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LANCOM
Systems

Information regarding

LCOS Software Release 9.10 SU10

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25.10.2017, CBuersch

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1. Preface

LCOS ("LANCOM Operating System") is the operating system for all LANCOM routers, WLAN 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 9.10 SU10, as well as the improvements since release 9.04.

Before upgrading the firmware, please pay close attention to chapter 3 of this document.

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

2. New features, improvements, and history

LCOS improvements 9.10.0727 RU9 ► 9.10.0773 SU10

Bugfixes / improvements

Wi-Fi

> A security issue within WPA2 authentication (KRACK attack) using 802.11r (Fast-Roaming) while in AP mode (base station) has been fixed:

> *CVE-2017-13082: accepting a retransmitted Fast BSS Transition Reassociation Request and reinstalling the pairwise key while processing it*

Please check with the manufacturer of your Wi-Fi client for the availability of updates. These devices need to be updated, too.

> A security issue within WPA2 authentication (KRACK attack) using WLAN client mode / WLAN station mode with 802.11ac-Wi-Fi modules as well as while using P2P connections with 802.11ac- and 802.11a/b/g/n Wi-Fi modules has been fixed:

> *CVE-2017-13077: reinstallation of the pairwise key in the Four-way handshake*
> *CVE-2017-13080: reinstallation of the group key in the Group Key handshake*

The WLAN client mode / WLAN station mode with 802.11a/b/g/n Wi-Fi modules is not affected.

Note:

LCOS is not affected by the following WPA2 security issues (KRACK attack):

CVE-2017-13084: reinstallation of the STK key in the PeerKey handshake
CVE-2017-13086: reinstallation of the Tunneled Direct-Link Setup (TDLS) PeerKey (TPK) key in the TDLS handshake
CVE-2017-13087: reinstallation of the group key (GTK) when processing a Wireless Network Management (WNM) Sleep Mode Response frame
CVE-2017-13088: reinstallation of the integrity group key (IGTK) when processing a Wireless Network Management (WNM) Sleep Mode Response frame
CVE-2017-13078: reinstallation of the group key in the Four-way handshake
CVE-2017-13079: reinstallation of the integrity group key in the Four-way handshake
CVE-2017-13081: reinstallation of the integrity group key in the Group Key handshake

LCOS improvements 9.10.0717 PR ► 9.10.0727 RU9

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.

Bugfixes / Improvements

Network Connectivity

> Fixed a problem that led to a non-working HTTPS communication from an Apple device with iOS 10 or macOS 10.12 to a LANCOM.

LCOS improvements 9.10.0715 RU8 ► 9.10.0717 PR

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.

Bugfixes / Improvements

Network Connectivity:

> Dynamic VPN connections will not remain in the "incoming" state after a forced disconnect
> Station objects within the firewall will be created correctly after a config sync

LCOS improvements 9.10.0666 RU7 ► 9.10.0715 RU8

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.

Bugfixes / Improvements

Network Connectivity

> More than two additional gateways configured for a PPTP connection work as dedicated
> Fixed a problem with RIP in conjunction with VRRP, when similar routes with different routing tags were not learned correctly
> Fixed a bug which prevented a VPN connection establishment with active polling
> VPN connection establishment via ISDN (D channel) works again
> ISDN admin access to the LANCOM device works again
> Fixed a WoL (Wake on LAN) bug via VPN client dial-in
> Access to a particular configuration within WEBconfig causes no device restart
> Fixed a bug which lead to call aborts on outgoing calls
> WWAN connections are established reliably after configuration changes

LCOS improvements 9.10.0629 RU6 ► 9.10.0666 RU7

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.

Bugfixes / Improvements

Network Connectivity

> There was a bug that caused incoming LAN packets have been assigned to the wrong routing tag.
> After a call was held the voice will be transmitted as provided again.
> Fixed a problem with T.38 fax transmission.
> PPTP tunnels are re-established after an item is added to the backup table.
> Fixed a problem with enforced bandwidth reservation.
> The performance of new sessions per second in scenarios with many IPv4 routes was improved.

LCOS improvements 9.10.0530 RU5 ► 9.10.0629 RU6

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.

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
> SNMP requests to big tables do no longer lead to the problem that the LANCOM does not answer any SNMP requests after a while
> Port forwarding of VPN ports 500 and 4500 works again
> Fixed the firewall packet action „Only when default route"
> If multiple devices are connected to the analog port, device hangups are reliably recognized
> 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
> A dynamic VPN connection can be established via Load Balancer
> The time display within the IPerf status table is shown more noticeable
> Corrected the negotiated WAN interface MTU for IPv6
> Fixed a bug which prevented a 4G backup connection establishment
> Fixed a problem which led to a router restart due to lack of memory

Wi-Fi

> When using the Public Spot XML interface with Radius-Server forwarding, all attributes are observed
> Fixed a bug which led to a several minute lasting inaccessibility of an accesspoint in client mode while roaming between base stations

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

Wi-Fi

> Configurable size of the PMK cache
> 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

Bugfixes / Improvements

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

Wi-Fi

> 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

Wi-Fi

> 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 lead 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

Wi-Fi

> 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

Wi-Fi

> 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

Wi-Fi

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

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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

Wi-Fi

> 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

Wi-Fi

> 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

Wi-Fi

> 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"

Wi-Fi

> 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

Wi-Fi

> 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.

Wi-Fi

> 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.

LCOS improvements 9.04.0084 RU2 ► 9.04.0129 RU3

New Features

Network Connectivity

> Internal ISDN Users are now found better if the MSN of the incoming call contains a country / area code.
> The calling party number is adjusted to the ISDN format, during an incoming call over an all-IP connection.
> Improved echo cancellation
> Support of ISDN Clear Mode

Bugfixes / Improvements

Network Connectivity

> If overlapping networks are configured, reply packets are forwarded to the correct network.
> An P address assigned by the DHCP server, is only checked against the network via which the DHCP request came in.
> If router advertisements with MTU are received by an IPv6 WAN interface, the MTU is forwarded to the LAN when the PD-source type router advertisement is used.
> SMS can be sent via LANmonitor again.
> There was a bug that caused that during a conversation of an ISDN telephone over an All-IP line the voice transmission was aborted.
> The Called Party Number for ISDN users will not always be transmitted as subscriber number.
> The connection establishment of an L2TP over IPSec connection after an abortion has been improved.
> A LANCOM now responds on his name again with its IP address while a DNS lookup.
> Additional configured gateways now also work with L2TP connections.
> If a PPPoE connection is configured via WEBconfig, a correct PPP list entry will be created.
> If the IPv6 firewall is deactivated, the configuration access paths work as expected.
> A problem was solved that caused that the RTP data were not treated properly, causing some conversations sounded "chopped".
> If a WAN connection is aborted and established, a SIP trunk is also established correctly.
> A problem was solved that caused that the ADSL upstream and downstream were not displayed.
> If a call from the LANCOM is made, a Re-Invite of the provider does not lead to a dropped connection.
> Activated call number suppression do not block an outgoing call on an All-IP telecom.
> The internal prefix is no longer set for outgoing external calls.
> The Telekom voicemail box can be retrieved.

LCOS improvements 9.04.0079 RU1 ▶ 9.04.0084 RU2

Bugfixes / Improvements

Network Connectivity

> The WEBconfig basic configuration wizard was improved
> In the CLI, it is no longer possible to create multiple DNS entries for the same name
> Improvements for the LANCOM All-IP Option
> The antenna gain is not configureable any longer for the LANCOM L-151E

LCOS improvements 9.00.0258 / 9.02.0258 RU3 ▶ 9.04.0079 RU1

New Features

Network Connectivity

> Support for the ALL-IP option.

Bugfixes / Improvements

Network Connectivity

> A problem with the COM port server was solved.
> A problem with the VPN load balancer was solved.
> LC-1781VA(-4G), LC-1781VAW: The ADSL sync behavior in auto mode was improved.
> If a "fragmentation needed" is resolved during a SCEP certificate request, the next packet isn't sent with the original size.
> A problem with the bandwidth reservation was solved.

Wi-Fi

> After expiration of the Public Spot ticket, the access expires even if the re-login timer has a longer duration than the Public Spot ticket.
> The same user cannot log into the Public Spot if the multiple log-in is deactivated and the upper/lower case is not observed.

3. 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.