LANCOM Systems

Information regarding

LCOS Software Release 6.34

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 dowload from LANCOM Systems.

This document describes the innovations within LCOS software release 6.34, as well as the modifications since release 6.14.

Warning Hint – Backing up the current configuration

Before upgrading the firmware to LCOS 6.34 it is <u>essential</u> to backup the configuration of your router. Due to extensive features it is <u>not possible to downgrade</u> 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 6.34 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 6.35 alternatively available which offers only bugfixes but no new features.

Note about the ASDL 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 from 6.32.0021 -> 6.34.0011

Corrections/Modifications:

Miscellaneous:

- Support for UMTS card "web 'n' walk ExpressCard II (Option GE0201)"

LCOS modifications from 6.30.0022 -> 6.32.0021

Corrections/Modifications:

VoIP:

- The LANCOM device supports the register-timer from the „Min-Expires" field
- Prefixes for internal number display are being considered again
- Hands-free calls via analogue line are no longer disturbed
- Optimized Echo compensation
- A phone connected to an AGFEO phone system will no longer hear an error beep on incoming calls
- ISDN facilities will be forwarded between TE- and NT interface
- Reworked sequence in the SDP information data fields, so connection establishment will no longer be denied by some SIP phones

Miscellaneous:

- WNS server assignment when using IKE Config Mode
- Dynamic VPN connections will be established even to remote stations which names contain exactly 8 characters
- Cable-bound clients which log in to the same Accesspoint's SSID via different client bridges may now communicate with each other
- No more discarded packets of the IDS module of the firewall if „Transmit" is selected
- If local routing is active, answers from the Next-Hop will no longer be discarded by the firewall
- Fixed throughput problems when using Multilink PPP
- Using Telnet it is again possible to chose the option „Begin-With" when configuring additional gateways

LCOS modifications from 6.28.0052 -> 6.30.0022

Corrections/Modifications:

WLAN

- The accesspoint will send a disassociate to the client if the MAC address check fails
- Slot times and ACK timeouts will now be computed correctly depending on the distance settings
- The email address may now contain up to 254 characters for WLAN interface notification

VoIP:

- Outgoing calls using the second ISDN channel are no longer blurred
- Adjusted analogue levels to avoid call dropouts
- An incoming call may now be answered using a Nokia E60
- Corrected bandwidth reservation for VoIP backup connections
- VPN overhead will be considered in QoS
- The annex information of the G.729 codec will be transmitted

Miscellaneous:

- The load balancer does no longer use the bundling channel while establishing a call, if one of the single connections is disturbed
- Configurable ADSL power management
- Integration of a new ADSL2+ linecode
- Automatic modem retrain on bad line
- Corrected scripting bugs
- Dynamic VPN negotiation packets will be ignored until the rule creation for the remote station is finished

LCOS modifications from 6.26.0022 -> 6.28.0052

Corrections/Modifications:

VoIP:

- Incoming ISDN calls will no longer be blurred
- SIP lines may now be used for backup
- The SIP client lifetime until registration renewal may be configured in the LANCOM device
- Corrections on connecting multiple calls with consultation (attended Call Transfer)
- It is now possible to selectively register SIP users whose realm differ from the one of the registrar
- A call forwarding of the provider / superordinate PBX does no longer lead to a connection loss
- Corrupt LAPD packets (D channel layer 2) will no longer cause a layer2 disconnect on the internal S0 bus
- Caller ID support for analog exchange line and internal a/b interface with singnalling via über FSK and DTMF

Miscellaneous:

- The LANCOM's RADIUS server may now be activated without reboot
- Reworked ISDN data LED display
- Improved bandwidth limitation for the DSL interface
- The APN of a UMTS profile may now contain up to 48 characters
- If a VPN gateway can only be reached via VPN connection (as per routing table), the loop will be recognized and no longer cause a reboot
- On a LC821/1621 the explicitly set protocol will be used for ADSL
- Reworked display of the ADSL link LED
- Minimized the number of ARP requests to non-existing addresses
- If a Windows XP PPTP client dials up a LANCOM, there will be no more intensely differing ping times
- A modem backup for ISDN will be triggered even if the ISDN connection cann not be established after a restart of the LANCOM device
- If the current time can not be polled per NTP (internet connection not yet established), the device will try again after the connection is established
- DNS requests for DNS names starting with numbers can be resolved on VPN connection establishment, too

LCOS modifications from 6.24.0013 -> 6.26.0022

Corrections/Modifications:

VoIP:

- When making calls via analog line there are no more echoes
- For SIP connections which were established via WAN interface the reserved bandwidth will be calculated correctly in the firewall
- The SIP response will now be directed to the target port which was sent in the VIA field of the corresponding request
- If a bandwidth is not available or there was a 486 Response (Busy Here) the cause „Congestion Busy" will be reported so that ISDN phone systems are able to establish a backup line
- The runtime from ISDN to ISDN was shortened, so that an echo caused by a misconfiguration of a subordinate phone system will no longer be noticed
- Internal switching of an ISDN/analog call to a further ISDN/analog subscriber via LANCOM Advanced VoIP Client now working

WLAN:

- The switch „Use the user list in menu ‚Public Spot/Users'" within the RADIUS server module does no longer link to the WLAN access list but to the Public Spot user list
- WEP encryption with „Shared-Key" authentication may be used again
- Background scanning in big accesspoint environments does no longer lead to increased scan rates.

Miscellaneous:

- If a reserved minimum bandwidth is deleted the bandwidth of the channel will be re-calculated
- Mail notification now works for disconnecting WAN connections which are used for load balancing
- Port forwarding restricted to TCP- and UDP packets
- Connections via G.703 interface may be established again
- Corrected time display in the Remote Connection Statistics
- Corrected default layer of the LANCOM 1620
- Hostnames of DynDNS providers can now be transmitted in upper or lower case letters, according to the provider's requirements
- Integration of a new ADSL2+ linecode with diverse synchronisation improvements

LCOS modifications from 6.24.0012 -> 6.24.0013

Corrections/Modifications:

VoIP:

- For the devices LC1723, LC1724 and LC1823 PCM Timeslots will now be released completely. This solves the problem that in seldom circumstances subsequent connections were switched only unidirectional.

LCOS modifications from 6.22.0007 -> 6.24.0012

Corrections/Modifications:

WLAN:

- A WLAN data packet whose target MAC address is unknown will now be sent to all clients, thus making sure that the packet reaches the recipient
- Miminum background scantime between single channel scans set to 20 seconds
- The beacon timestamp will always be set correctly when using background scanning so that older clients using powersaving are able to communicate correctly

VoIP:

- SNOM phones do no longer consider the LANCOM device as faulty registrar
- The router configuration may now be changed during a call connection via the ISDN interface, without blocking additional incoming/outgoing calls
- SIP user-ID extended to 64 characters

Miscellaneous:

- Incomplete configuration files will no longer be activated by the LANCOM device
- NetBIOS names which are already known from WAN will be ignored if being propagated on LAN
- Corrected inverse masquerading of H.323 connections
- Dial-in via modem connected to the serial port works again
- Selectable choice if all network relations shall be additionally established when connecting VPN
- The Novatel UMTS card Merlin U530 may again be used in the LANCOM 3550

LCOS modifications from 6.22.0006 -> 6.22.0007

Corrections/Modifications:

WLAN:

- In the upper 5 GHz band (sub-bands 2 + 3) the full ramge of 30 dBm will be used instead of the previous 23 dBm.

LCOS modifications from 6.20.0044 -> 6.22.0006

Corrections/Modifications:

VoIP:

- Extended source filter table which now contains all static filters
- No longer available SIP users will be deleted from the tables
- On a LANCOM restart the ISDN layers will be disconnected so that phone systems do not mark the ISDN bus as „faulty"

WLAN:

- On channel selection an access point with two WLAN modules considers the channel of the other interface

Miscellaneous:

- During VRRP an RFC conform virtual MAC address will be used, so that VRRP may also be used with other routers
- Deleting a VPN error within LANmonitor causes the LANCOM to send an SNMP trap, so that the LANmonitor display will not have to be refreshed manually

LCOS modifications from 6.14.0020 -> 6.20.0044 (for LC1723, LC1823 and C54ag)

New Features:

VoIP:

- Client authentication now possible via internet
- Billing information from ISDN lines will be transferred
- Support for G.729 connections with Advanced VoIP option

VPN:

- A phase-1 certificate request makes a certificate-based VPN connection to Cisco routers possible
- Dynamic management of incoming certificate based VPN remote stations
  - IKE Config Mode connections (1 remote IP address)
  - Network connections with one or more remote sub-nets
- A VPN connection and all appropriate phase-2 connections may now be established with the help of the keepalive functionality without using polling

WLAN:

- WLAN operation may now be limited to „Indoor". Thus in countries using DFS WLAN communication can be limited to the lower four channels where no DFS is necessary.
  These channels do operate with 200 mW. In client mode only permitted channels will be scanned
- Background scanning implementation. While in client mode the LANCOM scans for further access points for faster roaming.
- Display of the signal quality possible via WLAN link LED
- 802.1x client in WLAN Client mode
- Improved roaming in client mode
- Improved display of client log-in/log-off

Routing:

- Continuous monitoring of the line quality possible via SNMP
- Sorting and totaling of the transferred amount of data (Accounting) is now possible in configurable intervals

Miscellaneous:

- Option UMTS cards may be set to a fixed transmission method (UMTS, GPRS or AUTO)
- Transmission state of the Option UMTS cards will be shown
- Automatic daylight saving
- SSH authetification for console management access

Corrections/Modifications:

Miscellaneous:

- Improved echo suppression
- On a statically configured DNS Service Location Record there will be a request for an A-Record to resolve the name of the before obtained answer into an IP address
- Passive FTP may again be forwarded to an internal FTP server using inverse masquerading.
- At an austrian point-to-point connection the serial number may be dialed without using direct access
- At an austrian point-to-point connection the serial number will be signalized including the direct access number on outgoing calls
- After terminating an ISDN backup the reestablished DSL connection will be shown by a green Online LED

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.