

Panasonic®

TOUCH TERMINALS HM SERIES

Corvina Cloud

User Manual



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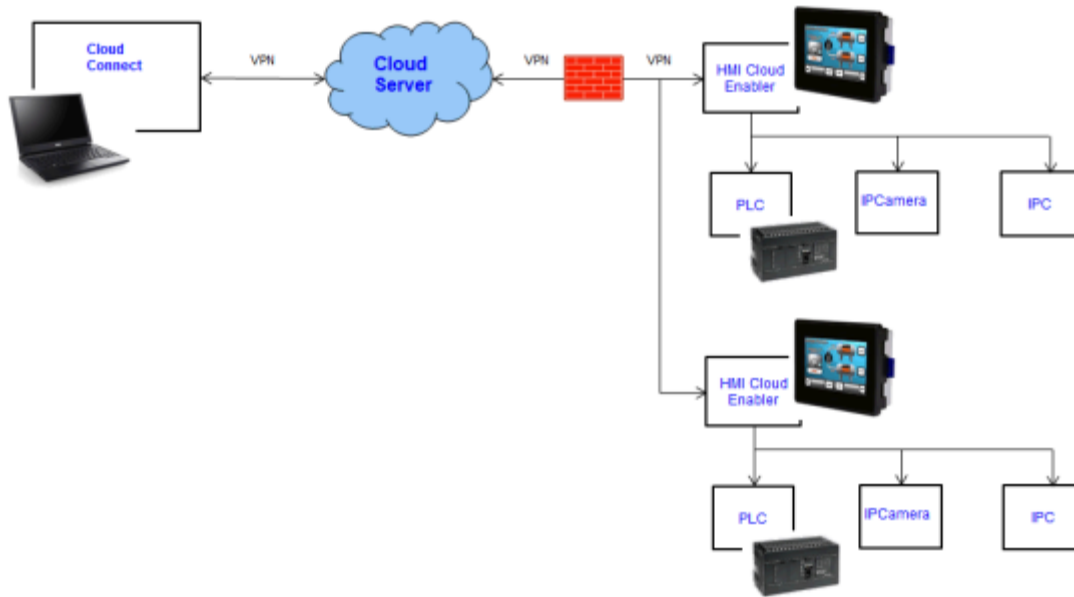
Welcome

This manual describes Corvina Cloud, a VPN-based solution that allows to remotely manage diverse remote devices connected to a centralized server through gateways. Corvina Cloud is a software platform design for connecting users and machines through global networks like internet. Corvina Cloud includes all is needed for central supervision of plants & machines offering the best platform for teleservice and tele control.

1. The system architecture

Corvina Cloud is a VPN-based solution that allows a seamless connection of diverse remote devices, called endpoints, to a centralized server through gateways. Users who have access to the Corvina Cloud can easily reach the gateways and the endpoints, provided they have the necessary access rights, using a PC application called Corvina Cloud Connect.

The diagram below presents a possible setup of the various components of the infrastructure, showing how they are interconnected:



In a nutshell, there are two remote sites connected to Corvina Cloud by means of two gateways - two HMIs, which in turn control several endpoints each such as PLCs, IP cameras, industrial PCs etc. Each gateway sets up an internal network on which the endpoints are located and can be reached.

Corvina Cloud can be securely accessed using the Corvina Cloud Connect, protected by an encrypted channel based on OpenVPN.

Endpoint can be reached by means of applications that must be installed on the local workstation and can be defined for any endpoints.

1.1 The system components

The Corvina Cloud platform is composed by the following components:

<p>Corvina Cloud</p>	<p>Corvina Cloud is the heart of the whole infrastructure. It stores all the configuration data, the log files, the access policies, and keeps track of the connections to the endpoints. Any connection between Corvina Cloud Connect and Gateways or End Points passes through the central server. The only way for users to access to Corvina Cloud for connecting to devices or configuring it is via Corvina Cloud Connect.</p>
<p>Corvina Cloud Connect</p>	<p>Corvina Cloud Connect is an application design for supervision of plants in a user-friendly manner. Using this application users & maintainers can connect to remote machines, to configure users, devices, assign roles & permissions. Corvina Cloud Connect has been design for Win32 platforms.</p>
<p>HMI Cloud Enabler</p>	<p>HMI Cloud Enabler is a light-weight application that can be used on HMIs for configuring and connecting to Corvina Cloud. HMI Cloud Enabler is a multiplatform application based on OpenVPN and designed for embedded devices running Windows CE/ARM. HMIs with HMI Cloud Enabler applications work like a gateway for end points.</p>

1.2 Corvina Cloud components

More in detail, here follows the description of the various actors involved in Corvina Cloud architecture.

Nodes	A node is a generic object that is managed by Corvina Cloud. The number of nodes is computed as the sum of all the users, endpoints, and gateways.
Devices	A device is any equipment managed by Corvina Cloud, and can be either a gateway or an endpoint.
Gateways	A gateway is the door through which Corvina Cloud can reach endpoints. A gateway creates a virtual network to accommodate the endpoints. Each endpoint is assigned a unique IP address. This network can be expanded if necessary. Example for gateways are HMIs with HMI Cloud Enabler software installed or VPN plug-in routers.
Endpoints	<p>An endpoint can be in principle any kind of equipment that can connect via a network, so they can be any kind of industrial machinery, an HMI as well as a PLC, an IPCamera, a Databases etc. Endpoints have their own IP address and may connect to their local network and/or to the Internet by means other than the gateway. Each endpoint can be connected to only one gateway and receives a unique IP address (called virtual IP in the architecture). The endpoint's virtual IP may change when the size of the network needs to be accommodated, for example with the addition of new endpoints to the network.</p> <p>Besides all the equipment, Corvina Cloud infrastructure encompasses also user management and applications that allow the setup of suitable access policies to the endpoints. Access policies determine on one side which user can access which endpoint and on the other side what all the applications that can be done on an endpoint. All these functionalities are described further in the manual.</p>
Users	A user is anyone who can in some way access and interact with either Corvina Cloud, a gateway, or an endpoint. A user can be member of a user group. In a group, the user can play two roles, either be a member of or an administrator of the group. A user can also be either a regular user of or a manager of gateways and gateway groups.
Applications	An application describes one means to connect to an endpoint. An application specifies which software application and which protocol are needed to connect. The types of applications may significantly vary, depending on the endpoint, since the same endpoint can be accessed in different ways (e.g., via RDP, via SSH, via HTTP). Several applications can be grouped together into an application profile: Each endpoint has one application profile attached, that defines all available and admitted connections possibilities.
Access policies	<p>The Corvina Cloud implements an additional policy to restrict the access to remote gateways or endpoints: Exclusive access at either gateway or endpoint level, which allows a gateway or an endpoint to be accessed by only one user at a time, preventing other users to connect. This policy ensures that when a user operates on a critical endpoint or on a gateway controlling several sensible endpoints, her work is not interfered by someone else.</p> <p>This policy is set globally: There cannot be some gateways (resp. endpoints) with exclusive access and some without. Moreover, if the policy is set at gateway level, it is propagated to all the endpoints controlled by that gateway, i.e., only who access the gateway can connect to the endpoints.</p> <p>Finally, note that this policy can be disabled, granting concurrent access to all the infrastructure to everyone.</p>

Organizations	<p>An organization, also called Domain, is a collection of users and devices, possibly arranged in groups. Every node in one organization is completely separated from, and invisible to, other organizations. Therefore, no user or device can belong to two or more domains. Organizations can be arranged in a hierarchy, with one root organization and one or more children or descendants.</p> <p>Within a domain, the default policy is that users can see all other users and all the devices in sub-domains that are lower in the hierarchy.</p> <p>The main advantages of Corvina Cloud organization are described by these use cases:</p> <ul style="list-style-type: none"> • The creation and management of multiple small companies on a same Corvina Cloud installation. • Break up a large enterprise into smaller departments, that shall remain separate and host all of them on a single Corvina Cloud installation. <p>Moreover, it would dramatically reduce the chance to put a device or a user in the wrong group or granting the user access policies to the wrong device.</p>
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1.3 A sample organization hierarchy

While the design of a hierarchy of organizations is left to the manager of Corvina Cloud, as it can depend on different requirements, the following example presents some guidelines.

Suppose there is a large multinational corporation, called example.com with branches in different countries. Every country has a main office, which coordinates factories, laboratories, other offices, logistic points, and other facilities, located in various cities within the country.

This structure can be easily reflected into Corvina Cloud, in which every facility is created as a node in the hierarchy.

- The root organization -the company itself- will be called example.com.
- Country branch offices are created as direct children of the root organization and named uk.example.com, it.example.com, de.example.com.
- A facility will be named after the name of the city or town in which it is located, and made a direct child of the country branch office. So, there will be organizations called london.uk.example.com, leicester.uk.example.com, milano.it.example.com, and so on.
- If there are more than one facility in one location (e.g. a factory and a logistic point) which require a separate node, an additional level can be added to the hierarchy and made sub-organization of the city office: factory.london.uk.example.com, shipment.london.uk.example.com.

The use of names to identify the various branches helps in making the structure of the corporation clearer to the Corvina Cloud's manager.

2. Getting Started

The below chapters give the basic information to start working with Corvina Cloud environment.

2.1 Connecting to Corvina Cloud

To get access at your Gateways and Endpoints through the Corvina Cloud you need to install the Corvina Cloud Connect application or use the Corvina Cloud Web Portal.

- Corvina Cloud Connect application create a VPN network that give the possibility to use the remote devices through IP address as if they were connected to the local network. Moreover, local applications (e.g. HMWin studio or HMWin studio Client) can be used.
- Corvina Cloud Web Portal required only an internet browser and not need any additional applications to be executed.

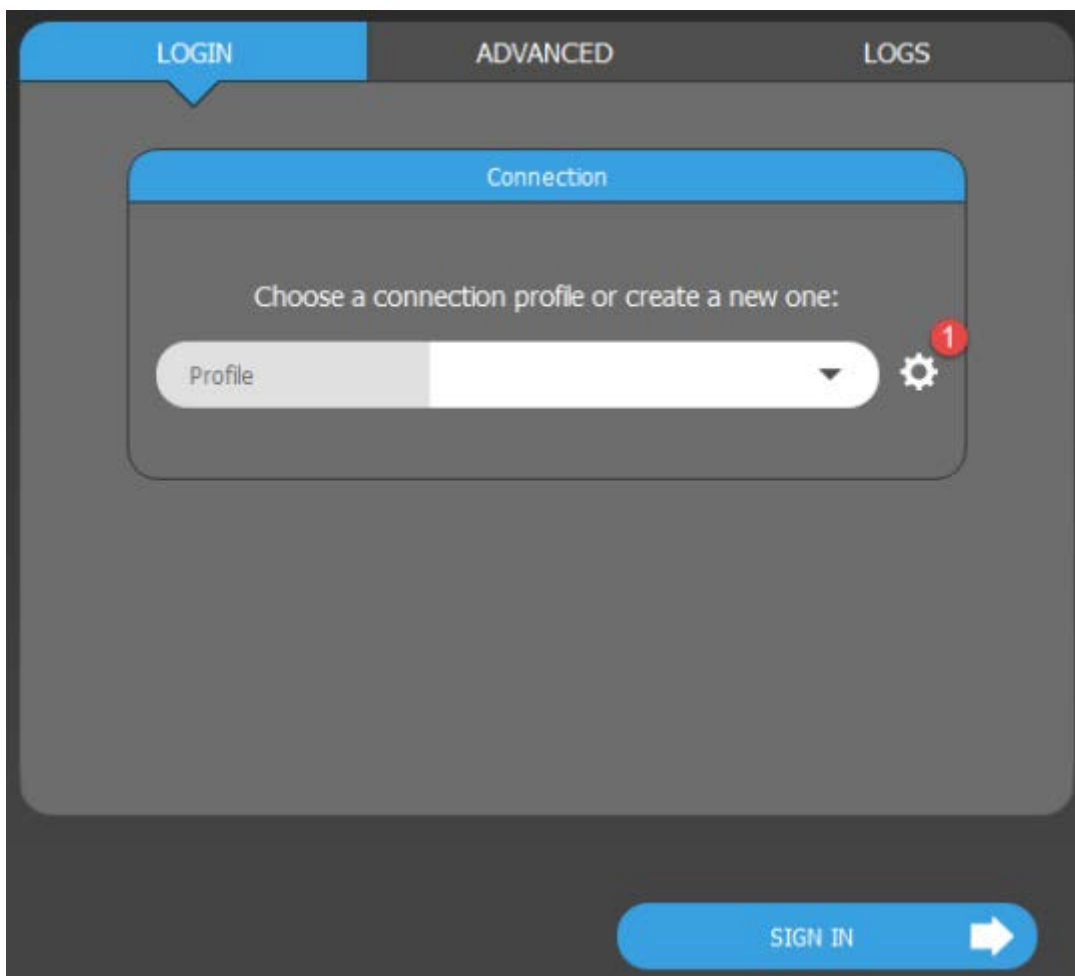
Both applications have the possibility to configure the entire environment (Organizations, Users, Devices and Applications) and monitor the endpoints through the [Dashboard](#) page.

2.1.1 Corvina Cloud Connect

See the [download](#) page to retrieve the Corvina Cloud Connect.

Corvina Cloud Connect Login screen

Click on the "Gear" icon to configure a Corvina Cloud access profile.



Choose the profile name that you prefer and enter the credential (user name, organization and password) provided from your local reseller or Corvina Cloud administrator. Then click OK to save the new profile.



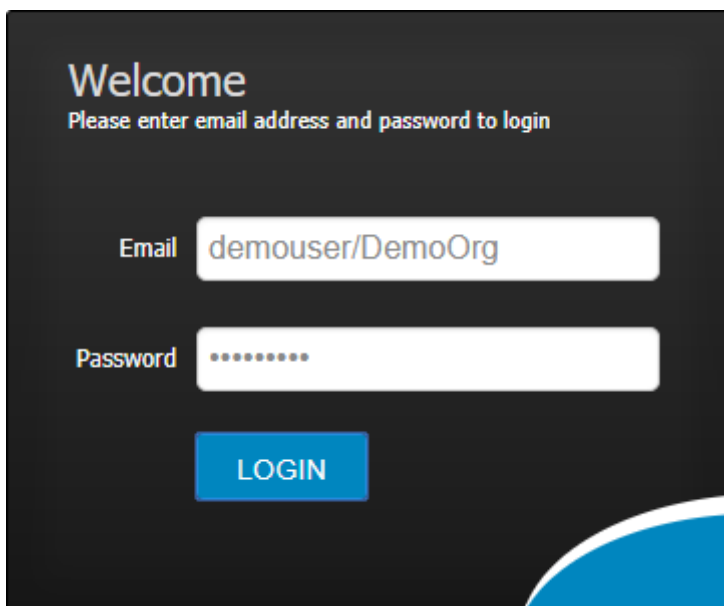
Now you can sign in to connect to Corvina Cloud. The [Dashboard](#) page will be open.

2.1.2 Corvina Cloud Web Portal

Use a web browser to connect at the URL: corvinacloud.com

Enter the credential (user name, organization and password) provided from your local reseller or Corvina Cloud administrator. Then click OK to save the new profile.

Instead of the email, the "*user name/organization*" syntax format can be used.



The [Dashboard](#) page will be open.

Note:

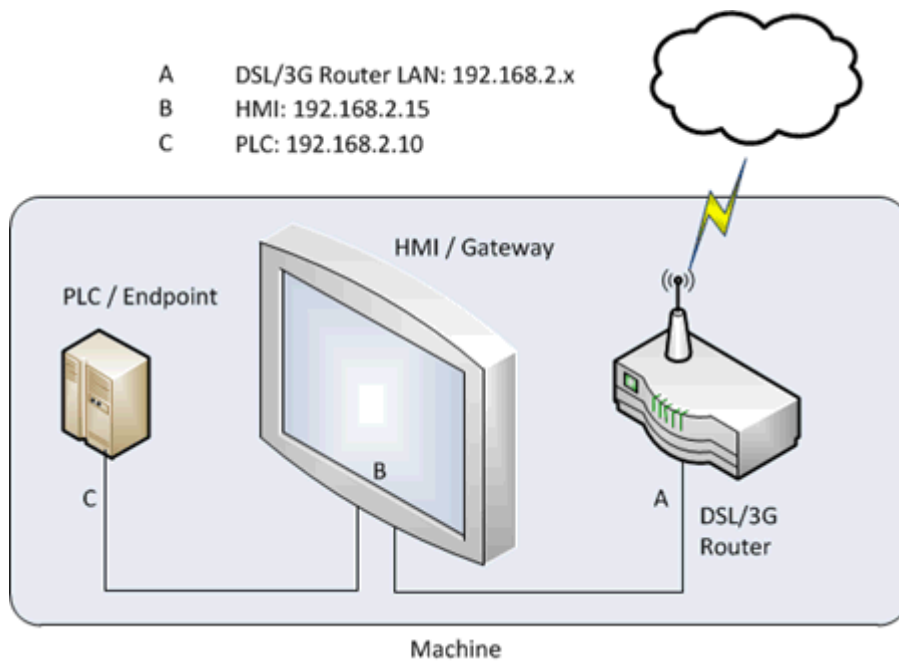
- HM4Web access from web portal is supported from version 2.6 SP1 (2.6.1.67)
- Using the web portal, the VPN network is not created and then the local applications cannot be used. Only build-in applications can be used from the web portal.

2.2 HM500 and Corvina Cloud Enabler

Following requirements needs to be satisfied to follow this guide:

- HM500 series HMI
- HMWin studio Suite (Download [here](#))
- Corvina Cloud Connect software (Download [here](#))
- Superuser account for Corvina Cloud Connect

Network diagram below explain the network configuration we are going to setup on Corvina Cloud:



Steps to do:

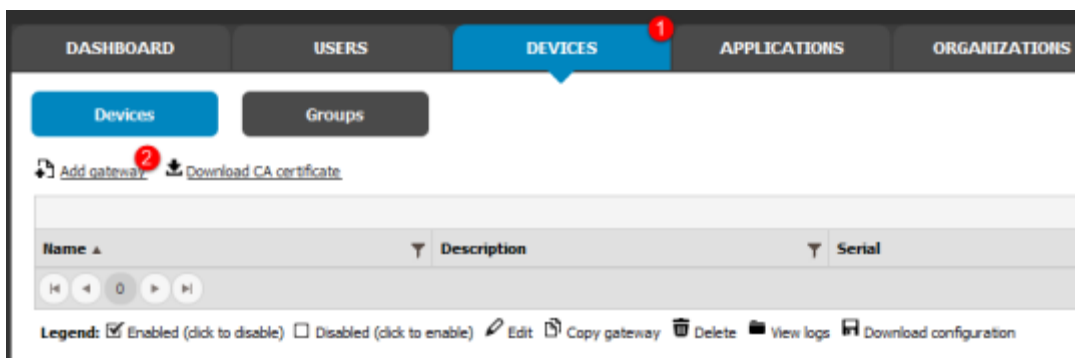
- Creation of gateway/endpoints with Corvina Cloud Connect
- HMI Cloud Enabler setup on HM500
- Connection to gateway/endpoints with Corvina Cloud Connect

2.2.1 Creation of gateway/endpoints with Corvina Cloud Connect

Launch the Corvina Cloud Connect software to get access to the Corvina Cloud server, in the login page select the profile with your credential, then click on the [SIGN IN] button.



Once connected select the DEVICES tab, then click on "Add Gateway" to add a new gateway device.



Into the Gateway definition interface define:

- Name: must be unique in users, gateways and endpoints
- Organization: select the organization from the combo-box
- Password: must be at least 8 characters and contain at least one non-alphanumeric character
- Serial number: insert the license code provided from your local reseller or the serial number of your device (license codes are provided for HM500, HMe...)

Add Gateway

Gateway Groups Endpoints Permissions Port Forwarding Location

Name *
Gateway

Organization
DemoOrg

Description
HMIcloud Gateway

Serial number
1234567890

Password
myGateway-01\$

Confirm password

Enabled

Add or Cancel

These settings will define the login credentials to be set into the HMI Cloud Enabler on HMI. A description may be added.

In this example, the credentials are:

- User name: Gateway/DemoOrg
- Password: myGateway-01\$

Location

In this tab, it is possible to assign a location to the device using either the Location Editor Map or the two small text fields below. In the map, use the plus and minus buttons to resize the maps to your needs or use directly the text field.

Search...

In this text field, write an address and optionally also the city and country. If a match is found, an icon is positioned on the map, if more results are available, choose the most appropriate one.

Note When an address is selected, the two text fields below are automatically filled in.

It is also possible, instead of supplying the address, to give the coordinates of the device location:

Latitude

Enter in decimal form the latitude where the device is installed

Longitude

Enter in decimal form the longitude where the device is installed.

If the device is moved from its current location into a nearby one, it is possible to drag the icon to the new location: the new address and coordinates will be updated automatically.

Add Gateway

Gateway Groups Endpoints Permissions Port Forwarding Location

Location Editor Map

Via Monte Fiorino, San Giovanni Lupatoto, Veneto, Italy

Latitude: 45.39202730968738 Longitude: 11.027848720550539

Add or Cancel * This Field is required.

Additional Endpoints (optional)

If we are planning to connect also additional devices (e.g. HMI, PLC, etc.), select the Endpoints tab to configure and click on [Add row] button:

Add Gateway

Gateway Groups Endpoints Permissions Port Forwarding Location

Maximum number of endpoints: 2

Local network:

Do not translate real IPs into virtual IPs (1:1 NAT):

Name *	IP Address *	Description	Application profile
gateway	127.0.0.1	Gateway	Click to edit

Add row Delete row Show CSV

Add or Cancel

Fill the row with:

- Name for the Device endpoint
- The Device IP Address. In this example, the Device have IP 192.168.43.112
- Device description (optional)

Add Gateway

Gateway Groups Endpoints Permissions Port Forwarding Location

Maximum number of endpoints
2

Local network

Do not translate real IPs into virtual IPs (1:1 NAT)

Endpoints

Name *	IP Address *	Description	Application profile
gateway	127.0.0.1	Gateway	Click to edit
device	192.168.43.112	Endpoint	Click to edit

Add row Delete row Show CSV

Add or Cancel

Click then on [Add] button to confirm and save changes to the new Gateway.

Endpoints

Name *	IP Address *	Description	Application profile
gateway	127.0.0.1	Gateway	Click to edit
device	192.168.43.112	Endpoint	Click to edit

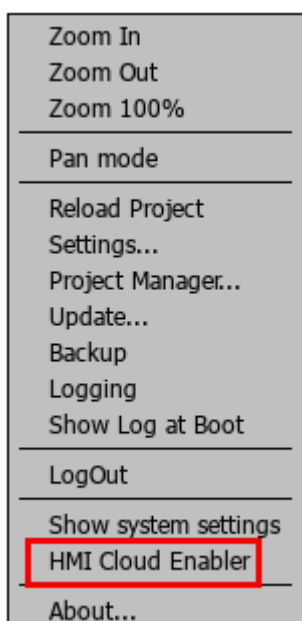
Add row Delete row Show CSV

1 Add or Cancel

2.2.2 HMI Cloud Enabler setup on HM500

The HMI Cloud Enabler allows to setup the Corvina Cloud connection into the operator panel, this function is part of the HMWin studio Runtime so it is necessary to have it running on the operator panel.

To start the HMI Cloud Enabler, press and keep pressed on an empty display area to recall the context menu, then select the HMI Cloud Enabler item.

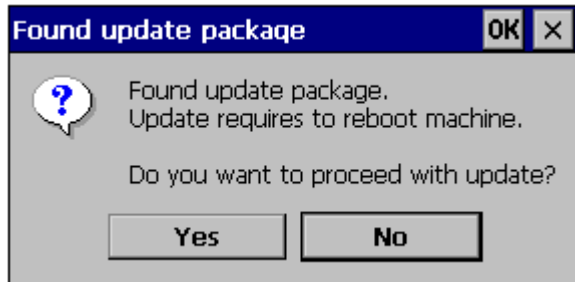


If this is first time the HMI Cloud Enabler has been started, after some seconds a dialog will be displayed (see image below).

Click on the [Yes] button on the dialog to start the update.

The HMI will be automatically restarted when the update operation succeeded.

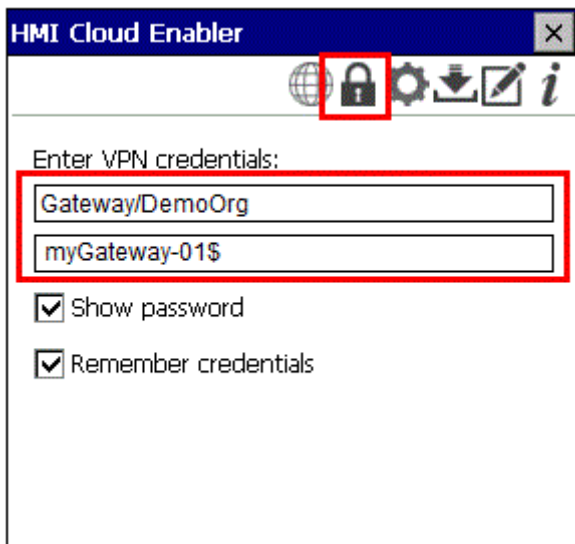
NOTE: the update does not require an active internet connection on the operator panel.



Once HMI Cloud Enabler has been updated, it is possible to set-up the operator panel for the Corvina Cloud connection.

Select the "Padlock" icon from the toolbar, then enter User name and Password set-up previously in the Gateway configuration.

In this example User name and Password are respectively "Gateway/DemoOrg" and "myGateway-01\$"



The above procedure is enough if we are planning to connect only the HMI,

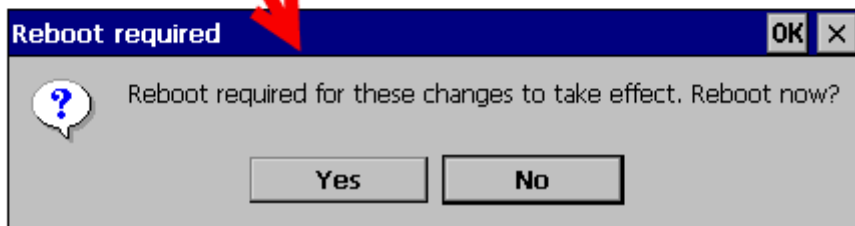
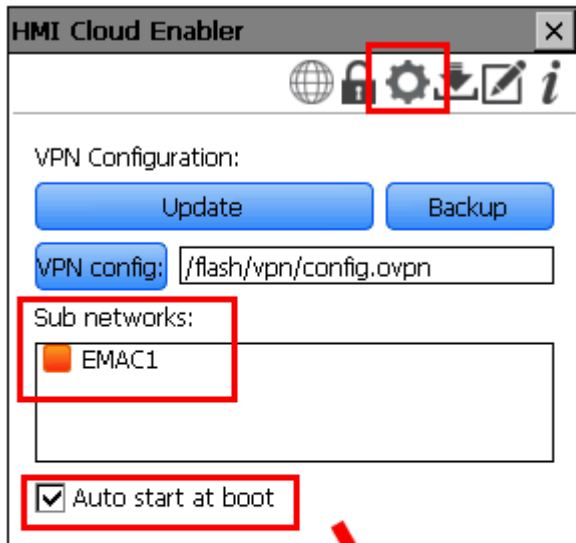
but to have access to the PLC through Corvina Cloud connection, Sub networks access must be enabled.

Select the "Gear" icon from the toolbar, and touch on the "EMAC1" box; the color will change from blue to orange.

Finally, to auto start the HMI Cloud Enabler connection to Corvina Cloud server when the HMI boots, check the "Auto start at boot" option.

When this settings are changed, a reboot of the system is required.

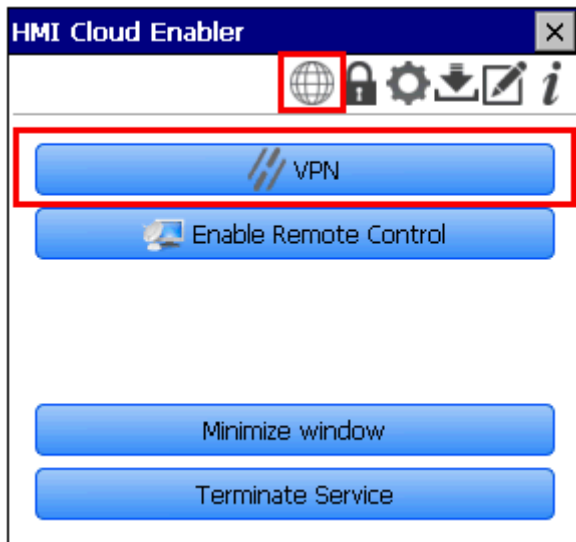
An immediate reboot of the HMI may be agreed, or reboot can be manually executed later.



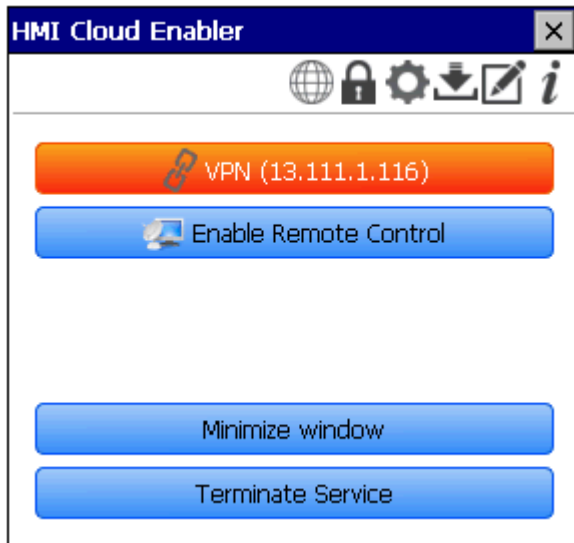
To connect the HMI to the Corvina Cloud Server, select the Globe icon from the toolbar and then press on the VPN blue button.

NOTE: to establish connection HMI must have:

- an active internet connection
- a valid network configuration including Gateway and DNS



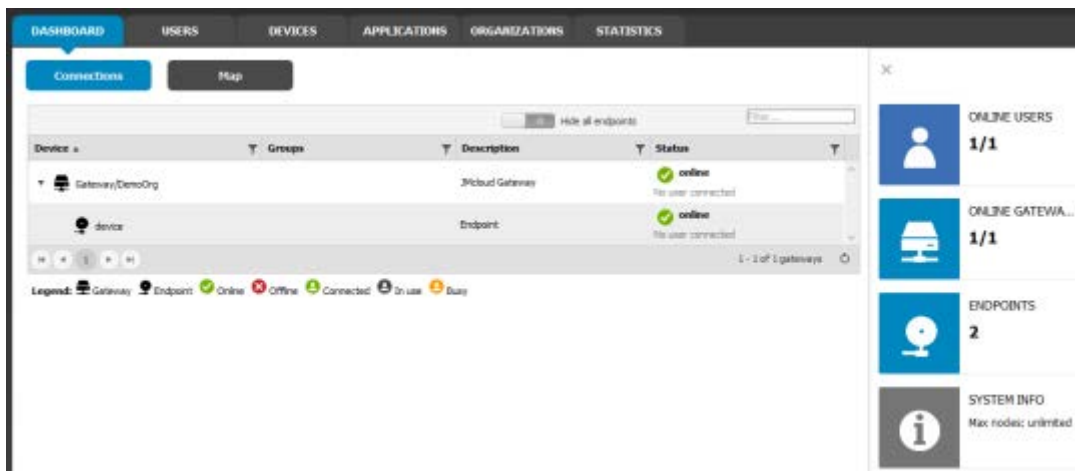
If the connection to the Corvina Cloud server is established the VPN button will become orange and the VPN Virtual IP address will be displayed as shown in the below image.



2.2.3 Connection to gateway/endpoints with Corvina Cloud Connect

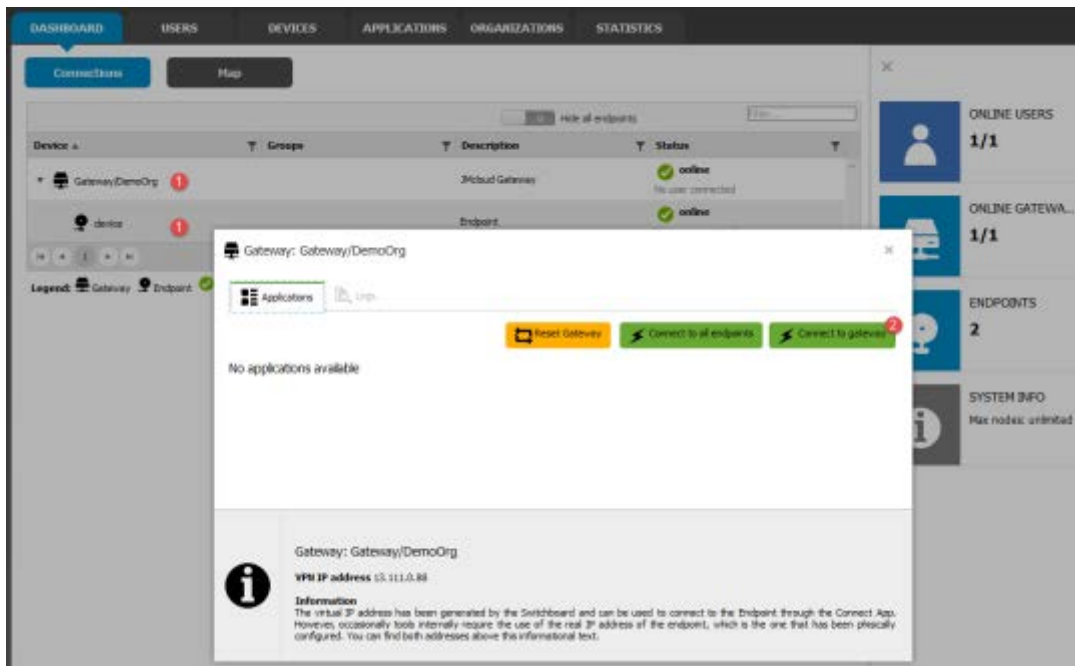
Once the gateway has been connected to the Corvina Cloud server, from Corvina Cloud Connect software it is possible to monitor the Endpoints defined.

Into the **DASHBOARD** tab will be reported Gateway and its Endpoints with proper status.



To establish the VPN tunnel with the remote device (Gateway or Endpoint),

- Click on the Device to open the device dialog box
- Click the Connect button



If the connection is correctly established the button will change color.

To disconnect the Endpoint, click on the Disconnect button.



From the device dialog box, you can retrieve the IP Address that can be used from the applications to reach the remote device. The dialog will offer a list of predefined applications that can be activated with a simple click. See [Applications](#) chapter for additional details.

2.2.4 Use Real IP instead of Virtual IP (optional)

When an Endpoint is connected to the Corvina Cloud server, by default gets a Virtual IP address.

In some cases, it may be necessary for the Endpoints to maintain the real IP used into the local network also when reached through the VPN.

To allow the use of real IP also in VPN the "Do not translate real IPs into virtual IPs (1:1 NAT)" option must be configured when the Endpoint is created.

When this option is selected the real IP of the operator panel and all other Endpoints must be specified into the configuration table as shown in the image below.

Gateway Groups Endpoints Permissions Port Forwarding Location

Maximum number of endpoints
2

Local network

Do not translate real IPs into virtual IPs (1:1 NAT)

Endpoints

Name *	IP Address *	Description	Application profile
device	192.168.43.112	Endpoint	Click to edit
gateway	127.0.0.1	Gateway	Click to edit

Add row Delete row Show CSV

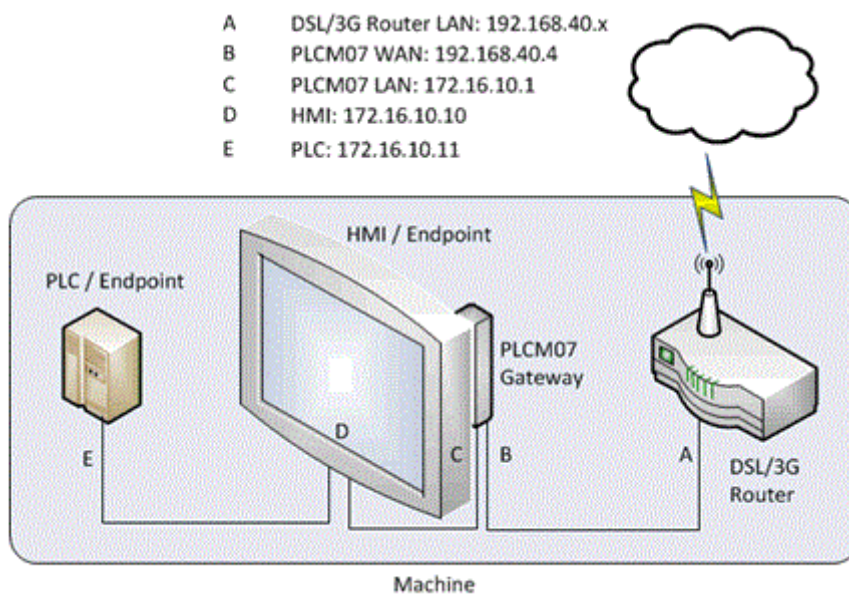
Change or Cancel

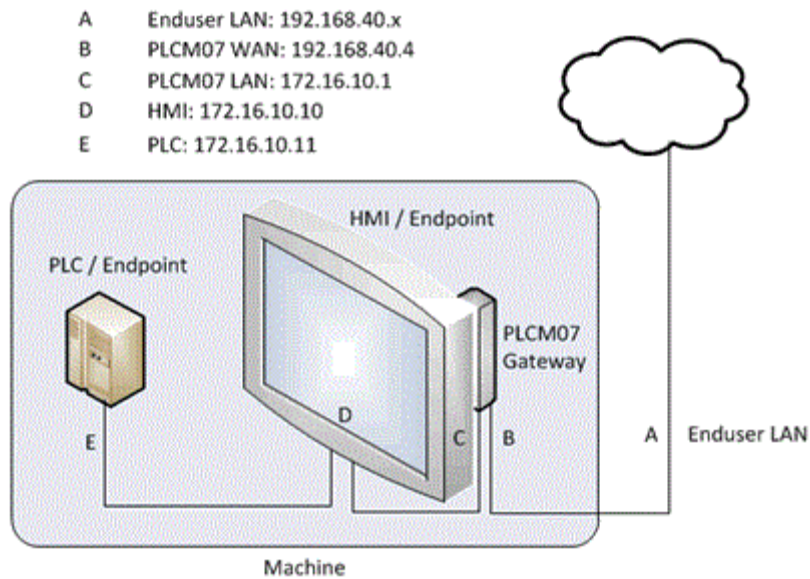
2.3 HM500 and Secure Cloud Connector

Following requirements needs to be satisfied to follow this guide:

- HM500 series HMI
- Secure Cloud Connector plugin unit (HMCLLOUDCONNECTOR07)
- HMWin studio Suite (Download [here](#))
- Corvina Cloud Connect software (Download [here](#))
- Superuser account for Corvina Cloud Connect

Network diagram below explain the network configuration we are going to setup on Corvina Cloud:





Steps to do:

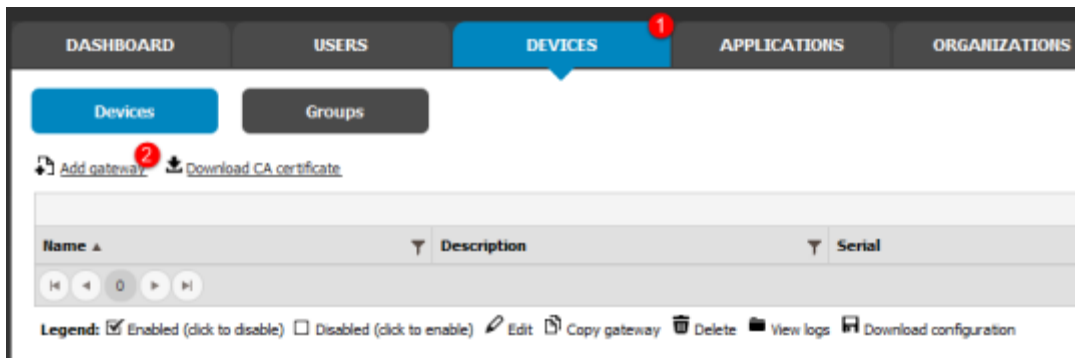
- Creation of gateway/endpoints with Corvina Cloud Connect
- Secure Cloud Connector setup on HM500
- Connection to gateway/endpoints with Corvina Cloud Connect

2.3.1 Creation of gateway/endpoints with Corvina Cloud Connect

Launch the Corvina Cloud Connect software to get access to the Corvina Cloud server, in the login page select the profile with your credential, then click on the [SIGN IN] button.



Once connected select the DEVICES tab, then click on "Add Gateway" to add a new gateway device.



Into the Gateway definition interface define:

- Name: must be unique in users, gateways and endpoints
- Organization: select the organization from the combo-box
- Password: must be at least 8 characters and contain at least one non-alphanumeric character
- Serial number: insert the license code provided from your local reseller or the serial number of your device (license codes are provided for HM500, HMe...)

These settings will define the login credentials to be set into the HMI Cloud Enabler on HMI. A description may be added.

In this example, the credentials are:

- User name: Gateway/DemoOrg
- Password: myGateway-01\$

Location

In this tab, it is possible to assign a location to the device using either the Location Editor Map or the two small text fields below. In the map, use the plus and minus buttons to resize the maps to your needs or use directly the text field.

Search...

In this text field, write an address and optionally also the city and country. If a match is found, an icon is positioned on the map, if more results are available, choose the most appropriate one.

Note When an address is selected, the two text fields below are automatically filled in.

It is also possible, instead of supplying the address, to give the coordinates of the device location:

Latitude

Enter in decimal form the latitude where the device is installed

Longitude

Enter in decimal form the longitude where the device is installed.

If the device is moved from its current location into a nearby one, it is possible to drag the icon to the new location: the new address and coordinates will be updated automatically.

Add Gateway

Gateway Groups Endpoints Permissions Port Forwarding Location

Location Editor Map

Via Monte Fiorino, San Giovanni Lupatoto, Veneto, Italy

Latitude: 45.39202730968738 Longitude: 11.027848720550539

Add or Cancel

* This Field is required.

Connect the HMI device to HMCLOUDCONNECTOR07 Gateway

It's now necessary to define the HMI device as an Endpoints behind HMCLOUDCONNECTOR07. Select the Endpoints tab, and click on [Add row] button:

Add Gateway

Gateway Groups Endpoints Permissions Port Forwarding Location

Maximum number of endpoints: 2

Local network: [Empty field]

Do not translate real IPs into virtual IPs (1:1 NAT):

Name *	IP Address *	Description	Application profile
gateway	127.0.0.1	Gateway	Click to edit

Add row Delete row Show CSV

Add or Cancel

Fill the row with:

- Name for the Device endpoint
- The Device IP Address. In this example, the device has the IP address 192.168.43.112
- Device description (optional)

Add Gateway

Gateway Groups Endpoints Permissions Port Forwarding Location

Maximum number of endpoints
2

Local network

Do not translate real IPs into virtual IPs (1:1 NAT)

Endpoints

Name *	IP Address *	Description	Application profile
gateway	127.0.0.1	Gateway	Click to edit
device	192.168.43.112	Endpoint	Click to edit

Add row Delete row Show CSV

Add or Cancel

Click then on [Add] button to confirm and save changes to the new Gateway.

Endpoints

Name *	IP Address *	Description	Application profile
gateway	127.0.0.1	Gateway	Click to edit
device	192.168.43.112	Endpoint	Click to edit

Add row Delete row Show CSV

1
Add or Cancel

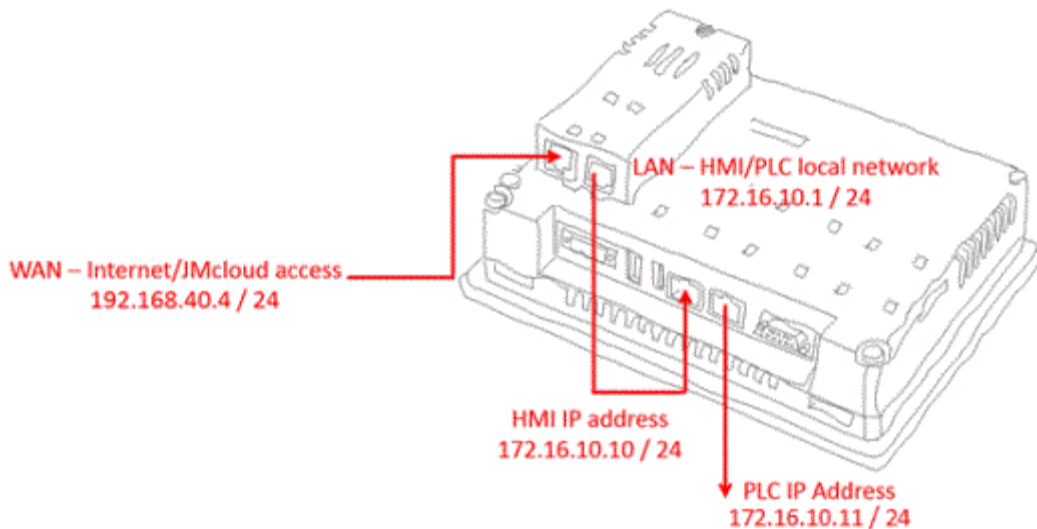
If we are planning to connect also additional devices (e.g. HMI, PLC, etc.), we can repeat previous operations to add the additional Endpoints.

2.3.2 Secure Cloud Connector setup on HM500

Mount the HMCLOUDCONNECTOR07 plugin unit into one empty slot of the HMI, then connect the Ethernet patch cord to the Ethernet ports.

The unit has 2 Ethernet ports:

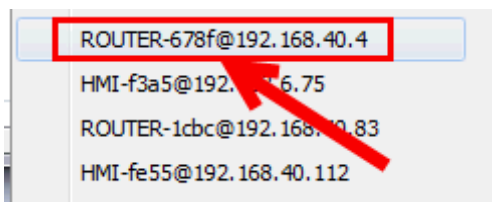
- WAN: internet access through customer's LAN network or DSL/3G Modem.
- LAN: machine local network.



Both Ethernet ports (LAN and WAN) are configured to receive an IP Address from DHCP server. If a DHCP Server is not available, they will auto assign an IP Address into range 169.254.X.X.

The IP Address can be found by using HMWin studio selecting "Run > Manage Target". From the Target drop-down list, identify the HMCLOUDCONNECTOR07 unit that can be recognized in the list as ROUTER. In case more devices are connected to the network, the correct one can be recognized by the last 4 digits of the MAC-ID (printed on the Ethernet interface label). In this example, the last 4 digits of the MAC-ID are 678F so the unit could be recognized among the 2 units present in the network.

In this example the last 4 digits of the MAC-ID are 678F so the unit could be recognized among the 2 units present in the network.



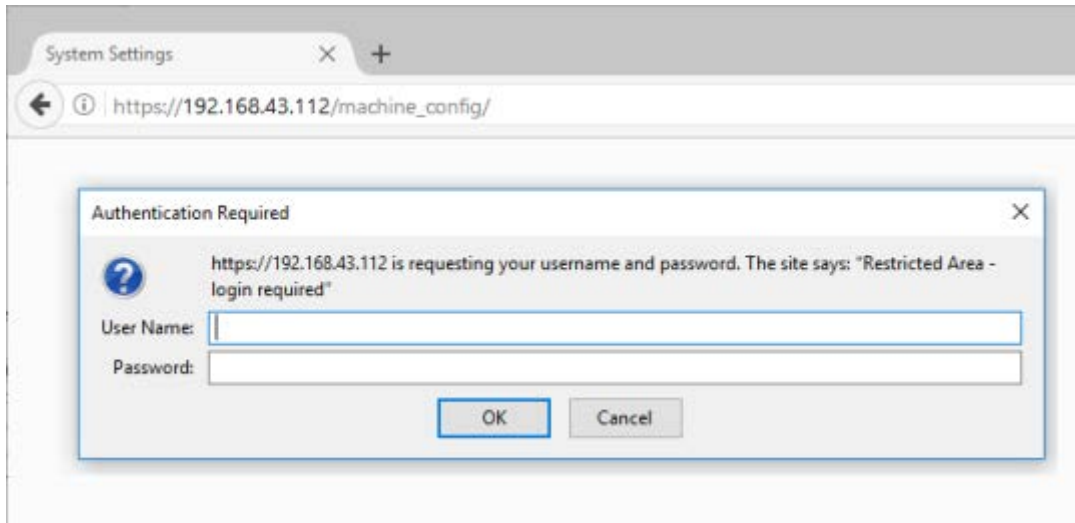
Once the IP address of the device is known, it is possible to connect using any web browser to get the System Setting web page.

Into browser's address bar, type the URL: *https://{ip_address}/machine_config*

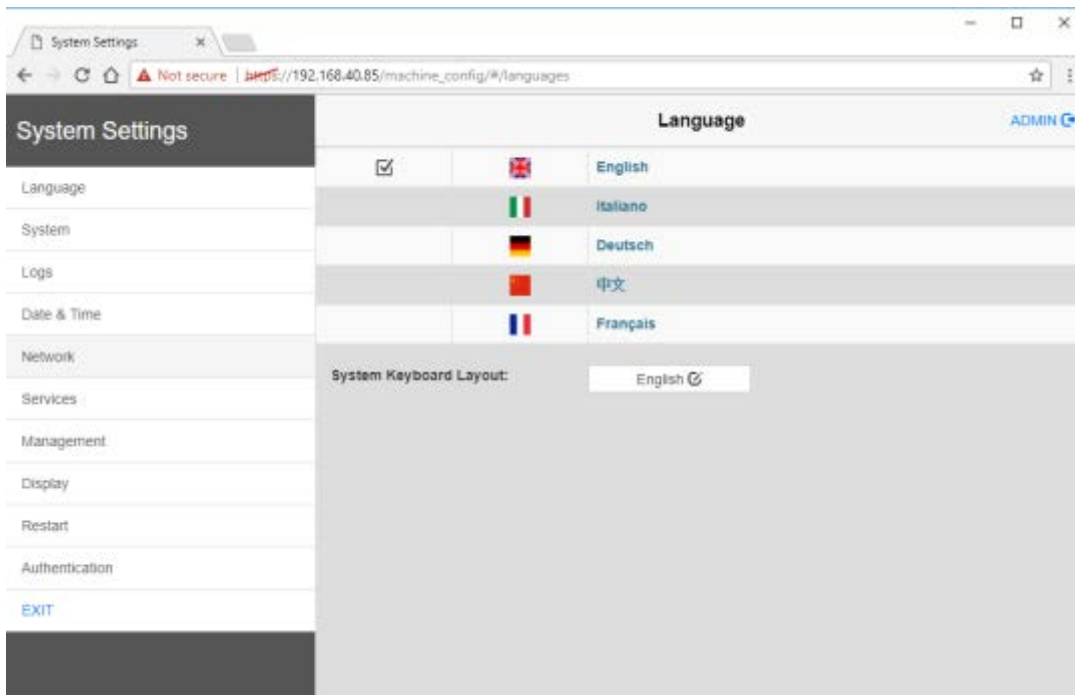
Some browser may report a security warning, then the page can be added to the trusted sites to allow the connection.

Once the connection is established, the system will ask for a User Name and Password to get access to the Web interface, defaults are:

- User Name: admin
- Password: admin



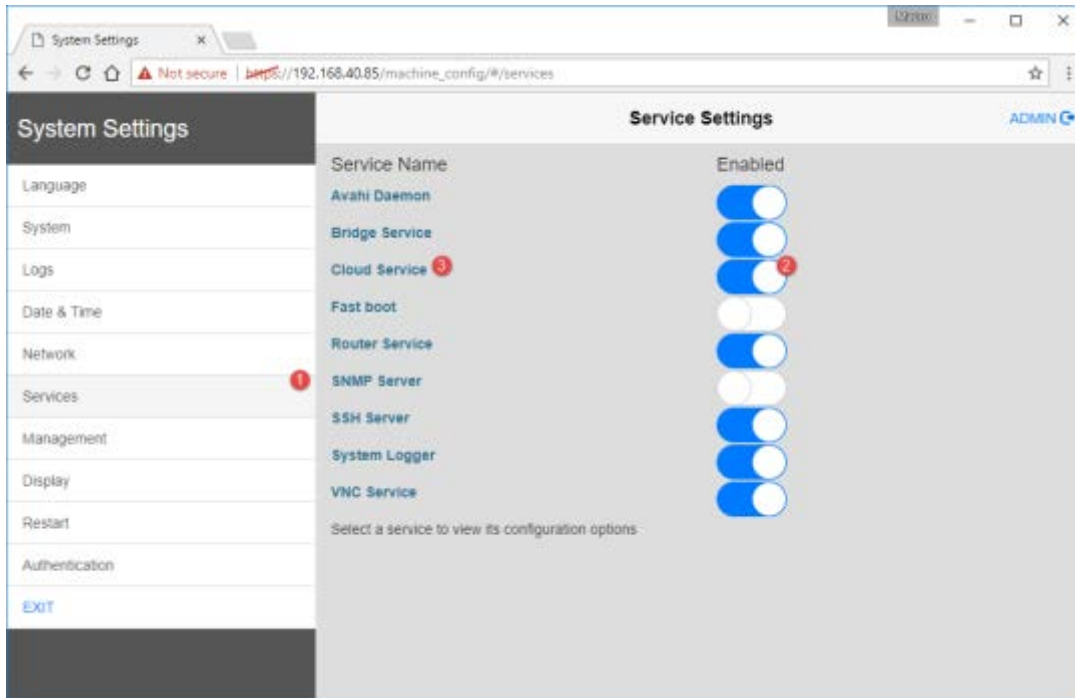
Then the web interface will be displayed:



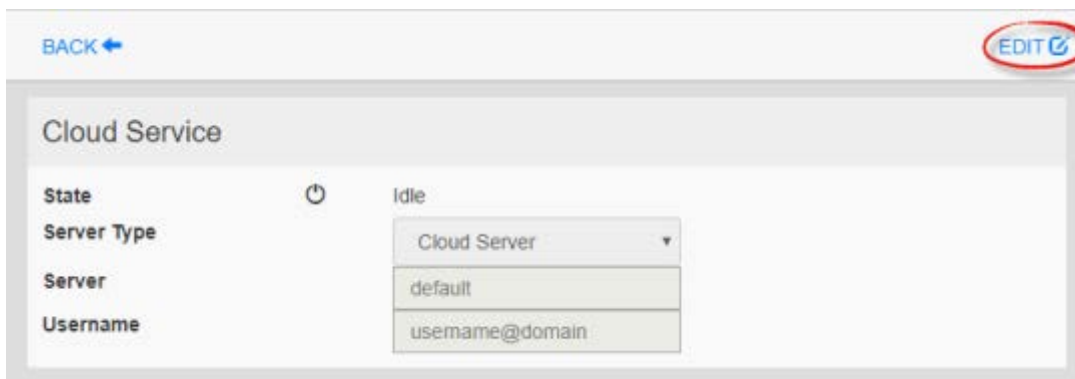
If required, the Network settings can be modified by click the Network item, then select the [Edit] button.

To enable and setup the Corvina Cloud connection:

- Select the Services item,
- Enable the Cloud Service by acting on the switch,
- Click the Cloud Service item to open the Cloud Service settings

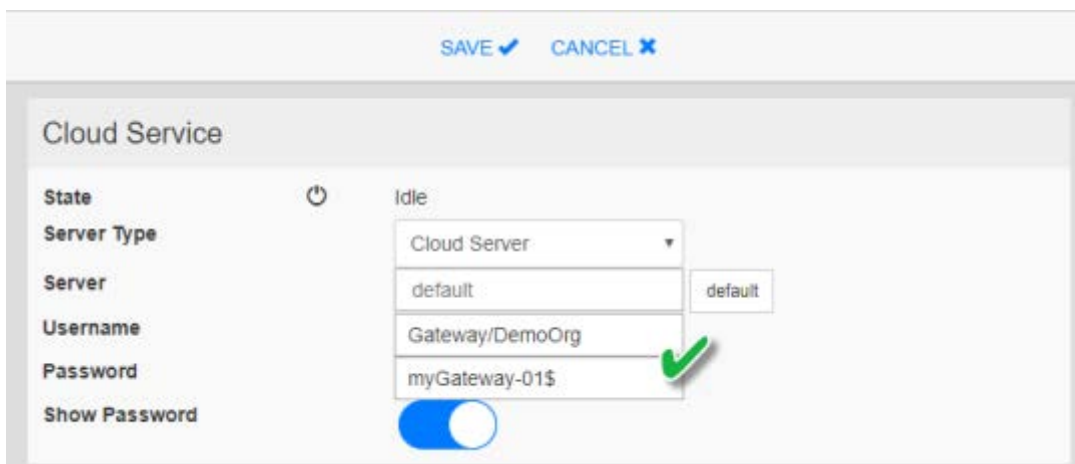


Click [Edit] to enter in edit mode:



Enter the credentials previously defined for this Gateway with Corvina Cloud Connect .

In this example User name and Password are respectively "Gateway/DemoOrg" and "myGateway-01\$"



Once confirmed if the connection operation is successful a message is given from the system, and the State voice will be updated accordingly.



2.4 Connection to gateway/endpoints with Corvina Cloud Connect

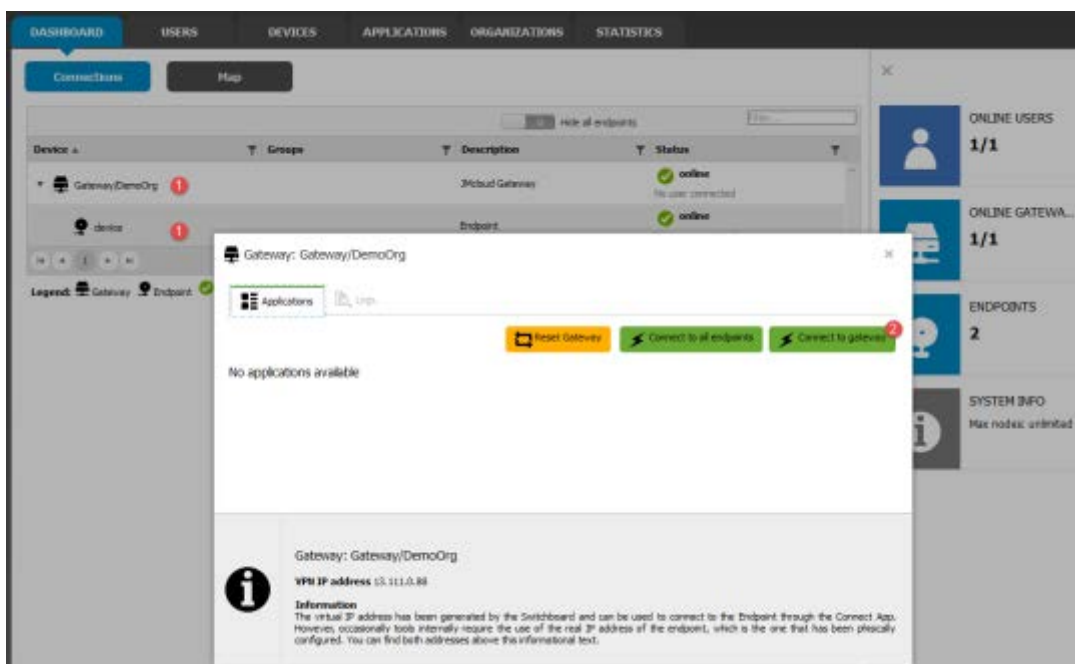
Once the gateway has been connected to the Corvina Cloud server, from Corvina Cloud Connect software it is possible to monitor the Endpoints defined.

Into the **DASHBOARD** tab will be reported Gateway and its Endpoints with proper status.



To establish the VPN tunnel with the remote device (Gateway or Endpoint),

- Click on the Device to open the device dialog box
- Click the Connect button



If the connection is correctly established the button will change color.

To disconnect the Endpoint click on the Disconnect button.



From the device dialog box you can retrieve the IP Address that can be used from the applications to reach the remote device. The dialog will offer a list of predefined applications that can be activated with a simple click. See [Applications](#) chapter for additional details.

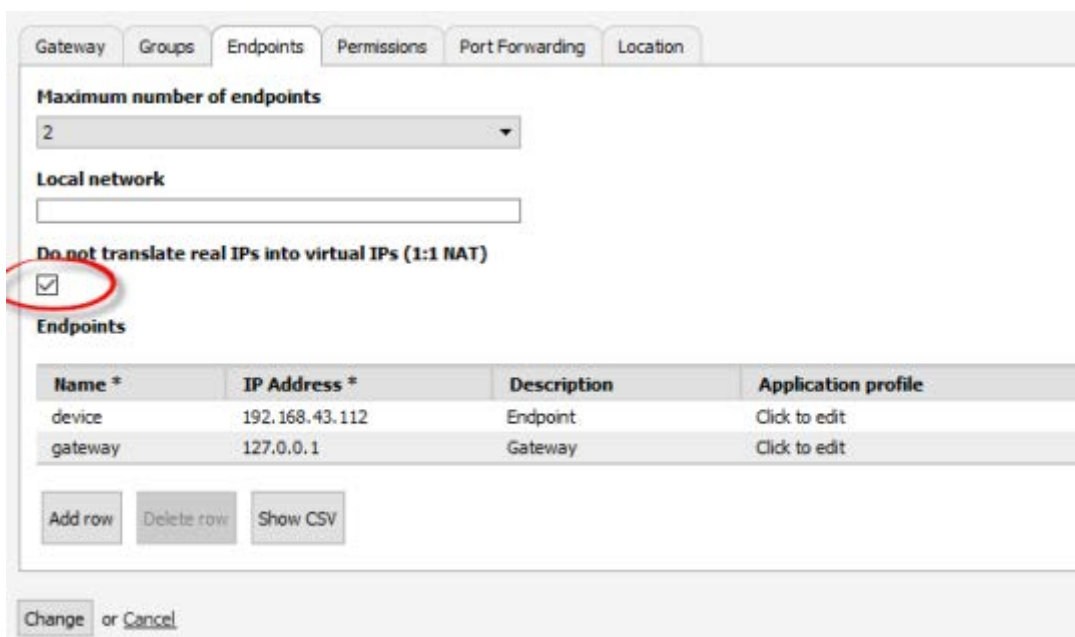
2.4.1 Use Real IP instead of Virtual IP (optional)

When an Endpoint is connected to the Corvina Cloud server, by default gets a Virtual IP address.

In some cases it may be necessary for the Endpoints to maintain the real IP used into the local network also when reached through the VPN.

To allow the use of real IP also in VPN the "Do not translate real IPs into virtual IPs (1:1 NAT)" option must be configured when the Endpoint is created.

When this option is selected the real IP of the operator panel and all other Endpoints must be specified into the configuration table as shown in the image below.

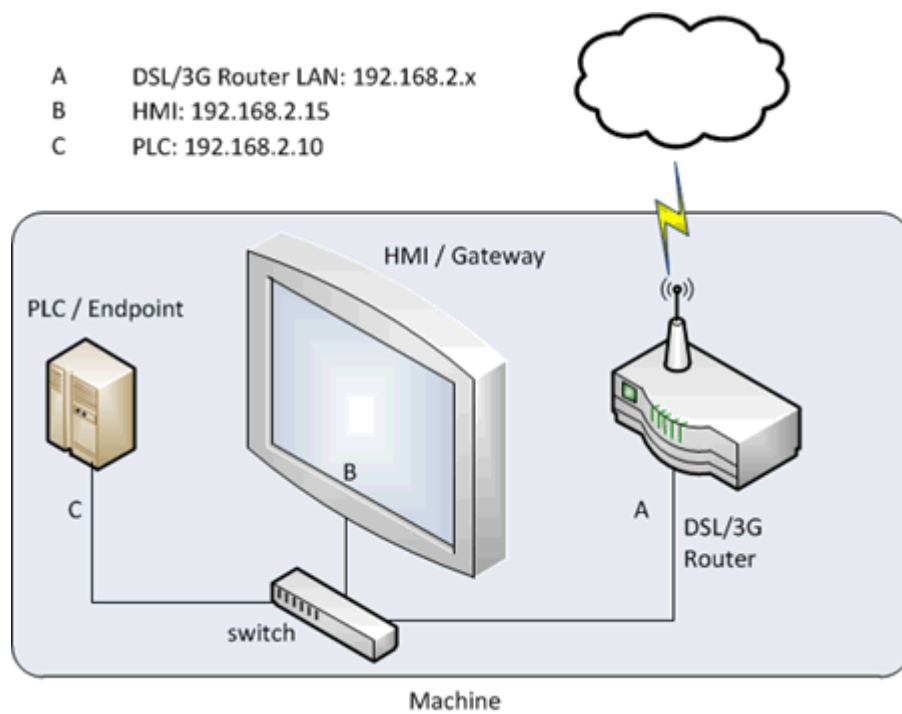


2.5 HMe and Cloud Service

Following requirements need to be satisfied to follow this guide:

- HMe series HMI
- Corvina Cloud Connect software (Download [here](#))
- Superuser account for Corvina Cloud Connect

Network diagram below explains the network configuration we are going to setup on Corvina Cloud:



Steps to do:

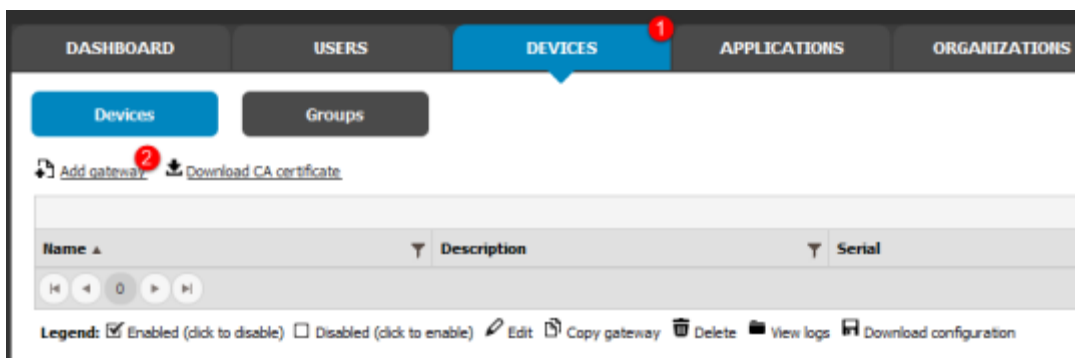
- Creation of gateway/endpoints with Corvina Cloud Connect
- Cloud service setup on HMe
- Connection to gateway/endpoints with Corvina Cloud Connect

2.5.1 Creation of gateway and endpoints with Corvina Cloud Connect

Launch the Corvina Cloud Connect software to get access to the Corvina Cloud server, in the login page select the profile with your credential, then click on the [SIGN IN] button.



Once connected select the DEVICES tab, then click on "Add Gateway" to add a new gateway device.



Into the Gateway definition interface define:

- Name: must be unique in users, gateways and endpoints
- Organization: select the organization from the combo-box
- Password: must be at least 8 characters and contain at least one non-alphanumeric character
- Serial number: insert the license code provided from your local reseller or the serial number of your device (license code are provided for HM500, HMe...)

Add Gateway

Gateway Groups Endpoints Permissions Port Forwarding Location

Name *
Gateway

Organization
DemoOrg

Description
Hcloud Gateway

Serial number
1234567890

Password
myGateway-01\$

Confirm password

Enabled

Add or Cancel

These settings will define the login credentials to be set into the HMI Cloud Enabler on HMI. A description may be added.

In this example the credentials are:

- User name: Gateway/DemoOrg
- Password: myGateway-01\$

Location

In this tab it is possible to assign a location to the device using either the Location Editor Map or the two small text fields below. In the map, use the plus and minus buttons to resize the maps to your needs or use directly the text field.

Search...

In this text field, write an address and optionally also the city and country. If a match is found, an icon is positioned on the map, if more result are available, choose the most appropriate one.

Note When an address is selected, the two text fields below are automatically filled in.

It is also possible, instead of supplying the address, to give the coordinates of the device location:

Latitude

Enter in decimal form the latitude where the device is installed

Longitude

Enter in decimal form the longitude where the device is installed.

If the device is moved from its current location into a nearby one, it is possible to drag the icon to the new location: the new address and coordinates will be updated automatically.

Add Gateway

Gateway Groups Endpoints Permissions Port Forwarding Location

Location Editor Map

Via Monte Fiorino, San Giovanni Lupatoto, Veneto, Italy

Latitude: 45.39202730968738 Longitude: 11.027848720550539

Add or Cancel

* This Field is required.

Additional Endpoints (optional)

If we are planning to connect also additional devices (e.g. HMI, PLC, etc.), select the Endpoints tab to configure and click on [Add row] button:

Add Gateway

Gateway Groups Endpoints Permissions Port Forwarding Location

Maximum number of endpoints: 2

Local network:

Do not translate real IPs into virtual IPs (1:1 NAT):

Name *	IP Address *	Description	Application profile
gateway	127.0.0.1	Gateway	Click to edit

Add row Delete row Show CSV

Add or Cancel

Fill the row with:

- Name for the Device endpoint
- The Device IP Address. In this example the Device have IP 192.168.43.112
- Device description (optional)

Add Gateway

Gateway Groups Endpoints Permissions Port Forwarding Location

Maximum number of endpoints
2

Local network

Do not translate real IPs into virtual IPs (1:1 NAT)

Endpoints

Name *	IP Address *	Description	Application profile
gateway	127.0.0.1	Gateway	Click to edit
device	192.168.43.112	Endpoint	Click to edit

Add row Delete row Show CSV

Add or Cancel

Click then on [Add] button to confirm and save changes to the new Gateway.

Endpoints

Name *	IP Address *	Description	Application profile
gateway	127.0.0.1	Gateway	Click to edit
device	192.168.43.112	Endpoint	Click to edit

Add row Delete row Show CSV

1 Add or Cancel

Note:

Router Service must be enabled from "System Settings > Services" to be able to reach external endpoints (PLCs or any network device connected to the gateway)

2.5.2 Cloud service setup on HMe

Cloud service allows to setup the Corvina Cloud connection into the operator panel. This feature is part of the firmware so can be managed using the System Settings page.

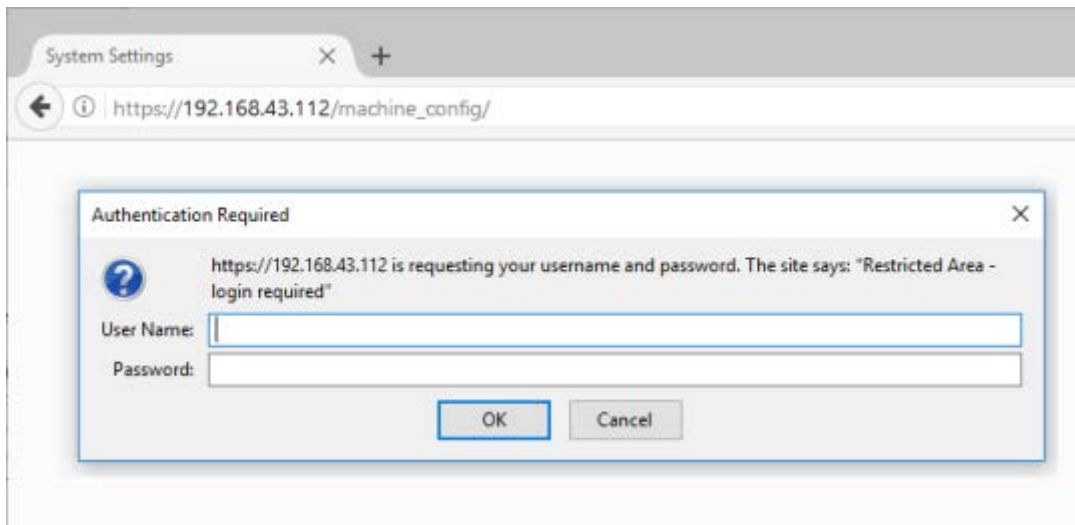
System Settings page can be retrieved:

- on the HMI screen, selecting Show System Settings option of Context Menu
- remotely using any web browser

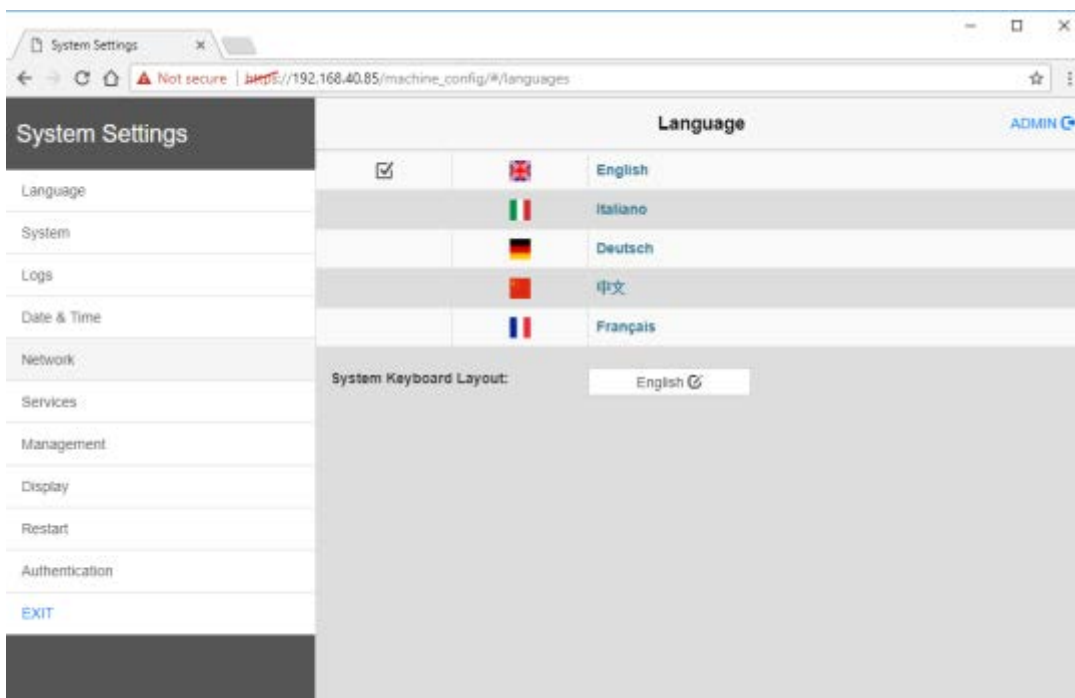
Some browser may report a security warning, then the page can be added to the trusted sites to allow the connection.

Once the connection is established, the system will ask for a User Name and Password to get access to the Web interface, defaults are:

- User Name: admin
- Password: admin



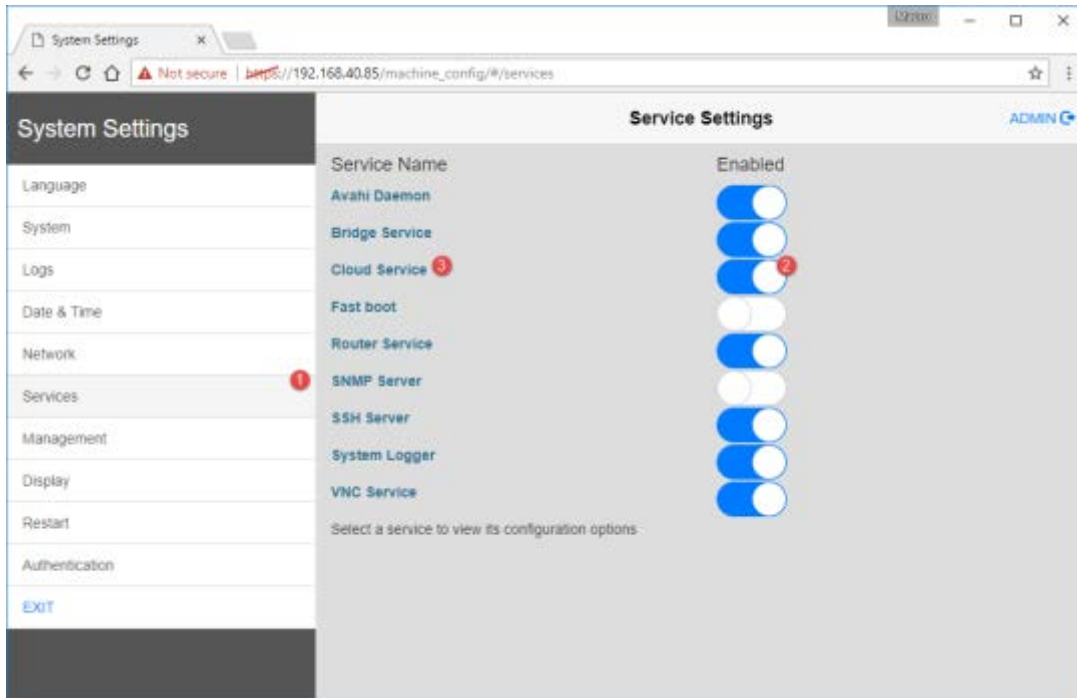
Then the web interface will be displayed:



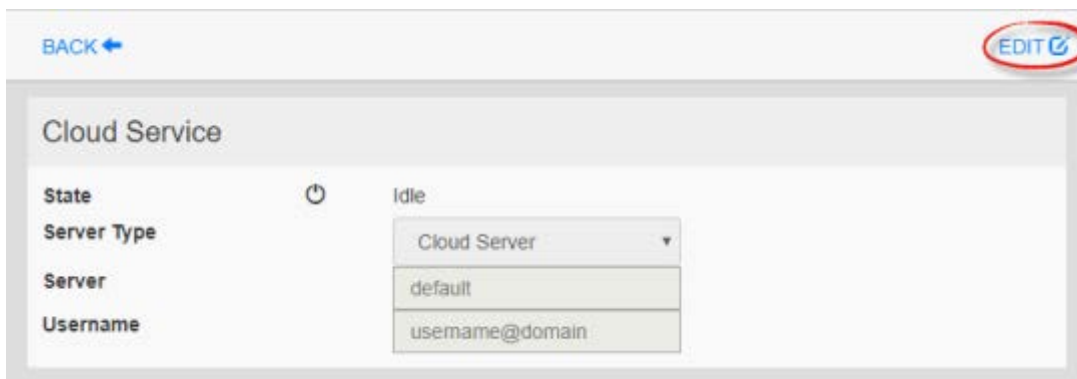
If required, the Network settings can be modified by click the Network item, then select the [Edit] button.

To enable and setup the Corvina Cloud connection:

- Select the Services item,
- Enable the Cloud Service by acting on the switch,
- Click the Cloud Service item to open the Cloud Service settings

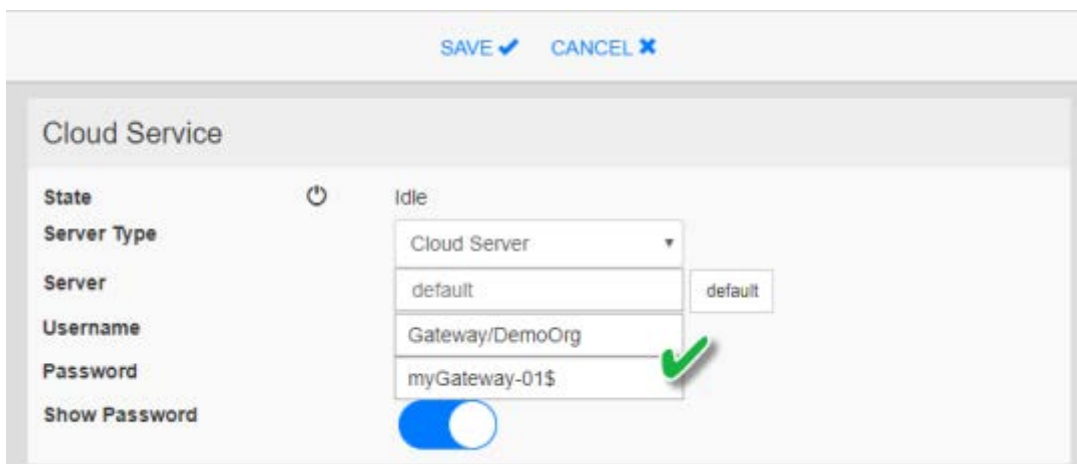


Click [Edit] to enter in edit mode:



Enter the credentials previously defined for this Gateway with Corvina Cloud Connect .

In this example User name and Password are respectively "Gateway/DemoOrg" and "myGateway-01\$"



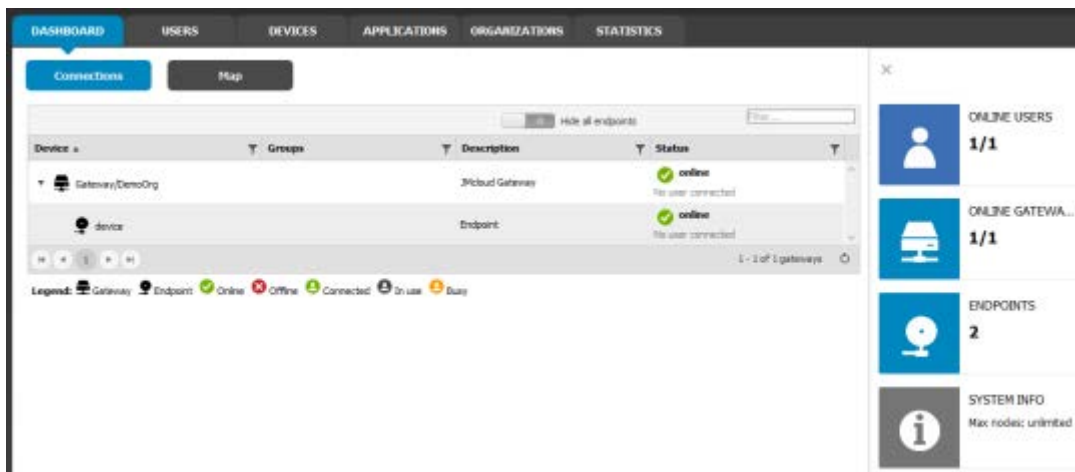
Once confirmed if the connection operation is successful a message is given from the system, and the State voice will be updated accordingly.



2.5.3 Connection to gateway/endpoints with Corvina Cloud Connect

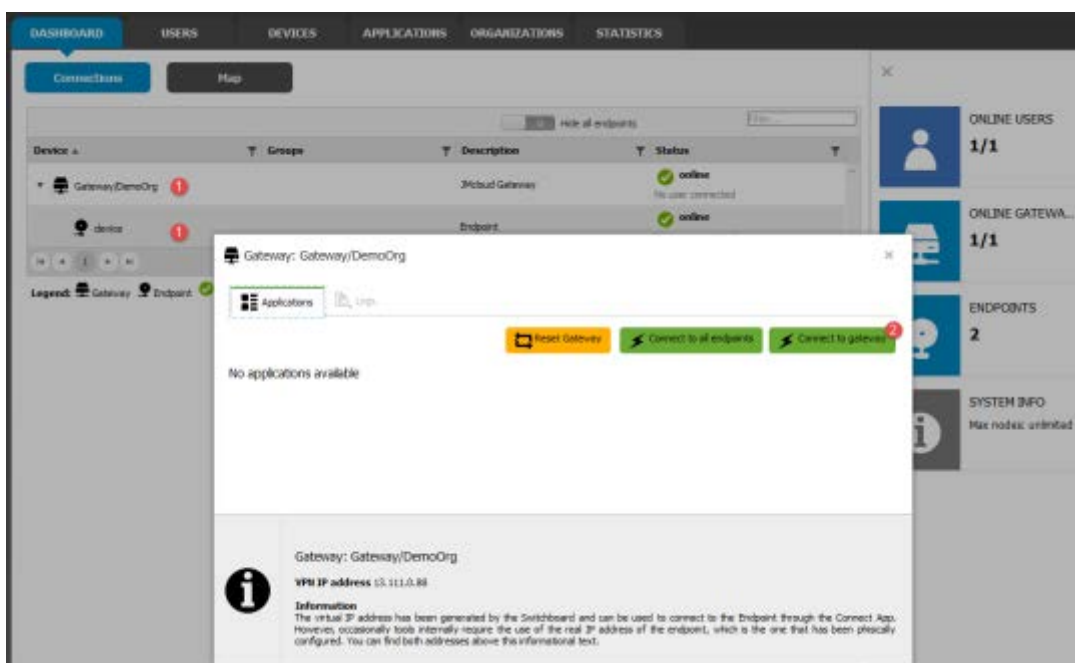
Once the gateway has been connected to the Corvina Cloud server, from Corvina Cloud Connect software it is possible to monitor the Endpoints defined.

Into the **DASHBOARD** tab will be reported Gateway and its Endpoints with proper status.



To establish the VPN tunnel with the remote device (Gateway or Endpoint),

- Click on the Device to open the device dialog box
- Click the Connect button



If the connection is correctly established the button will change color.

To disconnect the Endpoint click on the Disconnect button.



From the device dialog box you can retrieve the IP Address that can be used from the applications to reach the remote device. The dialog will offer a list of predefined applications that can be activated with a simple click. See [Applications](#) chapter for additional details.

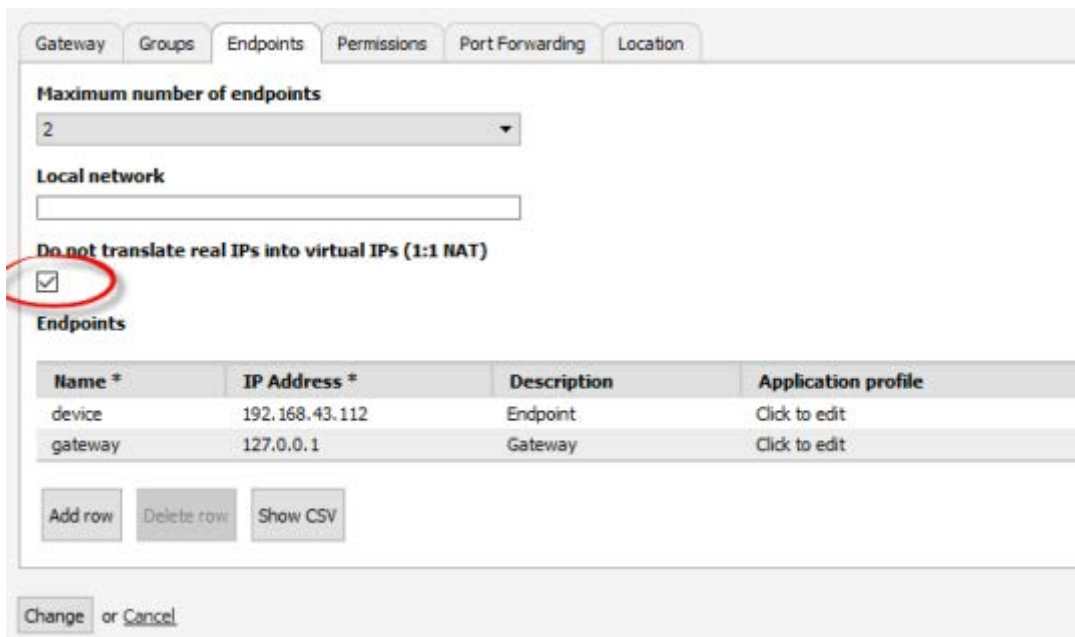
2.5.4 Use Real IP instead of Virtual IP (optional)

When an Endpoint is connected to the Corvina Cloud server, by default gets a Virtual IP address.

In some cases it may be necessary for the Endpoints to maintain the real IP used into the local network also when reached through the VPN.

To allow the use of real IP also in VPN the "Do not translate real IPs into virtual IPs (1:1 NAT)" option must be configured when the Endpoint is created.

When this option is selected the real IP of the operator panel and all other Endpoints must be specified into the configuration table as shown in the image below.



3. Organizations and Users' Rights

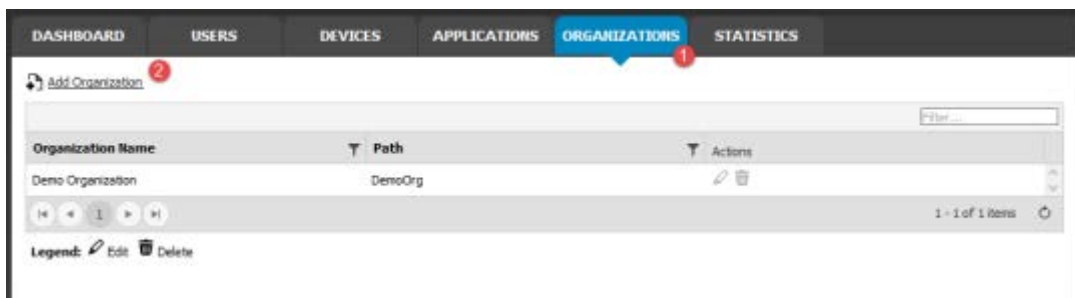
With Corvina Cloud Connect software it is possible to access Corvina Cloud infrastructure to get access to devices via VPN connection. Proper credentials are required to access Corvina Cloud, given by a local reseller or by the organization owner.

Following requirements needs to be satisfied to follow this guide:

- Corvina Cloud Connect software (Download [here](#))
- Superuser account to use with Corvina Cloud Connect (Ask to your local sales engineer OR to info.peweu@eu.panasonic.com)

3.1 Manage Organizations

From [ORGANIZATIONS] tab click on Add Organization



In the following window insert:

- Unique Organization Identifier: this is the identifier between sub organizations and it must be unique
- Parent Organization: choose the root organization or a sub organization as parent (if left blank, the root organization will be selected)
- Organization name: this is the name of organization displayed in Organizations list

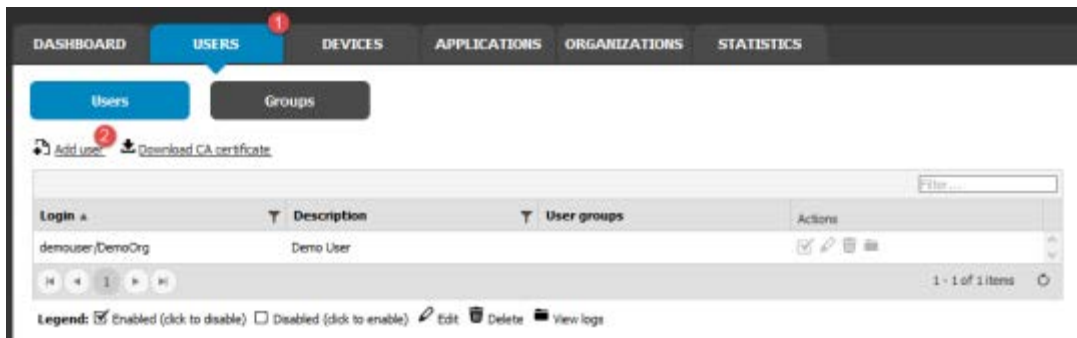
Fill the other fields by inserting the organization common details (phone number, address, position, website etc...) and then click on [Add] button to create the organization.

The added organization will be displayed inside the organization list.



3.2 Manage Users

To create a new user, from [USERS] tab click on Add user



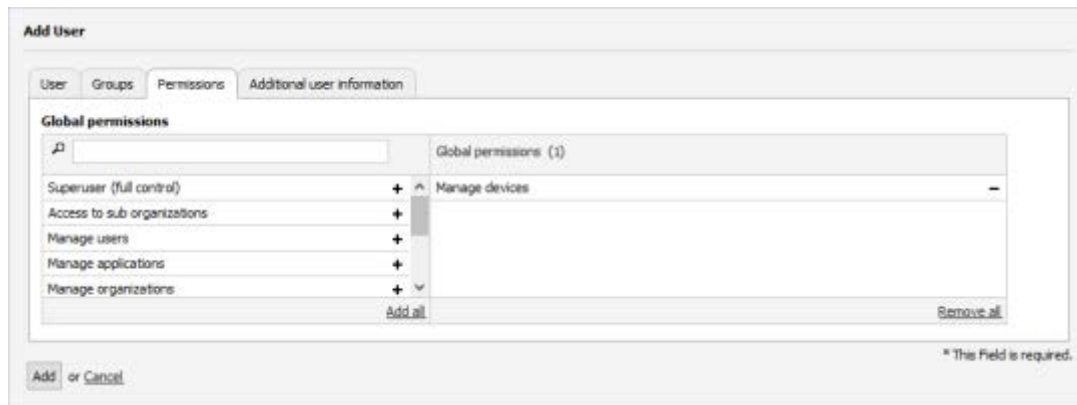
From User tab, set the following fields:

- Name: this the user name, it must be unique in users, gateways and endpoints
- Organization: this is the organization to which the user will be long to (if left blank, the root organization will be selected)
- Password: must be at least 8 character and contain at least one non-alphanumeric character
- Optionally, a Description can be added to make searches easier

Click on Add button to add the user.

Permissions

In this tab can be selected the permissions a user has on the other nodes and users of the Corvina Cloud. Items on the right column of the multiselect box are the permissions granted to the user, while those in the left column can not be used by the user. Click on the + on the right-hand side of the item to grant a permission, on - to remove the permission.



The user can be granted several permissions:

- Superuser (full control): The user can fully manage the Corvina Cloud
- Access to sub organizations: The user can access organizations
- Manage users The user can manage other users
- Manage devices The user can manage devices
- Manage applications: The user can manage the actions
- Manage organizations: The user can manage the organizations
- Use the API: The user can access and use the Corvina Cloud's API. (Feature not yet supported)
- Push route to GREEN | BLUE | ORANGE zone: When one or more of these options is selected, appropriate routes to the sub-nets governed by the Corvina Cloud will be pushed to the user. (Feature not yet supported)

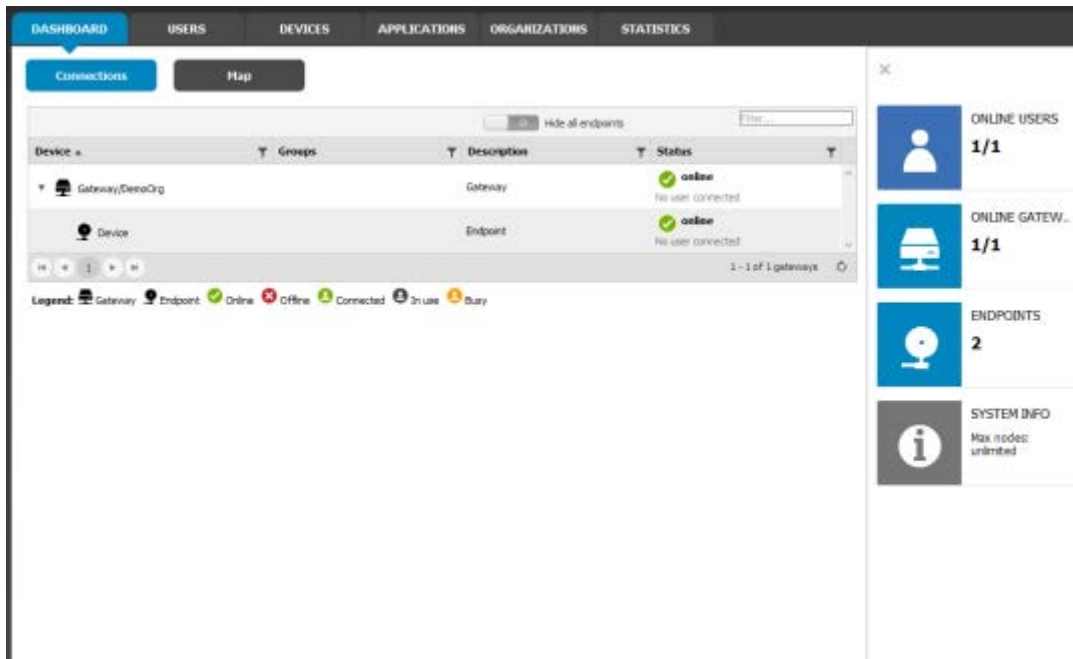
Any combination of these values can be associated to the user.

4. Dashboard

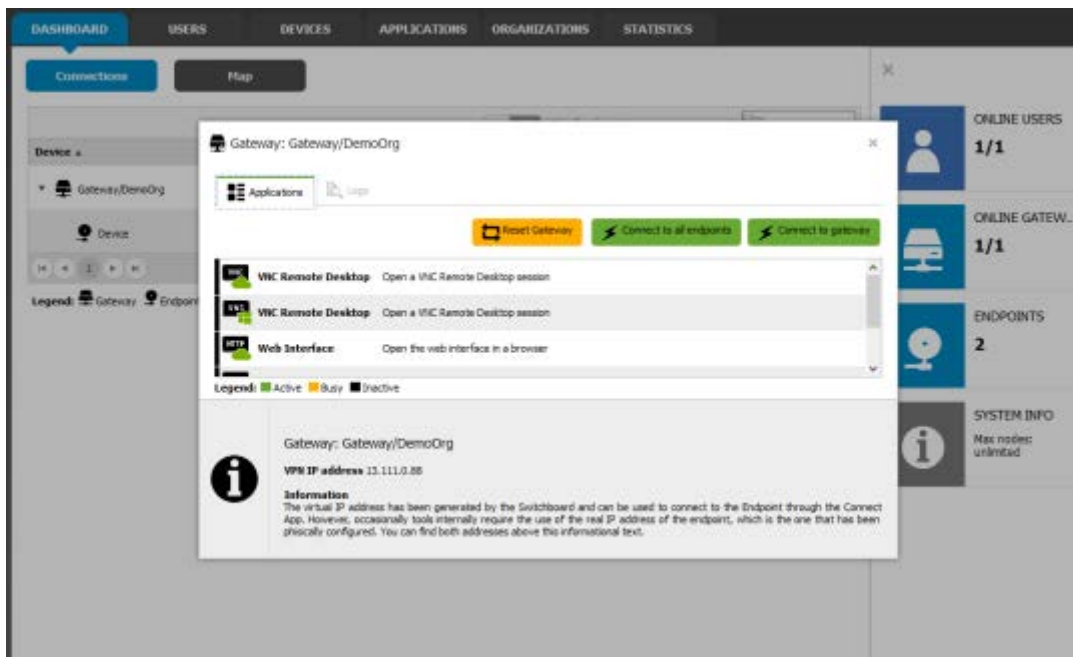
From the DASHBOARD page, you can get the list and the status of all devices (gateways and endpoints) of your organization and you can interact through the defined applications.

4.1 Connections

The Connection tab is showing all your available devices.



Click over a device (Gateway or Endpoint) to open the dialog with the list of the associated applications.



Connect to gateway

Connect the remote device to your local network. When connected, the local applications can be used with the VPN IP Address associated with the remote device (VPN is available only using Corvina Cloud Connect).

Use a predefined application

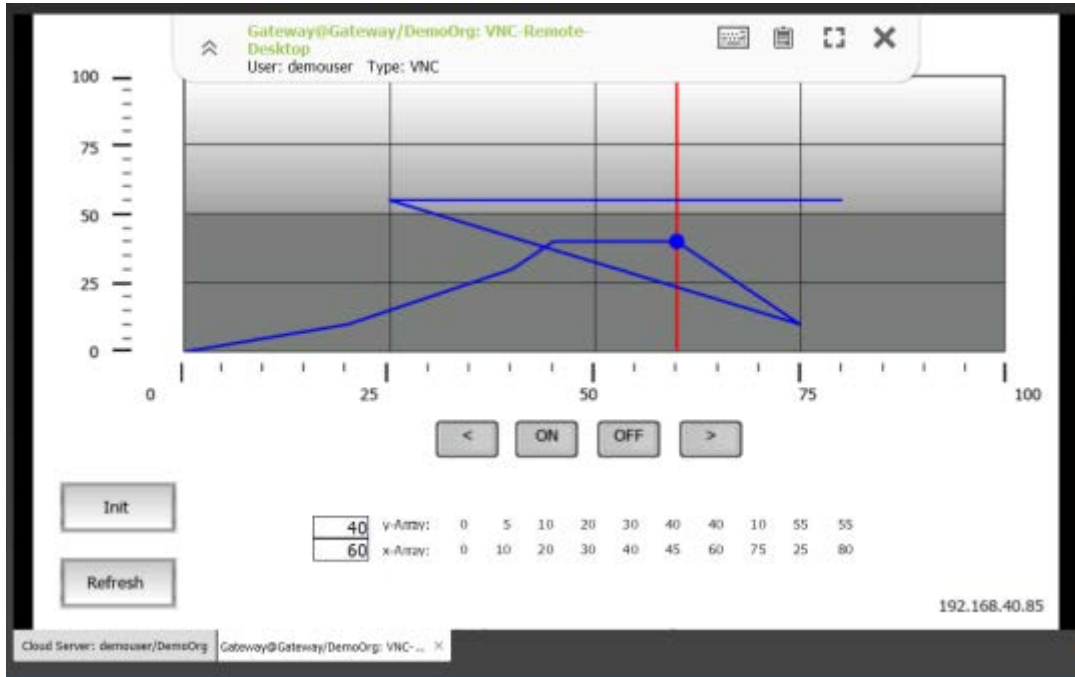
Click over the application to activate. Note that the Build-In Application can be used even through the portal (web interface) while the Local Application can be used only through Corvina Cloud Connect application.



Build-In applications are displayed with a small cloud

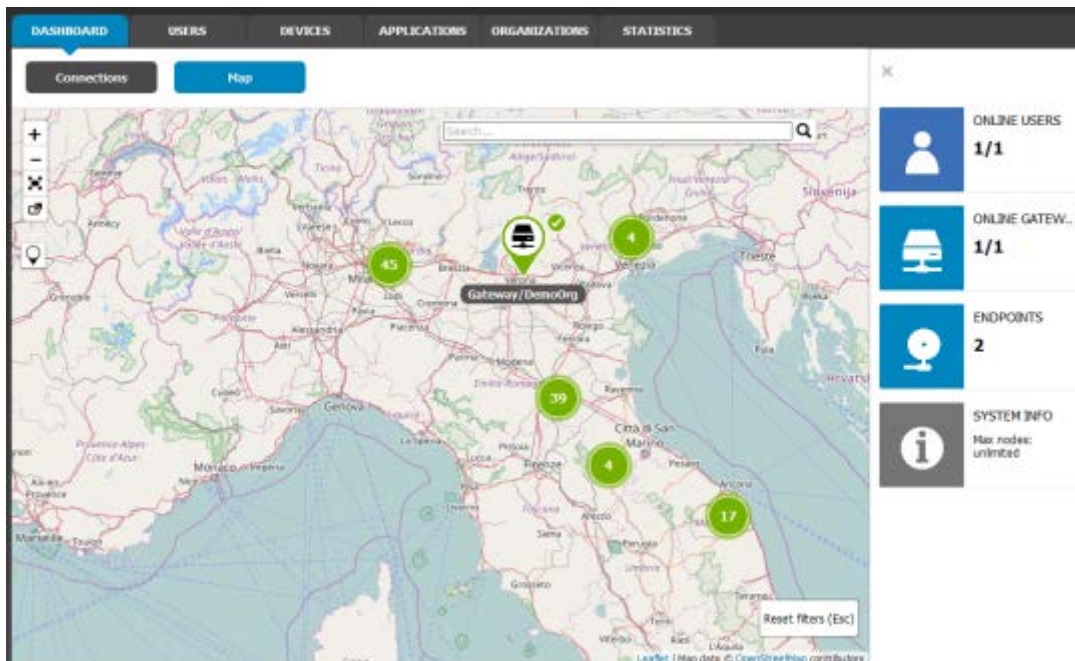
Local applications are displayed with the MAC/Windows logo

The below screenshot is an example of using the VNC Build-In Application

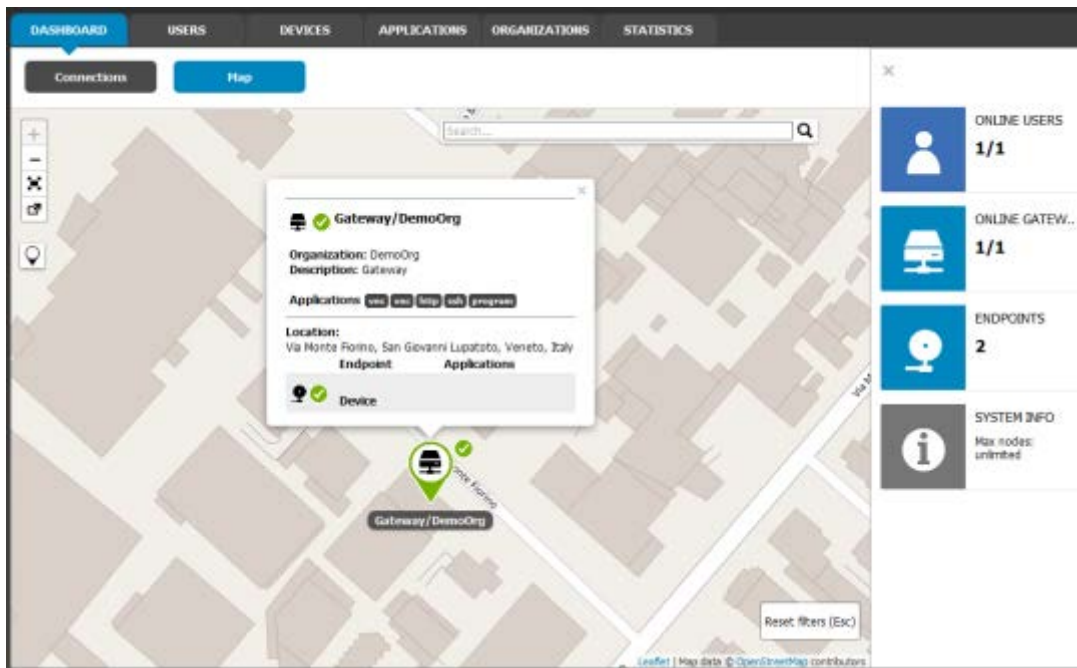


4.2 Map

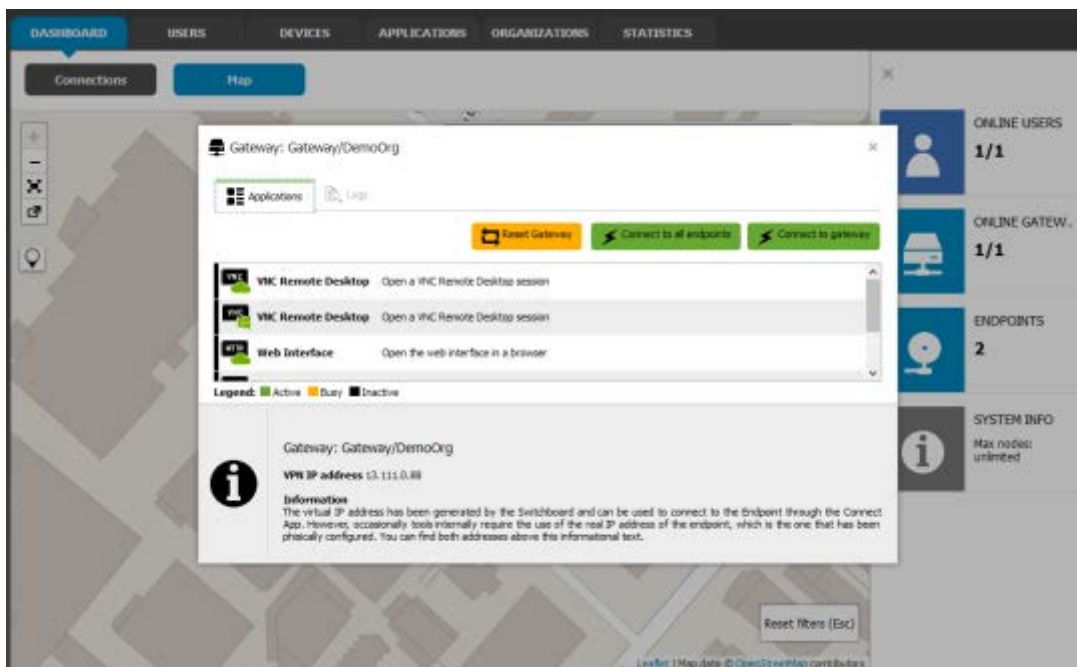
The Map tab is showing the location of your devices over a map. You can move and resize the map to find a device.



Click over a device to open the device information dialog.



Click over an endpoint to open the dialog with the available applications.



5. Advanced

The below chapters give the advanced configuration information of the Corvina Cloud environment.

5.1 Applications

Corvina Cloud allows to define "Applications" that can be seen as a way to access an endpoint from the Corvina Cloud Connect using a third-party application installed on the client side.

For example an application can be defined to simplify connection to HM4Web pages exposed by an HMI, launching the computer's default web browser with the endpoint's IP Address.

Requirements



Following requirements needs to be satisfied to follow this guide:

- Corvina Cloud Connect software (Download [here](#))
- User account with manage applications rights

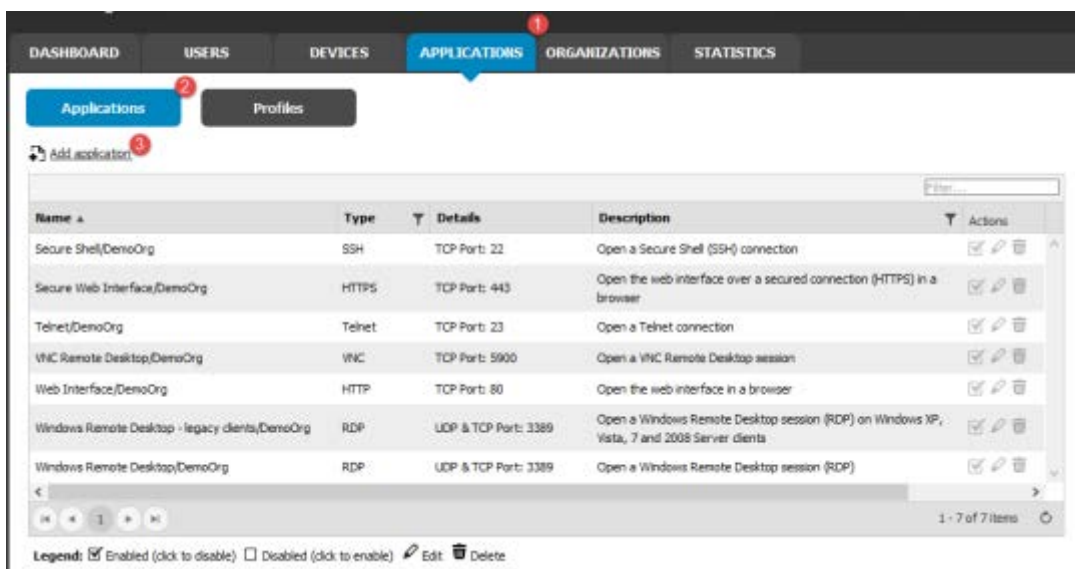
Launch the Corvina Cloud Connect software to get access to the Corvina Cloud server. Once connected select the [**APPLICATIONS**] tab.

5.1.1 Creation of Applications

The page initially shows the Add application link and a table containing the applications available by default and other information:

- The name given to identify the application.
- The type of the application (see further on for more information).
- A description of the application
- The available actions for each application:
 - Enable or disable the application
 -  Modify the application
 -  Remove the application

Above the table, on the right-hand side appears a filter, useful to search among all applications that have been defined in the Corvina Cloud.



When clicking on the Add application link, the applications editor opens right above the table, giving the opportunity to define additional applications. Two tabs are present in this editor: Application and Advanced parameters. The latter appears only for some of the Application type available.

Application

Name

A name to identify the application.

Organization

The name of an organization to which the use of the appliance is reserved. At least an organization must have been defined in the Organizations section for this option to appear.

Description

A description of the application.

Application type

The type of the application, which can be selected from the drop-down menu.

Note The choice of the application type influences also the availability of some of the next options; also the options that appear in the Advanced parameters tab will depend on the application type chosen.

Protocol

The protocol that the application should use, chosen from the drop-down menu. It can be TCP, UDP, or TCP & UDP.

Port

The port used by the application.

URL to open

The URL to be used for the connection. This option is available only when the Application type above is either HTTP or HTTPS.

Enabled

Tick the checkbox to enable the application.

The next options appear only if the Application type above is Custom and allow to define the path on the workstation to launch the application and arguments to be passed to the program. Since a same application might be run on Microsoft Windows and Mac OS X, the path and the arguments can be specified twice. It is even possible to use placeholders, that will be replaced accordingly on the operating systems, see below for more details.

Command path

The full path to the program to use.

Command arguments

Additional arguments to be passed to the program.

The next options concern how the Corvina Cloud Connect launches the application to connect to the remote device. The options are available for Windows and Mac OS X.

Enable integrated application

By selecting this option, the Corvina Cloud Connect will use its integrated application for the remote connection.

Open external application

By ticking this checkbox, it will be possible to specify which external application will be launched to establish the connection to the remote device. Two more options will appear, Command path and Command arguments, that are exactly the same described above and for which it is possible to use the placeholders described next.

Advanced parameters

Depending on the application type chosen in the other tab, the following common options are available for all types except for Custom.

User name

The user name used for the remote login.

Password, Confirm Password

The password that is used for the login, repeated twice for confirmation.

There is also the possibility to define advanced options for the following types:

- SSH

Private key

Use the textfield to paste the private key used for the connection

Passphrase, Confirm Passphrase

Write here the passphrase that corresponds to the private key.

Terminal color scheme

Select from the drop-down menu the colors used in the SSH terminal.

Font

The font used in the terminal.

Font size

The size of the font.

- RDP

There are a number of options that can be configured with this type of connection, but they are not required in most cases. These options allow to customise the authentication, the session, the audio support, some performance boost, and the RemoteApp.

- VNC

Number of connection retries

The number of times the connection should be attempted after an unsuccessful try.

Color depth

Choose the color depth used for the connection.

Swap red-blue

Invert the red and blue colors.

Cursor

Choose from the drop-down menu whether to use the local or remote cursor.

Read only connection

Tick the checkbox to disallow the client to make changes on the remote device.

Clipboard encoding

- Telnet

User name regex

The regular expression that recognises the correct moment when to send the user name to the remote device.

Password regex

The regular expression that recognises the moment when to send the password to the remote device.

Terminal color scheme

Select from the drop-down menu the colors used in the SSH terminal.

Font

The font used in the terminal.

Font size

The size of the font.

- **Custom**

For custom applications, click on Add row to add a new parameter, and then fill in the following information:

Parameter name

The name of the parameter.

Value

The value of that parameter.


It is possible to add any number of options and their values, these will be passed on the command line to the application.


5.1.2 Creation of Profiles

Applications can be grouped together into Profiles and attached to single endpoints, tailoring the possibility to access them. In other words, it is possible to configure applications on a given endpoint so that it can be reached only via some given protocols (e.g., RDP, SSH or HTTP) or services (e.g., VNC). The choice of the applications can be influenced also by the endpoint's running operating system and services.

The page contains the Add profile link, above the table carrying the list of all the available profiles and some information about each profile:

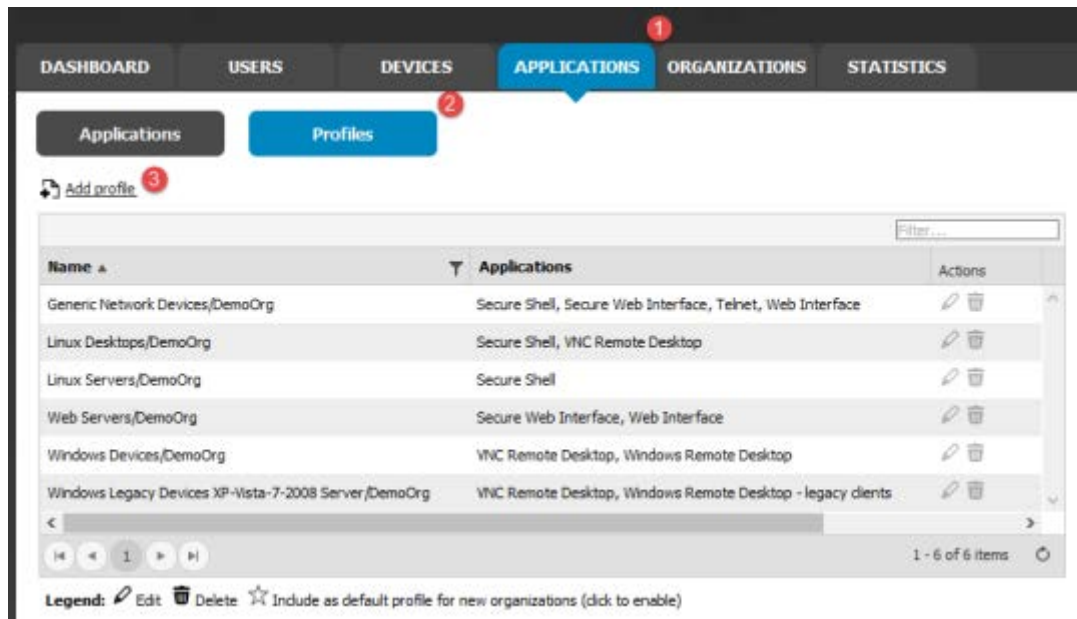
- The name given to the profile.
- The description of the profile
- The applications that are part of the profile.
- The available actions on each of them

 Modify the application profile

 Remove the application profile.

Note In case one or more profiles are deleted, the single applications will not be deleted: To remove an existing application, go to Applications.

Above the table, on the right-hand side appears a filter, useful to search among all profiles that have been defined in the Switchboard.



When clicking on the Add profile link, the editor opens right above the table.

The 'Add Profile' form contains the following fields and controls:

- Name ***: Text input field containing 'newProfile'.
- Organization**: Dropdown menu showing 'DemoOrg'.
- Description**: Text input field containing 'New Profile'.
- Include as default profile for new organizations**: Unchecked checkbox.
- Applications (2)**: Multiselect box with a search field and a list of applications:

Application	Selected
Windows Remote Desktop	+
Windows Remote Desktop - legacy clients	+
Secure Web Interface	+
Secure Shell	+
Telnet	+
- Buttons**: 'Add' and 'Cancel' buttons.
- Footer**: '* This Field is required.'

Here, additional profiles can be created, by supplying the following information:

Name

A name to identify the profile.

Organization

Select for which organization the Profile will be available.

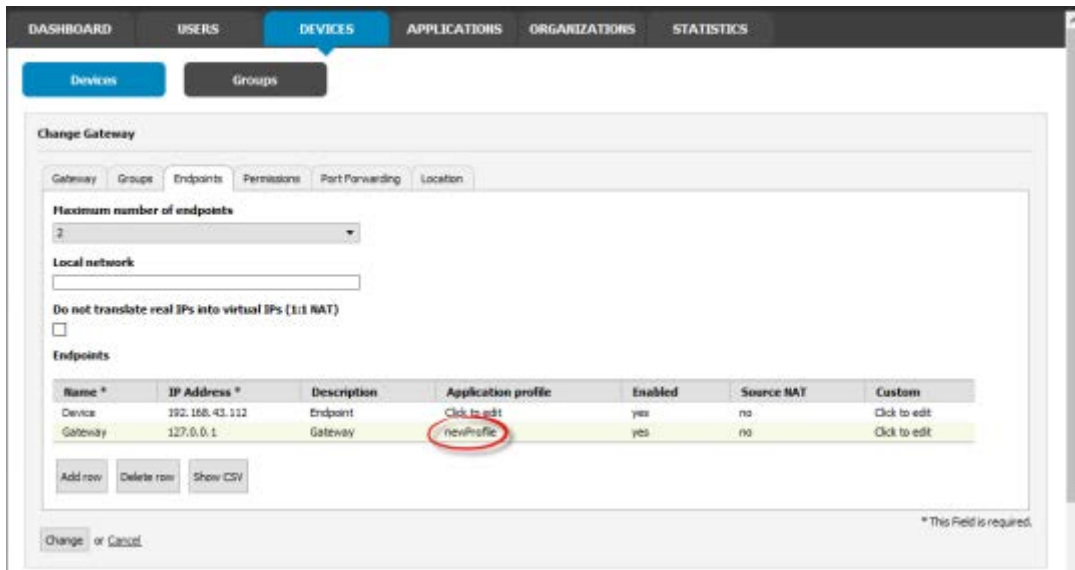
Description

A note about the profile.

Applications

Available applications are listed in this multiselect box. To add an application to the profile, click on the + next to the application's name. To search for an application, use the textbox on top of the box. The Add all link can be used as a shortcut for moving all applications within the profile. An application can be removed from the profile by clicking on the - next to the application's name in the right column.

Now the new profile, that contains the selected applications list, can be added to endpoints of the devices and the defined applications can be activate from the DASHBOARD page.



5.1.3 Application types

There are some applications integrated into Corvina Cloud that are already configured and ready to use:

SSH	Secure Shell Connection
RDP	Windows Remote Desktop (on Windows XP, Vista, 7 and 2008 Server clients)
VNC	VNC Remote Desktop Session
Telnet	Telnet connection
HTTP	Web interface in a browser
HTTPS	Web interface over a secured connection in a browser

Selecting custom application type, user has to provide:

Command path

The full path to the program to use.

Command arguments

Additional arguments to be passed to the program.

As an example of application, suppose that each workstation equipped with Windows and the Corvina Cloud Connect has also the program HMWin studio Client installed in user's program folder. To allow users to use HMWin studio Client, define a custom application with the following configuration values:

- Name: HMWin studio Client
- Description: Connect to HMI (command path could change based on your HMWin studio version)
- Application Type: Custom
- Protocol: TCP
- Port: 80
- Command path:
%PROGRAM_PATH%\Panasonic-ID SUNX Terminal\HMWIN x.xx\runtime\Client_WIN32\hmiclient.exe
- Command args: %DEVICE_IP%

5.1.4 Placeholders

The purpose of a placeholder is to allow the same application to be used on every device, independently of the varying configuration values of each device, like for example their (public) IP addresses.

Placeholders can be used in the **HTTP**, **HTTPS**, and **Custom** application types.

For HTTP and HTTPS types, these are the available placeholders:

- %DEVICE_IP% the IP address assigned to the device.
- %PHYSICAL_IP% the physical IP of the device.
- %SERVER_EXTERNAL_HOST% the FQDN of the server's public hostname.
- %SERVER_INTERNAL_IP% for the internal, private IP address.

In the Custom application type, the available placeholders are:

- %PROGRAM_PATH%: The default installation directory for applications (usually C:\Program Files).
- %SYSTEM_DRIVE%: The drive containing the Windows root directory (C:\).
- %SYSTEM_ROOT%: The Windows root directory (C:\Windows).
- %HOME_PATH%: The user's home directory (C:\Documents and Settings\`user name`).

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From here, it is possible to download the Corvina Cloud Connect Application that is necessary to activate a VPN connection with the remote panels.

Alternatively, you can use the Web Portal at: corvinacloud.com

7.1 Corvina Cloud Connect

[Corvina Cloud_Connect](#) (Registration required)

7.2 HMWin studio Suite

[HMWin studio Suite](#) (Registration required)

7.3 Firmware

- HMI Devices based on WinCE platform require BSP v1.96 or greater
- HMI Devices based on Linux platform require BSP v1.0.136 or greater

Record of Changes

Manual No.	Date	Description of Changes
ACGM0196V1EN	Juni 2018	First version based on EXOR manual version from 23 February 2018



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