

Information regarding  
LCOS Software Release 9.24 Rel

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## 1. Preface

LCOS („LANCOM Operating System“) is the operating system for all LANCOM routers, wireless LAN access points and WLAN controllers. 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 9.24 Rel, as well as the improvements since release 9.10.

### **Warning hint – Backing up the current configuration**

Before upgrading your device to a new LCOS version 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.

### Advice

LANCOM 178x 4G: To avoid delayed connection establishments within mobile radio (eg in case of backup) it is recommended to use the latest firmware version 3.5.24 for the LTE mobile modem (Sierra MC-7710). Please refer also to the following Knowledgebase article: [Link](#)

### Upgrading central site components

We strongly recommend updating productive systems only after internal tests in client environment. Despite intense internal and external quality assurance procedures possibly not all risks can be eliminated by LANCOM Systems.

### Using converter firmwares

To use any firmware from version 8.8 in your LANCOM 1722 1723, 1724 and in the L-320agn, L-321agn and L-322agn (less than hardware release E), enough space must be available in the memory of your device.

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.

### 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.

Any other Dynamic VPN operation mode (e.g. transmitting the IP address via ICMP, provoking a callback etc.) does not require 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.

### Device specific support of the current LCOS version

As from LCOS 8.84 support for the following devices is discontinued:

- Telekom R800+
- LANCOM 821+
- LANCOM 1611+
- LANCOM 1711
- LANCOM 1821n

As from LCOS 9.00 support for the following devices is discontinued:

- Telekom R1011
- LANCOM 1823 VoIP
- LANCOM L-54 Wireless
- LANCOM 1751 UMTS
- LANCOM 8011
- LANCOM 7111
- LANCOM C-54ag

As from LCOS 9.04 support for the following devices is discontinued:

- LANCOM 1711+ VPN
- LANCOM 1721+ VPN
- LANCOM 1722 VoIP
- LANCOM 1723 VoIP
- LANCOM 1724 VoIP
- LANCOM 1811n Wireless
- LANCOM 1821+ Wireless ADSL
- LANCOM 3850 UMTS
- LANCOM 800+
- LANCOM DSL/I-10+
- LANCOM L-315agn dual Wireless
- LANCOM OAC-54-1 Wireless
- LANCOM OAP-310agn Wireless
- LANCOM OAP-54 Wireless
- LANCOM WLC-4006
- LANCOM WLC-4025
- LANCOM XAC-40-1
- Swyx 1722 VoIP
- Swyx 1723 VoIP
- Swyx 1724 VoIP

**Note:** Even if devices do not support the latest LCOS version, they will still be maintained with LCOS Release Updates including bugfixes and general improvements on a regular basis.

The latest LCOS version overview can be found on our website under <https://www.lancom-systems.eu/en/products/lcos/version-overview/>.

## 2. Known Issues

Latest support notes and known issues regarding the current LCOS version can be found in the support area of our website <https://www.lancom.de/en/service-support/instant-help/common-support-tips/>

### 3. New Features, Improvements and History

#### LCOS improvements 9.20.0683 RU2 ► 9.24.0070 Rel

##### New Features:

##### Network Connectivity:

- Auto provisioning support for LANCOM DECT 510 IP
- Support for Call-Forking within the Voice Call Manager
- Support for SIP methods PRACK and UPDATE
- Support for Message Waiting Indication within the Voice Call Manager
- The available Rx/Tx bandwidth can be configured manually for routers with integrated ADSL/VDSL modem

##### WLAN:

- Predefined bandwidth profiles for the Public Spot
- Support for RADIUS CoA (Change of Authorization) within the Public Spot

#### LCOS improvements 9.20.0647 RU1 ► 9.20.0683 RU2

##### Important notice to the update:

The Loader 4.18 has to be flashed before updating the firmware of the LANCOM 1631E, LANCOM 831A and Business LAN R800A to LCOS 9.20.

##### Bugfixes / Improvements:

##### Network Connectivity:

- Fixed a problem within the jitter buffer which led to a fax transmission abort
- Access attempts to certain WEBconfig configurations no longer trigger a device restart
- To avoid server problems, the HTTP client reads the complete server reply when authentication is needed before another request is started
- IKEv2 VPN with NAT traversal works as designed
- Fixed a problem with codec selection if a phone is directly connected to the LANCOM
- Clip no Screening works again as desired, if a telephone system is connected to the LANCOM via S0 interface

**LCOS improvements 9.20.0566 Rel ► 9.20.0647 RU1****Important notice to the update:**

The Loader 4.18 has to be flashed before updating the firmware of the LANCOM 1631E, LANCOM 831A and Business LAN R800A to LCOS 9.20.

**Bugfixes / Improvements:****Network Connectivity:**

- As of now, BGP packets are marked with DSCP CS6
- Dial-up routes with simplified certificates for IKEv1 are set correctly
- The table for automatic VLAN provider selection can be edited
- DiffServ tags from inner tunnels as PPTP, L2TP, GRE or EoGRE are now applied to the outer VPN tunnel
- Improvements in IKEv2 re-keying
- Interoperability improvements for TLS 1.2 connections
- RIP propagates a conditional route if the remote station is connected
- ICMP polling works again with loopback addresses
- Fixed the active calls counter within the voice call manager
- LANmonitor displays the firewall rule of the first matching action
- No syslog message is sent if a broadcast is received and rejected on the LAN interface
- SMS can be sent and deleted via LANmonitor
- Improvements in SIP-ALG in conjunction with Mitel telephone systems. OPTIONS packets are sent from the correct port
- Fixed a problem with SIP ALG
- Fixed an issue where routing between local networks in conjunction with policy based routing did not work
- A forwarded call from an analog phone does not lead to unilateral voice transmission
- The rollout agent starts a rollout even if a config server URL is not transmitted via DHCP-Option 43, but instead is provided within the device configuration
- Fixed issues in conjunction with Swyx (CTI+, call forwarding, etc.)
- Support for 1TR114 SIP methods PRACK und UPDATE by Deutsche Telekom vSDP
- VLAN assignments per ISP are now possible

**WLAN:**

- OAP-830: The internal assembly of the Wi-Fi modules has been swapped to improve Wi-Fi performance. When running point-to-point connections with the OAP-830, please consider the following knowledge base article:  
<https://www2.lancom.de/kb.nsf/0/2FD8349316D983AAC1257FF0002F850D?opendocument>
- Fixed a problem where remotely managed access points did not receive the configuration from a WLC if the WAN link MTU was too large.
- An access point in client mode within an 802.11ac connection can re-connect to a base station

**LCOS improvements 9.20.0517 RC2 ► 9.20.0566 Rel****Important notice to the update:**

The Loader 4.18 has to be flashed before updating the firmware of the LANCOM 1631E, LANCOM 831A and Business LAN R800A to LCOS 9.20.

**Bugfixes / Improvements:****Network Connectivity:**

- Fixed a problem with T.38 fax transmission
- If the WEBconfig All-IP wizard is started a second time, all previous settings are replaced as expected
- PPTP tunnels are re-established after an item is added to the backup table
- Fixed a problem with enforced bandwidth reservation

**WLAN:**

- clients with an Intel AC-7260 chipset can connect to an Access Point running in „ac only“ mode
- Authentication via 802.1x under occurrent high packet load works again with 11ac Access Points
- CAPWAP does not set any host routes to targets within the local network, if a static IP address was allocated by a WLC

**LCOS improvements 9.20.0385 RC1 ► 9.20.0517 RC2****Important notice to the update:**

The Loader 4.18 has to be flashed before updating the firmware of the LANCOM 1631E, LANCOM 831A and Business LAN R800A to LCOS 9.20.

**Bugfixes / Improvements:****Network Connectivity:**

- Fixed an All-IP wizard bug where not all entries were deleted as desired
- If an L2TP remote station is disconnected, the according RIP routes are no longer provided
- After a fallback to 2G the router does not remain in Edge mode permanently
- The iPerf server daemon is accessible via VPN, if WAN access is limited to VPN
- Fixed a problem where a SIP line could not register due to missing DNS resolution
- SIP packets bigger than 1024 bytes are no longer cut
- The iPerf server report can be received by the iPerf client if client packets contain a VLAN tag
- If a call is put on hold, music on hold playback is correct

**WLAN:**

- Location Based Services (LBS) is no longer configurable on devices without WLAN or WLC option
- Public Spot template preview is visible only if a Public Spot option exists on the LANCOM device
- A configured Public Spot login text is displayed correctly
- Reduced memory usage with enabled aggregation and 802.11n modules

**LCOS improvements 9.10.0530 RU5 ► 9.20.0385 RC1****Important notice to the update:**

The Loader 4.18 has to be flashed before updating the firmware of the LANCOM 1631E, LANCOM 831A and Business LAN R800A to LCOS 9.20.

**New Features:****Network Connectivity:**

- Support for automated rollout via DHCP option 43
- The SCEP client obeys certificate dependencies
- Support for DTMF conversion for All-IP
- Support for SNMPv3
- The Voice Call Manager supports now TCP for SIP connections
- The Voice Call Manager supports now Voice over Secure IP (SIPS/SRTP)
- The amount of detected devices is shown with ll2mdetect
- The ADSL/VDSL state displays modem sync duration and connection count
- NTP client and server support IPv6
- Option for changing EAP-TLS settings, if the LANCOM device works as 802.1x supplicant
- Support for IKEv2
- Support for BGP v4
- The device status display shows an active backup connection and the number of established backup connections
- A backup can be triggered if a memorized route is no longer available (Route Monitor)
- The IPv6 firewall rule „Allow-IPSec“ is enabled by default
- Using syslog, DNS requests can be forwarded to an external syslog server
- LCOScap supports IPv6
- Support for IPv6 VPN with IKEv1
- A Syslog server can be enregistered as DNS name or IPv6 address
- SIP messages can be set to be only accepted from the SIP registrar
- Overlap dialing support for SIP trunks
- WAN connection prio tags are taken over to the VLAN header according to 1TR-112 or DSCP
- Extended support for TR.069 and TR.181
- The syslog shows the reason for a denied RADIUS server authentication request
- Support for ChaCha20-Poly1305 for SSH
- CA support for SCEP message GetCaCaps
- Adapted IKE and PFS default groups to DH group 14 within VPN
- Registered SIP users are not deleted on configuration changes
- Support for ISDN parallel calls
- Support for IPPerf as server and client
- Switchable configuration protocols
- Added an open ports display in WEBconfig under the „Services“ tab
- Powersaving for ethernet interfaces is enabled by default
- Removed the VLAN tagging mode „Incoming mixed“
- DHCP lease time is configurable per network
- Password complexity for the main device password and further administrators can be forced



**WLAN:**

- IAPP is disabled if a CAPWAP tunnel is active
- Support for Airtime Fairness
- Radio-field optimization can be done on autonomous Access Points
- Multiple AutoWDS profiles can be configured on a WLC
- Support for Adaptive RF Optimization
- Support for Wireless Intrusion Detection System (WIDS)
- Average WLAN error rates of particular Access Points can be read out on a WLC
- Using the URL variable „%r“, the MAC address of the Access Point to which a client is authenticated can be transmitted in a Public Spot redirect.
- The absolute elapse time of a Public Spot voucher can be configured in minutes and seconds
- Added a counter for displaying failed WPA authentication attempts
- Specified data rates can be configured per SSID
- The Public Spot function „Accept Terms and Conditions“ is utilizable when using PMS
- The displayed columns can be configured within the Public Spot/Manage User wizard
- Surplus blank characters while typing usernames and passwords are removed automatically
- The assigned bandwidth profile for a Public Spot user can be shown on the voucher
- Brute Force protection can be realized by configuring a login blocker
- Added a switch to forward HTTPS connections from unauthenticated clients to the Public Spot gateway
- Added an option to preview the uploaded Public Spot templates via WEBconfig
- Support for Spectral Scan for 802.11ac WLAN modules
- Improved WLAN rate adaption
- The current channel width and used MCS are now displayed in the WLAN interpoints table and in the station table

**Bugfixes / Improvements:****Network Connectivity:**

- Fixed a bug which led to a router restart when viewing the SMS inbox via WEBconfig
- Fixed a DNS resolution problem where an explicit DNS forwarding configuration was needed
- Port forwarding of VPN ports 500 and 4500 works again
- Fixed the firewall packet action „Only when default route“
- Variable „DEVICE\_URL“ works again when used with the „loadscript“ command
- If a VPN tunnel is established via DynDNS names, the name is re-resolved immediately after a disconnect, so that the tunnel is not established to the previous address
- A SIP phone call via SIP-ALG, which uses PRACK, is no longer disconnected
- The Internet configuration wizard sets the correct netmask within WEBconfig
- Fixed a problem which led to a router restart due to lack of memory
- A dynamic VPN connection can be established via Load Balancer
- The time display within the IPerf status table is shown more noticeable
- Outgoing SIP Trunk lines of a phone system via SIP-ALG are no longer disconnected
- Corrected the negotiated WAN interface MTU for IPv6
- Fixed a bug which prevented a 4G backup connection establishment

**WLAN:**

- Fixed a problem that only particular clients could authenticate to an 802.11ac accesspoint
- Fixed a bug which led to a several minute lasting inaccessibility of an accesspoint in client mode while roaming between base stations
- Configuration can be written again to devices with less memory
- Check of the DNS server response is now case insensitive
- Fixed a certificate error when an accesspoint tries to connect to a WLC

### Comments

If you want to upgrade the firmware of your device to a new version, please install the latest LCMS version 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.