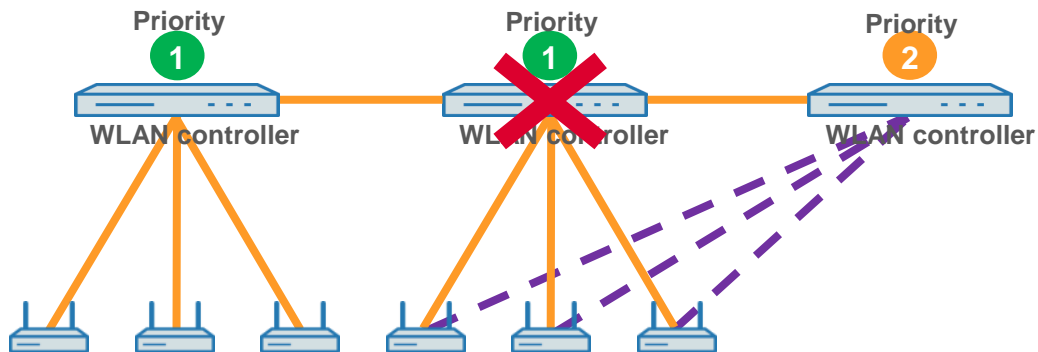
LANCOM High Availability Clustering
Application 2: WLC Backup

High availability due to reliable backups

Priority **1**

Priority **1**

Priority **2**

WLAN controller   WLAN controller   WLAN controller
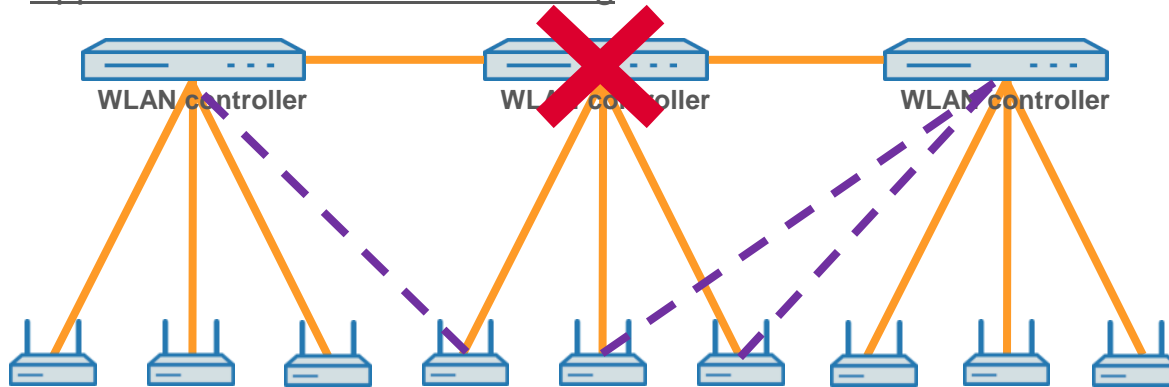
HIGH AVAILABILITY CLUSTERING

- In case of WLC failure or if the capacity of a higher prioritized WLC is exceeded, access points are automatically distributed to lower prioritized WLCs

- Automatic redistribution to the re-available, higher prioritized WLC

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LANCOM High Availability Clustering

Application 3: WLC Load Balancing

- Optimal load balancing due to an equal distribution of access points to the WLCs

- Equal distribution of access points after failure of one WLC

- Redistribution can be conducted during maintenance periods or during times of little traffic

The new highlight features

LANCOM High Availability Clustering
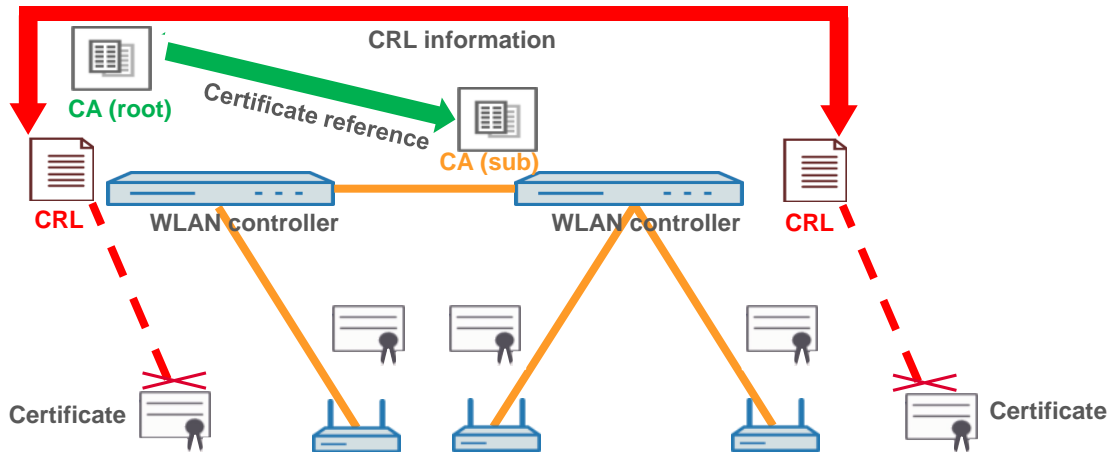
Application 4a: WLC CA Hierarchization
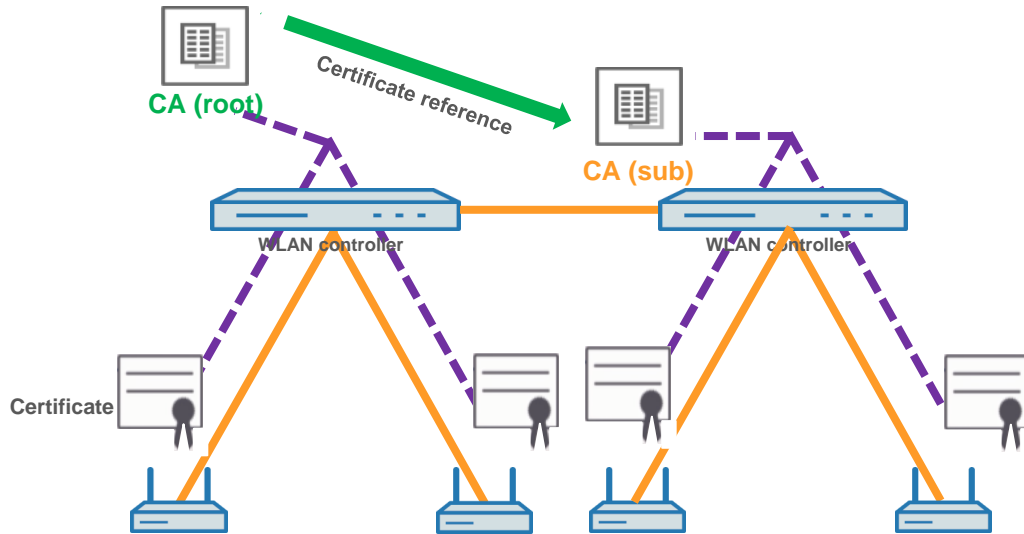
- Trusted chain between the CAs (Certificate Authorities) on connected WLAN controllers

LANCOM High Availability Clustering

Application 4b: WLC CA Hierarchization

- WLCs exchange information about withdrawn certificates (Certificate Revocation List), so a certificate is not usable for another WLC
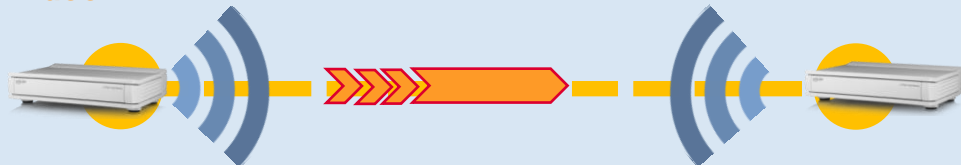
P2P support and client mode for the L-13xx series

- Point-to-point functionality for the 11ac access points of the L-13xx series for high-performance radio links with up to 1.300 Mbps (with a range of up to 1km)
- Support of client mode

Indoor P2P link

- 3x3 MIMO
- max. 1.3 Gbps

P2P link between sites

Note:
With the use of external antennas (for example: AirLancer Extender O-D9a)
- 2x2 MIMO
- max. 867 Mbps

Management of client bandwidth per SSID

- The usable bandwidth per SSID (download and upload) can be granted to each client equally
- Advantage: Gain more control over the available bandwidth per WLAN client

Maintain a consistent bandwidth for all wireless users

Internal network

10 Mbps

10 Mbps

Guest network: Each client gets 5 Mbps

Internal network: Each client gets 10 Mbps

Guest network

5 Mbps

5 Mbps

5 Mbps

Access point

Router
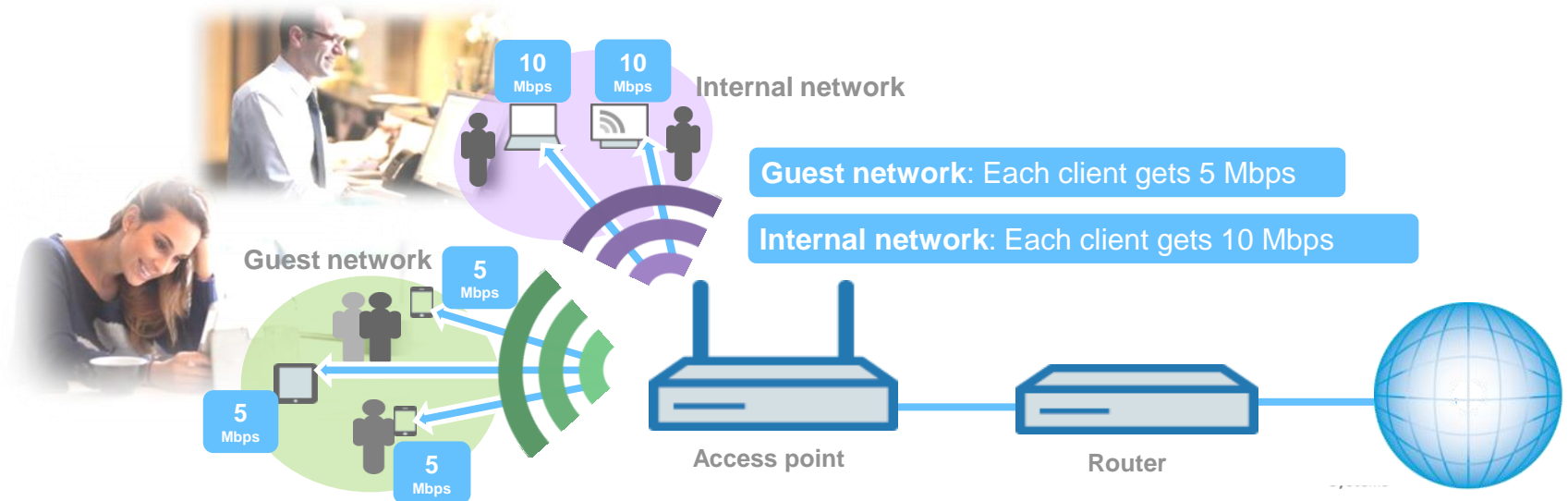
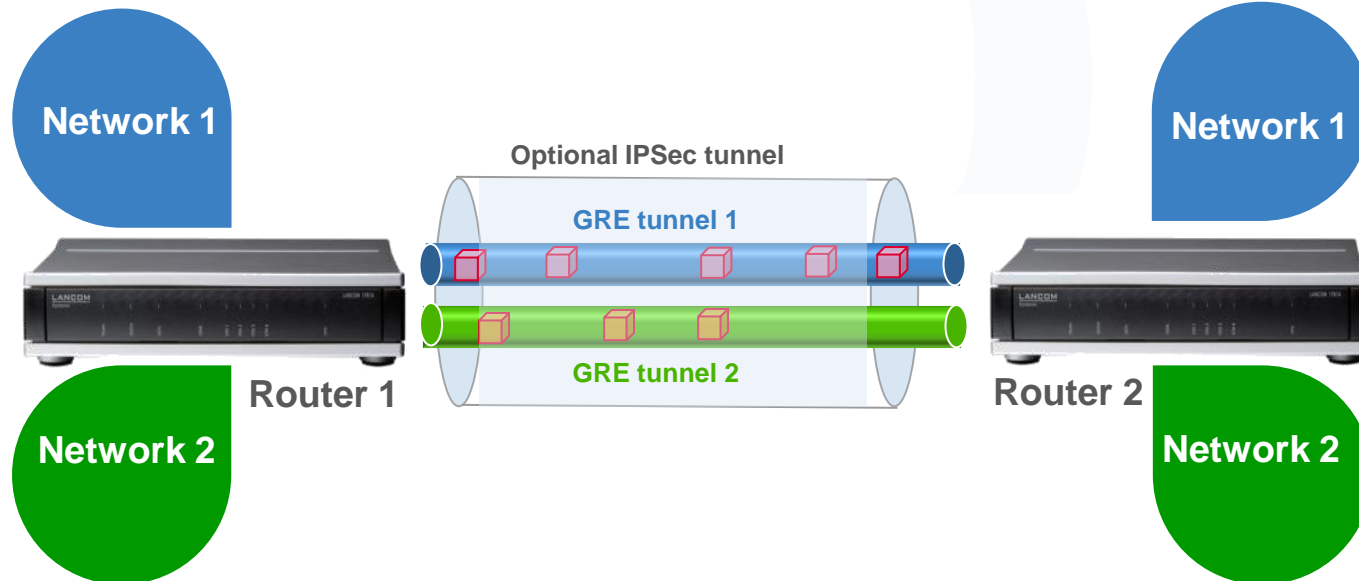## GRE tunneling

- With Generic Routing Encapsulation (GRE) packages are embedded and transported between two end points via a tunnel

➡ Easy and flexible connection of networks

Maximum flexibility for the connection of distant networks

Network 1

Optional IPSec tunnel

GRE tunnel 1

GRE tunnel 2

Network 1

Router 1

Router 2

Network 2

Network 2

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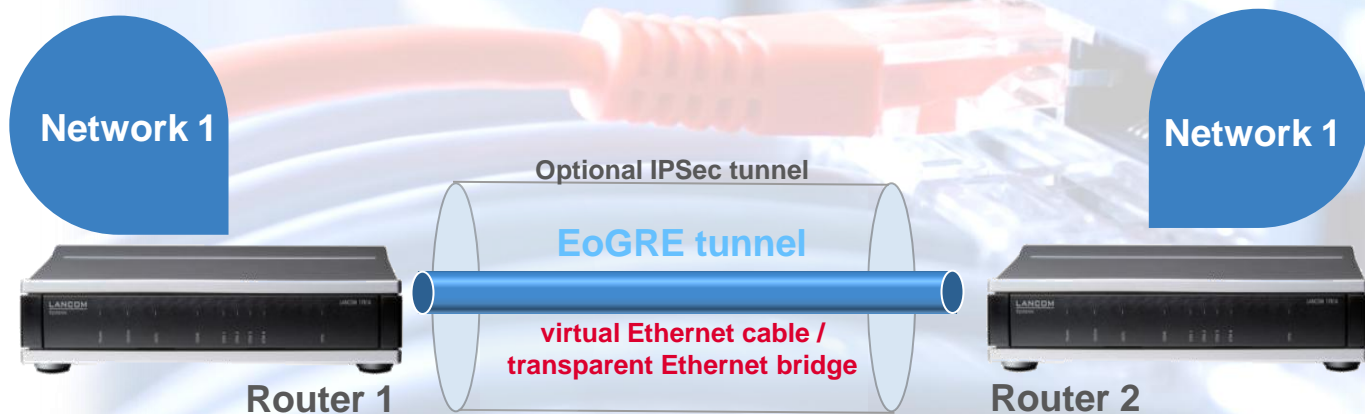Systems

Ethernet over GRE tunnel

- The "virtual Ethernet cable" – ideal for the connection of two networks via layer-2 tunnel e.g. with encrypted IPSec VPN

Network 1

Network 1

Optional IPSec tunnel

EoGRE tunnel

**virtual Ethernet cable /
transparent Ethernet bridge**

Router 1

Router 2

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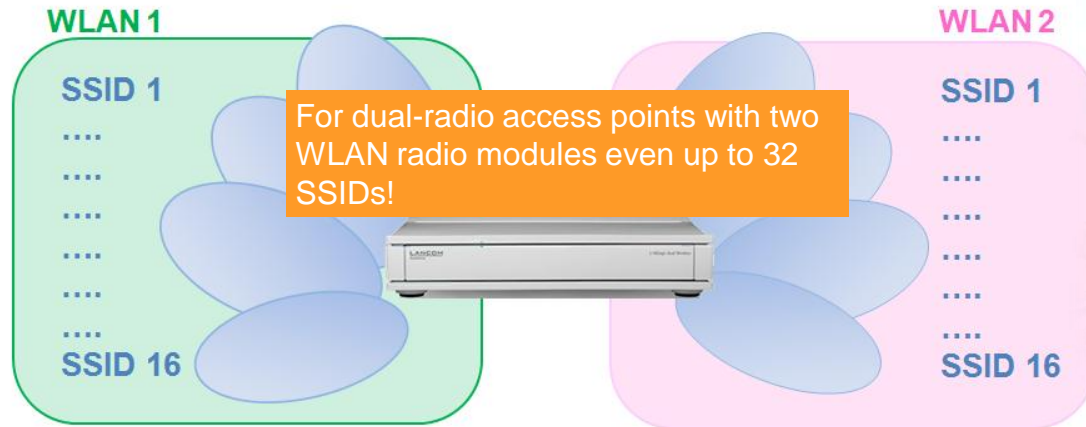Systems

16 SSIDs

- As of now, 16 individual SSIDs can be configured per WLAN radio module

➡ More simultaneous WLAN services

➡ More virtual networks are available

WLAN 1

SSID 1
....
....
....
....
....
....
SSID 16

For dual-radio access points with two WLAN radio modules even up to 32 SSIDs!

WLAN 2

SSID 1
....
....
....
....
....
....
SSID 16

LANCOM
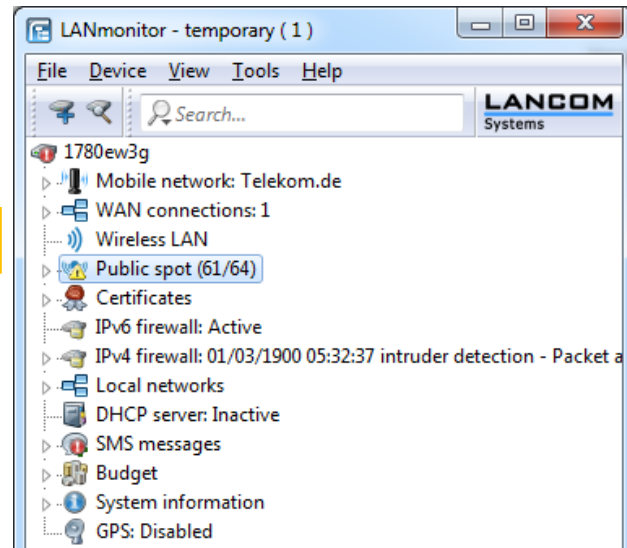Systems

Display of used Public Spot licenses

- The current and maximum number of Public Spot users is displayed in the LANmonitor with an additional notification at 90 % used capacity.
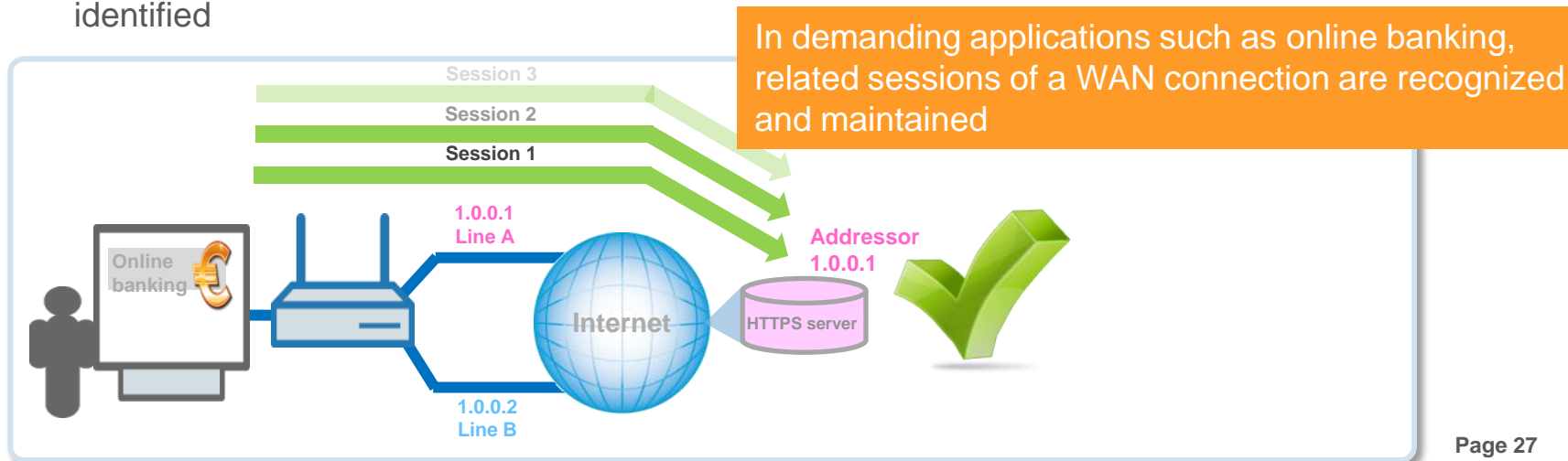
LANCOM Load Balancer Client Binding

- In load balancing scenarios with several WAN lines, new sessions can be established on the same line

- The web server can assign the sessions to an addressor so the client can be correctly identified

In demanding applications such as online banking, related sessions of a WAN connection are recognized and maintained

Session 3

Session 2

Session 1

1.0.0.1
Line A

Online banking

Internet

Addressor
1.0.0.1
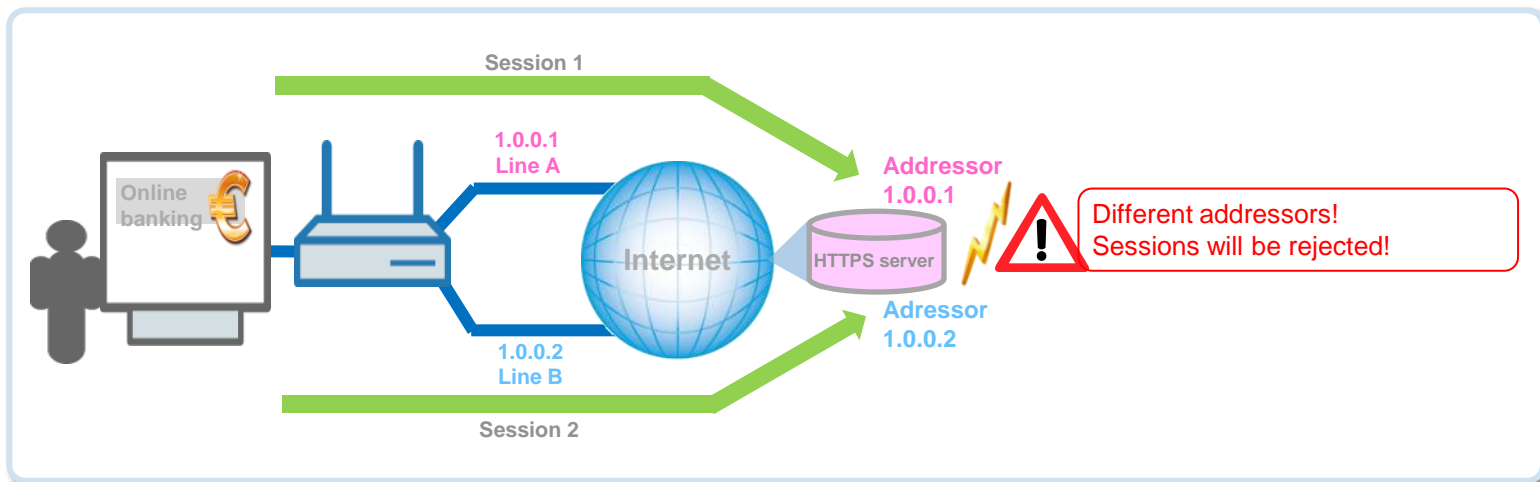
HTTPS server

1.0.0.2
Line B

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LCOS 9.10
Futher features

Without LANCOM Load Balancer Client Binding

- Due to the use of multiple lines, the HTTPS server thinks that it receives requests from different clients
- Consequence: For safety reasons, a new registration is required

Encrypted configuration storage in LANconfig

■ In LANconfig you can securely save your configuration data with a password

Do not allow unauthorized persons access to your configuration!

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Futher features

- **LANCOM Content Filter e-mail notification**
  At Content Filter incidents you can receive a notification via e-mail either immediately or on a daily basis

- **Extended number of characters**
  The possible number of characters for assigning device names has been extended to 64

- **New SCEP algorithms**
  More security for using certificates: The SCEP algorithms AES192 and AES256 for encryption and SHA256, SHA384, and SHA512 for signature control are supported

- **New DynDNS providers in the setup wizard**
  The providers "Strato" and "feste-ip.net" have been added to the DynDNS wizard

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LCOS 9.10
Futher features

- **Configurable administration of WAN connections**
  The acceptance and administration of APs via WAN connections can be approved or forbidden.

- **LEDs can be deactivated via WLC**
  The LEDs of administrated WLAN devices can be centrally deactivated via the WLAN controller

- **Monitoring of configuration changes**
  Easy monitoring of configuration changes thanks to the display of hash data, time stamps, and change counters in the status menu

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LCOS 9.10
Futher features

- **Improved control of Public Spot volume budgets**
  As of now, you can set more than 4 GB data volume limit in the Public Spot volume budget and additionally print the defined budget per user on the voucher.

- **Direct access to the voucher generation in the Public Spot**
  Vastly simplified access for the generation of Public Spot vouchers due to an automatic forwarding to the respective interface – ideal for untrained staff!

- **TR-069 support**
  "Zero-touch management" – in provider environments the protocol TR-069 allows an automatic provisioning and a securely encrypted remote management of a router

- **Configuration of Wireless ePaper and iBeacon via WLC**
  The WLC creates profiles for wireless ePaper and iBeacon which can be rolled out for the configuration of the LANCOM E-series access points

100+ FEATURES

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Thank you for your attention!
Further information…

See for more informationen for products, solutions and services at

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