

Network and OPS Module information



Versioning

Date	Changer	Changed	Version
25-02-2020	Roel Mercx	Initial setup	v1.0
21-04-2020	Roel Mercx	Add Aruba access point information.	v1.1
23-6-2020	Roel Mercx	Add windows firewall information.	v1.2
02-07-2020	Rudy van der Blom	Added app store and screen control urls	v1.3
03-05-2021	Hans Ahrens	Added OPS Module settings and removed Presenter 9 details	v1.4

Index

Versioning	2
Index	3
Document target audience	4
Prowise Central	4
Reflect	5
Recommended network configuration	6
Configuring mDNS service	8
Unifi USG	8
Aerohive Access Points	9
Aruba Access Points	10
Used network protocols for Reflect	11
Specific ports for the Prowise Reflect protocol	11
OTA - ports and domains	12
Appstore/Screen control	12
Prowise Presenter - ports and domains	13
Prowise OPS Module settings	14
Windows Drivers	14
Prowise NFC Tool	14
Windows Settings	15
Display Settings	15
Energy Settings	16
Automatic on screen keyboard	16
Touch keyboard icon	17
Windows Ink	17
Audio Devices	17
Prowise Move Camera	17
Applying settings via a script	18
WOL	18

Document target audience

This document is intended to be used by IT Professionals within an organisation to correctly set up their environment to be used with Prowise Products. With the information contained in this document all the correct settings can be made to support the functionality of Prowise services/hardware within an organisation.

Prowise Central

Prowise Central is the operating system of the Prowise Touchscreens. Within this operating system there are systems built in to support automatic updates, installing applications, and remote display of audio/video on the touchscreen. These chapters explain the specific settings that need to be made in a network to support all these functionalities.

Reflect

With Prowise Reflect the end user has the option to share their screen wirelessly with a Prowise Touchscreen. For this the end users have the option to use one of the following protocols:

- Prowise Reflect
 - Prowise Reflect is the screen sharing protocol developed by Prowise to share the screen of their device with the touchscreen. The Reflect protocol offers the option to use touch on the touchscreen to control the client device. Up to 4 devices can be shared simultaneously with the touchscreen.
- Airplay
 - With Apple Airplay the end user has the option to use the native screen sharing functionality of their iOS/Mac OS X device to share their screen with the touchscreen
- Chromecast
 - With Google Chromecast the end user has the option to use the screen sharing functionality of their Android/Chrome Browser to share their screen with the touchscreen.
- Miracast (Only available for the Prowise Touchscreen)
 - With Miracast the end user has the option to use the screen sharing functionality of Microsoft Windows to share their screen.

For each of the above protocols there are different network requirements (Defined by the creator of the Protocol). Next to these requirements the reliability/connections of these protocols are highly dependent on the network setup on site. To check if the protocol is working (and to rule out the client/touch screen) it's best to setup a local hotspot network with your Phone and connecting the client/touchscreen with this network.

The steps to test the preferred protocol with a hotspot are:

1. Enable the hotspot network on your phone
2. Connect the touchscreen to the hotspot network
 - a. It's best to forget the normal network via advanced settings and to reboot to screen after connecting to the hotspot. This way you ensure that the screen is only connected to the hotspot.
3. Connect the client to the hotspot network
4. Try to connect to the screen with the preferred protocol (Reflect, Airplay, Chromecast, Miracast).
5. If you can connect with the above steps then the IT administrator will need to adjust the network settings to support the preferred protocol. In the case it does not work then please contact the Prowise support department.

Recommended network configuration

Casting to different networks (vlans) can be accomplished by setting up mDNS forwarding and the correct firewall rules.

Casting protocols use broadcast to announce their availability and broadcast traffic will not transfer to other networks by design.

By using a mDNS forwarding service the broadcast traffic will be resubmitted to other networks.

Tip: When no connection can be made using Reflect code: check firewall rules.

When no screens are found in Reflect, Airplay or Chromecast but connection can be made by Reflect code: check mDNS forwarding.

Firewall:

For casting connection the follow firewall rules need to be setup:

(Firewall can be Windows Defender firewall, any other locally installed firewall or any firewall in place on your network.)

From	To	Port
Casting vlan	Devices vlan	TCP 80 TCP 443 TCP 554 UDP 554 UDP 1900 TCP 3689 TCP 5297 TCP 5298 UDP 5298 UDP 5350 UDP 5351 UPD 5353 UDP 7236 TCP 7236 TCP 7250 TCP 8082 UDP 8082 TCP 8085 UDP 8085 UDP 49159 UPD 49163
Devices vlan	Casting vlan	TCP 80 TCP 443 TCP 554 UDP 554 UDP 1900 TCP 3689 TCP 5297 TCP 5298

		UDP 5298 UDP 5350 UDP 5351 UPD 5353 UDP 7236 TCP 7236 TCP 7250 TCP 8082 UDP 8082 TCP 8085 UDP 8085 UDP 49159 UPD 49163
--	--	--

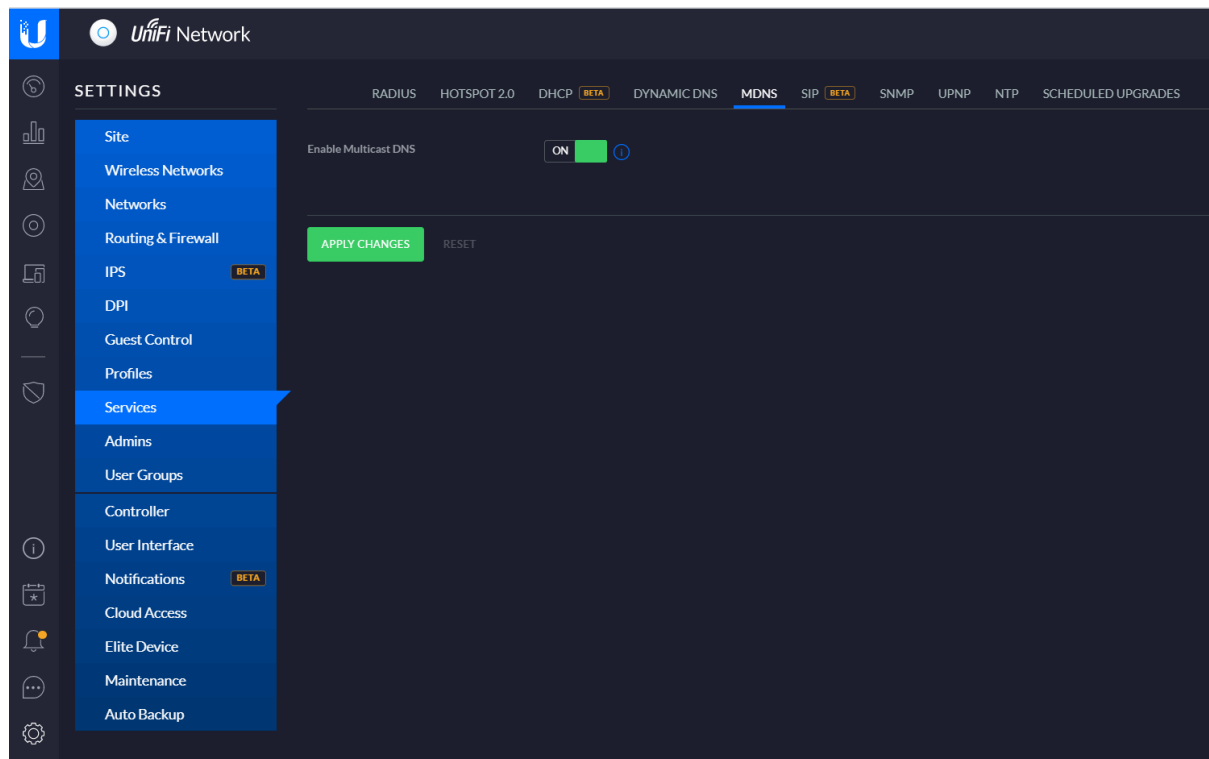
Configuring mDNS service

For casting availability mDNS service needs to be set up.

For Unifi USG, Aerohive Access Points and Aruba Access Points the settings are explained below.

Unifi USG

MDNS needs to be enabled



Aerohive Access Points

The Bonjour Gateway needs to be enabled and configured for forwarding mDNS traffic.

Scan the following VLANs for services: Enter all vlans that casting need to be enabled on. Include device and screen vlans.

From VLAN Group to Vlan Group minimal needs to be setup to listen on casting VLAN and broadcast to devices VLAN

Policy Details
Wireless Networks
Device Templates
Router Settings
Additional Settings
Deploy Policy

MANAGEMENT SERVER

DNS Server

NTP Server

SNMP Server

Syslog Server

POLICY SETTINGS

ACSP Logging

Bonjour Gateway Settings

Device Credentials

Device Data Collection And Monitoring

Device Time Zone

HIVE

iBeacon Service

Management & Native VLAN

Presence Analytics

NETWORK SERVICES

Access Console

Bonjour Gateway Settings

Bonjour Gateway Settings ON

Re-use Bonjour Gateway settings (Pick existing settings) 🔍

Name *

Description

Scan the following VLANs for services * [+4694]

VLANs can be configured as ranges or as individual VLANs. Indicate a range with a hyphen. Separate VLAN entries with commas, for example, 1-30, 100-200, 500

ADD
🔗
🗑️

Service	Type	From VLAN Group	To VLAN Group	Wireless Hop	Realm	Order
<input type="checkbox"/> ProwiseReflect	*_prowiserelect._tcp.	Any	Any		Any	↑ ↓
<input type="checkbox"/> Googlecast	*_googlecast._tcp.	Any	Any		Any	↑ ↓
<input type="checkbox"/> AirPlay	*_airplay._tcp.	Any	Any		Any	↑ ↓

10 | 20 | **50** | 100 🏠 < 1 > 🏠 Go

Aruba Access Points

When you do not use vlans and all devices are connected to the same wifi network, Turn off AirGroup in Aruba Access points.

When you are using vlans and the Prowise screen and casting device is on a different vlan, AirGroup needs to be enabled and configured.

The screenshot displays the Prowise Virtual Controller interface. The left sidebar shows navigation options under 'MANAGE' (OVERVIEW, DEVICES, CLIENTS, APPLICATIONS), 'ANALYZE' (ALERTS & EVENTS, AUDIT TRAIL, TOOLS, REPORTS), and 'MAINTAIN' (FIRMWARE). The main content area is titled 'ACCESS POINTS' and includes a sub-menu with 'WLANs', 'ACCESS POINTS', 'RADIOS', 'PORTS', 'SECURITY', 'VPN', 'SERVICES', 'SYSTEM', and 'CONFIGURATION AUDIT'. The 'SERVICES' section is expanded, showing a list of services with checkboxes for configuration:

Service	Configuration
AirGroup	<input type="checkbox"/>
Guest Bonjour Multicast:	<input checked="" type="checkbox"/>
mDNS (Bonjour):	<input type="checkbox"/>
SSDP (DLNA/UPNP):	<input type="checkbox"/>
> Real Time Locating System	
> OpenDNS	
> CALEA	
> Network Integration	
> AppRF™	

The 'AirGroup' checkbox is highlighted with a red square, indicating it should be disabled.

More information about Aruba AirGroup:

https://help.central.arubanetworks.com/latest/documentation/online_help/content/access-points/cfg/services/airgroup.htm

Used network protocols for Reflect

The following generic network protocols are used within the Reflect service to enable streaming of video/audio from a device to a Prowise Touchscreen

- Bonjour
 - Reflect uses Bonjour to broadcast the screen name/ip over the network. Your network needs to be configured to accept and rebroadcast Bonjour. It could be that you will need to enable Bonjour Gateway/mDNS forwarding for this.
- AirPlay
 - Reflect has built-in streaming support for Apple related products (e.g. iPhone, iPad, Mac), more support on the Apple Airplay protocol can be found here: <https://support.apple.com/en-us/HT202944>
- Chromecast
 - Chromecast needs Wireless Network Segmentation to be disabled for it to work. More trouble shooting tips can be found here: <https://support.google.com/chromecast/answer/3249268?hl=en>

Specific ports for the Prowise Reflect protocol

The following ports should be open on the internal network to use the Reflect protocol on devices within the network:

Ports	Protocol	Technology	Reason
1900	UDP	ssdp	Discovery of Reflect screen
5350	UDP	/	Discovery of Reflect screen
5351	UDP	nat-pmp	Discovery of Reflect screen
5353	UDP	mdns	Discovery of Reflect screen
8082	TCP/UDP	Websocket	Communication during reflecting
8085	TCP/UDP	Socket	Connection setup
*	UDP	RTC	Video transmission

OTA - ports and domains

Central needs to be connected to the Internet to download its automatic updates.

For this you need to ensure correct settings in central (Connected to Internet/Date and Time) and ensure that the screen can reach our servers via an SSL Connection.

For OTA to function correctly the following domains need to be accessible:

Domain	Port
central.prowise.com	443
download.prowise.com	443
cdn-prowise.azureedge.net	443
presenter-prowise.azureedge.net	443

Appstore/Screen control

Central needs to be connected to the internet to make use of the appstore and screen control features. For this you need to ensure that you have a stable and active connection (check the advanced settings) and that the screen can reach the following servers via an SSL connection.

For the app store and screen control to function correctly the following domains need to be accessible:

Domain	Port
api.prowise.com (Global)	443
api.de.prowise.com (localized German server)	443
login.prowise.com (Global)	443
login.de.prowise.com (localize German server)	443

Prowise Presenter - ports and domains

Prowise Presenter is the Prowise Interactive whiteboard application that can be used to create and give interactive presentations. Prowise Presenter is a web based service and uses SSL Connections to load its content from various domains. If you have any problems then please ensure that the domains and ports in the table are open in your firewall. To prevent service interruption in the future we recommend adding *.prowise.com with port 443 to your firewall.

Domain	Port
*.prowise.com	443
collaborate.prowise.com	2443
data.prowise.com	443
data-api.prowise.com	443
presenter10.prowise.com	443
presenter.prowise.com	443
presenter.cdn.prowise.com	443
cdn-prowise.azureedge.net	443
presenter-prowise.azureedge.net	443
data-pams.prowise.com	443
pams0prowise.blob.core.windows.net	443
data-pcal.prowise.com	443
pcal0prowise.blob.core.windows.net	443
data-pnsw.prowise.com	443
pnsw0prowise.blob.core.windows.net	443

Prowise OPS Module settings

For the Prowise OPS Module Prowise creates a specific image that has the optimal settings to be used together with a Prowise Touchscreens. These settings are made to give the user the best experience in combination with a Prowise Touchscreen. This chapter explains which settings are made so that if there is a need to create a custom image you have the option to apply the same settings in your custom Windows Image.

Windows Drivers

The OPS module is WHQL verified and will automatically download and install the latest drivers through the Windows Update system. If you want to include the latest drivers that are available from Prowise then they can be downloaded via the [Prowise Support website](#)

Prowise NFC Tool

When a touchscreens has a built-in NFC Reader/Writer then there is a direct connection to the OPS module to facilitate login via an NFC Card. For this to function correctly it's needed that the Prowise NFC tool is installed on the OPS Module. The latest version of the NFC tool can always be acquired via the [Prowise Support website](#)

Windows Settings

To support an optimal experience it's recommended that the following windows settings are made within Windows.

Display Settings

The following display setting is recommended to apply to have a better viewing experience.

The settings mentioned here can be found when navigating to **Settings -> System -> Display**

Default Prowise will configure the OPS module for UHD (4K), but it could be that you will need to set the resolution to Full HD (2K) to run specific applications. The following settings apply for these resolutions

- Resolution: UHD (4K)
 - Resolution
 - Set to: **3840 x 2160**
 - Scaling
 - Set to: **150%**
- Resolution: Full HD (2K)
 - Resolution
 - Set to: **1920 x 1080**
 - Scaling
 - Set to: **100%**

Energy Settings

The following energy settings are **highly recommended** to apply, changing them or not applying them correctly can have a significant negative impact on the working of the OPS module in combination with the Touchscreen.

The settings mentioned here can be found when navigating to **Settings -> System -> Power & Sleep**

- When plugged in, turn off after
 - Set to: **Never**
- When plugged in, PC goes to sleep after
 - Set to: **Never**

Next to these basic settings there are advanced settings that should be modified. The advanced settings can be accessed by clicking on **Additional Power Settings** in the Power & Sleep window and then navigating to **Choose what the power buttons do**

Now you should be in the **Define power buttons and turn on password protection** window in this window the following settings should be made:

- When i press the power button
 - Set to: **Shut Down**
- When i press the sleep button
 - Set to: **Do nothing**
- Turn on fast startup
 - **Uncheck** this option
- Sleep
 - **Uncheck** this option

Automatic on screen keyboard

Windows has the option to automatically display an on screen keyboard when touching an input field. This options can be enabled by making the following setting by navigating to **Settings -> Devices -> Typing**

- Show the touch keyboard when not in tablet mode and there's no keyboard active
 - Set to: **On**

Touch keyboard icon

Within Windows it's possible to always show a touch keyboard icon in the taskbar. This way a user can always quickly open an on screen keyboard. This options can be enabled by making the following setting by navigating to **Settings -> Personalization -> Taskbar**

- Show touch keyboard button
 - Set to: **On**

Windows Ink

Our newest touchscreens natively support Windows Ink. With this feature is possible for Windows to recognise the smallest pen point and implement specific actions based on the applications/windows settings.

We recommend making the following Windows Ink setting by navigating to **Settings -> Devices -> Pen & Windows Ink**

- Ignore touch input when I'm using my pen
 - Set to: **On**

Audio Devices

The OPS Module will have multiple Audio devices when plugged into the touchscreen. To ensure that the sound output goes through the speakers of the touchscreen make sure that the **Prowise Intel Display Audio** is set as the default audio device.

Prowise Move Camera

The Prowise Move Camera is based on Intel RealSense technology. In Windows the camera is displayed as two different cameras on depth camera and one RGB camera. If the depth technology is not used in Windows we advise disabling the depth camera to ensure that applications for video conferencing automatically choose the RGB Camera.

Applying settings via a script

We created a settings script to set all the above values except the default Audio device. These scripts can be downloaded via the following link: <https://download.prowise.com/139057/OPS-Windows-Settings-Scripts.zip>

Within this package run the following script **SetDefaultSettings.cmd** this will set all the correct values in the Windows image. This script is an example of the command's that can be used and can be modified/improved for your use case.

WOL

The OPS module supports WOL natively but because it's connected to the touch screen the WOL setup is different than with a normal Windows Device.

WOL for the OPS module is routed through the UTP connection of Prowise Central. This means that the following needs to be setup to use WOL

- Enable WOL in the distributor menu of the Touchscreen
- Plug in a UTP cable in the port on the mainboard of the Touchscreen

To use WOL to start the OPS module the Mac Address of Prowise Central needs to be used. This address can be found in the about screen in the settings menu of the touchscreen.

Next to the normal WOL option, the following setup can be made to create a secure WOL setup without giving Prowise Central network access:

- Physical UTP connection
 - Connect 1 UTP cable to the PC module and 1 UTP cable to the Touchscreen.
- Network VLAN settings
 - The interface of the switch where the touchscreen is connected to, must be in a separate VLAN.
 - The interface of the switch where the PC module is connected to, can be in LAN VLAN or separate VLAN if required.
- Firewall settings
 - The VLAN where the touchscreen is connected to, must be connected to a firewall.
 - Traffic rules
 - from any (or management network) to Touchscreen VLAN, allow only WoL,
 - from any to Touchscreen VLAN deny.
 - from Android VLAN to any, deny all.