

Information regarding

LCOS Software Release 7.30

for LANCOM Routers and Wireless LAN Access-Points

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LANCOM Systems GmbH
Adenauerstrasse 20 / B2
52146 Wuerselen
Germany

Internet: <http://www.lancom.de>

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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 7.30, as well as the modifications since release 6.32.

Warning Hint – Backing up the current configuration

Before upgrading the firmware to LCOS 7.30 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 managed Access Points

Prior to managing a LANCOM accesspoint using a WLAN controller, you have to upgrade your access point with the latest converter. The corresponding converter file can be found in your device's download directory on the LANCOM homepage. The converter upload is similar to a firmware upgrade.

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 6.0 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 firmsafe functionality for the LANCOM 1611+, there is a firmware 7.31 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 on 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 7.28.0031 -> 7.30.0015

New Features:

WLAN:

- Compliance with the new DFS standards ETSI 301 893, v1.3 for WLAN devices placed into circulation as from april 2008

Bugfixes/Modifications:

VoIP:

- All 3 lines of the Freenet VoIP account may be used
- On a DUS.NET trunk line the complete call number including direct dial will be transmitted as caller ID

Miscellaneous:

- Option for masking the IPsec packets of the Avaya VPN client
- Data transfer between WLAN stations can be cut off using the option "Do not allow data transfer between individual stations (associated to any access point)"
- Fixed masquerading problems of parallel pings into WAN
- DNS requests to the own domain will be completely stored in the DNS hitlist if a redirect is configured for the domain
- Reworked ISDN time leveling on device boot
- If using the load balancer all channels are reconnected after disconnect

LCOS modifications 7.26.0049 -> 7.28.0031

Bugfixes/Modifications:

VoIP:

- An incoming call which is redirected to a group after a configurable period of time will be determined if the caller hangs up
- A local SIP registration will be redirected correctly to the superordinate VoIP phone system
- Speech data is transmitted correctly on pure analog/ISDN calls via PBX coupling
- Improvements in inverse RTP masquerading
- Call diversions in the switching center may again be used if set by static call routing entries
- If a second SIP client registers itself with the same user data as the first client, the first client will not be de-registered if the registration of the second client fails
- Improvements in the call number assignment of the Voice Call Manager
- No more endless ringing of ISDN phones if the call is not answered
- The reason string sent by the SIP provider will be redirected transparently to the client to display suggestive error messages, if applicable.
- Improvements in T.38 implementation and corrected HLC signaling for ISDN dependent on SIP user type (Telephone, Fax, Telephone/Fax)
- Improvements in analog Caller ID, CID default for Spain set to RP-AS (Ring Pulse Alert Signal)

Miscellaneous:

- Huawei E620 UMTS cards may again be used in the LANCOM
- The requested bandwidth will be displayed correctly
- DHCP offer packets sent by DHCP relay servers will be accepted by LANCOM DHCP servers working in auto-mode
- Manually configured VPN rules for the DMZ are created again
- The DNS domain suffix will be considered when searching for the WLAN controller
- RAS- and PPTP dial-ins which get their IP addresses from a pool can be used again
- The 5 GHz band may be configured using WEBconfig with a LANCOM C-54
- Improvements in channel bundling of multiple DSL connections
- WLC-managed accesspoints will be accessible after reboot
- IAPP can be used in ARF/VLAN-environments

LCOS modifications 7.24.0012 -> 7.26.0049

Bugfixes/Modifications:

VoIP:

- Using ARF, answer packets to register requests are now sent to the correct interface
- „Busy“ is only signalized if the client is on the phone
- Calls from the theft protection are no longer signalized to the phones
- On incoming calls the setup will not be transferred repeatedly on the internal bus
- Video transfer via SIP is possible again
- Correct indication of a bandwidth shortage
- The authentication string is now signalized according to RFC 3361
- The number transmitted by the switching center is now stored completely in the LANCOM tables
- General improvements for hold, consultation hold and connect

Routing:

- If correctly configured, the LANCOM device answers with an „ICMP unreachable“ if a LAN client is not reachable from WAN
- The DHCP relay agent works between ARF interfaces
- The routing tag will be considered for loopback addresses, too
- Communication improvements between a VRRP master and a preceding switch to define the switch port for reaching the virtual IP address
- Fragmented packets can be routed through the LANCOM without having to be reassembled
- Name resolution between ARF networks possible with different interface tags

Miscellaneous:

- UMTS throughput improved
- Stability improvements for UMTS connections
- Support for the Huawei UMTS cards „Mobile Connect E630“ and „Mobile Connect E620“
- Synchronization works again with an ADSL Annex A line
- Auto mode works again with an ADSL Annex A line
- Simplified certificate dial-in (VPN) is possible with PFS group 0
- DHCP tracking works in conjunction with VLAN
- Accounting data will be stored correctly in the flash of the VoIP router, so that the bootlog contains no „wrong flash write“ message
- Uploading a configuration does no longer lead to a 100% load of the device if syslog notification is activated
- Router access via telnet is granted even after a crashed telnet session
- The EAP authentication of the Intel Pro Supplicant is no longer rejected by LANCOM RADIUS
- The LANCOM will not communicate itself as primary DNS server if another server was configured
- Odd LCOS version numbers may be used again for ADSL Annex A ports
- If the distinctive feature is set to „IP address“, no duplicate entries are generated

LCOS modifications 7.22.0016 -> 7.24.0012

Bugfixes/Modifications:

VoIP:

- The codecs will be correctly offered to the clients, so that all clients are able to accept the call
- A manual re-registration of a client is no longer interpreted as a register of a new client
- The X-Lite SIP client may again be used with a LANCOM
- Fixed an issue with superordinate registration in conjunction with multiple logins
- A call from an internal ISDN participant can be made with an-block dialing again
- The CANCEL packet was changed as some clients could not handle it and did further signaling
- The Voice Call Manager does a forwarding of the „user busy“ information from the ISDN line to the internal SIP client

Miscellaneous:

- Virtual router addresses (VRRP) can only be reached via the assigned ARF interfaces

LCOS modifications 7.20.0065 -> 7.22.0016

Bugfixes/Modifications:

VoIP:

- Second calls for SIP- and ISDN subscribers are now accepted by default (Busy on Busy disabled).
- VoIP calls via some SIP providers will no longer be disconnected after 30 seconds
- On outgoing calls to PSTN the correct calling party number will be transmitted
- On incoming calls with activated call number suppression the P-Preferred-Identity field will be transmitted correctly
- Reworked Call-Manager trace dumps
- Call number display prefixes corrected
- Reworked fax transmission via T.38
- E-mails sent from VCM do again contain the complete call number
- Disabled codecs are no longer used by VCM
- No more prefix duplication for multilogin users
- Call hold and consultation hold via superordinate SIP users (in different VoIP-Domänen) works

Miscellaneous:

- New ADSL2+ linecode for Annex B
- If there is a non WPA-encrypted WLAN network on the first SSID, WPA encrypted networks on the other SSIDs will work again
- Call groups may be created via WEBconfig again
- LANCOM WLAN client devices do again obey the settings for transmission power and antenna gain
- Updating a LANCOM 1511 Wireless with the current LCOS version does no longer lead to a fallback to the minimal firmware
- Script generated VPN tunnels cause the creation of the corresponding VPN rules
- A LANCOM device answers the IP x.x.x.254 by default, and will thus again be found by LANconfig
- A TFTP request which does not happen via root access does not generate an SNMP „Authentication Failure“
- When using N:N mapping answer packets will be sent to the correct receiver
- DNS requests from subnets will no longer be discarded

LCOS modifications 6.32.0021 -> 7.20.0065

New Features:

VoIP:

- redirect, call back, connect or consultation hold may be used for for any call (internal or external)
- Call redirects (immediate, on busy, time-dependent) may be configured for internal subscribers
- The call diversion of the LANCOM may be configured using the connected phones
- Support for internal call diversion of the SIP phone (REFER / REDIRECT)
- Multiple calls at a time may be deactivated for SIP- and ISDN subscribers (Busy on Busy)
- group call support
- T.38 support
- Possibility of multiple „same user“ logins to the LANCOM with the same user data
- Improved trace output for the VoIP Call Manager

WLAN:

- LANCOM Access Points LANCOM WLAN routers now supporting the WLAN controller
- Integrated Radius/EAP-Server for autonomous 802.1x authentication
- Rapid Spanning Tree support
- Enhancements for WLAN roaming
- The current 5 GHz channel does not have to be rescanned after 24 hours

Routing:

- ARF support (Advanced Routing and Forwarding)
- A name may be assigned to loopback addresses
- Inverse masquerading may now be defined for multiple IP addresses and bound to TCP and/or UDP
- Access to LAN devices through TCP/HTTP tunnel
- Number of simultaneously maskeable connections extended to 4096
- Behaviour of particular applications (FTP and IRC) now configurable via firewall settings

Miscellaneous:

- New ADSL2+ linecode for Annex A
- BOOTP table extended to 256 entries
- Number of characters in the WLAN port list extended to 251
- Support for further VLANs within VLAN
- Option to avoid users from tracing
- CRON actions may be deskewd using a time window
- Support for the UMTS card „Option GT 3G CDMA - HSDPA 7.2 Ready“
- Support for the UMTS card „web 'n' walk ExpressCard II (Option GE0201)“
- Freely configurable DHCP options
- Configurable behaviour of the reset switch
- Interface grouping by bridge groups
- SCEP support (Simple Certificate Enrollment Protocol)

Bugfixes/Modifications:

VoIP:

- Corrected caller list display for an analogue phone which is connected to the LANCOM
- Corrected detection of a SIP trunk's base number
- A busy external ISDN-Bus will now be indicated to an internal ISDN subscriber
- ISDN facilities will be forwarded between TE and NT interface
- Calls are no longer forwarded to a deactivated group
- Calls between two ISDN busses no longer deranged
- VoIP users do no longer show up twice in the VoIP user table after having forwarded an incoming call

VPN:

- Dynamic VPN connections via D channel may now be established over a not connected ISDN backup line
- VPN keepalive without Polling Table entry works again after returning from backup state

Routing:

- After having established a VPN connection a RIP update will be sent
- After returning from backup state VPN connections with keepalive will be established immediately
- Possibility of inverse masquerading for passive FTP connections
- In the port forwarding table "End-Port" may be "0", if "End-Port" should be identical to "Start-Port"

WLAN:

- Improved client > AP notification on heavy load situations

Miscellaneous:

- Corrections in the IGMP protocol, which is used in VRRP scenarios
- Channel bundling now possible using one internal and one external ADSL modem
- When routing LAN <-> DMZ all target MAC addresses will be checked by the firewall
- No more timeouts on manual UMTS network selection
- Configuration restriction to particular stations / networks may be used again
- Improved certificate upload
- ICMP redirects will be sent if multiple ARF networks are configured
- No more errors in the action table if a field contains the maximum amount of characters
- Modified ADSL-State LED display
- The PPP transmitted IP address of the remote station will now be shown with all devices
- DHCPINFORM packets will now be handled correctly
- If a user has configured a faulty DHCP pool, the DHCP server will automatically switch to active state after having corrected the configuration
- Duplex print now possible with a capable printer connected to the LANCOM USB port
- After returning from backup state VPN connections with keepalive will be established immediately

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.