



Overview LANCOM Software Version 6.22

September 2006

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LCOS 6.22
[LANCOM OPERATING SYSTEM]

LANCOM
Systems

Introduction



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

LCOS version 6.22 is focussed on security for wireless LAN networks.

In the following pages we would like to introduce you to the new possibilities for visualizing your wireless LAN to help you to maintain full control over the security and availability of your WLAN installations.

You will also find a short description of the new VoIP, VPN and management functions provided to you by LCOS 6.22.



Highlights LCOS 6.22

LCOS 6.22 *[LANCOM OPERATING SYSTEM]*

WLAN

- Background scanning of all WLAN channels
- To detect external access points and clients

VoIP

- New voice codec support
- Integration of remote SIP clients

VPN

- Automatic learning from remote networks – proadaptive VPN
- Automatic VPN keep-alive

LANconfig / LANmonitor / WEBconfig

- WLANmonitor with rogue AP detection / rogue client detection
- Script file export from LANconfig
- New Internet Access Wizard in WEBconfig



WLAN: What is rogue AP detection?

WLAN devices that make unauthorized attempts at accessing a wireless LAN by posing as an access point (AP) or client are called rogues.

The following dangers can arise through rogue APs or clients:

- Disturbance of your own WLAN network
 - By transmissions on the same channel
 - Own clients logging in to external access points
- Break-in attempts / security loopholes
 - External (or poorly configured) access points positioned in your own network

LCOS 6.22 features the following functions for detecting all WLAN stations within range:

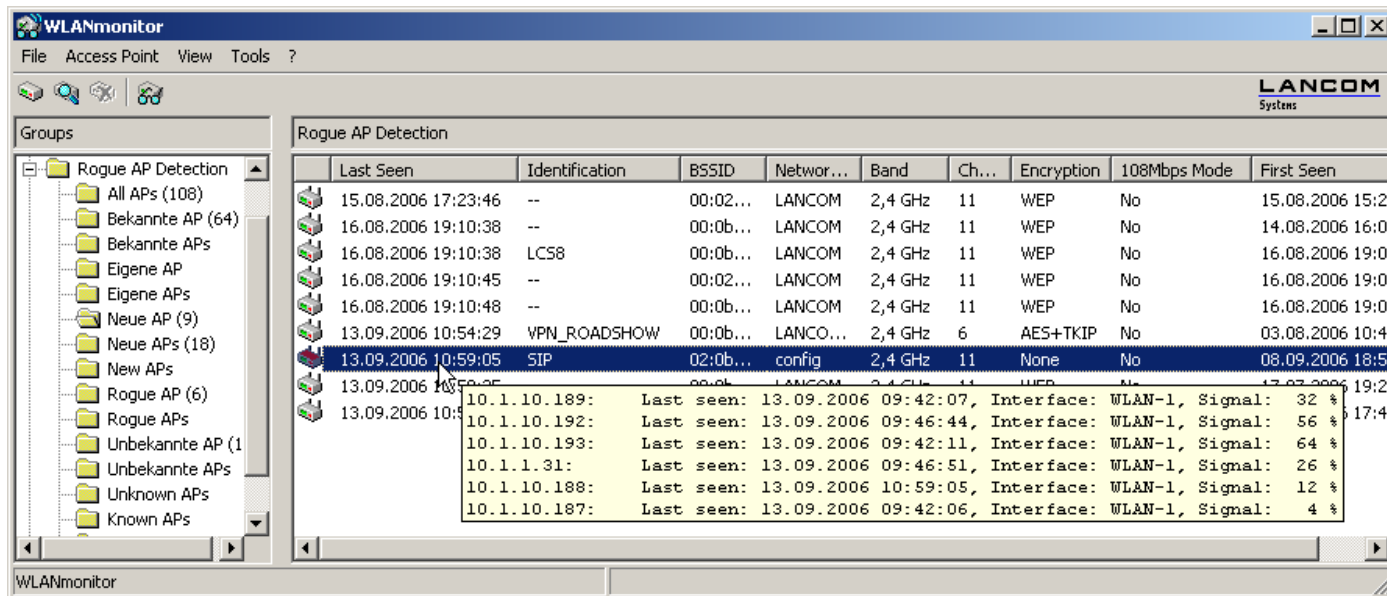
- Background scanning
 - Brief switching (just a few ms) to other channels without interrupting the existing wireless connection
 - Across the entire frequency band as set (2.4 or 5 GHz)
- Client detection
 - Detection of WLAN clients based on their probe requests



WLAN: Detection of external access points

Information about all WLAN access points found within range can be displayed as follows:

- Channel used, network name (SSID), and the encryption method in use
- Signal strength of a rogue at the access points which detected it



The screenshot shows the WLANmonitor application window. The title bar reads 'WLANmonitor'. The menu bar includes 'File', 'Access Point', 'View', 'Tools', and '?'. The interface is divided into a left sidebar and a main table area. The sidebar, titled 'Groups', contains a tree view with folders like 'Rogue AP Detection', 'All APs (108)', 'Bekannte AP (64)', 'Eigene AP', 'Eigene APs', 'Neue AP (9)', 'Neue APs (18)', 'New APs', 'Rogue AP (6)', 'Rogue APs', 'Unbekannte AP (1)', 'Unbekannte APs', 'Unknown APs', and 'Known APs'. The main table, titled 'Rogue AP Detection', has columns: 'Last Seen', 'Identification', 'BSSID', 'Networ...', 'Band', 'Ch...', 'Encryption', '108Mbps Mode', and 'First Seen'. A tooltip is visible over a row, displaying detailed information for an access point with IP 10.1.10.187, including its last seen time, interface (WLAN-1), and signal strength (4%).

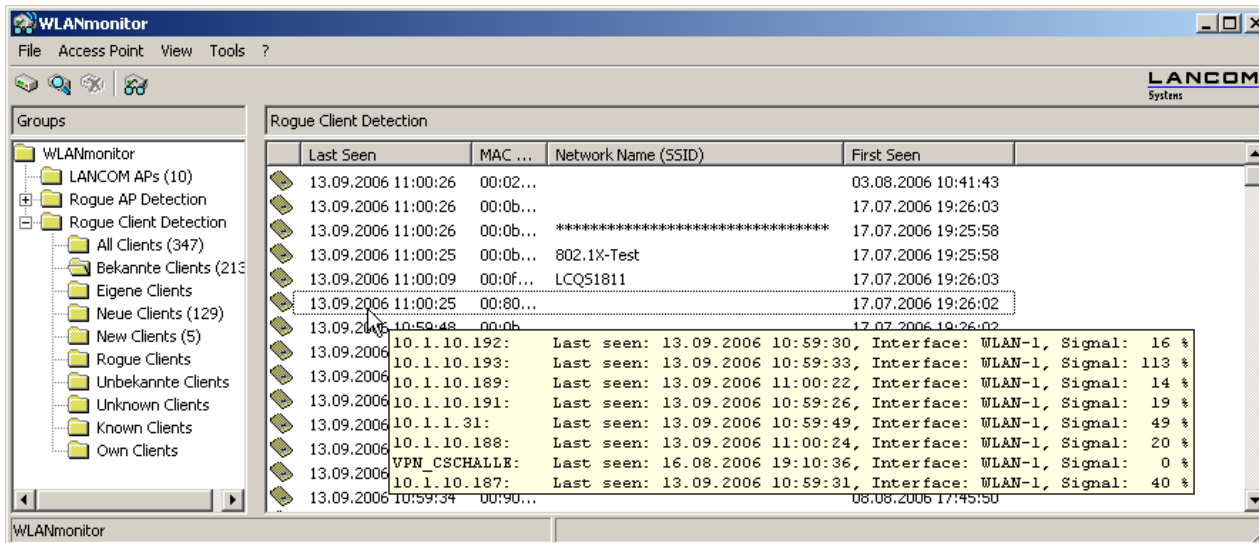
Last Seen	Identification	BSSID	Networ...	Band	Ch...	Encryption	108Mbps Mode	First Seen
15.08.2006 17:23:46	--	00:02...	LANCOM	2,4 GHz	11	WEP	No	15.08.2006 15:20
16.08.2006 19:10:38	--	00:0b...	LANCOM	2,4 GHz	11	WEP	No	14.08.2006 16:00
16.08.2006 19:10:38	LCS8	00:0b...	LANCOM	2,4 GHz	11	WEP	No	16.08.2006 19:00
16.08.2006 19:10:45	--	00:02...	LANCOM	2,4 GHz	11	WEP	No	16.08.2006 19:00
16.08.2006 19:10:48	--	00:0b...	LANCOM	2,4 GHz	11	WEP	No	16.08.2006 19:00
13.09.2006 10:54:29	VPN_ROADSHOW	00:0b...	LANCO...	2,4 GHz	6	AES+TKIP	No	03.08.2006 10:40
13.09.2006 10:59:05	SIP	02:0b...	config	2,4 GHz	11	None	No	08.09.2006 18:50
13.09.2006 10:59:05	10.1.10.189:	Last seen: 13.09.2006 09:42:07,	Interface: WLAN-1,	Signal: 32 %				
13.09.2006 10:59:05	10.1.10.192:	Last seen: 13.09.2006 09:46:44,	Interface: WLAN-1,	Signal: 56 %				
13.09.2006 10:59:05	10.1.10.193:	Last seen: 13.09.2006 09:42:11,	Interface: WLAN-1,	Signal: 64 %				
13.09.2006 10:59:05	10.1.1.31:	Last seen: 13.09.2006 09:46:51,	Interface: WLAN-1,	Signal: 26 %				
13.09.2006 10:59:05	10.1.10.188:	Last seen: 13.09.2006 10:59:05,	Interface: WLAN-1,	Signal: 12 %				
13.09.2006 10:59:05	10.1.10.187:	Last seen: 13.09.2006 09:42:06,	Interface: WLAN-1,	Signal: 4 %				



WLAN: Client detection

Information about all WLAN clients found within range can be displayed as follows:

- MAC address, name and signal strength of a rogue client at the access points which detected it



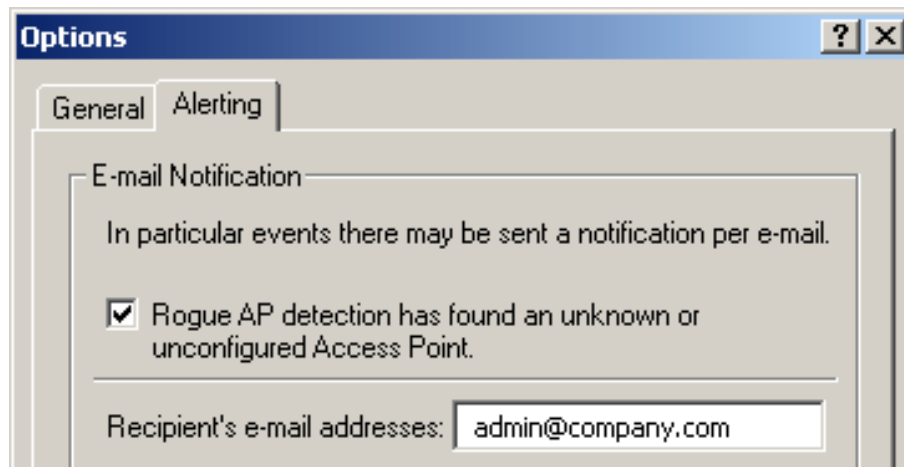
The screenshot shows the LANCOM WLANmonitor application window. The left sidebar displays a tree view of client groups, including 'Rogue Client Detection'. The main window displays a table of detected clients with the following columns: Last Seen, MAC, Network Name (SSID), and First Seen. A detailed view of a selected client shows its IP address, last seen time, interface, and signal strength.

Last Seen	MAC ...	Network Name (SSID)	First Seen
13.09.2006 11:00:26	00:02...		03.08.2006 10:41:43
13.09.2006 11:00:26	00:0b...		17.07.2006 19:26:03
13.09.2006 11:00:26	00:0b...	*****	17.07.2006 19:25:58
13.09.2006 11:00:25	00:0b...	802.1X-Test	17.07.2006 19:25:58
13.09.2006 11:00:09	00:0f...	LCQ51811	17.07.2006 19:26:03
13.09.2006 11:00:25	00:80...		17.07.2006 19:26:02
13.09.2006 10:59:48	00:0b...		17.07.2006 19:26:02
13.09.2006	10.1.10.192:	Last seen: 13.09.2006 10:59:30, Interface: WLAN-1, Signal: 16 %	
13.09.2006	10.1.10.193:	Last seen: 13.09.2006 10:59:33, Interface: WLAN-1, Signal: 113 %	
13.09.2006	10.1.10.189:	Last seen: 13.09.2006 11:00:22, Interface: WLAN-1, Signal: 14 %	
13.09.2006	10.1.10.191:	Last seen: 13.09.2006 10:59:26, Interface: WLAN-1, Signal: 19 %	
13.09.2006	10.1.1.31:	Last seen: 13.09.2006 10:59:49, Interface: WLAN-1, Signal: 49 %	
13.09.2006	10.1.10.188:	Last seen: 13.09.2006 11:00:24, Interface: WLAN-1, Signal: 20 %	
13.09.2006	VPN_CSCHALLE:	Last seen: 16.08.2006 19:10:36, Interface: WLAN-1, Signal: 0 %	
13.09.2006	10.1.10.187:	Last seen: 13.09.2006 10:59:31, Interface: WLAN-1, Signal: 40 %	
13.09.2006 10:59:34	00:90...		08.08.2006 17:45:50



WLAN: Rogue AP detection - management

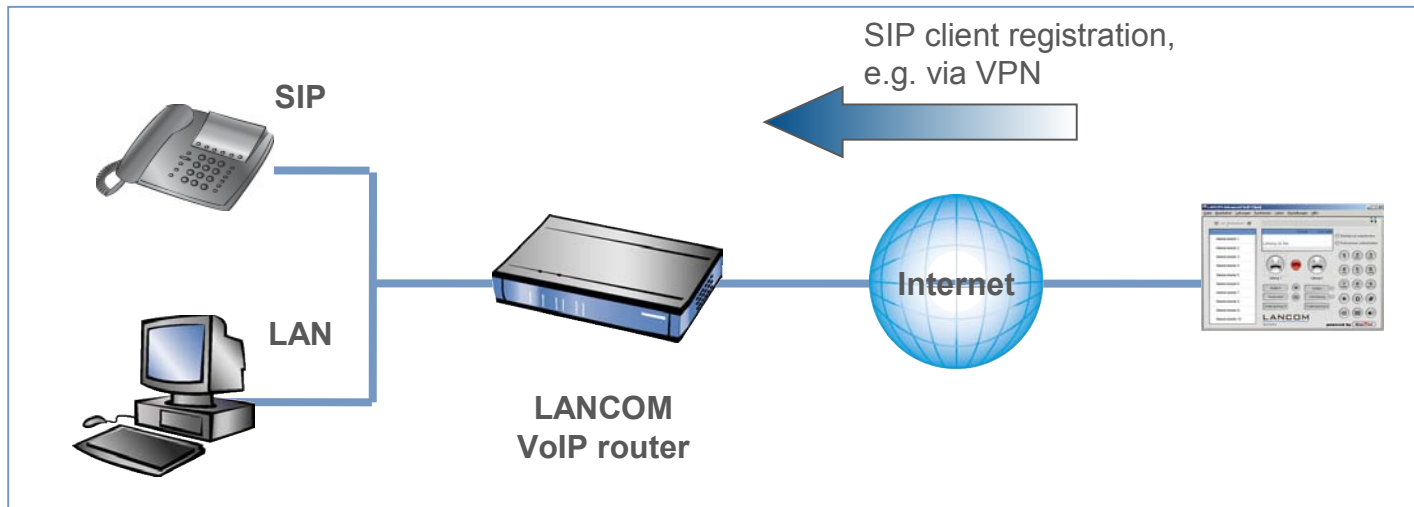
- All discovered access points can be categorized into groups by moving them into folders with drag & drop (e.g. own APs, unknown APs, etc.)
- If new rogue access points are detected, WLANmonitor can provide e-mail notification, if desired.



VoIP: Integration of remote SIP clients

SIP clients can now be integrated into the VoIP Call Manager over WAN connections

- For example, mobile users with a notebook and SIP client
- The same VoIP Call Manager functions are available to them as enjoyed by local terminal equipment (depending on the model: SIP, ISDN or analog)



VoIP: New voice codecs

The codec G.729a is especially designed for transmissions over low-bandwidth connections.

Properties of this codec are as follows:

- High compression (8 kbps net data rate, 32 kbps gross IP data rate) with clearly audible speech
- Widespread in VoIP terminal equipment

As opposed to non-compressed voice signals (64 kbps net, 80 kbps at IP level), an ADSL connection with 128 kbps upstream can support 4 parallel voice calls instead of just one.

If, however, the highest possible quality of voice transfer is important, then the codec G.722 can be used.

- Voice quality superior to ISDN due to 16 kHz sampling rate

These new voice codecs are available for "VoIP-ready" devices with the "VoIP Advanced Option" and are activated as standard in all "VoIP-integrated" products.



VPN: What is "proadaptive VPN"?

In cases where large network infrastructures are coupled via VPN, it is advantageous for the costs and effort in configuring a new subnetwork to be limited to the local VPN router and that the central dial-in router configuration remains unchanged.

If simplified dial-in with certificates is activated in the LANCOM router at the headquarters, then a remote router can communicate its own network to the VPN router at headquarters during the IKE negotiation in phase 2. No individual configuration is necessary.

The result: Simple roll-out of VPN installations!

- All VPN tunnels use a common configuration template
- Automatic learning of the remote network based on IPSec phase 2 information
- Access rights based purely on certificates
 - Temporary access for service providers & maintenance
 - Blockage with short-term certificates or CRLs

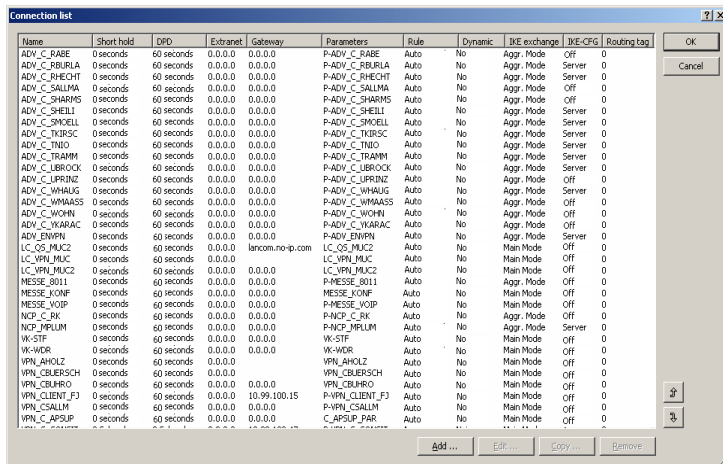


VPN: Proadaptive VPN - overview

No more inconvenient configuration of remote sites!

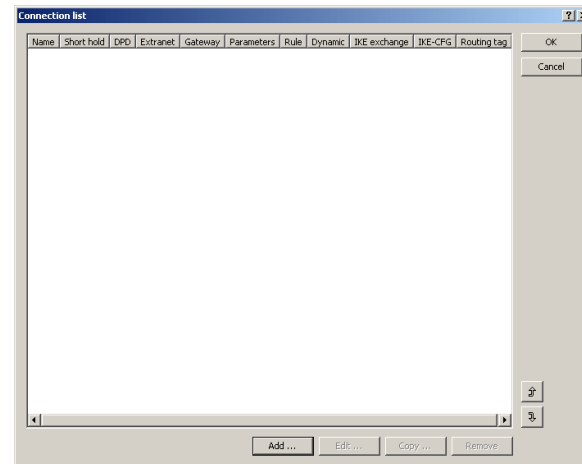
- The VPN gateway learns all of the required information during connection establishment
- Propagation of routes from VPN remote sites, e.g. per RIPv2
- Access can be revoked conveniently via the CRL

VPN connection list until now:



Name	Short hold	DPD	Extranet	Gateway	Parameters	Rule	Dynamic	IKE exchange	IKE-CPG	Routing tag
ADV_C_RABE	0 seconds	60 seconds	0.0.0.0	0.0.0.0	P-ADV_C_RABE	Auto	No	Aggr. Mode	Off	0
ADV_C_RBURLA	0 seconds	60 seconds	0.0.0.0	0.0.0.0	P-ADV_C_RBURLA	Auto	No	Aggr. Mode	Server	0
ADV_C_RHECHT	0 seconds	60 seconds	0.0.0.0	0.0.0.0	P-ADV_C_RHECHT	Auto	No	Aggr. Mode	Server	0
ADV_C_SALLWA	0 seconds	60 seconds	0.0.0.0	0.0.0.0	P-ADV_C_SALLWA	Auto	No	Aggr. Mode	Off	0
ADV_C_SHARMS	0 seconds	60 seconds	0.0.0.0	0.0.0.0	P-ADV_C_SHARMS	Auto	No	Aggr. Mode	Off	0
ADV_C_SHELLI	0 seconds	60 seconds	0.0.0.0	0.0.0.0	P-ADV_C_SHELLI	Auto	No	Aggr. Mode	Server	0
ADV_C_SMOELL	0 seconds	60 seconds	0.0.0.0	0.0.0.0	P-ADV_C_SMOELL	Auto	No	Aggr. Mode	Server	0
ADV_C_TKIRSC	0 seconds	60 seconds	0.0.0.0	0.0.0.0	P-ADV_C_TKIRSC	Auto	No	Aggr. Mode	Server	0
ADV_C_TINDO	0 seconds	60 seconds	0.0.0.0	0.0.0.0	P-ADV_C_TINDO	Auto	No	Aggr. Mode	Server	0
ADV_C_TRAMM	0 seconds	60 seconds	0.0.0.0	0.0.0.0	P-ADV_C_TRAMM	Auto	No	Aggr. Mode	Server	0
ADV_C_LBRIOCK	0 seconds	60 seconds	0.0.0.0	0.0.0.0	P-ADV_C_LBRIOCK	Auto	No	Aggr. Mode	Server	0
ADV_C_LBRINZ	0 seconds	60 seconds	0.0.0.0	0.0.0.0	P-ADV_C_LBRINZ	Auto	No	Aggr. Mode	Off	0
ADV_C_WHAUG	0 seconds	60 seconds	0.0.0.0	0.0.0.0	P-ADV_C_WHAUG	Auto	No	Aggr. Mode	Server	0
ADV_C_WHARAS	0 seconds	60 seconds	0.0.0.0	0.0.0.0	P-ADV_C_WHARAS	Auto	No	Aggr. Mode	Off	0
ADV_C_WOHN	0 seconds	60 seconds	0.0.0.0	0.0.0.0	P-ADV_C_WOHN	Auto	No	Aggr. Mode	Off	0
ADV_C_YKARAC	0 seconds	60 seconds	0.0.0.0	0.0.0.0	P-ADV_C_YKARAC	Auto	No	Aggr. Mode	Off	0
ADV_ENVPN	0 seconds	60 seconds	0.0.0.0	0.0.0.0	P-ADV_ENVPN	Auto	No	Aggr. Mode	Server	0
LC_QS_MUC2	0 seconds	60 seconds	0.0.0.0	lancom.no-ip.com	LC_QS_MUC2	Auto	No	Main Mode	Off	0
LC_VPN_MUC	0 seconds	60 seconds	0.0.0.0	0.0.0.0	LC_VPN_MUC	Auto	No	Main Mode	Off	0
LC_VPN_MUC2	0 seconds	60 seconds	0.0.0.0	0.0.0.0	LC_VPN_MUC2	Auto	No	Main Mode	Off	0
MESSE_0011	0 seconds	60 seconds	0.0.0.0	0.0.0.0	P-MESSE_0011	Auto	No	Aggr. Mode	Off	0
MESSE_KONF	0 seconds	60 seconds	0.0.0.0	0.0.0.0	MESSE_KONF	Auto	No	Main Mode	Off	0
MESSE_VOIP	0 seconds	60 seconds	0.0.0.0	0.0.0.0	P-MESSE_VOIP	Auto	No	Main Mode	Off	0
NKP_C_BH	0 seconds	60 seconds	0.0.0.0	0.0.0.0	P-NKP_C_BH	Auto	No	Aggr. Mode	Off	0
NKP_WPLUM	0 seconds	60 seconds	0.0.0.0	0.0.0.0	P-NKP_WPLUM	Auto	No	Aggr. Mode	Server	0
W-STF	0 seconds	60 seconds	0.0.0.0	0.0.0.0	W-STF	Auto	No	Main Mode	Off	0
W-WOR	0 seconds	60 seconds	0.0.0.0	0.0.0.0	W-WOR	Auto	No	Main Mode	Off	0
VPN_AHOLZ	0 seconds	60 seconds	0.0.0.0	0.0.0.0	VPN_AHOLZ	Auto	No	Main Mode	Off	0
VPN_CBUERSCH	0 seconds	60 seconds	0.0.0.0	0.0.0.0	VPN_CBUERSCH	Auto	No	Main Mode	Off	0
VPN_CBUHRO	0 seconds	60 seconds	0.0.0.0	0.0.0.0	VPN_CBUHRO	Auto	No	Main Mode	Off	0
VPN_CLIENT_FJ	0 seconds	60 seconds	0.0.0.0	10.99.100.15	P-VPN_CLIENT_FJ	Auto	No	Main Mode	Off	0
VPN_CSALM	0 seconds	60 seconds	0.0.0.0	0.0.0.0	P-VPN_CSALM	Auto	No	Main Mode	Off	0
VPN_C_APSUP	0 seconds	60 seconds	0.0.0.0	0.0.0.0	C_APSUP_PAR	Auto	No	Main Mode	Off	0

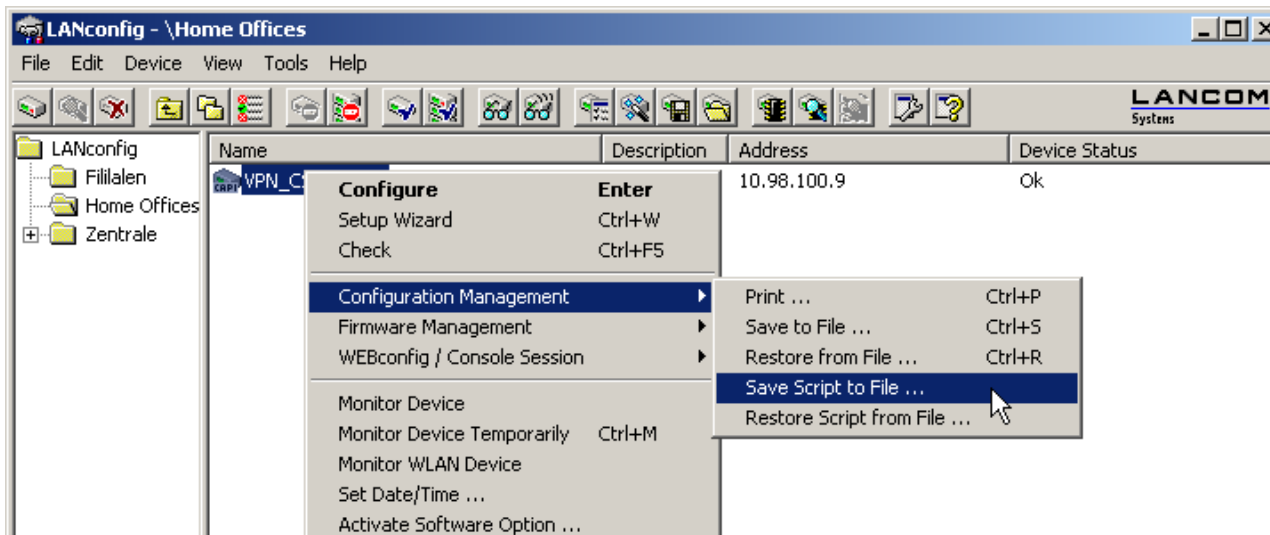
As of LCOS 6.22:



Name	Short hold	DPD	Extranet	Gateway	Parameters	Rule	Dynamic	IKE exchange	IKE-CPG	Routing tag
ADV_C_RABE	0 seconds	60 seconds	0.0.0.0	0.0.0.0	P-ADV_C_RABE	Auto	No	Aggr. Mode	Off	0
ADV_C_RBURLA	0 seconds	60 seconds	0.0.0.0	0.0.0.0	P-ADV_C_RBURLA	Auto	No	Aggr. Mode	Server	0
ADV_C_RHECHT	0 seconds	60 seconds	0.0.0.0	0.0.0.0	P-ADV_C_RHECHT	Auto	No	Aggr. Mode	Server	0
ADV_C_SALLWA	0 seconds	60 seconds	0.0.0.0	0.0.0.0	P-ADV_C_SALLWA	Auto	No	Aggr. Mode	Off	0
ADV_C_SHARMS	0 seconds	60 seconds	0.0.0.0	0.0.0.0	P-ADV_C_SHARMS	Auto	No	Aggr. Mode	Off	0
ADV_C_SHELLI	0 seconds	60 seconds	0.0.0.0	0.0.0.0	P-ADV_C_SHELLI	Auto	No	Aggr. Mode	Server	0
ADV_C_SMOELL	0 seconds	60 seconds	0.0.0.0	0.0.0.0	P-ADV_C_SMOELL	Auto	No	Aggr. Mode	Server	0
ADV_C_TKIRSC	0 seconds	60 seconds	0.0.0.0	0.0.0.0	P-ADV_C_TKIRSC	Auto	No	Aggr. Mode	Server	0
ADV_C_TINDO	0 seconds	60 seconds	0.0.0.0	0.0.0.0	P-ADV_C_TINDO	Auto	No	Aggr. Mode	Server	0
ADV_C_TRAMM	0 seconds	60 seconds	0.0.0.0	0.0.0.0	P-ADV_C_TRAMM	Auto	No	Aggr. Mode	Server	0
ADV_C_LBRIOCK	0 seconds	60 seconds	0.0.0.0	0.0.0.0	P-ADV_C_LBRIOCK	Auto	No	Aggr. Mode	Server	0
ADV_C_LBRINZ	0 seconds	60 seconds	0.0.0.0	0.0.0.0	P-ADV_C_LBRINZ	Auto	No	Aggr. Mode	Off	0
ADV_C_WHAUG	0 seconds	60 seconds	0.0.0.0	0.0.0.0	P-ADV_C_WHAUG	Auto	No	Aggr. Mode	Server	0
ADV_C_WHARAS	0 seconds	60 seconds	0.0.0.0	0.0.0.0	P-ADV_C_WHARAS	Auto	No	Aggr. Mode	Off	0
ADV_C_WOHN	0 seconds	60 seconds	0.0.0.0	0.0.0.0	P-ADV_C_WOHN	Auto	No	Aggr. Mode	Off	0
ADV_C_YKARAC	0 seconds	60 seconds	0.0.0.0	0.0.0.0	P-ADV_C_YKARAC	Auto	No	Aggr. Mode	Off	0
ADV_ENVPN	0 seconds	60 seconds	0.0.0.0	0.0.0.0	P-ADV_ENVPN	Auto	No	Aggr. Mode	Server	0
LC_QS_MUC2	0 seconds	60 seconds	0.0.0.0	lancom.no-ip.com	LC_QS_MUC2	Auto	No	Main Mode	Off	0
LC_VPN_MUC	0 seconds	60 seconds	0.0.0.0	0.0.0.0	LC_VPN_MUC	Auto	No	Main Mode	Off	0
LC_VPN_MUC2	0 seconds	60 seconds	0.0.0.0	0.0.0.0	LC_VPN_MUC2	Auto	No	Main Mode	Off	0
MESSE_0011	0 seconds	60 seconds	0.0.0.0	0.0.0.0	P-MESSE_0011	Auto	No	Aggr. Mode	Off	0
MESSE_KONF	0 seconds	60 seconds	0.0.0.0	0.0.0.0	MESSE_KONF	Auto	No	Main Mode	Off	0
MESSE_VOIP	0 seconds	60 seconds	0.0.0.0	0.0.0.0	P-MESSE_VOIP	Auto	No	Main Mode	Off	0
NKP_C_BH	0 seconds	60 seconds	0.0.0.0	0.0.0.0	P-NKP_C_BH	Auto	No	Aggr. Mode	Off	0
NKP_WPLUM	0 seconds	60 seconds	0.0.0.0	0.0.0.0	P-NKP_WPLUM	Auto	No	Aggr. Mode	Server	0
W-STF	0 seconds	60 seconds	0.0.0.0	0.0.0.0	W-STF	Auto	No	Main Mode	Off	0
W-WOR	0 seconds	60 seconds	0.0.0.0	0.0.0.0	W-WOR	Auto	No	Main Mode	Off	0
VPN_AHOLZ	0 seconds	60 seconds	0.0.0.0	0.0.0.0	VPN_AHOLZ	Auto	No	Main Mode	Off	0
VPN_CBUERSCH	0 seconds	60 seconds	0.0.0.0	0.0.0.0	VPN_CBUERSCH	Auto	No	Main Mode	Off	0
VPN_CBUHRO	0 seconds	60 seconds	0.0.0.0	0.0.0.0	VPN_CBUHRO	Auto	No	Main Mode	Off	0
VPN_CLIENT_FJ	0 seconds	60 seconds	0.0.0.0	10.99.100.15	P-VPN_CLIENT_FJ	Auto	No	Main Mode	Off	0
VPN_CSALM	0 seconds	60 seconds	0.0.0.0	0.0.0.0	P-VPN_CSALM	Auto	No	Main Mode	Off	0
VPN_C_APSUP	0 seconds	60 seconds	0.0.0.0	0.0.0.0	C_APSUP_PAR	Auto	No	Main Mode	Off	0

Management: Scripts

- Configuration scripts can be saved from LANconfig and uploaded again
 - Unlike with configuration files, the script format has the advantage that entire or partial configurations can be exchanged between different device types and versions



Management: WEBconfig Wizard overhauled

- WEBconfig has a re-worked design and now has an even more convenient Internet Access Wizard to offer.



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Systems

... connecting your business

VPN_NHAMEL (root)

(LANCOM 1722 VoIP (Annex B) 6.21.0024 / 08.08.2006)

Set up Internet access

Please enter your account data here.

These data should have been given to you by T-Online when your account was set up.

'Anschlusskennung'	<input type="text"/>
T-Online number	<input type="text"/>
'Mitbenutzerkennung'	<input type="text" value="0001"/>
Personal password	<input type="password"/>
(Repeat)	
Personal password	<input type="password"/>

© 9/14/2006 18:20

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Further new functions and improvements

LCOS 6.22 *[LANCOM OPERATING SYSTEM]*

VoIP

- Tone-dialing (DTMF) by means of SIP INFO or RFC 2833
- Transfer of advice of charge (AOC) between the internal and external ISDN buses

WLAN

- 802.1x supplicant: Authentication of an access point in WLAN client mode at another access point via 802.1x (EAP-TLS, EAP-TTLS and PEAP)

VPN

- Extended Cisco interoperability in certificate-based IPSec installations by supporting an optional "CERTREQ" request
- Simplified setup of "always on" VPN connections (no need of separate ICMP connection monitoring)



Further new functions and improvements



Management

- Explicit language selection in LANconfig and LANmonitor
- Certificate-based SSH authentication (alternative to PSK)
- Device-specific setting of the communication protocol (TFTP, HTTP, HTTPS) in LANconfig
- Automatic daylight-saving time change of the time-server module
- "Snapshot" function to read out accounting data (transmission volumes) at certain billing intervals, including sorting according to station
- New Internet Access Wizard in WEBconfig
- New design for the WEBconfig graphical user interface



Further information

More than 40 new pages of detailed information about all new functions in LCOS 6.22 are available in the addendum to the LCOS reference manual

- Available for free from <http://www.lancom-systems.com/>

The detailed revision history is in the release notes for LCOS 6.22

LCOS 6.22
[LANCOM OPERATING SYSTEM]



Service and 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** under www.lancom-systems.de/eu/support.

If the manual and our current support themes 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 – 17:00h under 0900-1-LANCOM (= 0900-1-526266) (1.24 € / Min. from German landlines).

Your LANCOM Systems Team



The image features a blue header bar at the top. The main content area is a light blue, semi-transparent graphic of a server rack with a LANCOM network switch in the foreground. The word "LANCOM" is written in large, bold, black, sans-serif capital letters across the middle of the rack. A horizontal blue line is positioned directly below the "LANCOM" text. Below this line, the word "Systems" is written in a smaller, black, sans-serif font. The background of the rack graphic shows a perspective view of server units.

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