

LANCOM Techpaper

Concepts of the LANCOM Management Cloud (LMC)



A fully functional network is the heart of any business.

And yet installing it and managing it is deeply complex.

The skills shortage makes things worse, as qualified network specialists are hard to find. At the same time, the conventional manual configuration is a time-consuming, error-prone and thus very costly task.

Wouldn't it be great if there were an intelligent, higher instance that automates and controls the entire network from a central location? A kind of hyper-intelligence that networks all of the key components, dynamically responds to any new requirements, and which is also secure.

It sounds like a future scenario, but it is not. The LANCOM Management Cloud (LMC) provides a hyper-integrated solution. In this document we will explore some of the basic concepts of the LMC, although the procedures described here are not an exhaustive guide to the initial configuration of an LMC project.

For this, as well as for other topics of interest, it is advisable to visit a corresponding LANCOM training.

Workflow – design first, deploy hardware later

The LMC brings a change to the workflow when defining and setting up a network. Until now you needed experts to define the network and then configure each device manually. This often has to be done on-site, meaning that experts have to travel to each of a company's locations. As a result, well-trained experts spend only a fraction of their time doing the work that they are actually paid for.

With the LMC, an expert carries out the complete planning of the network and, in actual reality, does not even have to touch a single device. Throughout, the LMC handles a huge amount of details that would otherwise be configured manually for each individual device. For example; do you need to set up VPNs between sites, which SSIDs are used where, and do you want VLANs? After that, the actual configuration of the devices is performed by the LMC. This is software-defined networking (SDN). More than just centralized management, it is a view of the entire infrastructure of a business.

With the roll-out, the LMC carries out the complete configuration of each and every device. A technician on location connects the devices that were previously planned by the expert and made known in the project. The devices then contact the LMC and retrieve their configurations, and the expert can now assign the devices within a specific project. The devices at the new location are thus ready for operation a few minutes after connection.

Now let's take a look at the elements of the LMC that are required for this workflow: Organizations, projects, networks, devices and locations.

Organizations

The LMC is aimed at LANCOM partners. They are the only ones who can be created as organizations within the LMC. Each partner can then create a project for each of their customers who is to be managed via the LMC.

If an end customer wishes to manage their own network, they can do this after first contacting a LANCOM partner, who creates the organization and the project within it.

Projects

For each customer, the LANCOM partner creates a project which is used to store all data for that customer. This includes, among others, global specifications for hotspots, and the license management of the devices. The costs incurred by the LMC are based on the license for each device that is paired with the cloud. These run for terms of one, three or five years.

On these and other topics relating to the LANCOM Management Cloud, we have a useful series of [tutorial videos](#).

Networks

In the project, you enter global definitions for the networks. These specifications put automatic mechanisms in place, which come into action when networks are assigned to locations. These automatic mechanisms are referred to as SDN.

First of all the network has a name, e.g. Guests, Sales, or LAN. Next, it has an IP address range, e.g. the class B network

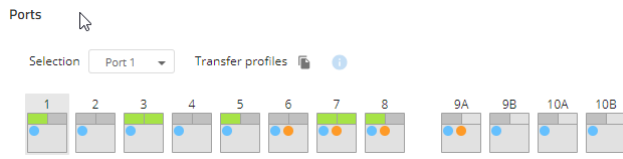
10.0.0.0/16. When the network is assigned to a location, the size of the local subnets (e.g. /24 for class C networks) is specified and it is automatically assigned a class-C network from within the range of the class-B network. Next, you specify whether the locations in this network should be connected via an IPSec VPN. If so, assigning this network to multiple locations causes VPN connections to be automatically created between those locations and the central site. In this way, the LMC always generates a star-shaped VPN topology from the branch locations to the central site.

In the same way, you can assign a VLAN ID to a network. This is then automatically rolled out to all of the sites that use this network. Consequently, all of the data in this network is automatically tagged with its VLAN ID. This separates the networks and is necessary if more than one network is to be operated at any given location.

For all of our switch models, you can specify the port assignments with the help of a template. This ensures that port assignment is specified uniformly at all locations and technicians performing the on-site cabling can follow a standardized pattern.

All of these network settings (VPN, VLAN, ...) are made just once and then used automatically at all of your locations.

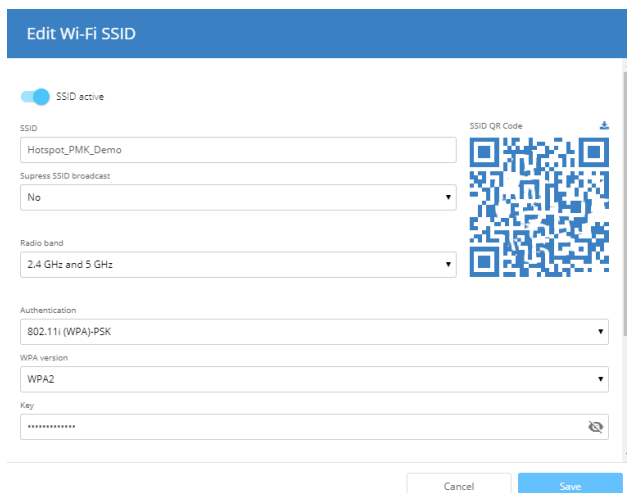
Finally, you assign an individual color to each network. This helps, for example, to identify which networks are assigned to which ports. This is especially useful if you customize the port assignment to an individual situation, such as when incorporating an existing network.



You can also add a Wi-Fi SSID with various options, such as the encryption type. This is then automatically available at any location that uses this network and has a connected access point.

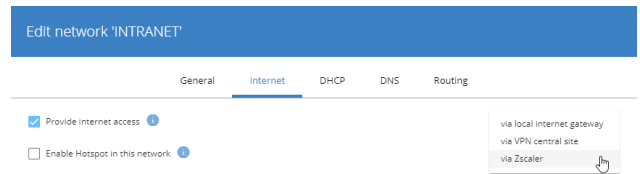
Furthermore, if you optionally configure a Wi-Fi hotspot, it is automatically available at all of the desired locations. This hotspot is then subject either to the hotspot settings made in the project specifications or to individual settings made later for the respective location.

You also set the route that each location uses to access the Internet. You have the choice between a direct local breakout, via the central site, or via the security service provider Zscaler.



These various paths can be provided with different levels of security, from the stateful-inspection firewall in the LANCOM routers to the local or central site-based unified firewall, or to a central firewall cluster.

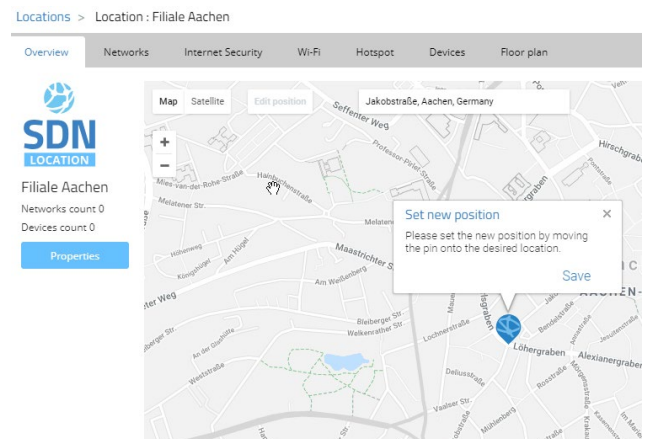
In this context, Zscaler represents a centralized, high-performance outsourcing of security infrastructure and applications. The connection to Zscaler is established by SD-Security, i.e. this too is a centrally configured default. Please note that Zscaler must be licensed and set up separately with the company of the same name.



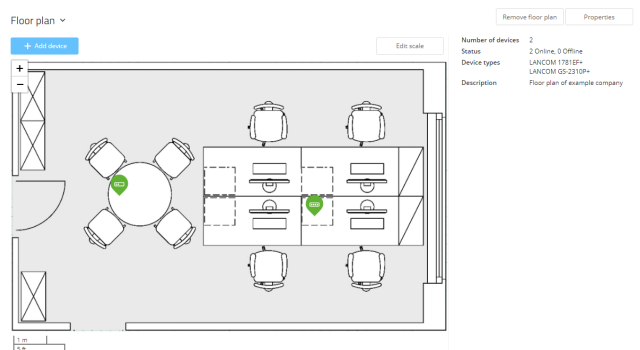
Locations

In the next step you create the locations. This is where you link the network specifications with the location itself. At the same time, you also assign devices to the location. These devices then receive the logical settings for the given location.

Enter the full address of each location so that each one appears correctly on the Google Maps-based display.



For each location, you optionally upload the floor plans for the building. You can use these to place the devices later. In the case of access points, the approximate coverage of the radio field is displayed on the dashboard.



However, this cannot replace a coverage analysis for the location as, for example, the materials of the walls are unknown and therefore cannot be modeled.

One option is to prepare the data for all of the locations in a CSV file and then import everything in one go (bulk import).



Site import from CSV file

Here you can import sites from a CSV file and allocate networks automatically. Create a CSV file which matches the format of the [example file](#).

After uploading the file, the import proceeds asynchronously in the background. In the meantime, you can use the LANCOM Management Cloud as usual.

Selected file: **No selection**

Encoding

Devices

The basis of any network is the devices that make it up: Gateways/routers, switches and access points.

Any current LANCOM device can be made known to an LMC project by means of its serial number and the cloud PIN shipped with it. Older devices are also cloud-ready if they run LCOS 10 or higher or, in the case of LANCOM switches, if they support the specially adapted LCOS SX 3.30 or higher. In this case you can request an activation code in the LMC. Using this code, you can use LANconfig to hand-over one or more devices to the LMC. You can use this procedure for any device that is cloud-ready.

Add new device

2. Step

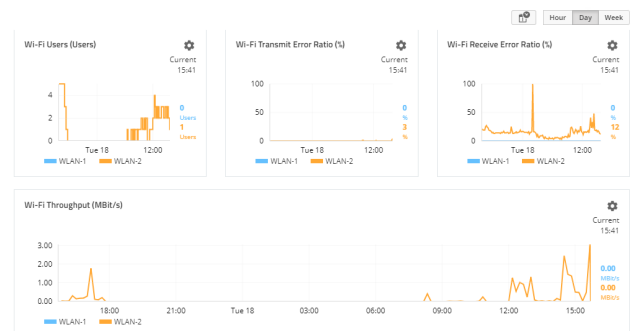
Activation code	VBB5-GK8C-X52F-9BQG-7TZI-W6ND	<input type="button" value="Copy"/>
Expires on	19.12.2018 15:41	

Now transfer your activation code to your currently not Cloud-interconnected LANCOM devices. You can either use the Cloud-Pairing functionality of the devices by LANConfig or by WEBConfig.

While the activation codes are valid it is possible to use them for the integration of multiple devices. Please ensure the devices are capable of an IP connection to the Cloud for the whole process.

However, devices are not permanently bound to their project. You can hand a device over to another of your projects at any time, or remove it from the LMC completely and operate it as a stand-alone solution.

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 remote administrators. This can be useful for communications with technicians on site.



As soon as the devices at their respective locations are connected, they contact the LMC. This then detects the project assigned to access points and switches and, optionally, it can use the DHCP option or the source IP to detect the location. In the case of routers, commissioning may have to be done with a wizard, which is used to provide the necessary data. Based on this data, the configuration can then be rolled out automatically.

The devices must have access to the Internet for this. If the router has a dedicated WAN Ethernet port and it finds a DHCP server, it will also be able to find the LMC and immediately obtain the correct configuration, assuming that the device has been made known to the LMC already. Otherwise, the router at this location requires a basic configuration by means of either the LANconfig setup wizard or the WEBconfig setup wizard. The location can also be assigned to the device at this time.

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. the administrator performs the commissioning in zero-touch mode.

One option is to prepare the data (serial no. / PIN) for all of the devices and then import everything in one go (bulk import).

Roles

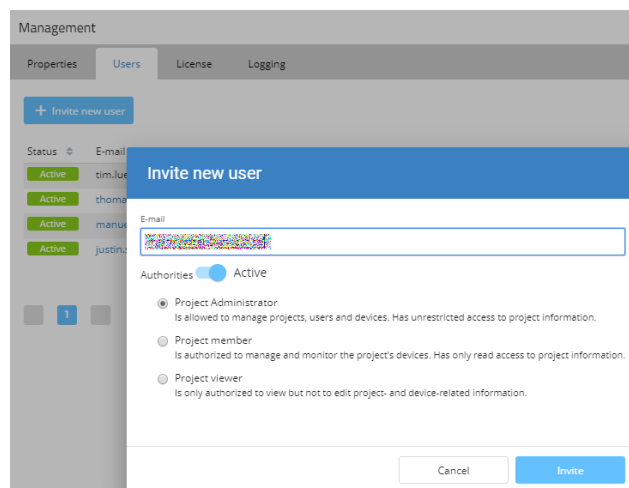
The roles for users in the LMC determine who is allowed to modify or simply view a project.

There is the role of the organization administrator, which essentially corresponds to the LANCOM partner. These users may create projects and other users. They have full control over these projects for as long as they remain registered as project administrator. This right can be withdrawn at any time. The organization administrator therefore does not necessarily have access to the projects assigned to the organization.

Project administrators have full control over the projects assigned to them, i.e. they can also add additional users to projects.

Then there are project members who can edit the configuration of the devices, networks and locations, but who cannot add new users.

Finally, there are the project viewers who can merely see the data of one project. The dashboard is the central entry point for a clear overview. They also have access to the device-specific status information and can view the device configuration and network structure. You can use this role, for example, to allow customers to monitor their networks.



Historical data about the WAN links gives you a quick overview of router throughput and the number of VPN connections.

Wi-Fi / LAN

Once the floor plans of your buildings have been uploaded, you can use them to show the positions of your access points. Although the coverage display cannot take the walls and other factors into account, it at least provides a first indication. The main advantage of this presentation is to show the current load on each access point, so that overloads can be detected in good time.

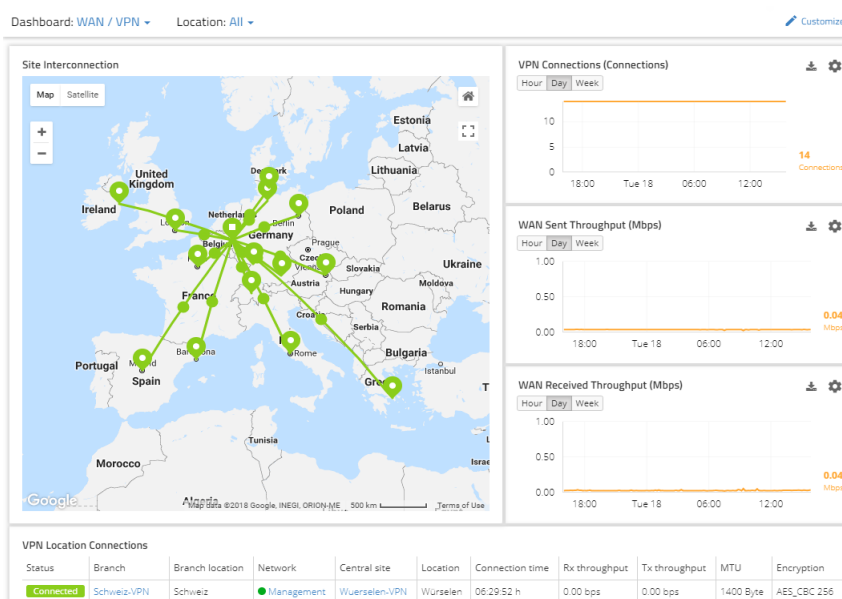
The dashboard presents statistics that give you an overview of the deployed devices, the number of users, the load and the top applications, among others. If you detect a

Dashboards

Dashboards provide a visualization of all of the information for a project, and offer a variety of different focuses. In the following we consider some of these dashboards and the information they present.

WAN / VPN

This displays all of the project locations on a map and immediately shows you all of the VPN tunnels between the locations along with their current status by means of the signal colors green and red.



bottleneck, for example, you can easily switch from the dashboard to the relevant devices at the location and inspect the details more closely.

Security / Compliance

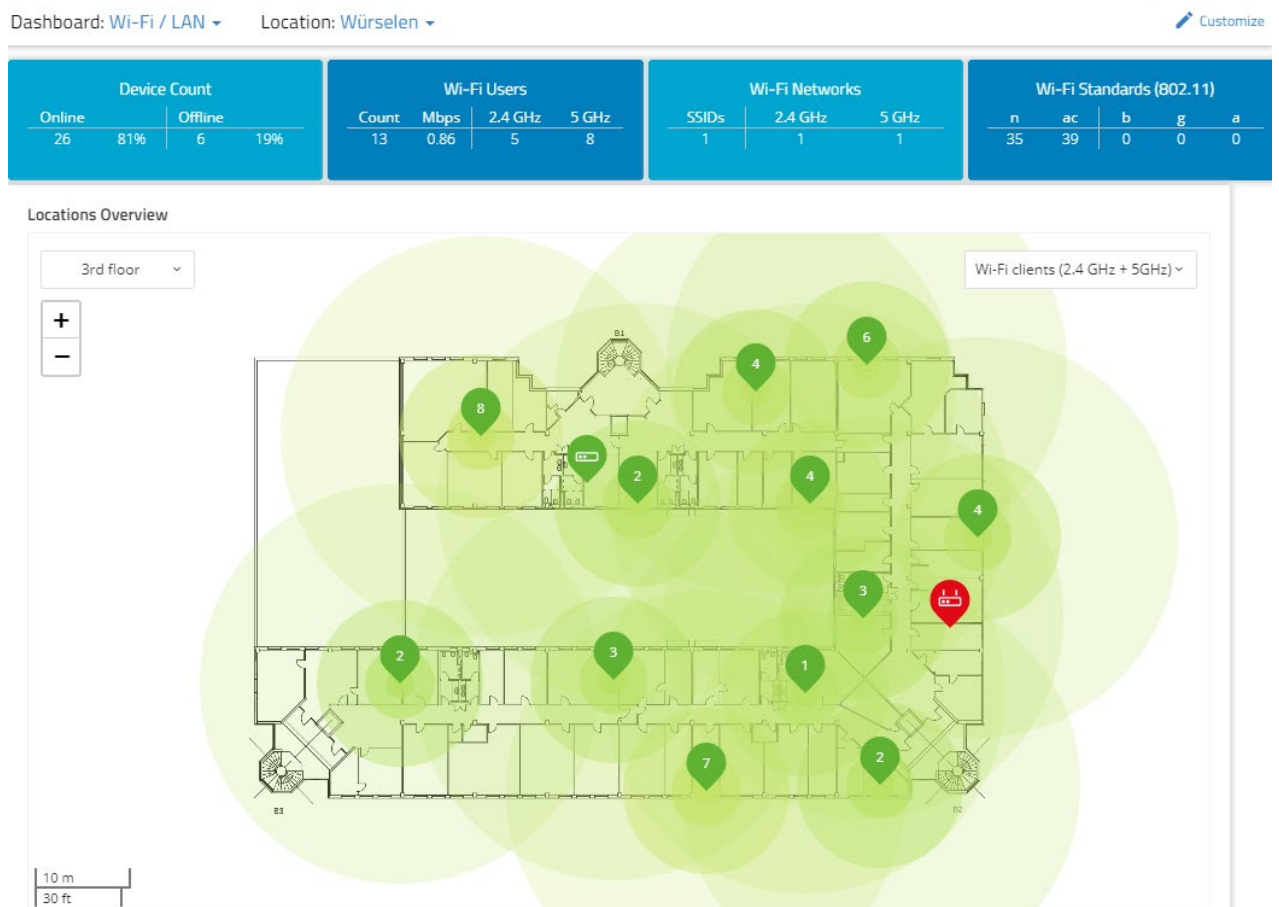
By means of the widgets you can immediately see if there are devices without a set password or in need of a firmware update. Open ports are also displayed with an appropriate warning.

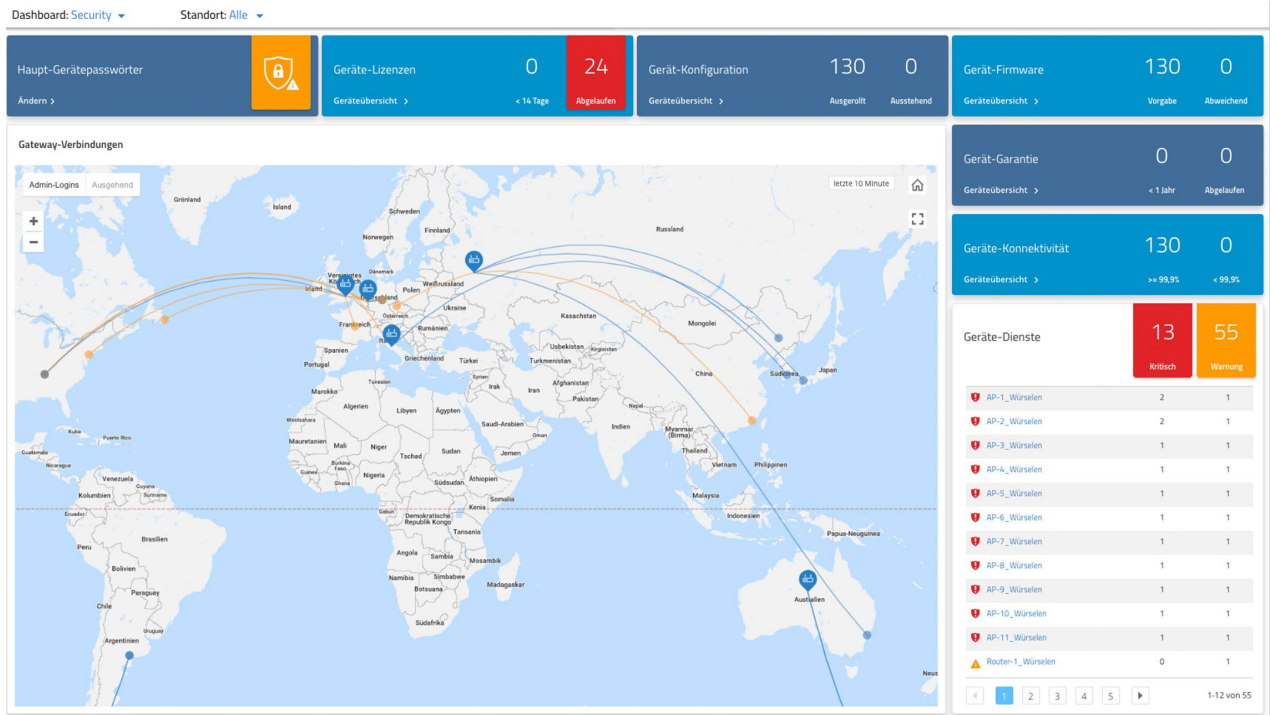
A world map shows you the attempts to connect to the configuration interfaces of the monitored devices in the last 10 minutes. Switching to "Outbound" visualizes the connections via the gateways. This shows the destinations that were accessed from within the managed network in the last 10 minutes.

Others

Add-ins / scripting

For any given project, LANCOM Systems can activate add-ins that enable specially trained users to add extensions within the LMC. Using a Javascript sandbox you can generate command-line scripts and configuration extensions based on the OID structure (LCOS or LCOS SX), which can be used to roll out any configuration to the devices. Scripts work with variables that can be set on any level of the LMC (networks, locations, devices), which is useful for further customizing a script. A variable with a selection type could, for example, control which part of the script becomes active and thus write the definition for different SIP providers.





Application Programming Interface (API)

All of the functions within the services in the LMC can also be invoked programmatically via an API. The documentation of the REST API of the LMC services, along with the http calls, can be found in the information area of the LMC.

Support

Should a question arise about the LMC, Support team members are available for a live chat during business hours and will give you help straight away.

Information area

Service information
This is the overview of the LANCOM Management Cloud services.

[Hide information](#)

SERVICE	DATE	VERSION
service-auth (1)	27.11.2018 14:29	6.5.7000
service-auth (2)	27.11.2018 14:29	6.5.7000
service-backstage (1)	19.09.2018 11:32	3.0.5000
service-backstage (2)	19.09.2018 11:32	3.0.5000
service-config (1)	06.12.2018 10:00	2.11.10000
service-config (2)	06.12.2018 10:00	2.11.10000
service-control (1)	10.12.2018 18:13	3.7.2000
service-control (2)	10.12.2018 18:13	3.7.2000
service-devices (1)	12.12.2018 12:56	4.15.4000 ! (4.15.1000)
service-devices (2)	12.12.2018 12:56	4.15.4000 ! (4.15.1000)
service-geolocation (1)	05.10.2018 17:10	1.1.3000 ! ()
service-geolocation (2)	05.10.2018 17:10	1.1.3000 ! ()
service-jobs (1)	03.12.2018 10:53	3.1.1000 ! ()
service-jobs (2)	03.12.2018 10:53	3.1.1000 ! ()
service-licenses (1)	30.11.2018 17:52	7.3.7000

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