Information regarding

LCOS Software Release 7.70

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 7.70, as well as the changes since release 7.58

Warning Hint – Backing up the current configuration

Before upgrading the firmware to LCOS 7.70 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 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.

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".

Remarks regarding the usage of VoIP options

VoIP options for LANCOM 1821 Wireless ADSL are dicontinued with LCOS 7.20. The final version containing the VoIP Call Manager is LCOS 6.32.
As from LCOS 7.5x support for VoIP options for the devices LANCOM 1511 Wireless DSL and 1521 Wireless ADSL is discontinued. The final version containing the VoIP Call Manager is LCOS 7.30.
For the „VoIP ready" routers LANCOM 1711 VPN, 1721 VPN and 1811 Wireless DSL support for the subsequently installed VoIP option will be discontinued with LCOS version 7.56. If you want to continue using your VoIP option, please do only use LCOS versions up to and including 7.54.
For T-Systems Business LAN R800+ VoIP functionality is discontinued in LCOS 7.60
LCOS 7.70 is the final version supporting VoIP options for the remaining „VoIP ready" devices.

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, Changes and History

LCOS changes 7.70.0092 RC3 -> 7.70.0100 Release

Bugfixes / Changes:

WLAN (for LCOS 7.70.0100):

- After resetting the LANCOM device to factory defaults, a changed configuration can be written back to the device using LANconfig

Miscellaneous (for LCOS 7.70.0099):

- If WEBconfig is opened with IE6 the menu-scrollbars are displayed again
- Authentication with Picopoint works again
- Improved communication between accesspoint and WLAN controller
- If 802.11n is deactivated on an 802.11n-able accesspoint, a re-initialization of the WLAN card works without failure (e.g. Background Scanning)
- IKE Config mode can be used with a CISCO ASA5520
- Analog calls are listed in the Call Info table on VoIP devices
- If public spot users are managed by the LANCOM-internal RADIUS server, the automatic userlist clearing up can be used again
- Users added by the PublicSpot wizard are managed by a RADIUS server as from LCOS 7.70
  Please look for current support hints on www.lancom-systems.eu/Common-Support-Hints.64.0.html#3 for activation of the RADIUS server

LCOS changes 7.70.0078 RC2 -> 7.70.0092 RC3

Bugfixes / Changes:

VoIP:

- Corrected CLIP on the ISDN interface
- Outgoing calls of a local superordinate registered SIP user can be established again
- Internally received SIP info signals are forwarded correctly on the SIP line
- On incoming calls with suppressed caller ID no invalid character string is sent to the phone
- Unitymedia SIP lines can be registered

WLAN:

- Configurable number of repetitions for probe responses
- Forwarding of RADIUS requests does no longer lead to memory loss
- No more LCOS watchdog when calling the accesspoint table of a WLC from within WEBconfig

Network Connectivity:

- No more LCOS watchdog when using scripts for configuring LANCOM devices
- A routing tag of an internal service which was automatically set will be overwritten if a loopback address is specified
- When using remote station referenced VRRP the backup router takes this function if the configured remote station fails

Miscellaneous:

- When using IE6 with WEBconfig the vertical scrollbar is displayed
- If a script sets not supported functional rights for further admins, these attributes are ignored

LCOS changes 7.70.0072 RC1 -> 7.70.0078 RC2

Bugfixes / Changes:

Network Connectivity:

- If the LANCOM RADIUS server authenticates WLAN clients via TLS, the is no access point restart anymore
- Even after longer uptime of the LANCOM 1751 UMTS without plugged SIM card the UMTS modem is still accessible.
- If a mailserver uses tarpitting, the LANCOM does not close the half-open connection early
- 802.11n clients which repeatedly break the WLAN connection to the accesspoint do no longer lead to a WLAN interface standstill

LCOS changes 7.60.0160 Release -> 7.70.0072 RC1

New Features:

WLAN:

- BFWA support (Broadband Fixed Wireless Access)
- Added country profile Irland in the WLAN wizard (5,8 GHz, 2 Watts, no DFS)
- Performance improvements for 802.11n point to point connections
- Improved DFS 2 recognition for 802.11n
- If desired, the voucher validity period for public spot users starts after the first login

Network Connectivity:

- Support for IGMP Snooping
- Support for TACACS+
- Any telnet tables can be sent using the email notification
- VPN Hardware encryption is activated by default for LANCOM 17xx and 18xx

Bugfixes / Changes:

WLAN:

- The use of the maximum powersave functionality of the USB-300 agn does no longer lead to transfer problems in 802.11n mode
- Default WLAN encryption changed to 802.11i-WPA-PSK
- Enhanced Auto mode of the ethernet interfaces for the devices LANCOM L-305 and LANCOM L-310: Gigabit link will be reduced to fast ethernet if a temperature of 35°C is exceeded. So the allowed temperature range can be extended to 0°C - 45°C.

VoIP:

- Incoming calls to a "1und1" SIP line with suppressed caller number are signalized to the internal user
- Voice calls can be established via 2nd S0 bus again
- Improvements on voice quality for calls between SIP and ISDN
- If call forwarding is active it is selectable for each direct access line if the original Caller-ID or the caller number of the extension line has to be used as sender number
- The Re-Register packet is sent earlier so that registration to an "AGFEO-LANmodul" is not at risk

Network Connectivity:

- Packets tagged by the firewall can be routed locally
- The DHCP broadcast bit is no longer used on WAN connections
- If the firewall sees a port scan or SYN flooding, the access to the affected host will be allowed again when the attack is finished
- Accounting information for bundled DSL connections are captured correctly
- DSLoL connections can be established with activated VLAN
- It is possible to enter the network number instead of network name within the UMTS profile
- If the firewall changes the DSCP (DiffServ-Codepoint) of packets, this will be taken into the VPN packet header, too
- Bigger port ranges in the port forwarding table do no longer lead to a router restart
- Access to a LANCOM via loopback address is possible with disabled session restore
- Line switch mode is disabled for NOVATEL UMTS cards
- Internal services follow the time-controlled default route
- HSUPA can be disabled on the LANCOM 1751 UMTS
- Sending RIP information can be disabled in RIP configuration

Miscellaneous:

- WEBconfig: the rekeying cycle of the WLAN encryption settings can be configured correctly
- Tabs may be used within scripts
- WEBconfig: point to point configuration now selectable for MAC address
- WEBconfig: corrected Annex version for ADSL interface settings
- WEBconfig: corrected ISDN interface protocol display
- Corrected PublicSpot authentication page
- Corrected data in the public spot information window
- WEBconfig: assignment for PPP list authentication protocols
- Characters „*" and „" can be used for call numbers within WEBconfig's remote station list
- WEBconfig: configurable UMTS/ISDN remote station list for LANCOM 1751 UMTS
- The LANCOM saves the ID of the WEBconfig session, so there is no need for re-authentication after a router restart/LCOS upload

LCOS changes 7.60.0150 RC2 -> 7.60.0160 Release

Bugfixes / Changes:

WLAN:

- Possibility to set the 802.11n data rate to a fixed value
- A remote access point is able to find the WLAN controller again
- FCC access points can only be configured to conform to FCC when being configured by WLC
- If a managed access point uses an external RADIUS server, the password attribute configured in the access point will be transmitted (default: MAC address)
- The OAP-54-1 WLAN module works in the correct temperature range now

VoIP:

- When call-forwarding it is possible to configure (per subscriber) if the extension line number of the redirector, the real calling ID or an individual sender call number is transmitted to the redirection target
- VoIP Option discontinued for R800+

Miscellaneous:

- No unwanted activation of the NTP send mode in WEBconfig
- When sending ICMP errors the sender address is determined correctly depending on the routing tags
- Due to insufficient main memory there is no LCOS 7.6 for LANCOM 1821 Wireless ADSL. The final LCOS version for this device is 7.58

LCOS changes 7.60.0124 RC1 -> 7.60.0150 RC2

Bugfixes / Changes:

WLAN:

- 802.1x authentication with TTLS can be used with the AirLancer client
- Despite temporary disconnect of the WLAN connection the Public Spot bandwidth limitation is active furthermore
- When using a WLAN controller, "*", "#" and spaces can be used within the SSID
- Performance improvements, particularly for 802.11n

VoIP:

- If the call number of a SIP device is suppressed, calls can be established though
- The „From" name of a SIP client is transmitted as authentication name
- An AGFEO phone system can be configured via ISDN remote per LANCOM

Network Connectivity:

- Portforwarding to more than eight remote stations does no longer lead to LCOS-Watchdogs
- A computer which has its NETBIOS name stored in an entry of the DHCP station table can be reached by pinging from the router
- DHCPINFORM packets are ignored if the client address is not part of the respective ARF network
- Overlapping cross reauthentication within CHAP do no longer lead to disconnects
- Corrected eradication of interlinked firewall rules
- The target remote station of a firewall rule is now treated correctly as condition
- Improved PPTP throughput
- The assigned WAN DHCP address is reported in syslog
- Stability improvements on VPN connections which are using client mode within IKE config mode
- On RAS connections the LANCOM communicates itself as a DNS server only if the primary DNS server is not configured
- An XAUTH connection from a dynamic IP address to the LANCOM can be established
- Discontinued support for dynamic VPN V1. Affected are VPN connections to LANCOM devices running an LCOS older than 5.x. With incorrect PPP entries there will be no dynamic VPN connection, too.

Miscellaneous:

- A LANCOM 1751 FCC is configureable again
- DHCP station table configureable again
- Corrected selection of the DynDNS remote station in the WEBconfig wizard
- WEBconfig's DynDNS wizard adds action table entries in the correct sequence
- The LANCOM 1751 UMTS ISDN interface is available again per WEBconfig internet wizward
- The WEBconfig internet wizward stores the complete PPP user data within the configuration
- The WEBconfig internet wizward activates the selected UMTS interface
- Fixed declaration of the maximum character count within WEBconfig
- Fixed configuration of the NTP request interval within WEBconfig

LCOS changes 7.58.0019 -> 7.60.0124 RC1

New Features:

WLAN:

- Multiple WLCs can match statistics in the network
- Weather radar channels 120, 124 and 128 are no longer used due to DFS policies
- Communication between WLAN clients can be suppressed per SSID

VoIP:

- Single SIP accounts, trunks, links and gateway lines may be used without registration
- After a T.38 Switchover the correct call numbers and lines are displayed
- If an external call is switched to an ISDN user via PBX, a communication in both directions is possible
- If a H.245 connection is not terminated on the same IP address as the H.323 connection, this connection will be treated correctly in masquerading
- An incoming call on a T-Online VoIP line is closed correctly, even if the call is not answered
- The SIP registrar does not allow user authentication from unknown domains
- Support for SIP-Privacy (methods for transmitting the Caller-ID) referring to RFC3325 and/or IETF-Draft-SIP-Pivacy-04

Network Connectivity:

- The serial interface of the LANCOM is accessible via LAN (RFC2217)
- Interface tags for remote stations can be learned via routing table
- Declaration of the WAN-RIP remote station now possible using wildcards
- Switchable PPP authentication protocols
- Firewall rules can be restricted for backup case
- A session limitation per station is configurable via firewall
- Bandwidth restriction configurable per station
- Bandwidth limitations in the firewall can be specified as percentage of the overall bandwidth
- The configuration of a further VPN remote station as a backup for a VPN remote station is possible
- LCOS and configuration data can be fetched from and written to a LANCOM device via HTTP(s)
- Using the LANCOM layer 2 management protocol (LL2M), a configuration is even possible if the device is not reachable via IP
- XAUTH client- and server support
- Routing tags can be specified in access lists
- In a BOOTP table a MAC adress can be assigned to multiple ARF networks
- VPN packets are sent using the correct SA

Miscellaneous:

- New WEBconfig layout
- Enhanced setup wizards in WEBconfig
- Local administrators can be denied the trace facility
- Configurable SNMP version for sending traps
- Improved line editor in telnet
- Extended action table display
- Dynamic configuration tables allow e.g. configuration of unlimited VPN remote stations
- OpenSSL library update to v0.9.8i

Bugfixes / Changes:

VoIP:

- The line prefix is set correctly on call forwardings
- OPTIONS requests are answered
- VCM DNS information is refreshed if required
- Background noise while holding a call is eliminated
- A configured backup line will be used when the analog line is busy
- The display name which is used as info item in the D channel is passed through to SIP side

Network Connectivity:

- Option to establish multiple PPTP tunnels to the same PPTP server
- UMTS may be used as backup for a DHCPoE connection
- Bugfix for the client of the IKE config mode
- If the name of a PPTP remote station consists of 16 characters, the PPP negotiation is not done using DEFAULT if the remote station is already assigned to the IP address
- DHCP requests from the LANCOM to a DHCP relay are done completely even in AUTO mode
- IP addresses from the WAN pool are released if the connection is closed

Miscellaneous:

- Prefix line of the least cost router table extended to 10 characters

4. Comments

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.