



Overview LANCOM Software Version 7.5

April 2008

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LC.OS 7.5
[LANCOM OPERATING SYSTEM]

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Introduction



The LANCOM operating system LCOS and the corresponding management tools regularly provide free new functions to all actual LANCOM routers, access points and gateways.

Here is an overview of the main new functions and improvements:

- **LANconfig** – new setup wizards (basic settings, Internet, WLAN), multi-column view, application settings per user or project
- **LANmonitor** – advanced diagnostic functions with convenient Windows dialogs at hand
- **VoIP** – Media Proxy for safe handling of data streams and new options for call transfer (transferring calls between SIP providers)
- **DFS** – conformance to ETSI 301 893 version 1.3 for 5 GHz Access Points
- **WLAN Public Spot** – now with voucher print wizard
- **WLAN-Controller-Upgrade** – automatic radio setup, auto-provisioning of firmwares and scripts as well as integrated Public Spot functionality including voucher print



Highlights

Management

- New setup wizards (basic settings, Internet, WLAN)
- Multi-column view and application settings per user/project in LANconfig
- Advanced diagnostic functions within LANmonitor (TRACES)

VoIP

- Media Proxy

Routing

- Extended RIPv2

VPN

- Multi-level certificates (hierarchies)

WLAN

- Public Spot with voucher print wizard
- DFS conform with ETSI 301 893 version 1.3

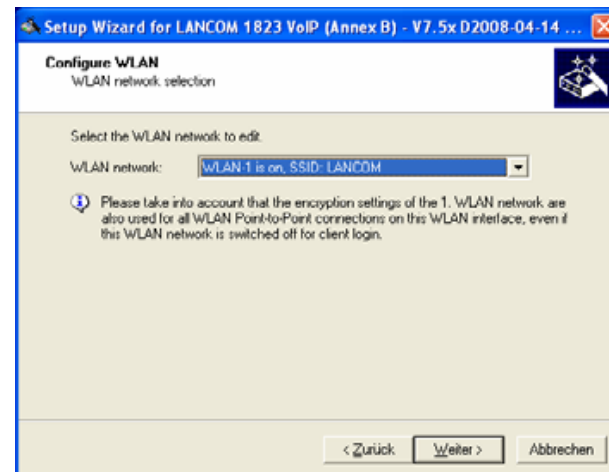
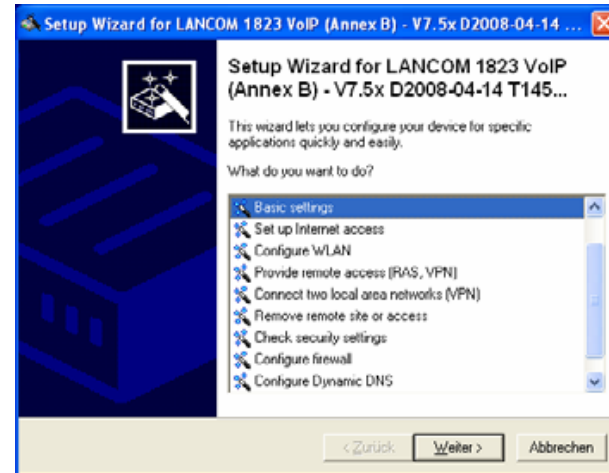
WLAN-Controller

- Automatic radio setup
- Auto-provisioning for firmware and scripts
- Integrated Public Spot functionality incl. voucher print wizard

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LANconfig – New setup wizards

- Completely revised setup wizards: basic settings, Internet and WLAN
- Basic settings wizards
 - Now repeated execution is possible
- Internet wizard
 - Forced disconnect (ADSL) at predefined time of day
 - Setup of UMTS backup
- New: WLAN wizard
 - Configuration of separate SSIDs
 - Setup even for point-to-point connections



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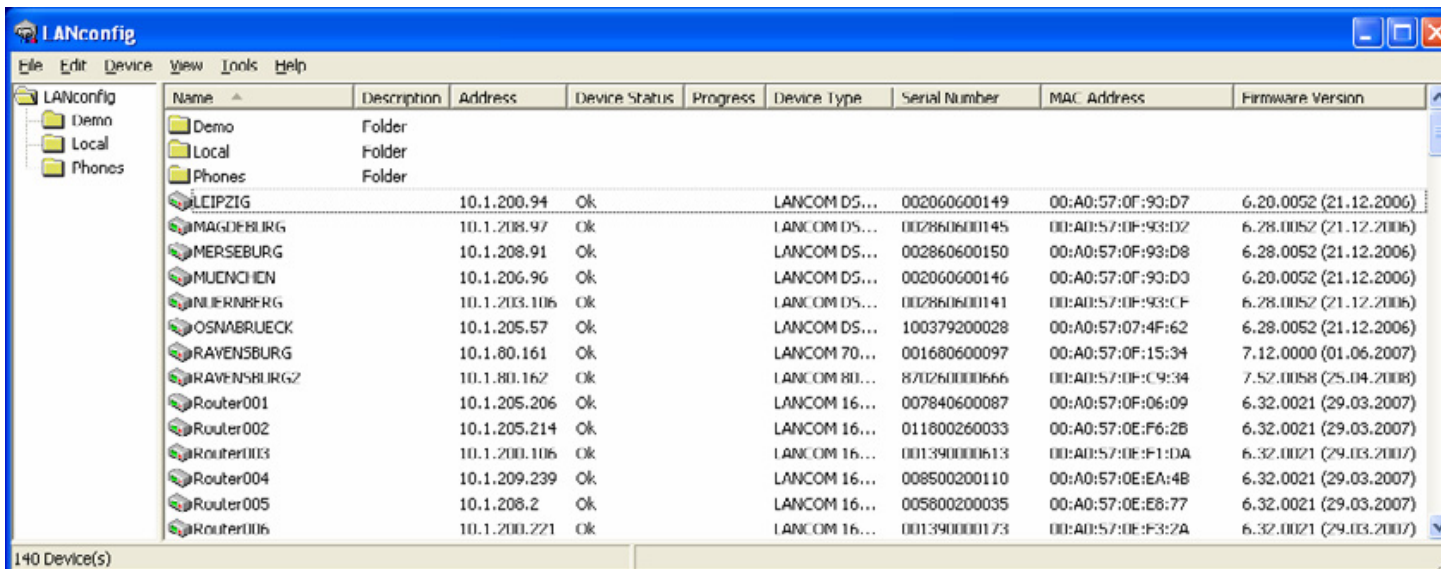
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LANconfig – Multi-column view

- All relevant information in single columns:

name	description	address	device status
progress	device type	hardware release	serial number
MAC address	firmware version	FirmSafe	1. image version
2. image version			

- Each column can be hidden or shown
- Any column as criterion for sorting
- Overview and information at a glance even for large scale projects



The screenshot shows the LANconfig application window with a menu bar (File, Edit, Device, View, Tools, Help) and a tree view on the left containing 'Demo', 'Local', and 'Phones' folders. The main table displays a list of devices with the following columns: Name, Description, Address, Device Status, Progress, Device Type, Serial Number, MAC Address, and Firmware Version. The table contains 140 entries, including folders and individual devices like 'LICIPIZIG', 'MAGDEBURG', 'MERSEBURG', 'MUENCHEN', 'NUERNBERG', 'OSNABRUECK', 'RAVENSBURG', 'RAVENSBURG2', and several 'Router' entries. The status for all devices is 'Ok'.

Name	Description	Address	Device Status	Progress	Device Type	Serial Number	MAC Address	Firmware Version
Demo	Folder							
Local	Folder							
Phones	Folder							
LICIPIZIG		10.1.200.94	Ok		LANCOM DS...	002060600149	00:A0:57:0F:93:D7	6.20.0052 (21.12.2006)
MAGDEBURG		10.1.208.97	Ok		LANCOM DS...	002860600145	00:A0:57:0F:93:D2	6.28.0052 (21.12.2006)
MERSEBURG		10.1.208.91	Ok		LANCOM DS...	002860600150	00:A0:57:0F:93:D8	6.28.0052 (21.12.2006)
MUENCHEN		10.1.206.96	Ok		LANCOM DS...	002060600146	00:A0:57:0F:93:D3	6.20.0052 (21.12.2006)
NUERNBERG		10.1.203.106	Ok		LANCOM DS...	002860600141	00:A0:57:0F:93:CF	6.28.0052 (21.12.2006)
OSNABRUECK		10.1.205.57	Ok		LANCOM DS...	100379200028	00:A0:57:07:4F:62	6.28.0052 (21.12.2006)
RAVENSBURG		10.1.80.161	Ok		LANCOM 70...	001680600097	00:A0:57:0F:15:34	7.12.0000 (01.06.2007)
RAVENSBURG2		10.1.80.162	Ok		LANCOM 80...	870260000666	00:A0:57:0F:C9:34	7.52.0058 (25.04.2008)
Router001		10.1.205.206	Ok		LANCOM 16...	007840600087	00:A0:57:0F:06:09	6.32.0021 (29.03.2007)
Router002		10.1.205.214	Ok		LANCOM 16...	011800260033	00:A0:57:0E:F6:2B	6.32.0021 (29.03.2007)
Router003		10.1.200.106	Ok		LANCOM 16...	001390000613	00:A0:57:0E:F1:DA	6.32.0021 (29.03.2007)
Router004		10.1.209.239	Ok		LANCOM 16...	008500200110	00:A0:57:0E:EA:4B	6.32.0021 (29.03.2007)
Router005		10.1.208.2	Ok		LANCOM 16...	005800200035	00:A0:57:0E:E8:77	6.32.0021 (29.03.2007)
Router006		10.1.200.221	Ok		LANCOM 16...	001390000173	00:A0:57:0E:F3:2A	6.32.0021 (29.03.2007)

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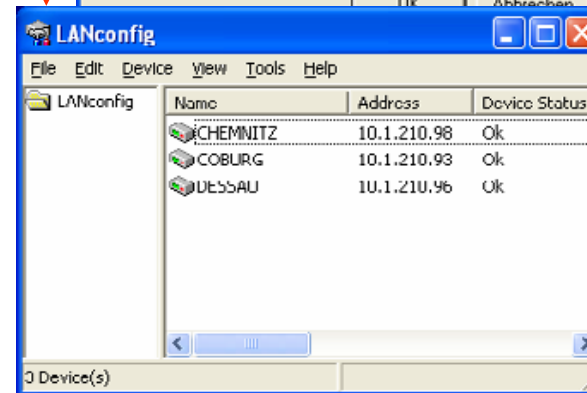
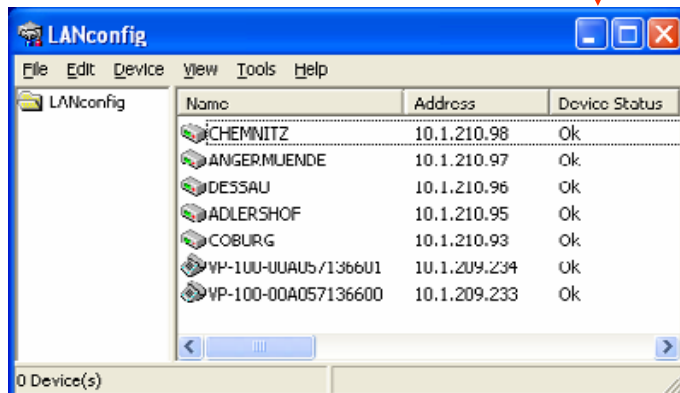
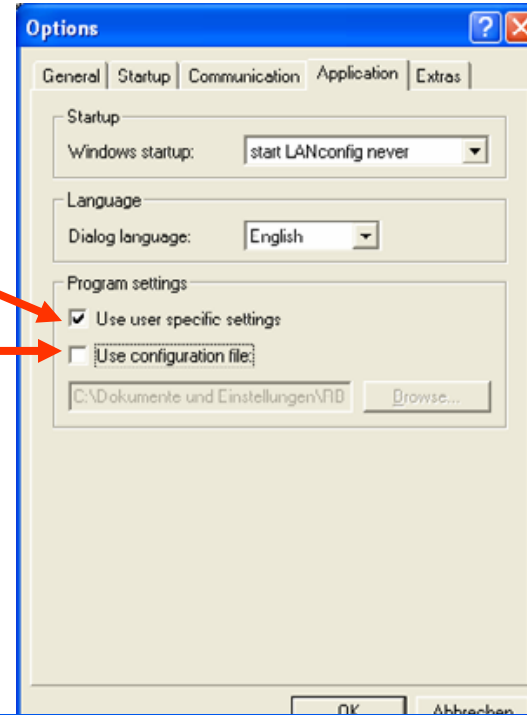
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LANconfig – Application settings per user or project

- Individual preferences can be managed per user or globally
 - Support for Windows Vista™ and users with restricted access (no write access right to program folders)
 - Common preferences file for a group of LANconfig users
- Different sets of preferences can be loaded for each project or customer



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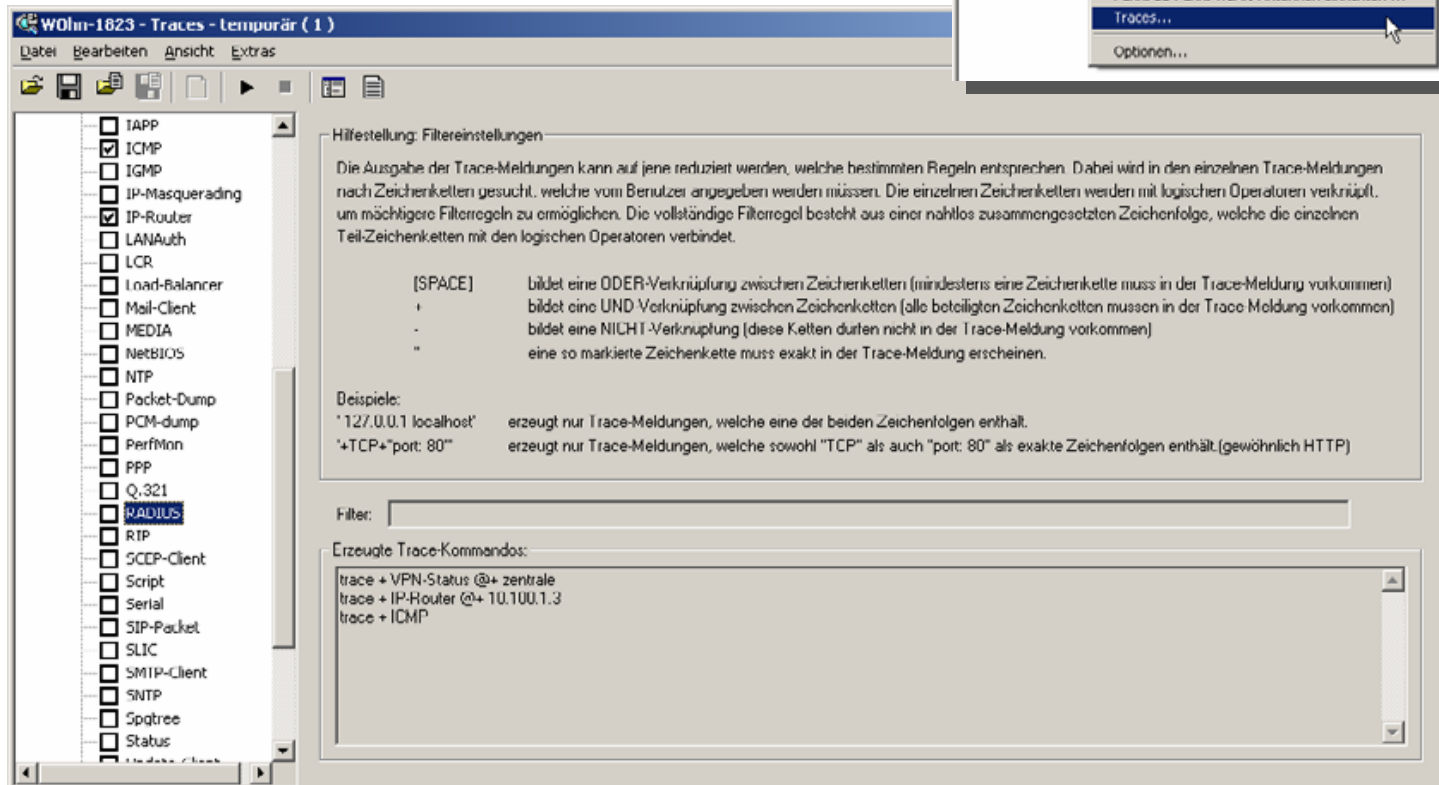
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LANmonitor – Diagnostics with TRACES in LANmonitor

■ Simple TRACE execution within LANmonitor

- The password is taken over automatically
- Supports the whole filter command set
- Im- and export of TRACE configurations (Complete TRACE commands can be prepared and sent to customers)



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LANmonitor – Diagnostics with TRACES in LANmonitor

Convenient reporting for performed TRACES

- List view for quick navigation even within large TRACE results

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The screenshot shows the LANmonitor Traces window titled "Wohn 1823 - Traces - temporär (1)". The window has a menu bar with "Datei", "Bearbeiten", "Ansicht", and "Extras". Below the menu is a toolbar with icons for file operations and navigation. The main area is divided into two panes. The top pane displays a list of traces with columns: "In...", "Tracekategorie", "Datum", "Zeitpunkt", and "Inhalt". The bottom pane shows a detailed view of the selected trace (line 16).

In...	Tracekategorie	Datum	Zeitpunkt	Inhalt
11	ICMP	2008/03/08	00:25:20,080	ICMP poll timeout for LCS; remote site answered during intervall; send poll frame to 10.1.1.11; ;
12	ICMP	2008/03/08	00:25:20,080	ICMP generate packet for Dest IP: 10.1.1.11: Echo request, ID: 430, Seq: 0, Tx (WAN, LCS) ; ;
13	ICMP	2008/03/08	00:25:20,110	ICMP Rx (WAN, LCS): Src IP: 10.1.1.11: Echo reply, ID: 430, Seq: 0; ;
14	ICMP	2008/03/08	00:25:20,110	ICMP Poll reply from LCS (10.1.1.11); ;
15	ICMP	2008/03/08	00:25:24,240	ICMP Rx (WAN, BELGACOM): Src IP: 88.16.75.172: Destination unreachable (Port unreachable); original packet; DstIP: 88.16.75.172, SrcIP: 8..
16	ICMP	2008/03/08	00:25:25,260	ICMP Rx (WAN, LCS): Src IP: 10.1.1.11: Echo request, ID: 1671, Seq: 0; ;
17	ICMP	2008/03/08	00:25:25,260	ICMP Tx (WAN, LCS): Dest IP: 10.1.1.11: Echo reply, ID: 1671, Seq: 0; ;
18	ICMP	2000/03/00	00:25:50,040	ICMP Rx (WAN, LCS): Src-IP: 10.1.1.9: Echo request, ID: 512, Seq: 29740; ;
19	ICMP	2000/03/00	00:25:50,040	ICMP Tx (WAN, LCS): Dest-IP: 10.1.1.9: Echo reply, ID: 512, Seq: 29740; ;
20	ICMP	2000/03/00	00:25:50,100	ICMP Rx (WAN, LCS): Src-IP: 10.1.1.9: Echo request, ID: 512, Seq: 33500; ;
21	ICMP	2000/03/00	00:25:50,100	ICMP Tx (WAN, LCS): Dest-IP: 10.1.1.9: Echo reply, ID: 512, Seq: 33500; ;
22	ICMP	2000/03/00	00:25:50,140	ICMP Rx (WAN, LCS): Src-IP: 10.1.1.9: Echo request, ID: 512, Seq: 34604; ;
23	ICMP	2008/03/08	00:25:50,140	ICMP Tx (WAN, LCS): Dest-IP: 10.1.1.9: Echo reply, ID: 512, Seq: 34604; ;
24	ICMP	2008/03/08	00:25:55,260	ICMP Rx (WAN, LCS): Src-IP: 10.1.1.11: Echo request, ID: 1703, Seq: 0; ;

ICMP Rx (WAN, BELGACOM): Src IP: 88.16.75.172: Destination unreachable (Port unreachable)
original packet:
DstIP: 88.16.75.172, SrcIP: 87.66.176.116, Len: 60, TOS: ----
Prot.: UDP (17), DstPort: 44672, SrcPort: 4672

=> discard

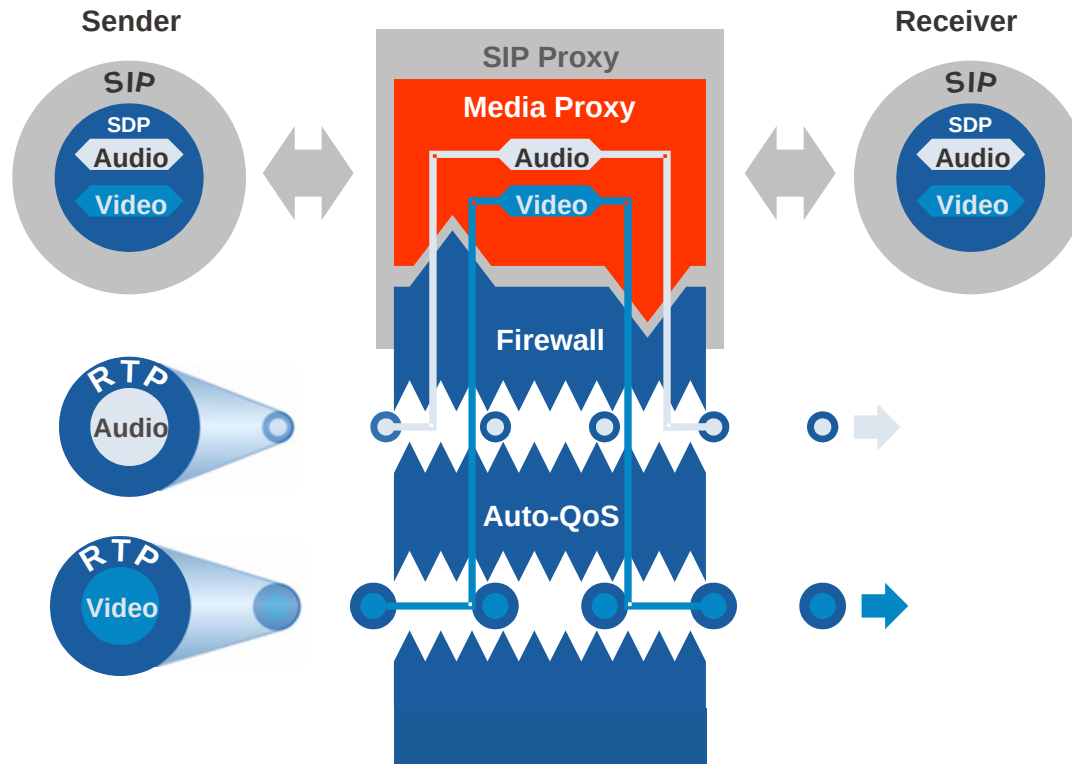
[ICMP] 2008/03/08 00:25:25,260
ICMP Rx (WAN, LCS): Src-IP: 10.1.1.11: Echo request, ID: 1671, Seq: 0
[ICMP] 2008/03/08 00:25:25,260
ICMP Tx (WAN, LCS): Dest-IP: 10.1.1.11: Echo reply, ID: 1671, Seq: 0
[ICMP] 2000/03/00 00:25:50,040
ICMP Rx (WAN, LCS): Src-IP: 10.1.1.9: Echo request, ID: 512, Seq: 29740
[ICMP] 2008/03/08 00:25:50,040
ICMP Tx (WAN, LCS): Dest-IP: 10.1.1.9: Echo reply, ID: 512, Seq: 29740

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VoIP – SIP with multiple media streams



- SDP in SIP can negotiate more than one media stream per session
- The firewall checks each data packet of every media stream
- **NEW:** The media proxy terminates each stream at either side (LAN/WAN)

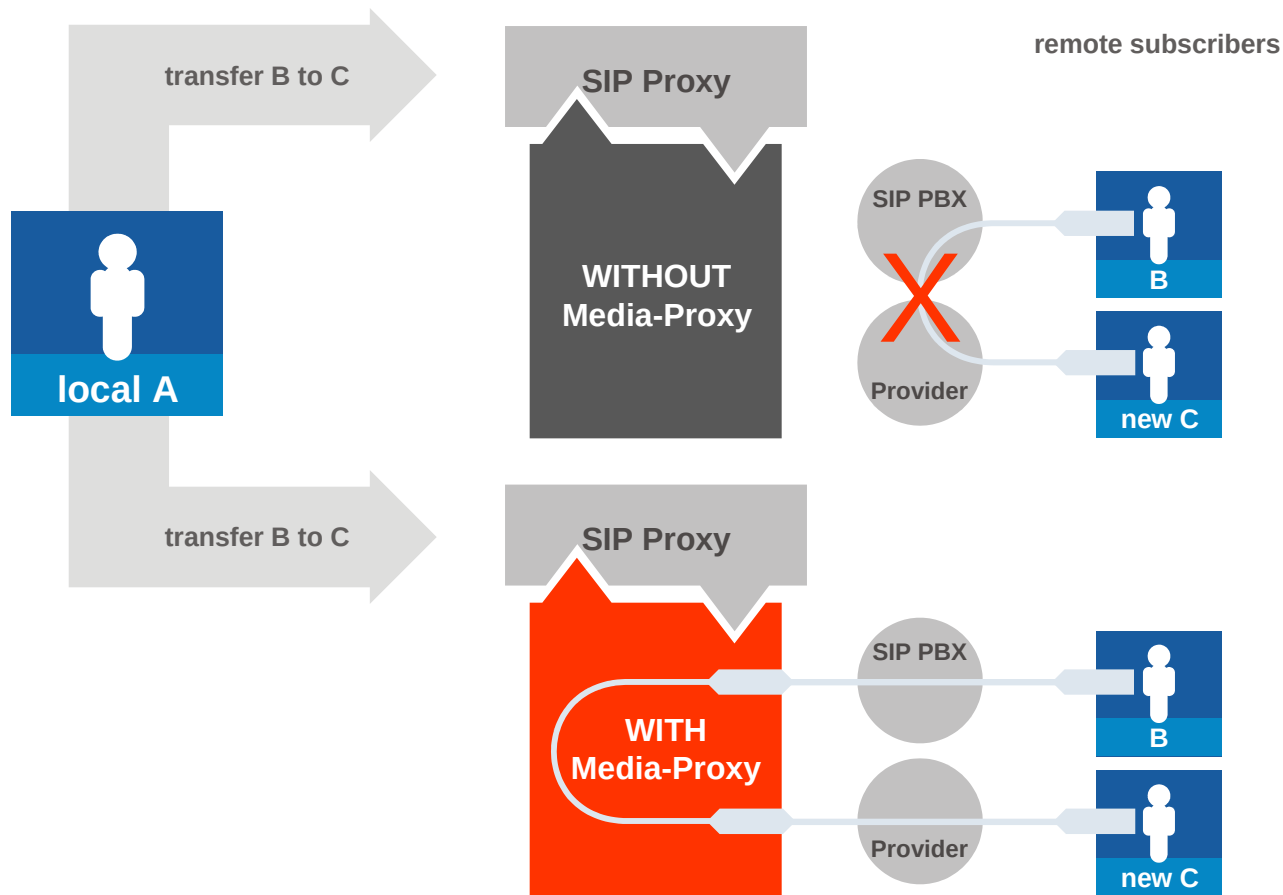
VoIP – Media proxy – the bottom line

- Making transfer possible where SIP signalisation refuses
 - Hold, swap and connect from any to any (SIP, ISDN, analog)*, broader field of use, even with problematic terminal devices
 - Example: Transferring a call to two subscribers behind different SIP providers
- Complex networks provoke trouble with routing of SIP (NAT/NAPT)
 - the media proxy changes all addresses and ports according to subnets
 - There is no further address translation necessary for terminal devices (e.g. STUN)
- Separation even at the data level for more security and control
 - Only media streams which are allowed according to SIP negotiation will pass through
 - No more „holes“ in the Firewall due to VoIP

*no transcoding

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VoIP – Media proxy for transfer across realms



- The media proxy is controlled by the SIP proxy
- The media proxy routes and mediates the media streams
→ Therefore even calls between parties which cannot reach each other directly with SIP routing can be connected via transfer

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Router – Extended RIPv2

Extended RIPv2 for large scale networks

- Extremely fast propagation of topology changes
- Accordingly even in enterprise environments applicable
 - Hop counts depending on accessibility
 - Poisoned reverse
 - Triggered update in the LAN with RFC 2453
 - Triggered update in the WAN with RFC 2091
- Precise control of routes to be learned or propagated
 - static routes that will be propagated in any case
 - extended filter options
- Detailed settings have to be entered via console (Command Line Interface)

RIP options

In this table you can define RIP settings and select which network they apply to.

RIP networks ...

RIP-1 mask: class

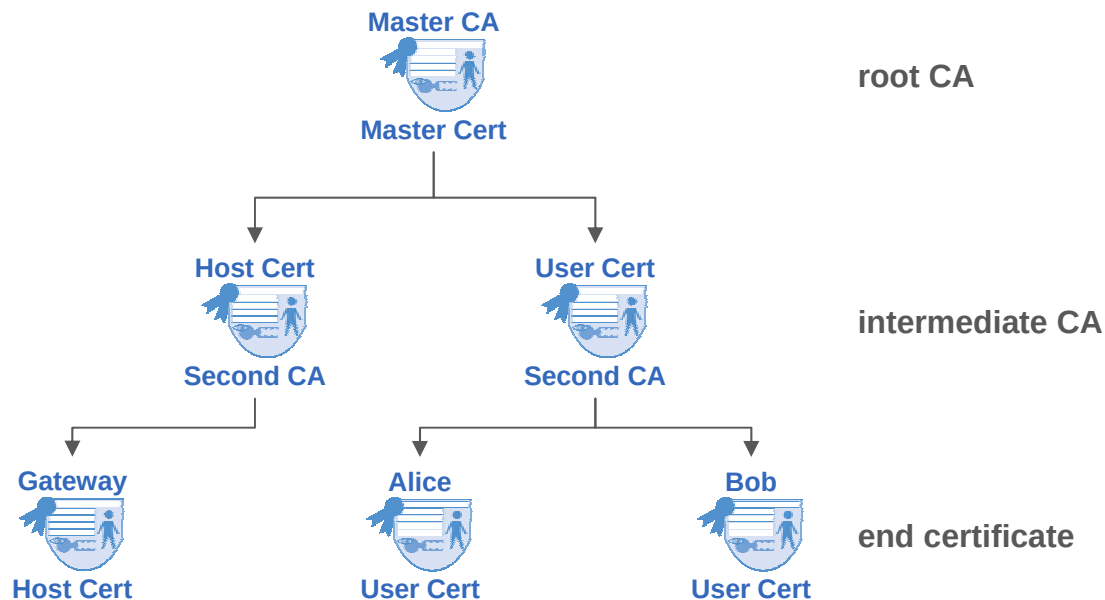
Configure here for each remote site separately the RIP support from WAN.

WAN RIP ...

VPN – Multi-level certificates

Multi-level certificates for CA hierarchies

- Up to now LANCOM VPN has been capable of single level certificate structures only
- As of LCOS 7.5 multi-level certificate structure are supported, too
- To achieve this the full PKCS#12 container including all necessary certificates has to be imported



WLAN – Public Spot Option including voucher print

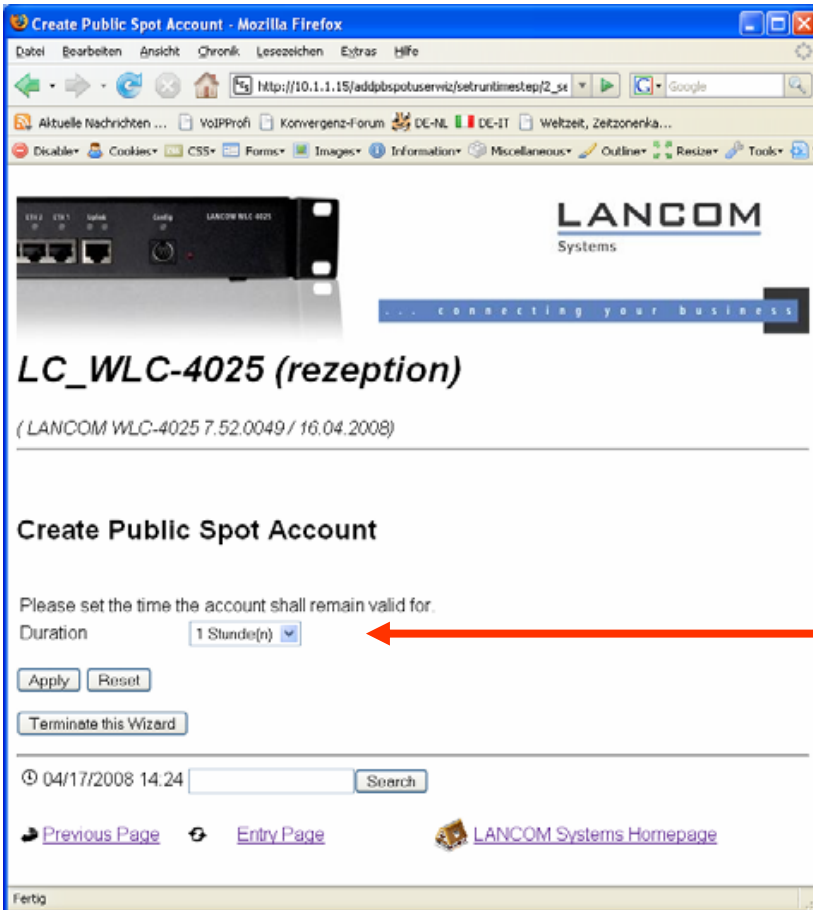
Printing vouchers is only 2 clicks away

- What is necessary?
 - PC (any MAC, Windows, Linux)
 - Printer (any!)
 - Best experience used along with LANCOM WLAN controller
- What for?
 - Creation and print out of guest vouchers
 - Automatic activation/deactivation of guest accesses
- What is NOT preconditional?
 - Accounting server
 - RADIUS server
 - Technical expertise

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WLAN – Public Spot Option incl. voucher print #1

Step #1: Enter duration



Create Public Spot Account - Mozilla Firefox

Http://10.1.1.15/addbpspotuserviz/setrunimestep/2_se

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... connecting your business

LC_WLC-4025 (rezeption)

(LANCOM WLC-4025 7.52.0049 / 16.04.2008)

Create Public Spot Account

Please set the time the account shall remain valid for.

Duration

Apply Reset

Terminate this Wizard

04/17/2008 14.24 Search

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Fertig

Useful presets:

- Predefined defaults for quick operation

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WLAN – Public Spot Option incl. voucher print #2

Step #2: Choose “Print” – that’s it!

Create Public Spot Account - Mozilla Firefox

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LC_WLC-4025 (rezeption)
(LANCOM WLC-4025 7.52.0049 / 16.04.2008)

Create Public Spot Account

Account data complete

SSID (Network Name):	LANCOM-VISITOR
User Name:	user12316
Password:	kaVjYv
Account ends:	17.04.2008 15:25:40

Click on 'Print' to print the account data

Print

Click on 'Save Account Data' to create the account.

Save Account Data

Terminate this Wizard

04/17/2008 14:25 **Search**

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Fertig

Know-how is unnecessary:

- SSID is chosen automatically (depending on Public Spot)
- Username with configurable 'prefix' and random number (e.g. 'MyHotel12345')
- Automatically generated password (configurable length)
- Automatic activation of account for guest access

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WLAN – Public Spot Option incl. voucher print #3

Step #3: Print voucher!



Voucher design can be edited!

- Choice of any bitmap format (JPG, GIF, PNG, TIF, ...)
- 64 kB limit in size
- Any printer can be used (standard PC printer for MAC/ Linux/Windows)

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WLAN – DFS conform to ETSI 301 893 version 1.3

■ DFS II

- Increased DFS requirements
- Other/more radar patterns
- Conformance to ETSI 301 893 version 1.3
- Mandatory for all 5 GHz Access Points brought into market from 1st April 2008 on

■ All LANCOM Access Points are conform

- with LCOS 7.3 all devices up to IEEE 802.11abg
- with LCOS 7.5 all devices up to IEEE 802.11n



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WLAN Controller upgrade – overview

What's new?

- NEW: Voucher print wizard for guest access accounts
- NEW: Up to 100 Access Points per controller
- NEW: RF optimization (automatic channel configuration)
- NEW: Auto-provisioning for firmwares and scripts
- NEW: Support for 802.11n APs
- Plus: Many additional enhancements
 - VLAN handling
 - Management for remote Access Points

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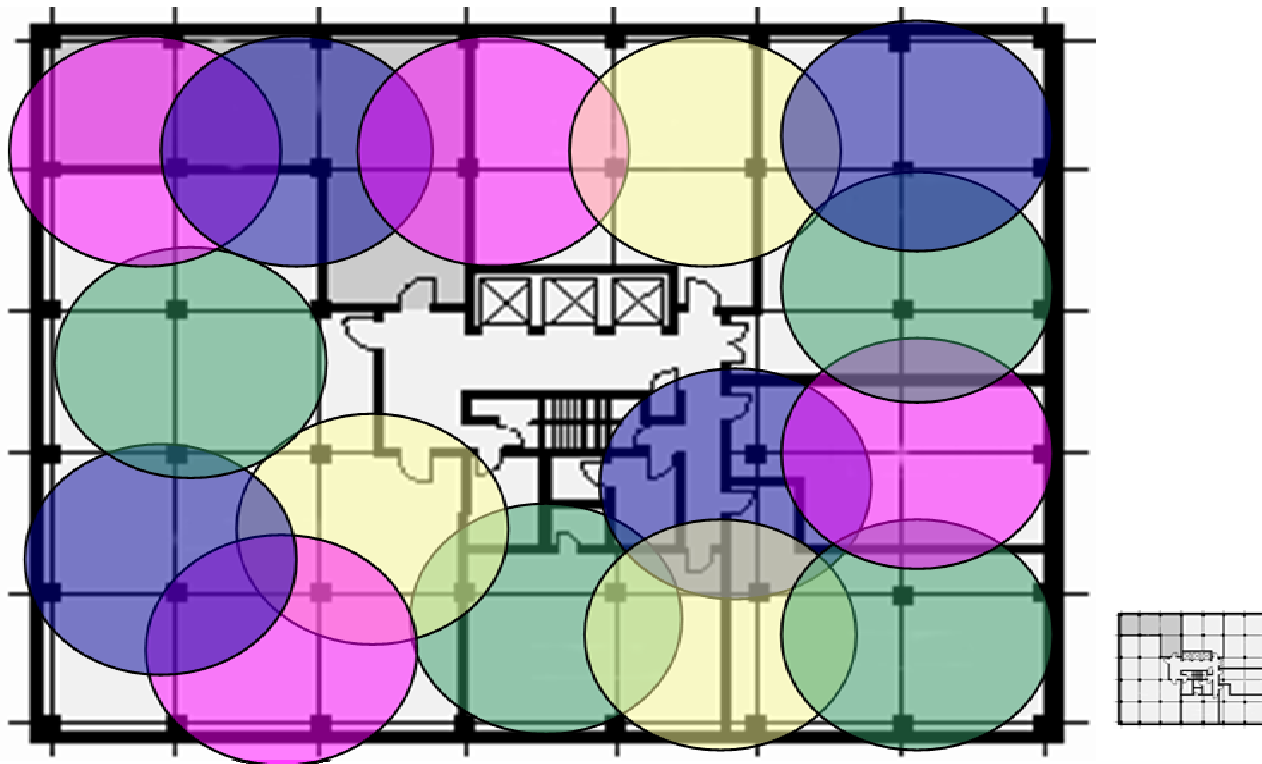
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WLAN Controller upgrade – Automatic RF optimization

Centrally controlled automatic WLAN channel configuration

- Optimal WLAN performance due to WLAN controller
 - Manual start of channel optimization
 - Finally all detected channel settings will be stored in the AP



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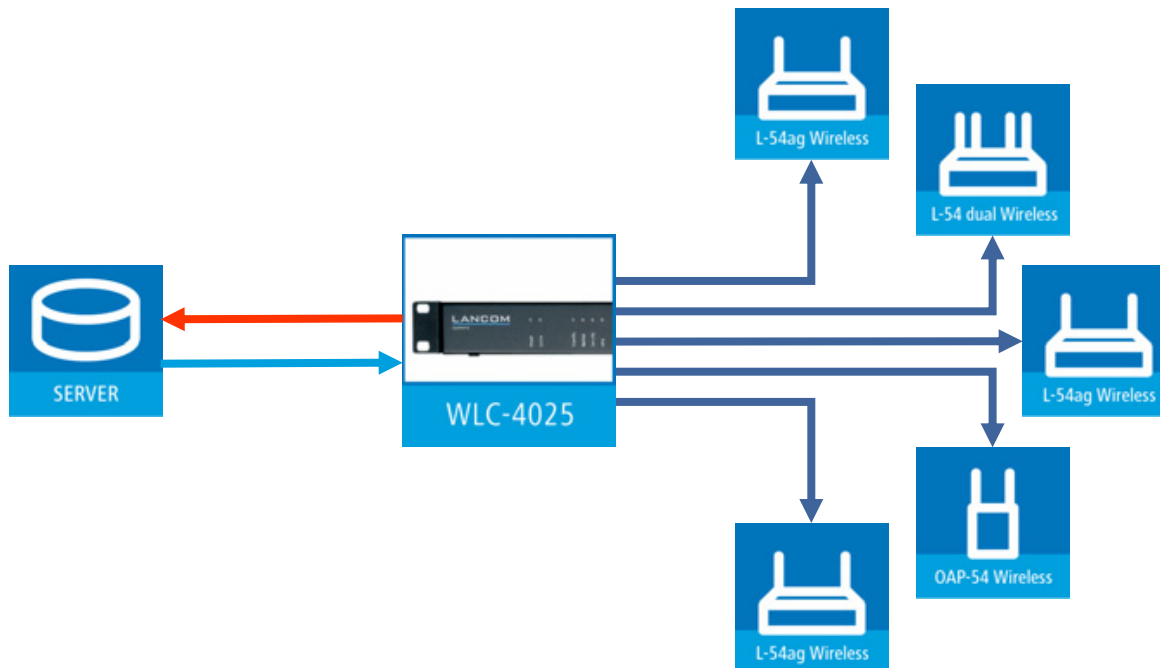
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WLAN Controller upgrade – Auto-provisioning

- Auto-provisioning of firmwares and scripts by the controller
- Convenient management of large scale installations
 - Switching to a new version at defined time of day (e.g. at night)
 - Automatic ,version correction, for new Access Points (with newer firmware)
- With scripting the full LCOS feature set is at hand (e.g. besides WLAN settings)



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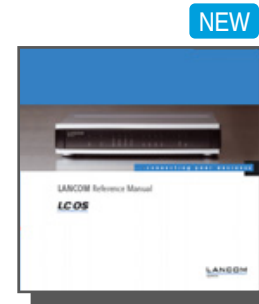
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Further information

Detailed information about all new functions of LCOS 7.5 is available in the new addendum to the LCOS reference manual

for free at <http://www.lancom.de/>

A detailed revision history is in the release notes of LCOS 7.5



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Service und Support

We wish you every success with your new LANCOM product!

We look forward to your **praise** and **criticism, suggestions** or **questions** to
info@lancom.de.

The latest information about Service and Support can be found on our Support flyer,
our Internet site or from our **Knowledge Base** at
www.lancom-systems.de/eu/support.

If the manual and our current support topics in the Internet are of no help to you, then
our **Support Hotline** is available to you in Germany on work days from 9:00 am
to 5:00 pm under

0900-1-LANCOM (= 0900-1-526266)

(1.24 € / Min. from German landlines).

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