

LANCOM Techpaper

LANCOM Management Cloud (LMC) Rollout



Until now, large-scale projects with many devices required all of these various devices to be configured individually. This configuration often has to be conducted on-site. For your highly qualified IT staff, this can take up significant amounts of their valuable time.

The LMC has made the manual configuration of individual devices a thing of the past—software-defined technology (SD-WAN, SD-LAN, SD-WLAN, SD-SECURITY) now delivers fully automated configuration. All the administrator has to do is to use the LMC to specify the framework conditions for the design of the network.

Auto-configuration and zero-touch deployment implement an automated rollout with maximum security.

Zero-touch deployment means that commissioning a device merely involves mounting it on location and connecting it up. Thanks to the auto-configuration per software-defined networking (SDN), the network administrator does not need to touch the device. It

is immediately ready for use. This means that the devices can be mounted and connected on-site by less qualified personnel.

In this document we briefly explain the various rollout options available with the LMC.

Requirements for device rollout

The following article assumes that a project has been created and that the networks and locations are already defined. For the specific project and/or locations, a Smart-Config or add-ins should be predefined as they automatically implement the configuration for any device that is new to the project or location. Also see the LANCOM techpaper “Concepts behind the LANCOM Management Cloud”.

Rolling out devices

The basis of any network is the devices that make it up: Gateways/routers, switches, access points, and Unified Firewalls. Any recent LANCOM device can be paired with a project in the LMC, and thus managed by it. Older devices are also cloud-ready if they run LCOS 10 or higher or, in the case of LANCOM switches, if they support LCOS SX 3.30 or

higher. LANCOM R&S®Unified Firewalls are cloud-ready as of LCOS FX 10.4 and later.

Manual assignment

You can manually assign this device to a project and to a location at the same time. Just enter the serial number found on the device or on the outside of the box, along with the Cloud PIN, which is provided on a separate information sheet shipped with every device. In the LMC, go to **Devices** and click **Add new device**.


Add new device

1. Step

Please enter here the serial number and PIN of your LANCOM device. The serial number is located on the bottom side of the device. The PIN is printed on a sheet which is enclosed with the original box. You can use the printed LAN MAC address of the device on this sheet to identify the correct device if sheet and device have been separated.

Serial number

PIN



No serial number and PIN?

Assign a location to use its software-defined configuration on this device.

Cancel

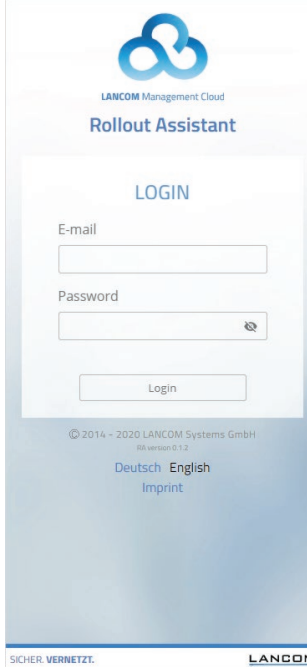
Add Device

This method is ideal for projects that manage smaller numbers of devices. Irrespective of the number of devices, this is the required procedure for allocating devices to an LMC project if they are not yet online, have to be paired with the LMC, and commissioned by zero-touch.

Assignment by Rollout Assistant

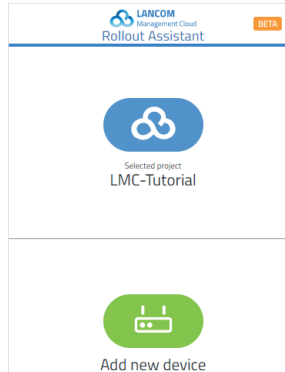
The Rollout Assistant is a web application. It uses a device equipped with a camera and Internet access, such as a smartphone, tablet or notebook, to read the serial number and PIN. It offers an extremely easy way to connect the device to the LMC.

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. The latter option is recommended if the barcode sticker on the device is very small, for example on a LANCOM LW-500. 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.

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. Not only is this information helpful for managing the devices, it can also be useful for a remote administrator communicating with an on-site technician.

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”.

Assignment by activation code

Devices that are managed by LANconfig are easily transferred to the LMC simply by means of an activation code. In the LMC go to **Devices**, click on **Activation codes** and then on **Create activation code**. This creates a temporary activation code. While it remains valid, this code can be used to activate any number of LANCOM devices, i.e. to transfer them to the LMC.

In LANconfig, mark one or more devices that you want to manage via the LMC and then select the menu item **Device > Pair device with LANCOM Management Cloud**. By entering the activation code, you pair those devices with the cloud and assign them to the project used to create the activation code.

This firmly connects the device to this project, and it cannot be moved to another project without your intervention. If at a later date you want to pair the device with a different project, you have to delete it from the first project or transfer it directly to the other project. You can do this using the **Transfer** option at the top of the device overview.

With the LANCOM devices registered in a project, they can be assigned to their locations. This information can be supplemented with a photo and a description of the device location (19" rack, suspended ceiling, ...) as a help to administrators working remotely. This can be useful for communications with on-site technicians.

As soon as the devices at their respective locations are connected, they contact the LMC. The device is automatically displayed in the project it is assigned to. If one of the automatic location detection methods listed below can be used to automatically assign the location, the configuration is rolled out—otherwise the location must first be assigned manually.

This method is particularly suitable for migrating existing projects to the LMC. However, when planning in advance, you should consider that migration may cause existing configurations to be overwritten by the auto-configuration. Be sure to discuss this in advance with your LANCOM representative in order to identify potential problems in good time.

Assignment via CSV import (bulk import)

A sample file is available to help you use the correct format. Download this in the LMC from **Devices, CSV import**. Currently this consists of columns for the serial number, the PIN, and the location.

Use a spreadsheet program to enter the serial number (found on the device or on the outside of the box) and the cloud PIN (found on a separate information sheet shipped with every device) into your CSV file. The serial number and cloud PIN are also available in barcode format and can be scanned in.

Enter the location if this is already known. Often you do not yet know which device is to be delivered to which location. For cases like this, help is available with the automatic assignment to a location by IP address or DHCP server, as described below.

You then upload your file to the LMC under **Devices** by clicking **CSV import**.

This method is suitable for any project, especially for medium to large-scale projects. You may want to create an application to scan the data from the devices and write the bulk import CSV file, so avoiding errors with the serial numbers and cloud PINs.

Serial number listing by LANCOM

With very large projects involving 1,000 devices or more, devices delivered directly to the customer in batches of 200 pieces or more can be supplied with the serial numbers and cloud PINs compiled in a CSV file as prepared by LANCOM. This should be clarified in advance with your LANCOM representative.

The result of this is that these devices can be automatically integrated into the respective LMC project in advance by means of a bulk import. Devices contacting the LMC for the first time are automatically assigned to the correct project, where they are automatically configured and put into operation (zero-touch/auto-configuration).

WEBconfig Rollout Wizard

As of LCOS 10.20 RU1, you can also add devices to the LMC with the Rollout Wizard in WEBconfig. To do this, use WEBconfig to open the configuration of the device being integrated into the LMC and execute **Setup Wizards > Rollout**.

Follow the instructions in the wizard to identify the LMC domain (e.g. a private LMC), an activation code, a project name (for a possible future extension), a location, and how the device is to function (as a gateway, access point, or manually defined). The latter is for future extensions of the LMC to include further device functions. This allows you to use these functions in the future without having to update to the latest LCOS.

This would allow, for example, multiple routers to be set to operate as gateways. Working in this way allows the LMC to be used to roll out an automated VPN configuration for redundant central-site VPN gateways.

The device then connects to the LMC and receives its configuration.

Zero-touch & auto-configuration

A LANCOM device in its factory default 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 SDN to the device.

In the case of an upstream router with an Internet connection, if it has a dedicated WAN Ethernet port (e.g. a LANCOM 1900EF) it can find a DHCP server, and thus the LMC. It then receives the correct configuration immediately. Further information can be found in the [LANCOM Knowledge Base](#). Otherwise, this basic configuration must be performed for the router at this location.

What this means is that you do not actually have to carry out any on-site configuration of the access points, switches, and (if applicable) the router, i.e. "zero touch" for the administrator.

Automatic rollback

Each time the LMC changes the configuration of a device, it then checks for connectivity to the LMC. If the LMC cannot be reached within five minutes, the device will return to its previous configuration.

This rescue mechanism prevents misconfiguration and stops you from being locked out.

Automatic location assignment by IP source address

If the IP subnets of the managed locations are uniquely assigned in the LMC, it can automatically assign a device to a location during rollout based on the source address of the device. The prerequisite for this is that the management network containing the LANCOM devices has a unique IP address range at each different location, so that devices reporting to the LMC with their IP address can be assigned to their location unambiguously. The associated SDN configuration is then automatically rolled out to the device when it is commissioned.

You have to activate this option in the project specifications. Under the **Project specifications**, click on the **Basic** widget. In the section **Automatic startup procedure**, enable the option **Site allocation based on device IP address**.

Automatic startup procedure i

- Site allocation based on device IP address
- Site allocation based on site information provided by device

Next, change to **Networks** and enable the option **Use this network for automatic site registration** for each one.

Automatic site allocation via DHCP

Using a LANCOM-specific DHCP option, the DHCP server can communicate information about the current location to connected devices. Using this information, devices can be automatically assigned to a location by the LMC even without a unique source address. If the DHCP server on a LANCOM router is also managed via the LMC, the DHCP option is automatically configured when the following feature is enabled: **Project specifications > Basic > Automatic startup procedure > Site allocation based on site information provided by device**.

Alternatively, you can configure these settings for the DHCP server in the LANCOM router using LANconfig under **IPv4 > DHCPv4 > LMC parameter**:

You can also use this DHCP option to inform the device about the domain used by the private LMC.

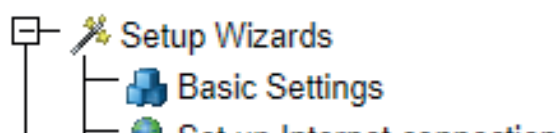
Redirect mechanism for Private LMC

Every device in its factory default settings knows the Public LMC and will attempt to report to it. An administrator or user can bind devices to a project in a Private LMC by using the serial number and PIN. The Private LMC then reports this to the LANCOM Public LMC via the Internet. If one of these devices then reports to the Public LMC, it is automatically directed to the correct Private LMC. You have no additional effort here since the LANCOM technician will already have set this up during the installation of the Private LMC.

Considerations for WAN routers

As mentioned in the “Zero-touch & auto configuration” section above, a WAN router with a dedicated WAN Ethernet port that finds a DHCP server can also find the LMC and immediately receive the correct configuration. Otherwise, the on-site router requires a basic configuration to be carried out, e.g. by entering the access data for a DSL connection. In most cases it suffices to start the “Set up Internet access” setup wizard.

To do this, use WEBconfig to open the configuration of the device being integrated into the LMC and execute **Setup Wizards > Set up Internet access**.



All it takes is a few steps to connect to the Internet.

“Minimal touch”

LANCOM devices with a USB port and in their factory default settings (e.g. after being unpacked or reset) will read a script file from an inserted USB stick and immediately execute the configuration commands in the script. This makes it easy to provide a technician with an appropriately prepared USB stick for configuring the WAN router on site. This may not be zero-touch, but at least inserting a USB stick into the WAN router is “minimal touch”. Further information can be found in the [LANCOM Knowledge Base](#).

Internet connections from some providers do not require specific PPPoE/DSL access data. In this case, this type of script can be applied universally. Talk to your LANCOM representative if you need help creating a script.

Important

DHCP / VLAN-ID

Note that when LANCOM devices in their factory settings are connected to the network, their LAN Ethernet port (or the WAN Ethernet port on WAN Ethernet routers) acts as an untagged DHCP client, i.e. data traffic is sent without a VLAN-ID. Consequently, the port has to reach an untagged DHCP server and reach the LMC untagged.

Establishing communications

Communications are established exclusively from the devices to the LMC. The protocols used are DHCP, DNS, and HTTPS. For this reason, no HTTPS proxy should be operated between the devices and the LMC. You should consider this when configuring an upstream firewall.

Summary

With auto-configuration and zero-touch deployments, the LMC provides optimal support for rolling out devices in projects of any size.

For smaller projects, devices are quickly and easily connected to the LMC by entering the serial number and cloud PIN.

In these cases, the Rollout Assistant is ideal for performing the pairing. This method of commissioning directly on site is performed quickly and easily with a smartphone.

For larger projects, the bulk import of the devices with a CSV file provides you with a convenient way to list the devices by means of a spreadsheet. All of your devices are then connected to the LMC in a single step.

With very large projects, devices delivered directly to the customer in batches of 200 pieces or more can be supplied with the serial numbers and cloud PINs already compiled in a CSV file as prepared by LANCOM.