# Customer Technical Requirements

*Version 3.6*

## Introduction

This document details the technical requirements for Evogro installations on customer premises. This document supplements the information in the customer contract, and in case of any conflicts, the signed contract should be considered authoritative.

All information contained within is confidential proprietary information of Evogro and is subject to change without notice.

## Contents

The technical requirements are described in the following sections:



## Cabinet Physical Requirements

### *Ambient Environment*

The Evogro cabinet can operate within an ambient temperature range of 15°C – 25°C. We recommend that the cabinet should not be immediately adjacent to stoves, heated gantries or other heat sources.

### *Securing the Evogro Cabinet*

The Evogro cabinet is a freestanding unit. It must be installed on a solid level floor (adjustable feet are provided for fine level adjustment) with its back against a wall.

Although the cabinet is inherently stable, it is recommended that the cabinet be secured to the wall with a bracket. This bracket can be installed by Evogro during the installation. Any electrical or plumbing conduits hidden in the wall behind the installation location should be marked by the customer prior to installation.

### *Power Requirements*

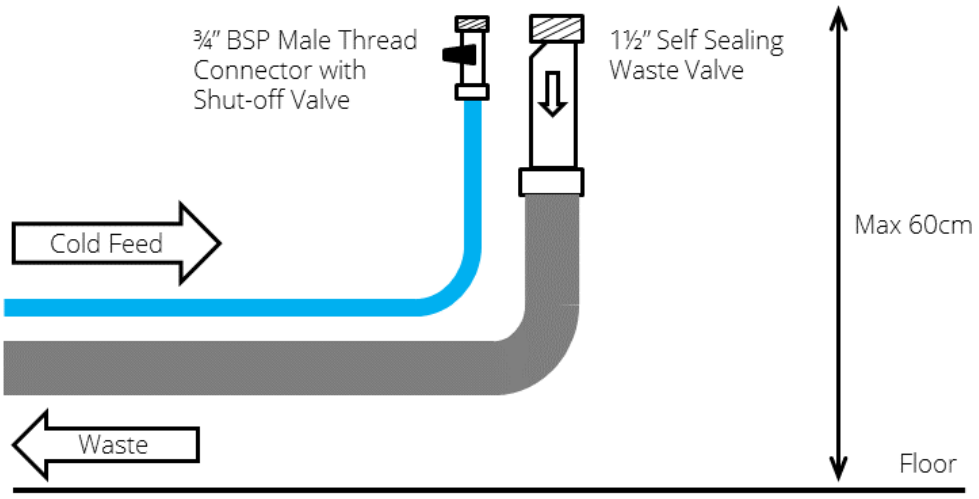
The Evogro cabinet is powered from a standard 230V/50Hz AC supply, and is fitted with a standard UK plug with a 5A fuse. Typical power consumption is 200W.

### *Plumbing Connections*

The Evogro cabinet can be operated standalone and the reservoir refilled with a jug and periodically drained to a bucket. The cabinet can also be fitted with a plumbing connection kit (at extra cost) that enables automatic top-up and drain. For the plumbing connection kit, the customer must provide the following services within 1 metre of the rear of the cabinet.

1. ¾" BSP Male Thread Connector with Shut-off Valve (for cold water feed).
2. 1½" Self Sealing Waste Valve (for waste)

A suggested arrangement is shown below:




## Cabinet Network Requirements

### Network Connection

The Evogro cabinet requires continuous network access in order to function. In most cases, after connection to the network, everything will function without further intervention. However if your network requires additional configuration, please review the information below.

The Evogro cabinet can be attached to the network via either Ethernet or WiFi. The method of connection will be agreed with Evogro prior to installation.

### *Ethernet*

A single RJ45 jack will be provided for connection via an Ethernet cable. The IP address can either be obtained via DHCP or a static IP address can be provided. This will be configured by Evogro at installation time, and can only be updated via a support request to Evogro. In addition, the MAC address of the interface can be provided. Please inform Evogro if you require the MAC address to implement any MAC filtering or whitelisting ahead of the installation.

### *WiFi*

The Evogro cabinet can be configured to use WiFi for connecting to the network. The WiFi network can be unsecured or secured via WPA2-PSK.

In the case of an unsecured WiFi connection, the connection must be active without the need for any user interaction via a captive portal (i.e. it must not require a login via a webpage or similar). In case your WiFi uses a captive portal to request user login, the Evogro cabinet should be whitelisted in order to bypass this. Consult your captive portal vendor for more information.

In the case of a secured WiFi connection, you should not use a network for which the passphrase changes frequently because re-configuring the cabinets with new security credentials is a cumbersome process.

The IP address can be either obtained via DHCP or a static IP address can be provided which will be configured at installation time by Evogro. In addition, the MAC address of the WiFi interface can be provided if required. Please inform Evogro if you require the MAC address to implement any MAC filtering or whitelisting ahead of the installation.

### *3G/4G WAN*

If neither Ethernet nor WiFi connection is possible, the cabinet can be fitted with a 3G/4G modem. This is an optional item and must be specified at the time of order. It also incurs additional ongoing costs to cover data usage, please consult the Evogro Price List for details.

## Network Usage

### *Data Connection*

Data is continuously exchanged between the cabinet and the Evogro cloud infrastructure. The data sent consists of sensor data collected from the cabinet, images from the growing shelves at a number of set points during the day, and other information regarding operating parameters within the cabinet. The data received consists of control information required to automatically configure and maintain the optimal growing environment. Average data traffic is 80MB per day.

### *VPN Connection*

The Evogro cabinet maintains an active VPN connection for remote management and maintenance. The Evogro VPN uses OpenVPN, an SSL-based VPN, and should not require any special customer configuration beyond ensuring the port access as specified below. Each Evogro has a unique certificate for OpenVPN authentication, and certificate revocation lists are actively maintained. Only Evogro technical support personnel have access to the VPN via their own certificates.

Within the VPN tunnel, SSH is used for management of the Evogro. SSH is the only listening server on the Evogro, and SSH authentication is controlled by private key, which are only issued to Evogro technical support personnel. Since SSH access is provided through the VPN tunnel, port forwarding on port 22 is NOT required.

### *Ports and Protocols*

The following ports and protocols are used by the cabinet. If you have filtering or firewalls in place on your network, you should ensure that the following ports are open for outbound access:

| Protocol | Port | Type | Destination | Used By |
|---|---|---|---|---|
| TCP | 80, 443 | HTTP/HTTPS | Google[1] | Data Connection |
| UDP | 1194 | VPN/SSL | 54.246.169.76 | OpenVPN |
| UDP | 123 | NTP | *.pool.ntp.org[2] | NTP |

## Evogro User Application

The Evogro user application is provided as a web-based application. No installation on client devices is required. It can be accessed at https://my.evogro.com

Users of the Evogro user interface on a PC should use a modern browser, supporting HTML5, CSS3 and JavaScript. The web application is optimised for mobile devices and mobile browsers on Apple iOS 6 or later and Android 4.3 or later are also supported. JavaScript, cookies and local storage must all be enabled.

Web application users will need access to the evogro.com domain and its subdomains. If you have web proxies or similar, evogro.com should be added to the whitelist.

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[1] The Evogro cloud is hosted by Google. The range of IP addresses used by Google is not fixed and subject to change without notice. See Appendix A.

[2] The time service uses a number of addresses from the public NTP pool, which will resolve to different IP addresses at different times.

Authentication for the Evogro web application is via third-party oAuth providers. Accounts at Google, Facebook and Twitter are currently supported. For Google, both Google for Work and private Google accounts are supported. If you do not currently have an account at any of these providers, we suggest signing up for a free Google account at https://accounts.google.com/SignUp

## Appendix A: Google IP Address Range

The current list can be found by looking up the DNS record:

TXT _cloud-netblocks.googleusercontent.com

This record will probably contain further includes which can then be resolved into IP ranges. All ranges for all includes must be added in any filtering rule. The following example shows retrieving the first DNS record:

```
# dig IN TXT _cloud-netblocks.googleusercontent.com 8.8.8.8
...
;; ANSWER SECTION:
_cloud-netblocks.googleusercontent.com.          3599 IN    TXT "v=spf1 include:_cloud-netblocks1.googleusercontent.com
include:_cloud-netblocks2.googleusercontent.com include:_cloud-netblocks3.googleusercontent.com include:_cloud-
netblocks4.googleusercontent.com ?all"
```

Once you have the initial record, the included blocks can be queried. For example, querying for the first block:

```
# dig IN TXT _cloud-netblocks1.googleusercontent.com 8.8.8.8
...
;; ANSWER SECTION:
_cloud-netblocks1.googleusercontent.com. 3599 IN TXT "v=spf1 ip4:8.34.208.0/20 ip4:8.35.192.0/21 ip4:8.35.200.0/23
ip4:108.59.80.0/20 ip4:108.170.192.0/20 ip4:108.170.208.0/21 ip4:108.170.216.0/22 ip4:108.170.220.0/23 ip4:108.170.222.0/24 ?all"
```

In this example all the ranges 8.34.208.0/20, 8.35.192.0/21, etc. are possible destination addresses for the data connection.

Since these address ranges may change over time, filtering based on destination IP is not recommended. If you do choose to restrict the cabinet's access to specific IP ranges, it is your responsibility to ensure the filter settings are kept up to date. If, due to customer IP filtering, the cabinet loses connectivity to the Evogro cloud, Evogro shall not be liable for any resulting loss or damage.