

Information regarding

**LCOS Software Release 6.14**

for LANCOM Routers and Wireless LAN Access-Points

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## 1. Introduction

LCOS („LANCOM Operating System“) is the operating system for all Wireless LAN Access Points and Routers. In the context of the hardware given by the products the at a time latest LCOS version is available for all LANCOM products and is available free of charge for download from LANCOM Systems.

This document describes the innovations within LCOS software release 6.14, as well as the modifications since release 6.06.

### Warning Hint – Backing up the current configuration

Before upgrading the firmware to LCOS 6.14 it is essential to backup the configuration of your router. Due to extensive features it is not possible to downgrade to a previous firmware without using the backup configuration.

Please see the reference manual for instructions on how to backup the router configuration.

If you want to upgrade devices which are only accessible via router connections or WLAN bridges, please keep in mind to upgrade the remote device first and the local device afterwards.

### Note when using certificates

Prior to loading certificates into the LANCOM you must install the current converter. The appropriate converter file can be found in your device's download directory on the LANCOM homepage. Flashing the converter file works similar to a firmware upgrade.

### Note when using converter firmwares

You will need enough free memory to use a firmware 6.14 and newer in your LANCOM 15x1, 1611+, 821+ and DSL/I-10+.

Due to the implementation of several new features within the current build of the firmware, it is no longer possible to store two main firmware versions side by side. To gain more free space for the current version, it is now necessary to upload a converter firmware into your device. The converter-firmware has a much smaller size, so that it is now possible to store the main release of the firmware besides the converter-firmware.

This setup is only necessary once for a single device and is done with the so-called converter-firmware (see readme.pdf of the affected devices).

After having flashed the converter-firmware the firmsave function of the LANCOM device is available only on a limited scale. The update to a newer firmware is furthermore possible. However, in case of an update failure the LANCOM will only work with a minimal-firmware which allows just local access to the device. Any extended functionality, in particular remote administration, is not possible when running the minimal-firmware.

To assure the full firmsave functionality for the LANCOM 1611+, there is a firmware 6.15 alternatively available which offers only bugfixes but no new features.

### Note about the ADSL linecode

LCOS versions 5.20 and newer do contain a new ADSL linecode for LANCOM 821+, 1521, 1721 and 1821. This new linecode supports ADSL2+ for LANCOM 821+, 1721, 1722 and 1821(from rev. E). For the LANCOM 1521, this linecode supports ADSL2. Needless to say that conventional ADSL interfaces are furthermore supported. Anyhow, there is an LCOS version 5.21 (6.x1...) available, which solely uses the previous ADSL linecode, and may alternatively be used.

### **Note for Dynamic VPN registration**

By reason of patent you have to register the functionality „Dynamic VPN“ with IP address transmission over ISDN. This operating mode is usually required when you configure a VPN tunnel with dynamic IP addresses on both sides without dynamic DNS services.

All other Dynamic VPN operation modes (e.g. transmitting the IP address via ICMP, provoking a callback etc.) do not require a registration.

The registration process is fully anonymous - no personal or company data will be transmitted.

The registration of the Dynamic VPN option requires administrator rights on the LANCOM device.

#### **Registration with LANconfig**

When scanning the device (e.g. right after program start) LANconfig automatically recognizes devices which have to be activated. After confirming the arising hint LANconfig automatically transmits solely the device's serial number to the LANCOM Systems registration server. The registration code is automatically transmitted back, thus the option will be activated. The state of this procedure is visible in LANconfig.

#### **Registration with WEBconfig**

For the registration with WEBconfig the serial number of the device is required. You can find this information on the bottom of your device.

Using WEBconfig you will find a link on the first page which leads you to the LANCOM Systems registration server. Here you must enter your device's serial number and –optional-your e-mail address. After transmitting the data you will receive a registration code for the option.

To load this code into your device, please proceed as follows:

Log in to the device with administrator rights. Select “Enable Software Option”, which is placed on the entry page. On the following page enter the registration code and confirm by selecting “Apply”.

## **2. New features, modifications and history**

### **LCOS Modifications from 6.12.0017 -> 6.14.0020**

#### **Corrections/Modifications:**

##### **VPN:**

- Integration of the UMTS/VPN Option for the LANCOM 3550
- On VPN connections with negotiation failure unused memory will be released again.

##### **WLAN:**

- Public Spot users may be created with limited validity again
- Using VLAN the EAP packets are no longer provided with VLAN tags
- Limitations for HTTP(S) access to Public Spot web pages only occur if Public Spot is activated for the used interface
- In the WLAN log the channel on which a radar pattern is identified will be additionally shown
- Corrections in the datarate adaption algorithm

##### **VoIP:**

- Improved echo suppression
- Corrected the sequence of the route headers within the ACK packets
- An outgoing call via a SIP provider which requests QoP (Quality of Protection) does no longer lead to a LANCOM restart

##### **Miscellaneous:**

- An analog modem may now be addressed via outband interface of a LANCOM 1722/1724
- Support for HSDPA card „Novatel Wireless Merlin U740“
- It is again possible to load certificates into the router
- Corrected accounting for virtual interfaces
- Ethernet ports may be manually configured for MDI or MDIX
- No WAN connection loss when writing a configuration to the device
- Corrected the number of ISDN ports of the LANCOM 6000 series

### **LCOS Modifications from 6.10.0038 -> 6.12.0017**

#### **Corrections/Modifications:**

##### **VoIP:**

- If a second line is configured as default within the call router, this line will be used in the backup case
- A second call from ISDN to SIP may now be done without quality loss
- On devices with S0 interface the ISDN interface will be set correctly per default
- Italian dial tones are now configurable
- Support for connection monitoring for SIP provider NIKOTEL, so that SIP connections will no longer be cut after two minutes
- The configurable port for use with the SIP provider will now be used
- Redirection of G.722 connections now possible
- Sending and identification of DTMF tones within the RTP protocol now possible (RFC 2833).

**WLAN:**

- Turbo mode may now be used in Spain, too
- IAPP packets will be utilized, even by LANCOM devices without WLAN module
- Slave/client radar signals will be listed in the master's log table
- Support for all MC-54ag cards in the LANCOM 3550

**VPN:**

- A VPN tunnel may be established from DMZ to LAN with NAT traversal activated

**Routing:**

- Load balancing may be used again
- SIP registration does no longer initiate a firewall DoS protection
- NetBIOS update storms will be suppressed
- Access to a DMZ-located server from the LAN via WAN-IP is possible again using port forwarding

**Miscellaneous:**

- It is again possible to supplement remote stations in existing firewall rules
- LANCOM devices will no longer send useless syslog messages if being monitored with LANmonitor
- New ADSL2+ linecode
- Support for Kalooma AirCard 580 (Qualcomm 3G CDMA)

**LCOS modifications from 6.06.0012 -> 6.10.0038**

**New Features:**

**VoIP:**

- No more limited quantity of ISDN subscribers. The ISDN mapping table may now contain up to 40 entries.
- New SIP subscriber limits:
  - VoIP Basic: 4 subscribers
  - VoIP Advanced & LANCOM VoIP Router: 32 subscribers
- SIP Trunking as of Q.1912
- The caller number may now be suppressed on SIP -> ISDN connections
- Call hold / consultation hold / connect to remote or local SIP stations
- Support for point-to-point connections in the ISDN mapping tables
- Support for Agfeo remote configuration

**VPN:**

- Support for CRL (Certificate Revocation Lists)
- dynamic management of VPN remote stations

**Routing:**

- Significant throughput improvements
- Support for Layer 2 Tagging (QoS for LAN)

## WLAN:

- Rx-/Tx limits may now be defined within the Public Spot via RADIUS attributes
- DFS rescan time now configurable per WLAN interface
- Integration of a RADIUS server for local MAC address management within an Access Point (Public Spot accounts, too)
- Support for IEEE 802.11e (QoS)
- Support for IEEE 802.11i (PMK caching and preauthentication)
- Access Points with more than one WLAN interface may scan WLAN networks in the background to identify extraneous Access Points
- If a WLAN interface is deactivated due to temperature this state will be shown by a slowly flashing WLAN link LED
- Automatic removal of expired accounts from the Public Spot table
- Regular checking of the WLAN MAC address lists via RADIUS (thus changes of RADIUS data can be adopted at runtime)

## Miscellaneous:

- Number of possible VLANS increased to 256
- Extended site verification via D-channel with call diversion query
- Integration of the ISDN leased line
- Integrated print server for connecting a USB printer
- Option to use HTTPS commands in the action-/CRON table
- Support for HSDPA card "T-Mobile web 'n' walk" (Option GT Fusion+)
- freely configurable TCP ports for connecting to the device via Telnet, SSH, HTTP and HTTPS
- For all routers it is now possible to deactivate the ISDN interface, if present. This prevents the router from not accepting calls due to defined, but nonexistent MSNs. The admin interface remains untouched.
- LANCOM routers are now able to work within a VLAN
- The amount of available DHCP IP addresses may now be configured per interface
- DHCP servers behind WLAN client connections can be blocked

## Corrections/Modifications:

### VoIP:

- Allocation of subscriber lines working even if the name of a line is a prefix in the name of another line
- Call hold on a UTStarcom F1000 does no longer break up the call

### VPN:

- The standard VPN client is again able to establish a VPN connection to the router if NAT traversal is activated
- Corrected VPN rule generation for a VPN remote station name with exactly 16 characters
- No more tunnel losses on simultaneous rekeyings if more than one network is available via VPN
- If a physical connection gets disconnected because of an error, the next remote gateway for VPN will be selected.

### Routing:

- On unmasked connections the LANCOM answers broadcasts with its WAN IP address
- PPPoA may be used with LLC-MUX again
- DNS requests via IPoEoA will be redirected correctly again

**Miscellaneous:**

- Extended backup table (number of configurable VPN remote stations)
- A Config reset causes a reset of the PPPoE server
- Mail delivery gets no longer stuck if the mailserver is not immediately accesible
- It is again possible to do a PPTP dial-in on devices with multiple ISDN interfaces
- Possibility to set date and time in the public spot user table via scripting
- A Sony PSP can now get an IP address from a LANCOM DHCP server
- On devices with multiple ISDN interfaces the Basic Settings Wizard may be called repeatedly without crashing the router
- On ADSL reconnections the original channel will be re-used
- Unenforced bandwidth reservations will be processed again

### **3. Remarks**

If you want to upgrade the firmware of your device to a new version, please install the latest LANtools first. **Before running the firmware-upload you should save the router configuration to a file.** After that you can use LANconfig to load the latest LCOS-version into the device.

In principle, we suggest upgrading the firmware of your device only if you are in need of the latest features.

Please note that different firmware files might be available for your device. Further information can be found in the file README.PDF in the download area of our homepage.