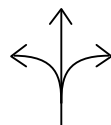# LANCOM Management Cloud

Automated. Software-defined.

The LANCOM Management Cloud is the world's first fully integrated management system that intelligently organizes, optimizes, and controls your network architecture in the areas of WAN, LAN, Wi-Fi, and Security. State-of-the-art software-defined technology drastically simplifies the provision of integrated networks and makes the manual configuration of individual devices a thing of the past. The system adapts dynamically to your requirements, it is future-proof and offers maximum security.
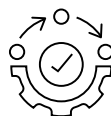
Maximum agility and versatility

State-of-the-Art security

Radical time and cost savings

Highly automated multi-service networks in top quality

LANCOM Management Cloud

Fully automated configuration

LANCOM has made the manual configuration of individual devices a thing of the past – software-defined technology now delivers fully automated network orchestration. All the administrator has to do is to specify the framework conditions for the design of the network. Auto-configuration and zero-touch deployment implement an automated rollout with maximum security. Complex network configurations, previously the cause of intense manual effort by certified IT professionals, is now reduced to just a few minutes and a few clicks

Routing, switching, Wi-Fi, Security

The LANCOM Management Cloud is a holistic system that controls the entire network infrastructure. This is only possible through a perfectly compatible product portfolio: All gateways, all routers, all switches, all access points, and all firewalls are quickly and easily transferred to the cloud-based network orchestration for a holistic cloud management.

The easiest way into the cloud

It takes just a few clicks to integrate your devices into the LANCOM Management Cloud – be they new devices or existing infrastructures. You decide whether to switch your entire network over to innovative cloud management, or whether to take it step by step: A gradual transition of your different locations is easy to implement – so take a closer look at the full power of hyper integration.

|		
SD-WAN gateway	Switch	Access point
Unified Firewall	Switch	Access point
vRouter / vFirewall	Switch	Access point
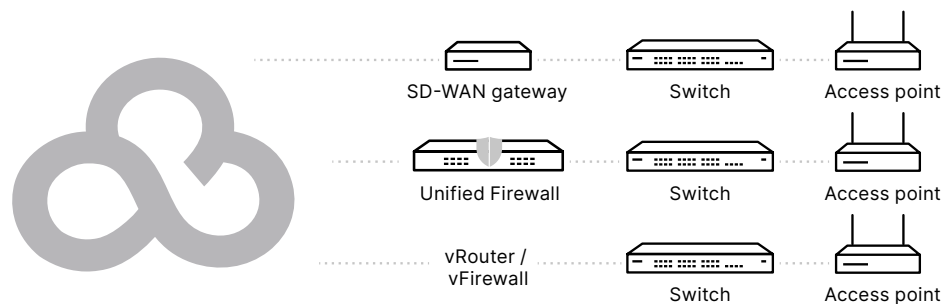
LANCOM Management Cloud

SD-WAN

A software-defined wide-area network (SD-WAN) automatically and dynamically uses any type of wide-area network (WAN) for your site connectivity. New locations are installed automatically, securely networked with one another, and new applications are created and rolled out with just a few clicks.

Maximum agility for your site connectivity

Cloud-managed LAN

A cloud-managed LAN supports the automated, dynamic, and secure provisioning of any type of multi-service network on switch ports. What used to be the extremely timeconsuming and error-prone configuration of individual switches is now fully automated.
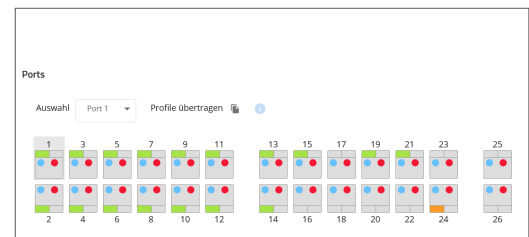
Dynamic, automatic switch configuration

Cloud-managed Wi-Fi

A software-defined wireless local-area network combines the features of conventional WLAN controllers and cloud-managed Wi-Fis and supplements these with maximized automation and agility. Further access points or new applications such as hotspots are easily integrated into the network, taking full account of all network policies relating to VLANs, security, bandwidth management or client management.
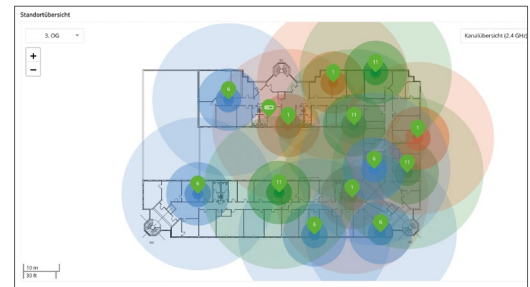
Location-independent, automated Wi-Fi

Cloud-managed Security

Cloud-managed Security provides centrally orchestrated network security: The LANCOM Management Cloud handles the complete firewall configuration, configurations of the Content Filter, the Anti-Virus function, SSL Inspection, and Application Management. Network-wide or site-specific security policies are also monitored centrally.
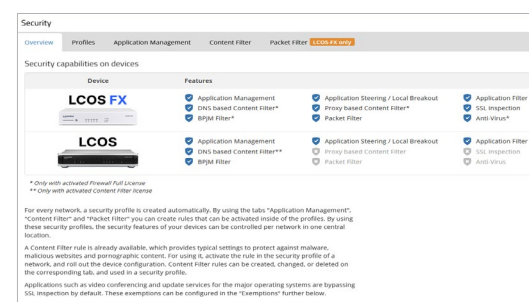
One-click Security

LANCOM

SYSTEMS

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LANCOM Management Cloud

Product variants	
Public Cloud	A variant of the LANCOM Management Cloud hosted at a data center in Germany
Private Cloud	A variant of the LANCOM Management Cloud operated by LANCOM customers on their own premises

Security	
Data hosting service (Public Cloud)	All devices and personal data are hosted at a ISO 27001-certified datacenter in Germany and are subject to German and European data protection regulations
IT security "Made in Germany"	LANCOM Systems bears the quality seal "IT security made in Germany" from TeleTrusT for compliance with the following requirements: → The company is headquartered in Germany. → The company offers trusted security solutions. → The products contain no hidden access paths. → Research and development in IT security takes place in Germany. → The company is committed to satisfying the requirements of German data protection regulations.
Security auditing	Regular security auditing and pentesting by external test laboratories
Secure device communication	HTTPS- / TLS-secured communication between all managed devices, certificate-based authentication, secure and unambiguous assignment of equipment and projects (claiming & pairing)

Scope of services - network management	
Firmware management	Central distribution of firmware versions to single or multiple devices
SD-WAN	Automatic networking of sites via VPN, including network virtualization over the wide-area route. SD-WAN Application Routing also enables certain applications defined by the administrator to be routed directly to the Internet (local break-out). SD-WAN functions for LANCOM R&S®Unified Firewalls: → Automatic 1-click VPN networking → ARF network virtualization with end-to-end transmission of separate IP networks / VLANs SD-WAN capabilities for LCOS-based routers and gateways: → Automatic 1-click VPN networking → ARF network virtualization with end-to-end transmission of separate IP networks / VLANs (also overlapping) → Layer-7 application routing (local break-out) → Dynamic Path Selection (quality-based routing with up to 4 WAN connections, incl. session switching and sub-second failover) → Dynamic Traffic Steering (application-dependent routing)
Cloud-managed LAN	→ Configuration of LAG settings and graphical assignment of networks to switch ports with automatic, continuous VLAN switching → Convenient management and monitoring for units of a switch stack → Visualization of switch stack status information
Cloud-managed Wi-Fi	Automatic configuration of all access points and Wi-Fi routers incl. multi-SSID, Active Radio Control (Band Steering, Adaptive RF Optimization), Fast Roaming, VLAN, authentication and Wi-Fi anomaly detection, floor plans per site, incl. graphical Wi-Fi channel management, utilization monitoring and transmission power adjustment, support for the 6 GHz frequency band (Wi-Fi 6E)

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Cloud-managed Security	Centralized and highly automated configuration of network-wide compliance policies, network security, and optimal bandwidth utilization across all network components such as Unified Firewalls and LCOS-based routers and gateways. Applications or Content Filter categories can be blocked or allowed direct access. Unified Firewalls also protect against viruses and malware, and thanks to SSL Inspection, scanning, filtering, and application detection can also be used for encrypted data packets, and security policies can be successfully implemented. Cloud-managed Security functions for LANCOM R&S®Unified Firewalls: → Anti-Virus for web- and e-mail data traffic → SSL Inspection for web- and e-mail data traffic → Application Management with Ipoque R&S®PACE2 engine → Content Filter for web data traffic with extension for blocking websites harmful to minors (BPjM filter) → High Availability (HA) Cloud-managed Security functions for LCOS-based routers and gateways: → Application Management → Content Filter with BPjM filter for web data traffic
Two-factor authentication	Network management protection by two-factor authentication on LMC login, as well as when managing single projects. Besides the access data, the login can be secured by adding a time-based one-time 160 bit key password according to RFC-6238.
Wi-Fi hotspot	Convenient setup of a simple hotspot (cloud-managed hotspot) incl. on-demand VLAN for secure network separation and roaming support for LANCOM access points. Landing page, welcome text, terms and conditions, and login password, custom URL forwarding, and temporary hotspot vouchers as PDF or CSV exports in the hotspot portal.

Scope of services – monitoring

Anomalies information	In the LMC, the data from the managed WLAN devices is evaluated using various metrics and compared with previously defined threshold values. As soon as this threshold value is repeatedly exceeded in a certain interval, the affected device is marked accordingly in the LMC and the administrator receives an alert.
Site, user and project tables	Filtering or sorting according to criteria such as device type, serial number, firmware version, and configuration status, etc., individual comment fields available
E-mail notifications	Automatic information by e-mail, if the system does not work faultlessly. The convenient notification center allows an overview of important network events at any time and sends an e-mail if a notification has been closed. This covers: device suddenly offline; device configuration has been changed, could not be loaded or deployed; firmware update failed, automatic firmware update failed or successful; automatic licensing was not successful; WAN backup connection is active. Related events can be displayed consolidated — without the risk of spam.
Open Notification Interface / Webhooks	Centralized monitoring and alerting system to route event notifications (anomaly detection, configuration rollout, etc.) from devices bound to the LMC to umbrella monitoring systems (e.g. Splunk, Spectrum) or messaging systems (e.g. Slack, Telegram)
Individual device monitoring	Detailed display of device-specific information such as: → Wi-Fi channel → Wi-Fi quality → Total throughput → Cloud latency → CPU load → Switch usage → Blocked threats (LANCOM R&S®Unified Firewalls only)
Organization dashboard	Convenient overview of all projects, location-aware placement of projects on a map, traffic-light indicators of device status
Projekt-Dashboard Security & Compliance	Clear overview if all network devices are configured according to corporate security policies.
Projekt-Dashboard WAN / VPN	Overview of all VPN connections including status (active/inactive)
Projekt-Dashboard WLAN / LAN	Aggregate monitoring information about sites, floor plans, devices, error states, clients, and applications (layer 7) for a project. Clear proportional display of the online- / offline status for all devices in the site overview map. A complete list of LANCOM devices supporting Layer-7 application detection is available in the LANCOM Systems Knowledge Base.

LANCOM Management Cloud

Scope of services – logging

Logging system	Detailed logging of configuration changes and error conditions on project and device level (PCI DSSI compliant audit log, incl. storage of all administrative changes for the duration of 1 year and monthly export)

Scope of services – device management

Auto configuration	Automatic assignment of configurations to new devices that are added at a site
Automatic license allocation	Automatic allocation of LMC licenses from the license pool to devices three weeks before the previous license expires, as well as notification if there is no longer a compatible license available. The terms of multiple licenses assigned to a device are added up and automatically combined into one license.
Auto Updater	In the project defaults a version guideline can be specified for the LCOS and LCOS LX Auto Updater which controls the display of the available firmware versions for a device update. Possible values: → Latest version for all releases → Latest version for all releases without release version → Latest version within a release → Only security updates within a release LCOS / LCOS LX devices with activated Auto Updater are tagged with an Auto Updater icon in the firmware column of the device table.
Bulk import	In big scenarios, creating sites, allocating networks or adding new devices can make work. Alternatively, big scenarios can be prepared using a spreadsheet tool, and the information can then be imported as a .csv file to the LANCOM Management Cloud.
Device exchange	Transfer of firmware and configuration to a new device of the same model by entering its serial number
Device integration	Available for all current LANCOM products from LCOS 10.x, LCOS LX 4.00, LCOS SX 3.30, and LCOS FX 4.1 (all available as a free S/W update)
Easy port config	The LANCOM Management Cloud allows simple configuration rollout for all switches of a location. Since network configurations are usually not created from identical trunk and port configurations, it is now possible to set the desired networks and properties for each port individually via single device monitoring of the switch. A graphical interface offers the highest level of transparency and ease of use!
Flexible device handling	Devices are easily moved between organizations and projects
Individual device configuration	Full, detailed configuration of all parameters for individual devices
Initial commissioning firmwares	Updating the firmware to a previously defined version in the course of initial commissioning
LMC Config Sync	Local configuration adjustments on individual devices are automatically adopted, detected and logged, or immediately reset by the LMC.
Offline acknowledgements	Distinguish between offline devices and devices that are scheduled to be offline
Password management	Central change of all device passwords
Pre-configuration	Creation of a detailed configuration of new devices even before they are connected to the LMC
REST-API	An extensive programming interface (API defined by 'Swagger') is available for system integration and process automation.
Rollout Assistant	Easy commissioning via photo scan of serial number and cloud PIN using cell phone camera, automatic project and site assignment and commissioning.
Secure Terminal Access	For all LANCOM products with operating system LCOS 10.32, LCOS SX 4.00 RU1 / 5.00 REL
Secure Webconfig Access	For all LANCOM products with operating system LCOS 10.42 RU3, LCOS SX 4.00 RU4 / 5.00 REL, and LCOS FX 10.4 RU2

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| Scripting | Self-expandability of the system by freely definable LCOS scripts, which can be activated on device-, location-, and network level and thus provide automated full access to all device parameters. These scripts themselves can access self-defined and system variables and can contain input screens for user-defined values.
Scripting is available on request for system administrators; the resulting GUI elements are available on user level. |

Overview of currently supported add-in methods:

Operating system	CLI-based add-ins Support of all parameters on the CLI, preview as a script separate from the detailed configuration	OID-based add-ins Support of all parameters of the detail configuration / DSC, preview via direct integration into the detail configuration
LCOS	x	x
LCOS LX	-	x
LCOS SX 3.x	x	x
LCOS SX 4.x	x	x
LCOS SX 5.x	x	x
LCOS FX	In preparation (on REST-API basis)	-

| Zero-touch deployment | When being integrated into a network, access points and switches are automatically detected by the LANCOM Management Cloud and, after entering a device PIN, included into the administration. Routers and gateways generally need to be set up with Internet access in advance, e.g. with the LANCOM setup wizards or have to be connected per Ethernet WAN- or LAN port to a DHCP network with Internet access (operation behind a network termination router or with already existing Internet access). |

Scope of services – project management

Organization	Project administration area for specialist resellers, system vendors, and system integrators; any number of projects per organization Key features: → Live project status as a map view → Device pool, from which you can move devices into projects → Freely definable organisation and project properties, i.e. customer number, contact person, etc.
Projects	Area for creating and managing multiple, independent projects
Roles and rights	Support of different roles for users in organizations and projects: → Organization Administrator (all rights within the organization) → Project administrator (all rights within a project) → Technical administrator (rights to make site, network and device settings. No rights to manage or invite new users, cannot change project properties). → Project member (rights to conduct network, site and device management and monitoring within a project) → Rollout wizard (rights to add devices to the project and read device information using the LMC rollout app) → Hotspot operator (rights to create vouchers in the hotspot portal) → Project observer (read-only rights within a project) Administrators can temporarily enable or disable users. Any number of users can be added to each project. Users can be active in multiple projects.

Scope of services – help systems

Help area	Help area with all resources for the LANCOM Management Cloud, video tutorials, Guided Tour, FAQs and scenarios.
System information	Centralized info area containing system status, service and license information

LANCOM Management Cloud

Live chat	Live chat functionality for administrators of registered LANCOM partners with direct access to LANCOM Cloud experts for all questions about the LANCOM Management Cloud; accessible on workdays between 9 a.m. and 5 p.m.

System requirements – private cloud

System characteristics	1 master node (min.): 2 vCores, 4 GB RAM, 25 GB storage 2 worker nodes (min.): 8 vCores, 32 GB RAM, 25 GB storage Nodes can be virtualized NAS / SAN memory linking as required Further details on request

System requirements – browser to access the LANCOM Management Cloud

Supported browsers	The LANCOM Management Cloud user interface is available in German and English. Supported Internet browsers: → Google Chrome (incl. Vimium browser extension) → Mozilla Firefox → Apple Safari → Microsoft Edge All browser specifications are platform independent (PC, laptop, Mac, tablet). We recommended you use the latest browser version. Recommended screen resolution of 1400 pixels width

System requirements – supported LANCOM devices & licenses

Devices & software versions	The LANCOM Management Cloud is supported by all LANCOM routers, access points, fully managed switches, and Unified Firewalls as from software version LCOS 10.x, LCOS LX 4.00, LCOS SX 3.30, and LCOS FX 10.4. To use the full scope of performance and to operate with the maximum possible stability, the latest available software version is recommended in each case. Complete overview of the supported devices and software versions: Devices supporting the LMC
Cloud starter license	Automatic start-up license (valid for 30 days) for all devices that are newly integrated into the LANCOM Management Cloud by LANCOM resellers and system house partners. After the 30 days have expired, devices without valid license will no longer be able to be configured, but remain autonomous, fully operational and will be monitored concerning their operational status by the LMC via a simple status monitoring (online / offline) in the map view. For the full scope of functionalities you are invited to choose one of our license models.
Other license models & categories	For the further operation of the devices in the LANCOM Management Cloud, you can choose one of our license models: www.lancom-systems.com/products/network-management/management-cloud/lmc-licenses
License category A	LANCOM Management Cloud license for the management & monitoring of a category A device. Specification of the LMC project ID and project information needed, incl. support & updates Device assignment: www.lancom-systems.com/products/network-management/management-cloud/lmc-licenses Available with validity periods as follows: 1 year LANCOM LMC-A-1Y item no. 50100 3 years LANCOM LMC-A-3Y item no. 50101 5 years LANCOM LMC-A-5Y item no. 50102
License category B	LANCOM Management Cloud license for the management & monitoring of a category B device. Specification of the LMC project ID and project information needed, incl. support & updates Device assignment: www.lancom-systems.com/products/network-management/management-cloud/lmc-licenses Available with validity periods as follows: 1 year LANCOM LMC-B-1Y item no. 50103 3 years LANCOM LMC-B-3Y item no. 50104 5 years LANCOM LMC-B-5Y item no. 50105

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License category C	LANCOM Management Cloud license for the management & monitoring of a category C device. Specification of the LMC project ID and project information needed, incl. support & updates
	Device assignment: www.lancom-systems.com/products/network-management/management-cloud/lmc-licenses

Available with validity periods as follows:

1 year	LANCOM LMC-C-1Y	item no. 50106
3 years	LANCOM LMC-C-3Y	item no. 50107
5 years	LANCOM LMC-C-5Y	item no. 50108

License category D	LANCOM Management Cloud license for the management & monitoring of a category D device. Specification of the LMC project ID and project information needed, incl. support & updates
	Device assignment: www.lancom-systems.com/products/network-management/management-cloud/lmc-licenses

Available with validity periods as follows:

1 year	LANCOM LMC-D-1Y	item no. 50109
3 years	LANCOM LMC-D-3Y	item no. 50110
5 years	LANCOM LMC-D-5Y	item no. 50111

Item

LANCOM LMC Private Appliance	Appliance for operating a Private LMC, supports up to 1,000 network devices, for use in 19"rack, price for hardware plus costs for installation, preconfiguration, commissioning, and support, without licenses for connected devices. Only available on request directly from LANCOM	Item no. 50210

LANCOM LMC Private Appliance Support	LANCOM LMC Private Appliance support fee. Includes at least 2 updates of the LMC per year. Service will be done remote via LANCOM. Incl. LANCOM Premium Support (10/5). Separate Private Cloud contract necessary. Only available on request directly from LANCOM

Available with validity periods as follows:

→	1 year	LANCOM LMC Private Appliance Support (1 Year)	Item no. 50212
→	3 years	LANCOM LMC Private Appliance Support (3 Years)	Item no. 50213
→	5 years	LANCOM LMC Private Appliance Support (5 Years)	Item no. 50214

LANCOM LMC Private Support Package	LANCOM LMC Private support fee. Includes at least 2 updates of the LMC per year. Service will be done remote via LANCOM. Incl. LANCOM Premium Support (10/5). Separate Private Cloud contract necessary. Only available on request directly from LANCOM

Available with validity periods as follows:

→	1 year	LANCOM LMC Private Support Package (1 Year)	Item no. 50206
→	3 years	LANCOM LMC Private Support Package (3 Years)	Item no. 50215
→	5 years	LANCOM LMC Private Support Package (5 Years)	Item no. 50216

LANCOM LMC Private Cloud License	License to operate the LMC as a private cloud on customer provided server cluster applicable separate requirements. Separate Private Cloud contract necessary. Only available on request directly from LANCOM	Item no. 50201

LANCOM LMC Private Base Fee	Basic fee for the operation of a private LANCOM Management Cloud without maintenance costs. Maintenance is billed separately. Invoicing due in advance. Only available on request directly from LANCOM

Available with billing periods as follows:

→	1 year	LANCOM LMC Private Base Fee (1 Year)	Item no. 50215
→	1 month	LANCOM LMC Private Base Fee (1 Month)	Item no. 50216

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LANCOM LMC Private Secondary Testing Instance (1 Year)	Provision and support of a second private LMC instance for test purposes. Includes installation, proactive maintenance and the installation of software updates. Attention: Only available in combination with an existing Private LMC instance. Only available on request directly from LANCOM	Item no. 50217
LANCOM LMC Private On-Site Installation Service	On-site installation and setup for one LMC Private Cloud through LMC Professional Services team, travel expenses within Germany included (per day) Only available on request directly via LANCOM	Item no. 50202
LANCOM LMC Private On-Site Installation Service - Travel EU / CH / UK	Travel expenses for "LMC On-Site Installation Service" within EU/CH/UK (per day) Only available on request directly via LANCOM	Item no. 50203
LANCOM LMC Private On-Site Installation Service - Travel ROW	Travel expenses for "LMC On-Site Installation Service" outside EU/CH/UK (per day) Only available on request directly via LANCOM	Item no. 50204
LANCOM LMC Private Remote Installation Service	Remote installation and setup for one LMC Private Cloud through LMC Professional Services team (per day) Only available on request directly via LANCOM	Item no. 50205