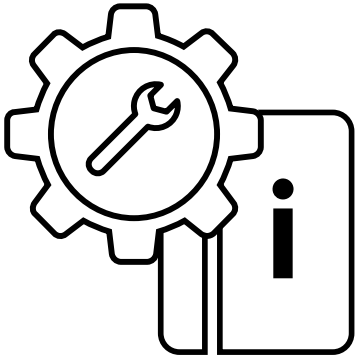
Installation Guide

Switches



LANCOM SYSTEMS

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Wuerselen, 02/2023

Introduction

Overview

LANCOM switches are the foundation for a reliable infrastructure. These switches deliver multiple intelligent features for improving the availability of your critical business applications, protecting your data, and optimizing your network bandwidth to deliver information and applications more effectively. Easy to set up and use, they provide the ideal combination of economic efficiency and technical capabilites from entry level to enterprise level networks. All models offer enhanced security and management functions. In addition, they have networking features to support common applications of data, voice, security and wireless networking.

Switch architecture

The switches performs a wire-speed, non-blocking switching fabric. This allows wire-speed transport of multiple packets at low latency on all ports simultaneously. The switch also features full-duplex capability on all ports, which effectively doubles the bandwidth of each connection. The switches use store-and-forward technology to ensure maximum data integrity. With this technology, the entire packet must be received into a buffer and checked for validity before being forwarded. This prevents errors from being propagated throughout the network.

Network management

LANCOM Systems offers two types of switches: unmanaged switches and managed switches.

→ Unmanaged switches are not configurable.

→ Managed switches support configuration via LANCOM Management Cloud (LMC), a web-based GUI, or CLI (Command Line Interface via SSH or Telnet). For outband management, these switches either provide a front-sided RJ45 console port, or a serial port at the front- or backside of the device. This port can be used for connecting a null-modem cable to a PC for configuration and monitoring purposes.



A LANCOM switch automatically contacts the LMC for 24 hours after startup (boot / reset) to successfully terminate the coupling. This enables zero-touch deployment for operation with the LMC.

Configuration options overview

	LMC	CLI	Outband	Web-based
Unmanaged Switch	—	—	—	—
Managed Switch	✓	✓	✓	✓

Safety instructions and intended use



In order to avoid harming yourself, third parties or your equipment when installing your LANCOM device, please observe the following safety instructions. Operate the device only as described in the accompanying documentation. Pay particular attention to all warnings and safety instructions. Use only those third-party devices and components that are recommended or approved by LANCOM Systems.

Before commissioning the device, be sure to study the Quick Reference Guide supplied with the hardware. These can also be downloaded from the LANCOM website (www.lancom-systems.com).
Any warranty and liability claims against LANCOM Systems are excluded following any usage other than the intended use described below.

Environment

LANCOM devices should only be operated when the following environmental requirements are met:

- → Ensure that you comply with the temperature and humidity ranges specified in the Quick Reference Guide for the LANCOM device.
- → Do not expose the device to direct sunlight.
- → Ensure that there is adequate air circulation and do not obstruct the ventilation slots.
- → Do not cover devices or stack them on top of one another
- → The device must be mounted so that it is freely accessible (for example, it should be accessible without the use of technical aids such as elevating platforms); a permanent installation (e.g. under plaster) is not permitted.

Power supply

Please observe the following before installation, as improper use can lead to personal injury and damage to property, as well as voiding the warranty:

- → Use only the power adapter / IEC power cable mentioned in the Quick Reference Guide.
- → Some models can be powered via the Ethernet cable (Power-over-Ethernet, PoE). Please observe the relevant instructions in the Quick Reference Guide for the device.
- → Never operate damaged components.
- → Turn the device on only if the housing is closed.
- → The device must not be installed during thunderstorms and should be disconnected from the power supply during thunderstorms.
- → In emergency situations (e. g. in the case of damage, ingress of liquids or objects, for example through the ventilation slots), the power supply must be disconnected immediately.
- → Operate the device only with a professionally installed power supply at a nearby and any time accessible power outlet.

Applications

- → The devices may only be used in accordance with the relevant national regulations and under consideration of the legal situation applicable there.
- → The devices must not be used for the actuation, control, and data transmission of machinery that, in case of malfunction or failure, may present a danger to life and limb, nor for the operation of critical infrastructures.
- → The devices with their respective software are not designed, intended or certified for use in: the operation of weapons, weapons systems, nuclear facilities, mass transportation, autonomous vehicles, aircraft, life support computers or equipment (including resuscitators and surgical implants), pollution control, hazardous materials management, or other hazardous applications where failure of the device or software could lead to a situation in which personal injury or death could result. The customer is aware that the use of the devices or software in such applications is entirely at the customer's risk.

General safety

- → Under no circumstances should the device housing be opened and the device repaired without authorization. Any device with a case that has been opened is excluded from the warranty.
- → Notes on the individual interfaces, switches, and displays on your device are available in the supplied Quick Reference Guide.
- → Mounting, installation, and commissioning of the device may only be carried out by qualified personnel.

Installation

For safe and secure installation of your LANCOM device, please observe the safety instructions and intended use.

Selecting a site

The switch can be mounted in a standard 19-inch equipment rack or on a flat surface. Be sure to follow the guidelines below when choosing a location.

→ Position the switch near the devices you want to link and near a power outlet.
→ Be able to maintain the temperature of the switch within the limits listed in the Hardware Quick Reference Guide.
→ Have the switch accessible for installing, cabling, and maintaining the devices.
→ Allow the status LEDs to be clearly visible



Make sure that one rack slot is left free above and below for air circulation when installing the device in a rack.



Make sure the twisted-pair Ethernet cable is always routed away from power lines, radios, transmitters or any other electrical interference.

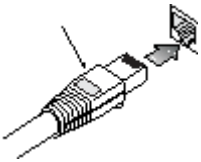


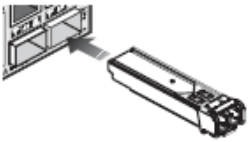
Make sure that the switch is connected to a separate grounded power outlet that provides 100 to 240 VAC, 50 to 60 Hz

Ethernet cabling

To ensure proper operation when installing the switch into a network, make sure that the available cables are suitable for 100BASE-TX or 1000BASE-T operation. Check the following criteria against the current installation of your network:

- → Cable type: Unshielded twisted pair (UTP) or shielded twisted pair (STP) cable with RJ-45 connectors; Category 5e with maximum length of 100 meters is recommended for 100BASE-TX, and Category 5e or 6 with maximum length of 100 meters is recommended for 1000BASE-T
- → Protection from radio frequency interference emissions
- → Electrical surge suppression
- → Separation of electrical wires and data – based network wiring
- → Safe connections with no damaged cables, connectors or shields





Package content and accessories

Before beginning with the installation, please check that nothing is missing from your package. Along with the LANCOM switch the box should contain the following accessories:

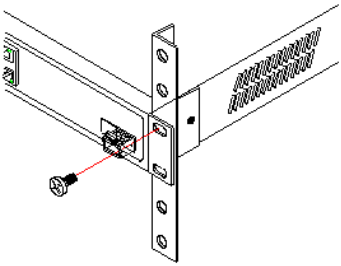
- → Power cord
- → 19” adapter (2 pieces) and mounting materials
- → Serial cable (model dependent)
- → Printed documentation

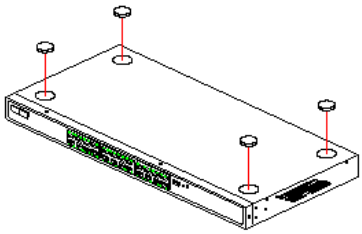
Should anything be missing, please immediately contact your dealer or the address on the delivery note supplied with your device. Ensure that you have all accessories at hand which might be required during installation.

Mounting and connecting the LANCOM switch

Installing the LANCOM switch involves the following steps:

→ Mounting – The device is designed for mounting in an available 19” unit in a server cabinet. Make use of the supplied mounting brackets for 19“ cabinets. If necessary fix the rubber pads to the underside of the device to prevent any scratching to other equipment.





Ensure that the device has sufficient ventilation to prevent damage from excessive heat build-up.

→ LAN connection – Connect the network devices to the ports of the LANCOM switch by means of a suitable twisted-pair cable (TP cable). The connectors automatically detect the available data transfer speeds and the pin assignment (autosensing).

Use only standard TP cables of category CAT 5 or better with a maximum length of 100 m to ensure the best possible data transfer. Crossover cables can be used thanks to the auto-sensing function.

→ Supply power – Supply power to the device by means of the IEC power cable and/or an external power supply unit (model dependent).

→ Ready for operation? – After a brief self-test, the power or system LED lights up continuously. Green Link / Act LEDs show which LAN connectors are used for a connection.

Configuration

Configuration options for managed switches

There are three different options to configure the device:

- → Via a graphical user interface in a browser (WEBconfig):
  This configuraton option is only available if you have network access to the device's IP address from your computer.
- → Via a graphical user interface in a browser (LANCOM Management Cloud – LMC):
  This configuration option is only available if you have network access and both your device for configuration and the switch have a connection to the LANCOM Management Cloud.
- → Configuration via console (Command Line Interface – CLI):
  This method of configuration, which requires a program such as SSH, Telnet, Hyperterminal, or similar, can be conducted over a network connection or with a direct connection via serial interface (RS-232 / RJ45).

WEBconfig

There are two ways of starting the configuration by browser:

→ If you know the device's IP address, simply enter this into the address line of the browser. The factory settings for accessing the device are:
  - Before LCOS SX 4.00: User name: **admin**, password: **admin**
  - As from LCOS SX 4.00: User name: **admin**, password: **<empty>**

→ If you do not have the device's IP address, LANconfig can be used to search for it. LANconfig automatically searches for all available devices in your network. Any available LANCOM routers or access points will be displayed in the list, including LANCOM switches. Double-click on this entry to start the browser automatically with the correct IP address.

What is the IP address of my LANCOM switch?

The current IP address of the LANCOM switch after being switched on depends on the network constellation.

→ a Networks with DHCP server – In its factory settings, the LANCOM switch is set for auto DHCP mode, meaning that it searches for a DHCP server to assign it an IP address, subnet mask and gateway address. The assigned IP address can only be determined by using the appropriate tools (e. g. LANconfig) or via DHCP server. If the DHCP server is a LANCOM device, the IP address of the LANCOM switch can be read out from the DHCP table. If this is the case, the LANCOM switch can be accessed from any network computer that receives its IP address from the same DHCP server.

→ Network without a DHCP server – If no DHCP server is present in the network, the LANCOM switch adopts the address **172.23.56.250**. If this is the case the LANCOM switch can be accessed from any network computer with its IP address set to the address range **172.23.56.x**.

LANCOM Management Cloud

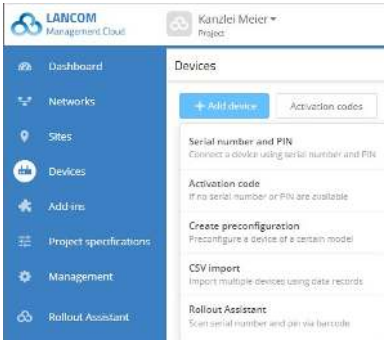
In order to configure a LANCOM switch via the LANCOM Management Cloud (LMC), it must first be integrated into the LMC.
Integrating the switch into the LMC requires the switch to be connected to the Internet and able to reach cloud.lancom.de.
There are several different methods of integrating a LANCOM device into the LANCOM Management Cloud:

- → Integration into the LANCOM Management Cloud by serial number and Cloud PIN
- → Integration into the LMC by LMC Rollout Assistant
- → Integration into the LANCOM Management Cloud by activation code

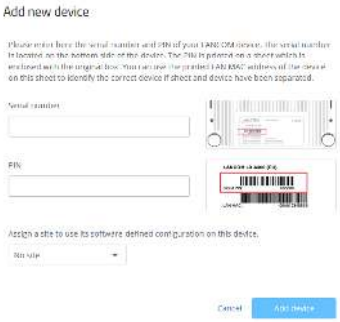
Integration into the LMC by serial number and Cloud PIN
If you have purchased a LANCOM switch that was shipped with LCOS SX (formerly LANCOM Switch OS) 3.30 or later – i.e. it is already "Cloud-ready" – all you have to do is simply add the device to a project in the LANCOM Management Cloud (Public).
You will need the serial number of the switch and the associated Cloud PIN. You can find the serial number on the bottom of the switch or in LANconfig or WEBconfig. The Cloud PIN can be found on the Cloud-ready flyer, supplied with the device.



In the LANCOM Management Cloud, open the **Devices** view and click **Add new device**, then select the desired method, here **Serial number and PIN**.



In the next window, enter the serial number and Cloud PIN of the device. Then confirm with the button **Add new device**.

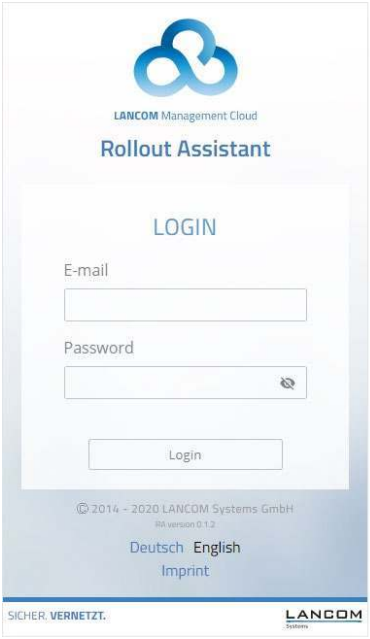


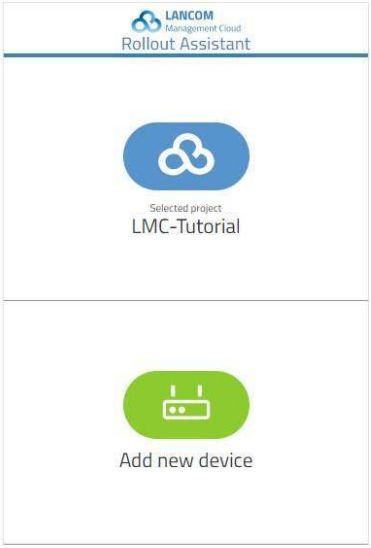
The next time the LANCOM device has contact with the LANCOM Management Cloud (Public), it will be paired automatically. A LANCOM switch automatically contacts the LMC for 24 hours after startup (boot / reset) to successfully conclude the pairing. After these 24 hours you can restart this period by a reset or use the following method with activation code.

Integration into the LMC by LMC Rollout Assistant

The Rollout Assistant is a web application. It uses a device equipped with a camera and Internet access, such as a smartphone, tablet or notebook, to read the serial number and PIN. It offers an extremely easy way to connect the device to the LMC.

To start the Rollout Assistant, just enter the URL cloud.lancom.de/rollout into a browser. The Rollout Assistant opens with this login screen:





You select the desired language and login to the LMC using your credentials. On the next page, you select the project that new devices are added to. Do this by tapping the green button and scanning the serial number. The Rollout Assistant may request access to the camera on the device to do this. You scan the serial number either on the underside of the device or alternatively from the barcode on the packaging box. Otherwise, you can enter the serial number manually.

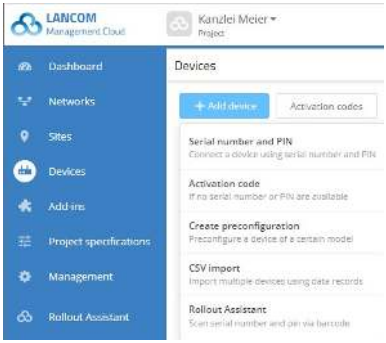
Next, scan the cloud PIN from the information sheet enclosed with the device. Here, too, you have the option of entering the PIN manually.

Now you can select one of the locations available in the project, or optionally use **No location** to leave this item open. Bear in mind that the location is an important setting for the configuration by SDN (Software-defined Networking).

In the next step, you assign various properties to the device. You give the device a name, enter an address, and take a photo of the installation. The address can be determined with the GPS information from your device.
In the final step, the information is displayed once again for checking. If you find any errors, simply go back and correct the corresponding entry.
Click or tap **add device** to pair the device with the LMC. You will immediately see it in your project and can make other settings if necessary. As soon as you connect the device and it connects with the LMC, it is provisioned with an initial operating configuration based on the SDN settings, and the status changes to “online”.

Integration into the LMC by activation code
This method uses LANconfig and just a few steps to integrate one or more LANCOM devices simultaneously into the LANCOM Management Cloud.

Create an activation code
In the LANCOM Management Cloud, open the **Devices** view and click **Add new device**, then select the desired method, here **Activation code**.

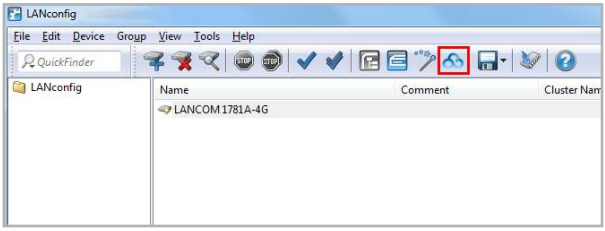


Create an activation code by following the instructions in the dialog. This activation code allows you to integrate the LANCOM device into this project at a later time.

The **Activation code** button displays all of the activation codes for this project in the Devices view.

Using the activation code

Open LANconfig and select the desired device or devices and click the Cloud icon in the menu bar.



In the dialog window that opens, enter the activation code that you generated previously and click the button **OK**.

4 If you copied an activation code to the Clipboard, it is automatically entered into the field.

Once the device is paired with the LANCOM Management Cloud, it is available in the project for further configuration.

Zero-touch & auto configuration

A LANCOM device in its factory settings will initially try to contact the LMC. If it succeeds, i.e. the device has Internet access, then the LMC can check whether the device is already assigned to a project. In this case, it rolls out the auto-configuration created by software-defined networking (SDN) to the device.

This eliminates the basic configuration and the switch immediately receives the correct configuration. What this means is that you do not actually have to carry out any on-site configuration of the switches, i.e. “zero touch” for the administrator.

The automatic contact attempts to the LMC deactivate automatically after 24 hours. Alternatively, you can also disable them in WEBconfig.

Command Line Interface via network

If you know the IP address of the managed switch (see section above) and the device is accessible from your computer via the network, you can use the command line interface via the network.

→ To do this, start a console such as SSH or Telnet and enter the device's IP address as the target.

→ Log on with user name and password

- Before LCOS SX 4.00: User name: **admin**, password: **admin**
- As from LCOS SX 4.00: User name: **admin**, password: **<empty>**

Command Line Interface via serial connection

If you do not know the IP address of the managed switch, you can use the command line interface via a serial connection.

→ Use the serial configuration cable to connect the LANCOM switch to the configuration computer (see "Mounting and connecting the LANCOM switch").

→ Start a terminal program on the configuration computer, such as PuTTY. Use the following parameters for the connection:

Baud rate: 115200
Stop bits: 1
Data bits: 8
Parity: N
Flow control: none

→ Log on with user name and password

- Before LCOS SX 4.00: User name: **admin**, password: **admin**
- As from LCOS SX 4.00: User name: **admin**, password: **<empty>**

LANCOM Service & Support

You have chosen a LANCOM or AirLancer product with highest reliability. If you still encounter a problem, you are in best hands!

LANCOM Support

(Quick) Installation Guide / Quick Reference Guide
If you encounter any problems when installing or operating your product, the included Quick Installation Guide or included Installation Guides and Quick Reference Guides will help you in many cases.

Support from reseller or distributor
You can contact your reseller or distributor for support:
www.lancom-systems.com/how-to-buy

Online
The LANCOM Knowledge Base is always available via our website:
www.lancom-systems.com/knowledgebase
In addition you can find explanations of all features of your LANCOM device in the LCOS reference manual:
www.lancom-systems.com/publications
We offer free end-customer support for selected devices:
www.lancom-systems.com/supportrequest

Firmware
The latest LCOS firmwares, drivers, tools, and documentation can be downloaded free of charge from the download section on our website:
www.lancom-systems.com/downloads

Partner support
Our partners get additional support access according to their partner level. More information can be found on our website:
www.lancom-systems.com/mylancom

LANCOM Service

Warranty
LANCOM Systems provides a voluntary manufacturer warranty on all products. For more Information, please refer to the General Warranty Conditions at: www.lancom-systems.com/warranty-conditions
The warranty period depends on the device type:

- → 2 years for all LANCOM unmanaged switches as well as accessories
- → 3 years for all routers, gateways, Unified Firewalls, WLAN controllers, and access points
- → 5 years for all LANCOM managed switches (except switches with Limited Lifetime Warranty)
- → Limited Lifetime Warranty for switches (for suitable switches see www.lancom-systems.com/infopaper-llw)

Within the EU: To apply for warranty you need an RMA number (Return of Material Authorization). In this case please contact our support team. More information can be found under der following link: www.lancom-systems.com/repair
Outside EU: Please contact your reseller or distributor.

Lifecycle
The LANCOM lifecycle applies to the support of products. For more information please visit the LANCOM website: www.lancom-systems.com/lifecycle

Options for your individual requirements
LANCOM offers individually tailored value-added services according to your needs to help you protect your investment for little money.
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Individual support contracts and service vouchers for best possible support with guaranteed response times can also be found at:
www.lancom-systems.com/support-products

Your LANCOM team

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