Information regarding

LCOS Software Release 9.20 RC1

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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 dowload from LANCOM Systems.

This document describes the innovations within LCOS software release 9.20 RC1, 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.

2.   Known Issues

Latest support notes and known issues regarding the current LCOS version can be found in the download area of our website http://www.lancom-systems.eu/Common-Support-Hints.64.0.html

3. New Features, Improvements and History

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 IPerf 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

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LCOS improvements 9.10.0488 RU4 ► 9.10.0530 RU5

Important notice to the update:

Please note that with LCOS 9.10 the interface binding "any" is no longer supported. For more information, see the knowledgebase article at this link.

New Features:

Network Connectivity:

- Support for VLAN Prio Tagging with ADSL/VDSL lines
- Added a configuration option for accepting SIP messages only if the SIP line is registered
- Support for VDSL Inventory
- Automatic generation of device depending SSH- and SSL keys

WLAN:

- Configurable PMK cache size
- Added a configurable account lock to prevent Brute Force attacks in Public Spot

Bugfixes / Improvements:

Network Connectivity:

- Fixed a bug which could lead to a memory problem
- Setup is no longer forwarded exclusively to ISDN-1 on incoming calls
- Fixed a „no communication" problem with modem connections
- Analog calls are answered correctly
- Call forwarding on time (CFNR) can be used with internal call groups
- The LBS client restarts, even if the LANCOM device is restarted
- SSH and HTTPS access per ISDN admin dial-in work again if it is forbidden via WAN access
- RTP data is routed accurately when multiple ARF networks are configured
- Configured parameters are set accurately by the All-IP wizard
- „*" can be set as wildcard via WEBconfig
- Fixed a memory problem

LCOS improvements 9.10.0426 RU3 ▶ 9.10.0488 RU4

Important notice to the update:

Please note that with LCOS 9.10 the interface binding "any" is no longer supported. For more information, see the knowledgebase article at this link.

New Features:

Network Connectivity:

■   Support for LANCOM 1784VA

Korrekturen/Anpassungen:

Network Connectivity:

■   Switchable support for H.323
■   Station names of clients which got their IP address from a DHCP relay can be resolved by the LANCOM device
■   Fixed a problem with T.38 modem connections

WLAN:

■   Fixed a band steering problem which prevented clients from authenticating to the WLAN

LCOS improvements 9.10.0405 RU2 ► 9.10.0426 RU3

Important notice to the update:

Please note that with LCOS 9.10 the interface binding "any" is no longer supported. For more information, see the knowledgebase article at this link.

New Features:

Network Connectivity:

- Routing method „consider DiffServ field" is enabled by default
- DNS SRV Record requests can be answered by the LANCOM if a SIP line with the same registrar is configured
- The used Voice Call Manager port range can be configured

WLAN:

- Redirects for Public Spot HTTPS connections are now switchable

Bugfixes / Improvements:

Network Connectivity:

- Registered SIP lines are disconnected as intended, if the appropriate interface is disabled
- Fixed a bug which led to a malfunction in routing between ARF networks
- UMTS network scan improvements
- Special characters are displayed correctly in forwarded SMS
- Configured GRE tunnel are established as intended
- Fixed a bug which caused the PMS interface to go to failed state after a short time
- Holding and transferring a phone call works again as intended
- Improved allocation of incoming VPN tunnels to multiple concentrators
- Improved reliability for aggressive mode XAUTH VPN dial-in
- Volume budget reset only on the configured date
- Call forwarding when using All-IP can be deactivated again
- Improved ADSL/VDSL sync behaviour for LANCOM 1781 devices
- "Recall at …" works again

WLAN:

- IP addresses of the registered Public Spot clients are checked for plausibility before displaying them
- Fixed a problem with occasionally non-accessible 802.11n Access Points
- Stability improvements for P2P indoor-only mode connections in the 5 GHz band

LCOS improvements 9.10.0382 RU1 ► 9.10.0405 RU2

Important notice to the update:

Please note that with LCOS 9.10 the interface binding "any" is no longer supported. For more information, see the knowledgebase article at this link.

New Features:

Network Connectivity:

■ Support for LANCOM 1783VA and LANCOM 1783VAW

LCOS improvements 9.10.0333 Rel ► 9.10.0382 RU1

Important notice to the update:

Please note that with LCOS 9.10 the interface binding "any" is no longer supported. For more information, see the knowledgebase article at this link.

New Features:

Network Connectivity:

■ The number of configurable VoIP lines has been increased to 20
■ The to be connected mobile network can be selected based on the signal strength
■ T.38 support when using the All-IP option

WLAN:

■ Using the Public Spot web API, 802.1x users can now be created, too
■ P2P distances longer than 1km can be configured for the LANCOM L-13xx

Bugfixes / Improvements:

Network Connectivity:

■ Devices with a device name consisting of more than 16 characters are displayed correctly within the web search
■ If a backup profile is configured within the RADIUS server, the configuration is written back correctly
■ Improved firmware upload ruggedness

WLAN:

■ A problem was solved where an error message showed up when using the Public Spot user management
■ TLS connections are now disconnected as intended

LCOS improvements 9.10.0289 RC2 ► 9.10.0333 Rel

Important notice to the update:

Please note that with LCOS 9.10 the interface binding "any" is no longer supported. For more information, see the knowledgebase article at this link.

New Features:

Network Connectivity:

- The access rights via WAN interface are now "not allowed" by default
- Calls via SIP are no longer interrupted when a configuration is written back
- After a reset, the LANCOM generates a seperate RSA key for TLS/SSL device certificates
- The entry field for DHCP options was extended to 251 characters
- The number of configurable SIP users was increased to 10

WLAN:

- The button "save as CSV" can be hidden within the Public Spot user wizard

Bugfixes / Improvements:

Network Connectivity:

- A problem was solved where a WWAN connection to T-Mobile was not established
- The VPN rules are re-created correctly if the configuration is changed via script during a tunnel connection establishment
- DNS works correct again in a backup scenario
- The LANCOM does no longer answer itself to all incoming IP requests through an L2TP tunnel if the internal L2TP tunnel address is a Class C address
- The error message that appeared while generating a certificate without activating the CA was adjusted
- If a fax is received from an external SIP line and passed to an internal T.38-capable receiver, an associated reinvite will not be discarded
- ARP packets are forwarded over an EoGRE Tunnel as expected
- The active routing table is displayed correctly again
- When using SIP ALG via a VPN tunnel the busy lamp field of SNOM and Yealink SIP phones works correctly again
- After a reinit, the WWAN module of a 1781VA-4G responds again
- With activated firewall a ping from a tagged IPv6 network is routed correctly again
- The receipt time of an SMS is displayed correctly
- Routing tags in CAPWAP retransmits are set again according to the network
- For compatibility with existing software any ASN.1 strings for certificates and certificate requests are no longer UTF-8 encoded

WLAN:

- The assignment of WLC tunnels to bridge groups is working again as intended
- The error message "user limit reached" is no longer displayed in the Public Spot if this is not the case
- SSIDs with spaces are now handled correctly
- Regardless of uppercase and lowercase of admin accounts, the related Public Spot vouchers are now displayed
- A client is duly separated from the Public Spot if the volume budget is exceeded

LCOS improvements 9.10.0262 RC1 ► 9.10.0289 RC2

New Features:

Network Connectivity:

- Incorrect or unanswered Register packets with SIP lines will be sent only after an adapted time so that the provider will not be flooded with requests
- Support of PPPoE snooping
- At Telekom All-IP connections the VLAN handling is automatically negotiated on the WAN

WLAN:

- Within the station table a * can be used as wildcard
- ESL and iBeacon profiles can be distributed via a WLC
- Support of iBeacon operation mode „managed"

Bugfixes / Improvements:

Network Connectivity:

- A PPTP connection works even if the target is an IPSec backup connection
- The LBS service will now start properly if this is switched active via a script
- If a call from the LANCOM is made, a Re-Invite of the provider does not lead to a dropped connection
- Daily sent mails from the Content Filter include again all overrides that have occurred
- SNMP bulk queries no longer run in a timeout when TACACS+ is active and for which there is no community TACACS+ account
- DHCPoE connections are now created by default with the MAC address type "global" instead of "locally"
- The password of a local user can be changed via a script when TACACS + is active
- Data over a PPTP connection is not blocked by the firewall, if a QoS reservation was generated
- Active SIP lines and calls are not disconnected if a configuration is being written
- External calls via All-IP can be hold again
- To avoid problems in the VLAN negotiation with certain DSLAMs, the default MAC address type for WAN interfaces was changed from "local" to "global"

WLAN:

- WLC clustering works correct again over a routed connection
- If the radio field optimization starts when only one access point is connected to the WLC, the AP no longer remains permanently in the optimization

LCOS improvements 9.04.0129 RU3 ► 9.10.0262 RC1

New Features:

Network Connectivity:

- With the new CLI command „show script error" only the occurred errors of an installed script can be displayed.
- Support of CWMP (TR069)
- E-mail notifications of Content Filter has been improved.
- Support of Client-Binding bei Nutzung des Load-Balancing.
- The certificate authority is now included in all VPN routers with at least 25 VPN connections allowed.
- The public part of the certificate authority can now be downloaded from the WEBconfig.
- The certificate authority now supports one-time passwords.
- SCEP was the algorithms AES-192, AES-256, SHA-256, SHA-384 and SHA-512 extended.
- Certificates can now be created via WEBconfig.
- A wizard to revoke issued certificates has been added.
- The interface assignment "Any" has been removed.
- With the new CLI command „do /Other/Flash-Restore" changes in test mode are undone, without restarting the LANCOM.
- Support for IPSEC over PPTP dial-ins for Windows 2000 and XP has been removed.
- The status of certificates for new access points is displayed at CAPWAP.
- The L2TP sender address can be configured.
- The LED mode of the access point can be configured through the WLC.
- Improvements of RADIUS-Servers
- Improved backup behavior for dual-SIM devices.
- Status Information of Public Spot users can be hidden for the WEBconfig.
- The device name was increased up to 64 characters.
- Support GRE tunnel
- The configuration of the LANCOM can be saved encrypted and uploaded.
- Automatic configuration adjustment for 7100+, 9100+, WLC-4025+ and WLC-4100

WLAN:

- LANCOM with a 802.11ac interface now support the client and P2P mode.
- Location Based Service has been improved.
- The acceptance of access points via the WAN interface of a WLC can be configured.
- More than 4 GB can now be configured for the volume budget in the RADIUS server.
- Up to 16 SSIDs can be configured per WLAN module.
- For wireless routers the WLAN interface is disabled in default.
- A maximum bandwidth per client can be configured for each SSID.
- The button "Export CSV" at the Public Spot Wizard can now be hidden.
- VLAN-Handling in Public-Spot was improved.

Bugfixes / Improvements:

Network Connectivity:

- External ISDN errors no longer lead to a reboot of the router, a syslog message is sent instead.
- A problem was solved that caused that after a phase 2 rekeying no new phase 2 SA was established.
- The "Line Control Interval" parameter for a SIP trunk is now works as expected.
- A problem was solved which led to that after a VPN Phase 2 Soft timeout no new phase 2 SA has been established.
- The monitoring interval for SIP trunks is handled correctly.
- SIP trunks register even if the SIP-ALG is enabled.
- A PPTP connection works even if the target is an IPSec backup connection.
- If a SIP client uses AAC compression over an All-IP connection, a voice connection can be established nevertheless.
- If a VPN connection is terminated, no IPSec Keepalive packets are sent anymore.
- Unanswered REGISTER packets are repeated at short intervals.
- The call status table displays the original number.

WLAN:

- The limitation to 20 MHz channels is transferred from a WLC to an access point.
- Stability improvements for scenarios with many WLAN clients.
- A problem was solved where WLAN clients were registered, but no data transmission was possible.
- Prevention of duplicate MAC address entries in the station table.
- Stabilization and acceleration of EAP key handshake phase during the WLAN connection establishment.
- A problem with AR93xx based WLAN modules in TKIP encrypted networks has been fixed.
- Automatic sequence number handling to support older and newer wireless drivers and clients.

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.