# LANCOM Systems

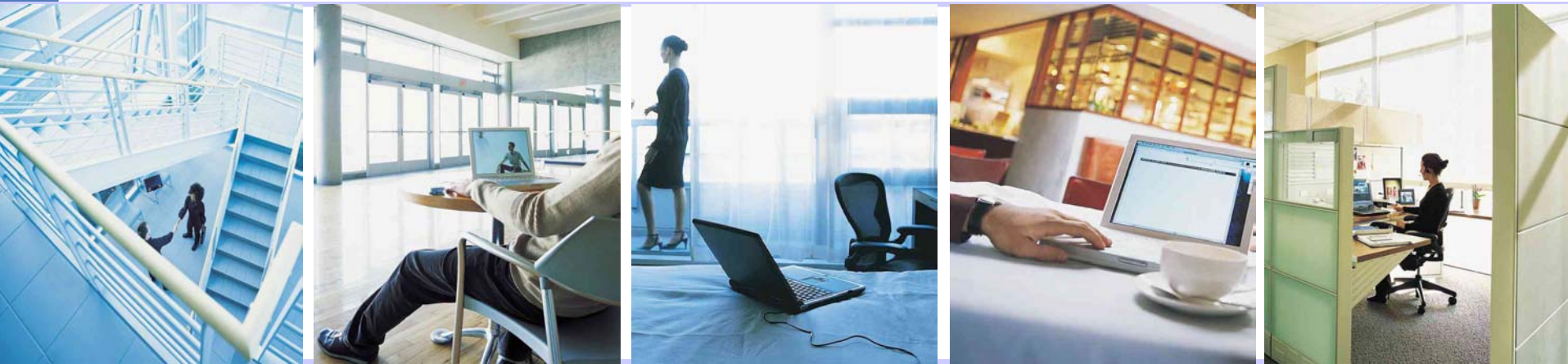## ... connecting your business

**LANCOM software version 3.52**

**October 2004**

# LC.OS 3.52

*[LANCOM OPERATING SYSTEM]*

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**LC.OS** *3.52*
*[LANCOM OPERATING SYSTEM]*

## Contents

**On the following pages we would like to give an overview of the new features and enhancements of this new LANCOM software.**

**In particular, the following items will be covered:**

▶ New version LCOS 3.52 - highlights

▶ 802.11i with 802.1x

▶ Service and Support

*Regarding previous LCOS versions you will find information on the LANCOM CD: ‚documentation'*

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**LC OS 3.52**

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## New LCOS version 3.52

▶ Supports all LANCOM models.

▶ Also suited for Telekom Business LAN

▶ compatible to AirLancer MC-54g/ag, PCI-54ag with drivers of version 3.1. and higher

**Highlights:**

Introducing new security standards for Wireless LAN:

▶ WPA

▶ 802.11i with 802.1x

▶ New LANCOM Reference Manual

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# New security standards for Wireless LAN

**Hardware AES encryption** is integrated in LANCOM

L-54g/ag, 1511, 1521, 1811, 1821, 3550, 3050 (with external AirLancer MC-54g/ag)

**and** in AirLancer MC-54g, AirLancer MC-54ag and AirLancer PCI-54ag Client Adapters

▶ 802.11i with passphrase or 802.1x for all 54Mbps Wireless products

▶ A maximum of security and performance utilizing the integrated hardware AES encryption

## Cit. Heise Ticker (c't, Germany):

*„The newly ratified standard IEEE 802.11i includes all capabilities of WPA and additionally requiers the use of the Advanced Encryption Standard (AES). AES offers enough security to fulfil the specifications of the Federal Information Standard (FIPS) 140-2 which are requested by most of governemental authorities. "*

**802.11i**
Enhanced Security with
AES Hardware Encryption

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## IEEE 802.11i – the components

**Basis: WPA (WiFi Protected Access)**

▶ Encryption method: TKIP, MIC (‚Michael')

▶ Authentication by 802.1x for enterprise networks

**The new standard: IEEE 802.11i**

▶ = WPA + AES + 802.1x

▶ downwards compatible to WPA/TKIP (switched)

▶ AirLancer 54 Clients do AES in hardware without loosing performance (AirLancer MC-54g/ag und PCI-54ag)

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# IEEE 802.11i – the advantages

**Highest possible security level**

▶ AES is State-Of-The-Art comparable to VPN

▶ no more loopholes in WLAN

▶ optional Authentication with 802.1x

**Easily to set up**

▶ The encryption key is automatically calculated out of it

▶ Automatic temporary key change enhances the security

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# WEP vs. IEEE 802.11i/WPA

|  | WEP | WPA | 802.11i |
|---|---|---|---|
| **Encryption** | Uses ‚weak' Keys. Tools hack it within short time. | By TKIP and MIC better encryption. Theoretically: Time until key is repeated takes very long. | By AES similar security as VPN. |
|  | 40bit/104bit/128bit RC4 | 128bit RC4 | 128bit AES |
|  | Key distribution by hand, Man-in-the-middle attack possible | By passphrase automatic key calculation | Automatic key calculation, AES in hardware |
| **Authentication** | none | 4 way handshake with session and group key | by 802.1x/EAP |

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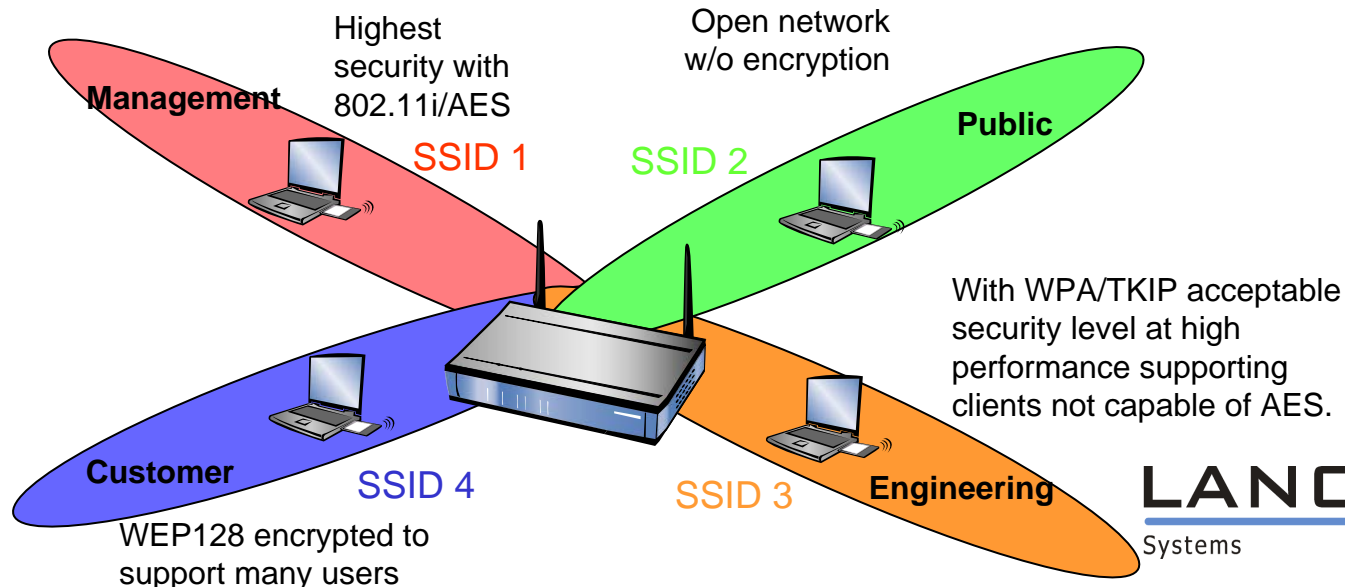# Migration from WEP→WPA→802.11i

Utilizing the possibility to define up to 8 WLAN networks for every WLAN interface, the administrator can offer to each user the level of security his personal wireless client card requires. One network can be set up for clients using WEP only. Another network offers simultaneously maximum security using 802.11i with AES exclusively. These different security levels can furthermore be supported internally using VLAN to separate them from each other in the complete network.

**Techpaper according to**

▶ **802.11i,**

▶ **Multi SSID,**

▶ **802.1x**

and

▶ **108 MBit/s are available for download under**
**www.lancom.de**

Highest security with 802.11i/AES

Open network w/o encryption

**Management**

**Public**

SSID 1

SSID 2

With WPA/TKIP acceptable security level at high performance supporting clients not capable of AES.

**Customer**

**Engineering**

SSID 4

SSID 3

WEP128 encrypted to support many users

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## IEEE 802.11i – highlights

**IEEE 802.11i**

▶ The long awaited security standard

▶ Full speed using hardware AES

▶ Easy to use

▶ No more loopholes left

▶ Supports WDS (Wireless P2MP, P2Station, Client Mode)

▶ Interoperability matrix available in the internet

▶ with 802.1x/EAP for authentication in enterprise networks

**Outlook**

▶P2P suport for 802.11i/WPA with LCOS Version 4

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## Reference Manual

**LANCOM Reference Manual – new edition**

▶ 300 pages of background information, tips for your realisation and detailed description of all functions

▶ New chapters:

   ▶ Wireless LAN with 802.11i and WPA/TKIP

   ▶ As PDF in Download Area and on LANCOM CD

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**LC·OS** *3.52*

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## further changes

You can find a complete and **detailed history of changes**, documents and LCOS versions on our website:

www.lancom.de/download

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## Service and Support

We wish you all the best with your new LANCOM product!

We would be glad to receive your feedback – either positive or negative, as well as feature suggestions via email to **info@lancom.de**.

Please find actual support information in the enclosed support leaflet, on our Internet support site, or in our Support database (KnowledgeBase) under **www.lancom.de/support**.

In case your were not able to resolve your questions by reading our manuals, please contact your local distributor for further assistance.

Your LANCOM Systems Team.

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