

■ connecting your business



LANCOM Systems GmbH

LCOS 8.80 Release
Feature Notes

LCOS 8.80
[LANCOM OPERATING SYSTEM]

LANCOM
Systems

LCOS und LCMS 8.80

Introduction



The LANCOM operating system LCOS and the corresponding management tools (LCMS) **regularly provide free new functions** to current LANCOM routers, access points, and gateways.

LCOS 8.80 provides **enterprise tools for your WLAN, innovations in the LANCOM Public Spot, and comprehensive IPv6 support.**

Read on for more of the most important features and improvements summarized in brief.

LCOS and LCMS 8.80

The new features



Band Steering

Use the bandwidth of your WLAN to an optimal extent!

Due to the automatic switching of clients to the 5 GHz frequency band, triggered by the access point, the WLAN performance is doubled, using channels without overlaps for channel bonding.



Spectral Scan

Monitor your WLAN radio field spectrum for sources of interference!

By scanning the entire radio spectrum, non-WLAN sources of interference are identified and graphically illustrated.



Innovationen im LANCOM Public Spot

Benefit from the best Public Spot of all times!

LANCOM Smart Ticket offers your guests a comfortable access to the Public Spot through a transmission of credentials via SMS or e-mail.

Further innovations such as the LANCOM Public Spot Wizard or configurable multi-logins as well as numerous features like the XML interface offer higher usability and new room for your personal design of hotspot solutions.

LCOS and LCMS 8.80

The new features



Comprehensive IPv6 support

Reliability for the future with IPv6!

LCOS 8.80 is the first LANCOM release version with IPv6 dual stack - natively or via tunnel technologies. Including a versatilely configurable IPv6 stateful-inspection firewall for a LANCOM-usual secure connection.



Over 100 detail improvements

More performance, more security, more LANCOM quality!

Up to 15% more performance for your routers and access points, numerous new security features, easier operation of LANconfig, and much more.

Band Steering

Steering of clients towards the 5 GHz frequency band

Why Band Steering?

- The 2,4 GHz band is crowded due to high user density
- Many legacy clients are in action

Advantages of the 5 GHz frequency band:

- More channels without overlaps
- Less users
- Higher bandwidth

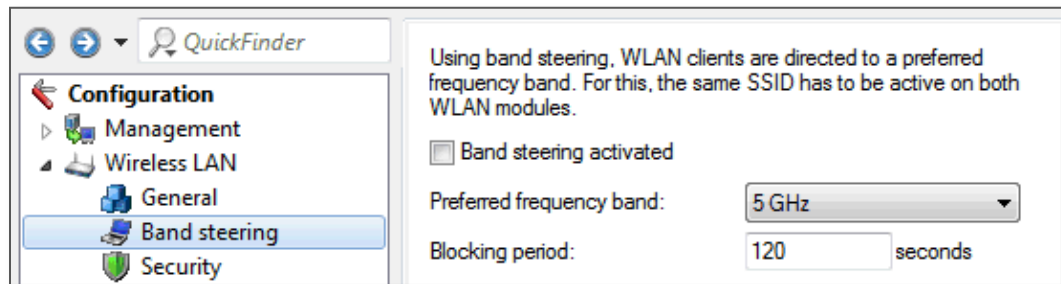


Band Steering

Steering of clients towards the 5 GHz frequency band

What does Band Steering do?

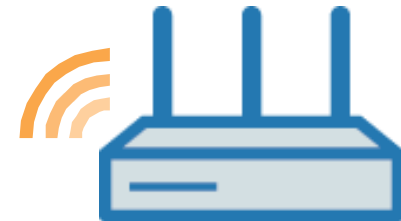
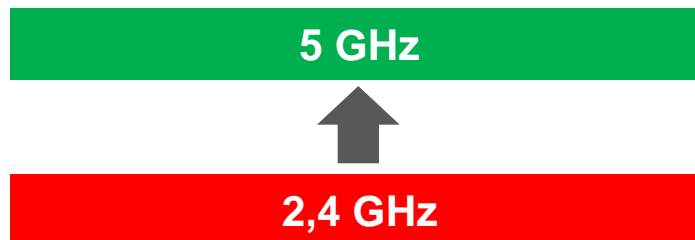
- Active steering of clients towards the 5 GHz frequency band by restricting the access to the 2.4 GHz band
- Fully automatic – **no changes in the client configuration** necessary!



Access point
only answers on the
5 GHz frequency band



WLAN client



Dual-radio AP

LANCOM Spectral Scan

Identification of RF interferences

Why Spectral Scan?

- RF interferences affect the reliability and the performance of WLANs – up to total failure
- These interferences can be predicted

What does Spectral Scan do?

- Scanning of the entire RF spectrum
- Measurement of the load on WLAN channels at a certain point of time
- Automatic identification of non-WLAN interferences (e.g. microwaves, babyphones, bluetooth devices, etc.)

Your LANCOM Spectral Scan:
free and always on-site!



LANCOM Spectral Scan

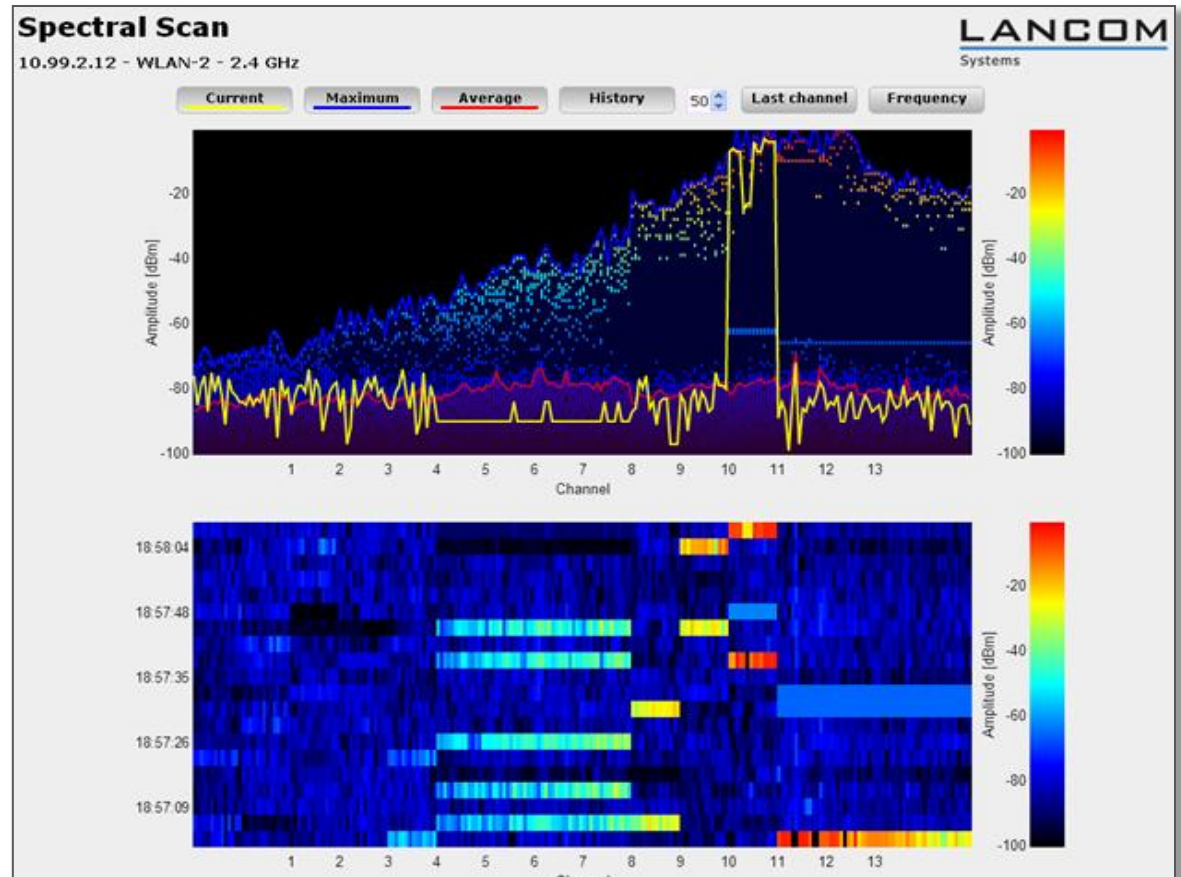
Identification of RF interferences

Scan of the RF spectrum

Illustration of the load on individual WLAN channels at a certain point of time

Historical waterfall diagram

Illustration of the load on individual WLAN channels in a chronological history



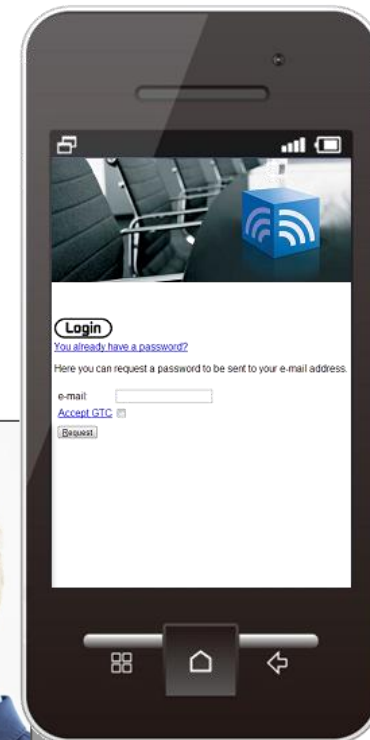
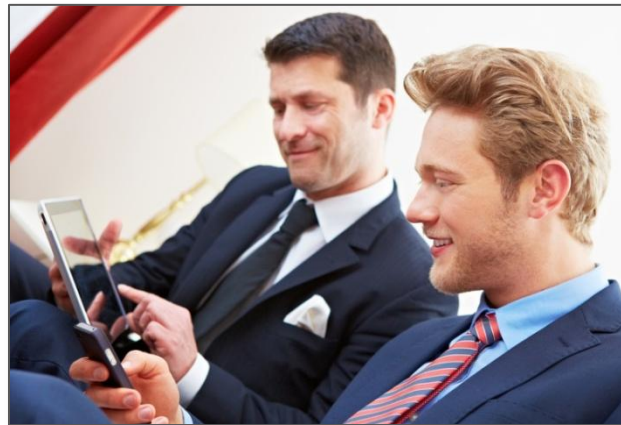
LANCOM Smart Ticket

The comfortable “self-service Public Spot”

The easiest Public Spot solution of all times!

What is Smart Ticket?

- Comfortable end-user self-service portal for the LANCOM Public Spot
- The user directly receives the credentials for the Public Spot via SMS or e-mail
- Completely without printing vouchers, **no staff on-site is necessary!**



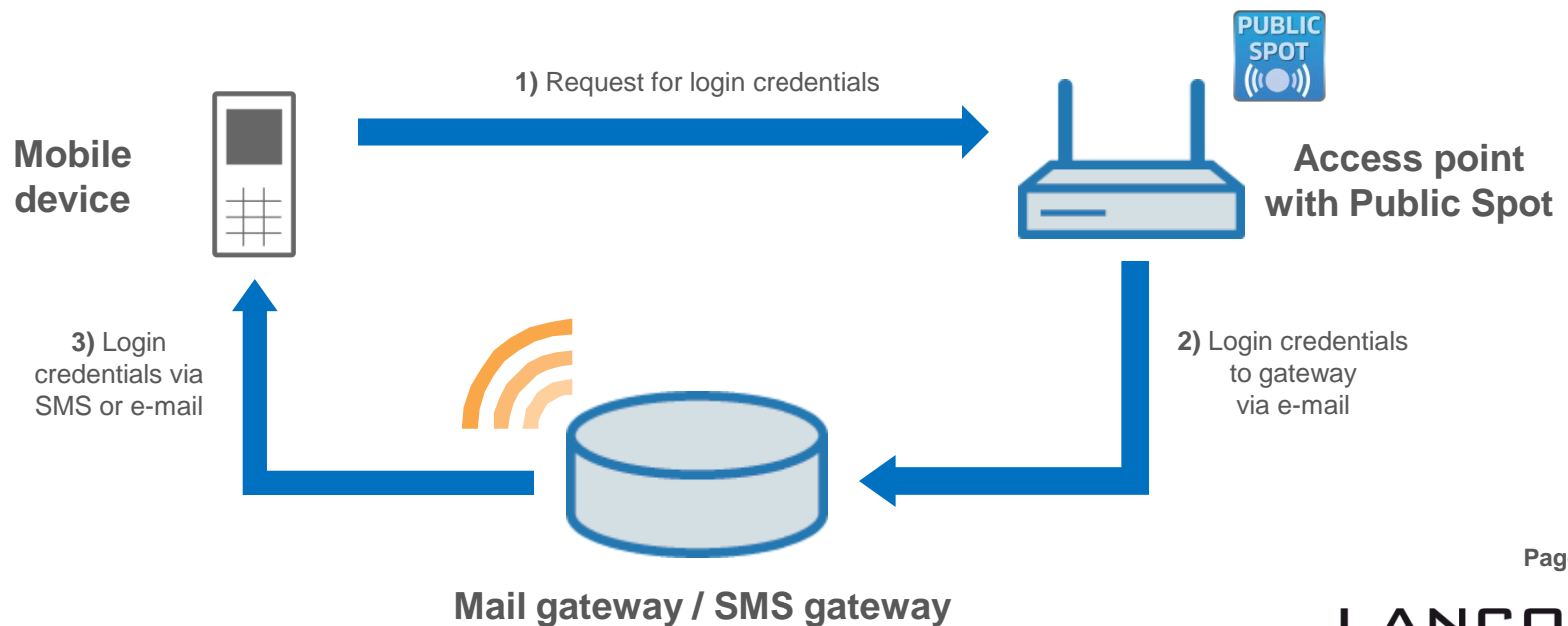
LANCOM Smart Ticket

The comfortable “self-service Public Spot”

Included in the
LANCOM Public Spot

What does Smart Ticket do?

- Gives the user the possibility to accredit himself for Public Spot access (**Captive Portal functionality**)
- Automatic transmission of credentials as an SMS via email2sms gateway



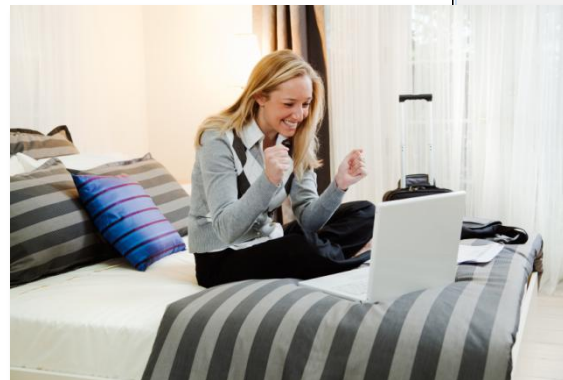
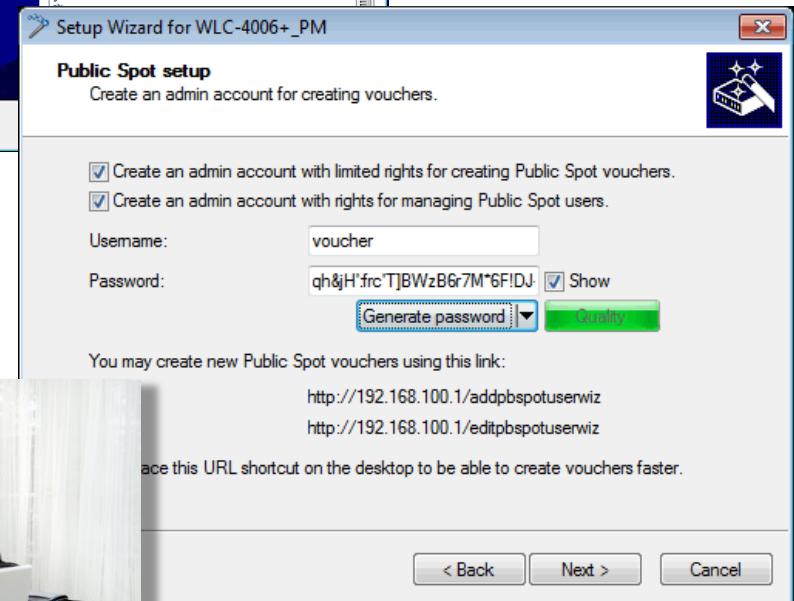
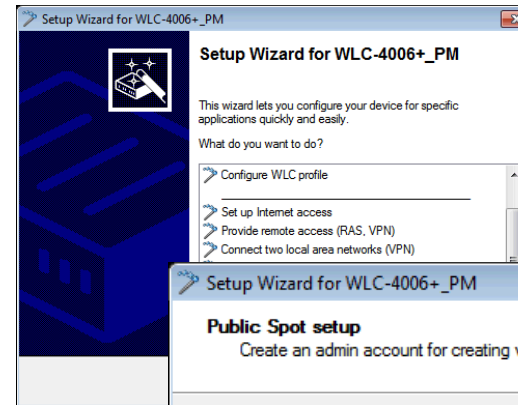
LCOS 8.80 – Features

Improvements in the Public Spot Wizard for an initial setup

Comfortable
Public Spot access
for your customers

Wizard for setting up guest accesses

- The new setup wizard helps you configuring easy Public Spot scenarios
- Intuitive usability
- Usage of existing networks or manual for configuring separate WLANs



Improvements in the Public Spot

XML interface, DNS whitelist, comfortable configuration

- Numerous improvements and new features for the LANCOM Public Spot, such as:

Smart provider features

- **XML interface** for the communication of an external hotspot gateways with a LANCOM Public Spot via XML
- **DNS whitelist** for unblocking requested domains in the Public Spot

More usability

- **Configurable number** of multi-logins in the Public Spot Wizard
- **Casesensitivity of user names** is no longer required

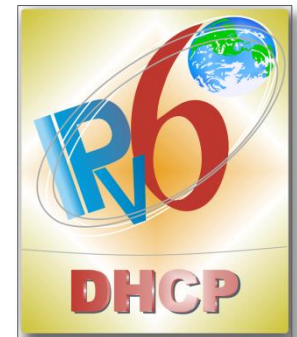


The Internet of the future starts **now**

IPv6 with LANCOM



- LCOS 8.80 is the first **IPv6 dual stack release** version – natively or via tunnel technologies
- Management of IPv6 functions with LANconfig
- **IPv6 Ready Gold** and **IPv6 DHCPv6 Gold** certifications of the LANCOM firmware LCOS:
 - Optimal compliance of IPv6 standards
 - Full support of DHCPv6
 - Interoperability of LANCOM IPv6 devices
 - LCOS fulfills rigid guidelines of the IPv6 forum



The Internet of the future starts **now** IPv6 with LANCOM



New IPv6 firewall

- Stateful-inspection
- More usability for configuring firewall rules with LANconfig



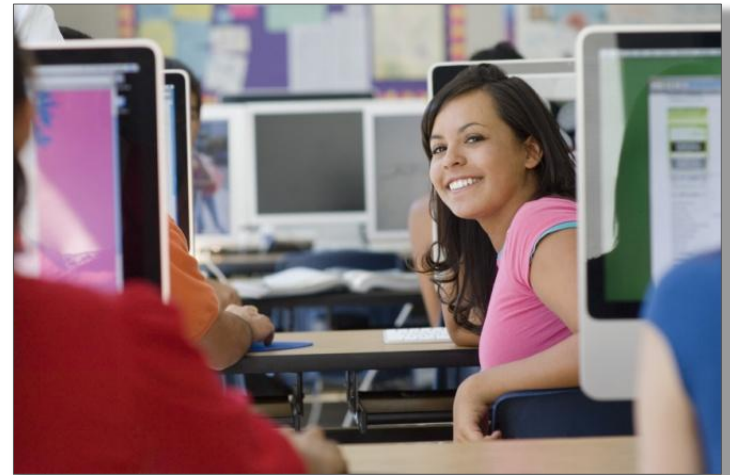
The screenshot displays the LANCOM configuration interface. On the left is a tree view under 'Configuration' with 'IPv6 Rules' selected. In the center, the 'IPv6-Forwarding-Regeln - Eintrag bearbeiten' dialog is open, showing a rule named 'ALLOW-OUTBOUND' with 'ACCEPT' action and 'LOCALNET' source. On the right, the 'Eingabe auswählen für Dienst-Objekte' dialog is open, showing a list of services like DNS, HTTP, and SSH. A 'Firewall Rules (Filter)' dialog is overlaid on the bottom, with the text: 'You can filter packets according to a variety of criteria: for example, to protect your system against unauthorized access.' It contains two buttons: 'IPv6 inbound rules' and 'IPv6 forwarding rules'.

Improvements in the LANCOM Content Filter

Concurrent User Modell

Concurrent user model:

- More efficient use of the LANCOM Content Filter
- Flexible detection of simultaneously active users
- Minimizes the necessary user licenses since the new version of the Content Filter only considers currently active users



Improvements in LANCOM myVPN

Configurable lockout after failed attempts

Configurable profile lockout after failed attempts

- The number of failed logins can be configured
 - The profile is blocked after a defined number of failed attempts
- myVPN profile reception via WAN is configurable

The screenshot displays the LANCOM 1781EW Configuration utility. The left sidebar shows a tree view with 'myVPN' selected. The main window shows the 'myVPN' configuration page. A callout box highlights the 'Pin length' and 'Lock profile download after' settings. The 'Pin length' is set to 4, and 'Lock profile download after' is set to 5 login failures. The 'Allow profile download via WAN connections' checkbox is checked. The 'myVPN enabled' checkbox is also checked. The 'Notifications' section has 'Send myVPN notifications by SYSLOG' and 'Send myVPN notifications by email' checked. The 'myVPN accounts' section has a button labeled 'myVPN accounts'. The bottom of the window shows 'OK' and 'Cancel' buttons.

The pin length used by the setup wizard to generate a new pin can be defined here.

Pin length:

Allow profile download via WAN connections

Lock profile download after: login failures

myVPN enabled

Own SSL server name:

Remote Gateway:

The pin length used by the setup wizard to generate a new pin can be defined here.

Pin length:

Allow profile download via WAN connections

Lock profile download after: login failures

Notifications

Send myVPN notifications by SYSLOG

Send myVPN notifications by email

Email address:

myVPN accounts

The mapping between the myVPN pin and the VPN profile will be defined in this table.

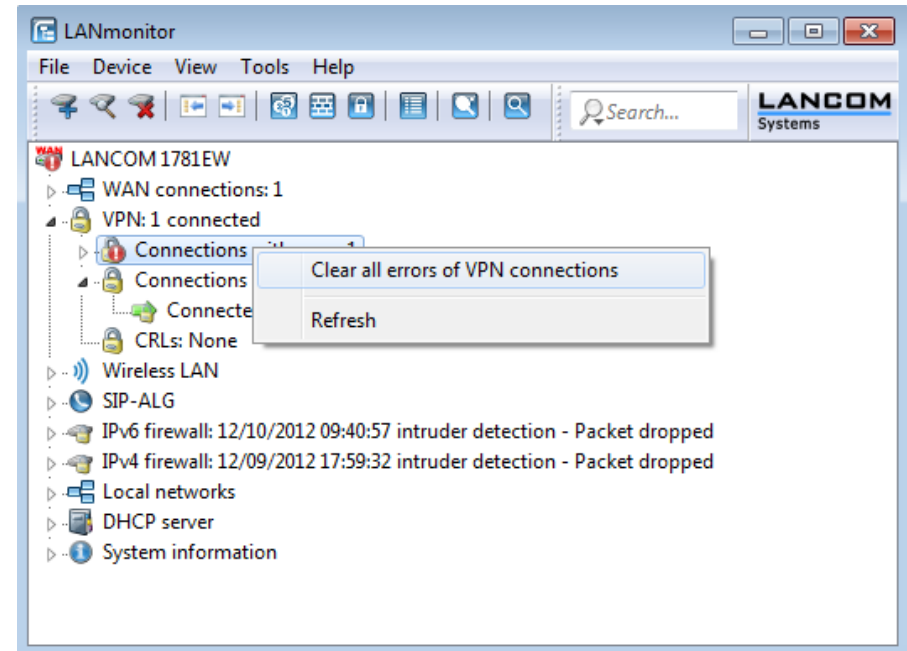
LANCOM Systems

OK Cancel

Clearing VPN error messages

More usability in LANmonitor

- Erase all VPN error messages with one click
- No more time-consuming deletion of separate error messages



Increased performance

Up to 15% more performance

LCOS 8.80 makes your LANCOM routers and access points even faster!

- Up to 15% more performance in LAN-LAN connections compared to the previous version
- Up to 10% more data throughput in WAN connections



Packet Capture

Efficient troubleshooting with real-time captures

Paket Capture

- Capturing of data packages within a defined timeframe
- Invokable via the WEBconfig of LANCOM devices
- Export as .cap data
- Easy to read out with external analysis tools (e.g. Wireshark)

Packet-Capture

Logout

Interface-Selection

Only include packets to/from MAC Address:

Volume-Limit (MiB)

Packet-Limit (#)

Time-Limit (s)

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000	192.168.100.199	192.168.100.58	TCP	54	https > 51855 [ACK] Seq=1 Ack=1 win=2695 Len=0
2	0.710585	192.168.100.72	224.0.1.76	IGMP	60	v1 Membership Report
3	4.551318	Lancom_18:3c:00	LLDP_Multicast	LLDP	141	Chassis Id = 00:a0:57:18:3c:00 Port Id = LAN-1 TTL = 120 System Name
4	6.020800	192.168.100.72	224.0.1.76	IGMP	60	v1 Membership Report
5	6.856933	192.168.100.199	192.168.100.58	TLSv1	107	Encrypted Alert
6	7.057242	192.168.100.58	192.168.100.199	TCP	60	51855 > https [ACK] Seq=1 Ack=54 win=64026 Len=0
7	7.057372	192.168.100.199	192.168.100.58	TLSv1	107	Encrypted Alert
8	7.257322	192.168.100.58	192.168.100.199	TCP	60	51855 > https [ACK] Seq=1 Ack=107 win=63973 Len=0
9	7.257444	192.168.100.199	192.168.100.58	TCP	54	https > 51855 [RST, ACK] Seq=107 Ack=1 win=2695 Len=0
10	7.483442	192.168.100.199	192.168.100.1	UDP	139	source port: 5734 destination port: 1027
11	7.484742	192.168.100.1	192.168.100.199	UDP	139	source port: 1027 destination port: 5734
12	9.181045	192.168.100.72	224.0.1.76	IGMP	60	v1 Membership Report
13	10.920630	Lancom_1b:33:30	LLDP_Multicast	LLDP	218	Chassis Id = 00:a0:57:1b:33:30 Port Id = LAN-1 TTL = 120 System Name
14	12.272872	192.168.100.58	192.168.100.199	TCP	74	51859 > https [SYN] Seq=0 win=8192 Len=0 MSS=1460 WS=4 SACK_PERM=1 T
15	12.273062	192.168.100.199	192.168.100.58	TCP	58	https > 51859 [SYN, ACK] Seq=0 Ack=1 win=2920 Len=0 MSS=1460

Certification for WMM Power Save

More efficient data transmission for more battery lifetime

Longer battery lifetime for mobile devices

Wi-Fi Alliance certification for WMM™ Power Save

- WMM™ (Wi-Fi Multimedia) Power Save increases the battery lifetime of WLAN clients
- WLAN clients remain longer in a dozing state due to a more efficient data transmission of the access points
- More efficient WLAN data transmission for
 - decreased energy consumption
 - higher performance due to minimized transmission latency



Wi-Fi CERTIFIED™ Interoperability Certificate Certification ID: WFA16163

This certificate lists the capabilities and features that have successfully completed Wi-Fi Alliance interoperability testing. Additional information about Wi-Fi Alliance certification programs is available at www.wi-fi.org/certification_programs.php.

Tested Spatial Streams	Dual-Band Selectable	
	2.4 GHz	5.0 GHz
Transmit	3	3
Receive	3	3

Certificate Date: October 12, 2012
Company: LANCOM Systems GmbH
Product: LANCOM L-452agn dual Wireless
Model/SKU #: L-45x/
Category: Enterprise Access Point, Switch/Controller or Router

IEEE Standard	Security	Multimedia
IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n Optional 802.11n Capabilities - Short Guard Interval - TX A-MPDU - STBC - 40 MHz operation in 2.4 GHz with coexistence mechanisms - 40 MHz operation in 5 GHz	WPA™ - Enterprise, Personal WPA2™ - Enterprise, Personal EAP Type(s) EAP-TLS EAP-TLS/MSCHAPV2 PEAPv0/EAP-MSCHAPV2 PEAPv1/EAP-GTC EAP-SIM EAP-AKA EAP-AKA Prime EAP-FAST	WMM® WMM Power Save

LANCOM QuickLinks

Easier operation in LANconfig

- More overviews with intelligent **QuickLinks**
- Comfortable usability
- Deep structures are clearly illustrated
- Integration of the **QuickFinder** into selection menus for a quick fulltext search

The screenshot displays the LANCOM LANconfig interface. The main window shows the 'IP Router / Routing / Load balancing' section with the 'INTERNET-BUNDLE' connection list selected. A 'QuickFinder' search bar is visible at the bottom of this section. A red arrow points from the search bar to a magnified view of the 'Select input for Router' dialog box. This dialog box contains a table of VPN connections:

Value	Source	Configuration path
<input type="checkbox"/> VPN-DE-AACHEN	Connection list	VPN / General / VPN connections
<input type="checkbox"/> VPN-DE-MUENCHEN	Connection list	VPN / General / VPN connections
<input type="checkbox"/> VPN-DE-BREMEN	Connection list	VPN / General / VPN connections
<input type="checkbox"/> VPN-DE-BERLIN	Connection list	VPN / General / VPN connections
<input type="checkbox"/> VPN-DE-DRESDEN	Connection list	VPN / General / VPN connections
<input type="checkbox"/> VPN-DE-STUTT GART	Connection list	VPN / General / VPN connections
<input type="checkbox"/> VPN-DE-HAMBURG	Connection list	VPN / General / VPN connections
<input type="checkbox"/> VPN-DE-FLENSBURG	Connection list	VPN / General / VPN connections
<input type="checkbox"/> VPN-DE-DUESSELD	Connection list	VPN / General / VPN connections
<input type="checkbox"/> VPN-DE-HANNOVER	Connection list	VPN / General / VPN connections

Below the table, a search bar contains '-DE-' and 'OK' and 'Cancel' buttons are visible. A second red arrow points from the 'INTERNET-BUNDLE' selection in the main window to a 'IPv4 routing table - New Entry' dialog box. This dialog box has the following fields:

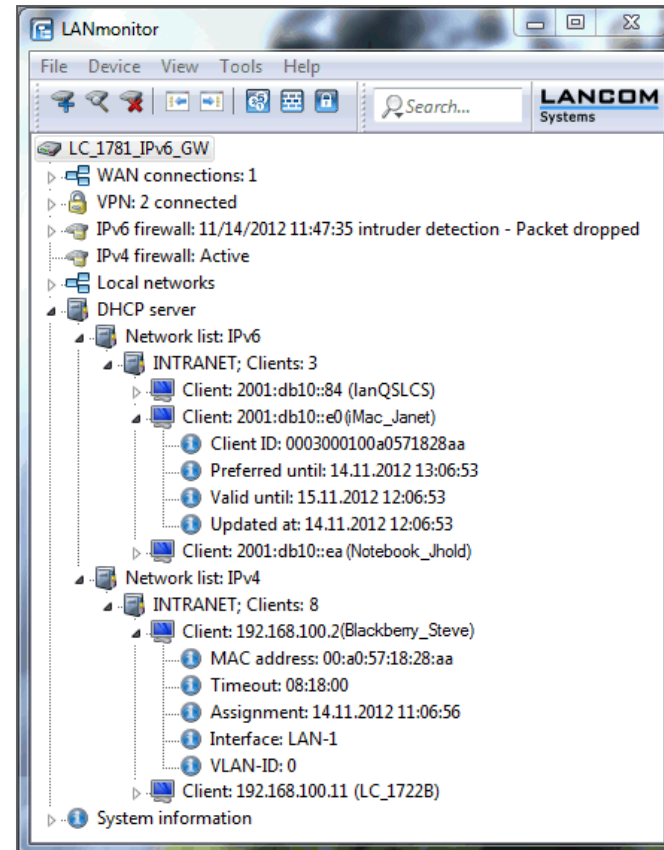
- IP address: 255.255.255.255
- Netmask: 0.0.0.0
- Routing tag: 0
- Enable state: Route is enabled and will always be propagated via RIP (sticky)
- Router: [dropdown menu]
- Distance: 0
- IP masquerading: masking Intranet and DMZ (default)
- Comment: default route

DHCP display in the LANmonitor

Address allocation in the network at a glance

Structured information on DHCP clients in the LANmonitor

- Display of allocated DHCP addresses with time of allocation
- Display of validity of allocated DHCP addresses
- Display of IPv4, IPv6, MAC addresses, and clear-text names



Maximized security

Efficient error diagnosis and secure data transfer

■ Numerous new security features:

- **Persistent storage of SYSLOG and Bootlog**

Even in case of a reboot of the device, notifications in the SYSLOG and bootlog remain – for a historical tracking of device notifications

- **Logging of configuration changes in the SYSLOG**

Information such as date/time, user name, and altered menu entries can now be logged

- **Encrypted data upload via SSH**

For data such as VPN and SSL certificates or Public Spot elements

- **Configurable SSH algorithms**

The supported encryption algorithms can now be configured and individually limited

- **Support of Diffie-Hellman group 14**

IKE and PFS now support DH group 14

- **IPSec Replay Detection**

Configurable via the command line



LCOS 8.80

Further features

- **LLDP support** – display of network topologies with external tools
- Applicability of **different RADIUS servers per SSID**
- Support of **DFS 4** for dynamic frequency selection
- **Windows 8 support** for LCMS
- Entry of **IPv6 stations in the DNS-Server** possible
- **Extension of DynDNS scripts** for dynaccess.de via IPv4 and IPv6
- **Simplification** of automatically generated passwords in LANconfig

Service & support

We wish you every success with your LANCOM product and the new LCOS!

We look forward to your **praise and criticism, suggestions or questions:**

myLANCOM@lancom.eu

The latest information about service and support can be found on our support flyer, our Internet site or from our **Knowledge Base**.

If the manual and our latest support topics on the Internet do not resolve your issue, then feel free to contact our new support hotline at landline rates in Germany from Monday to Friday between 9:00 AM and 5:00 PM (CET).

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Your LANCOM Systems team