
Configuring Raspberry Pi for M5 Software and PTAGIS Connectivity

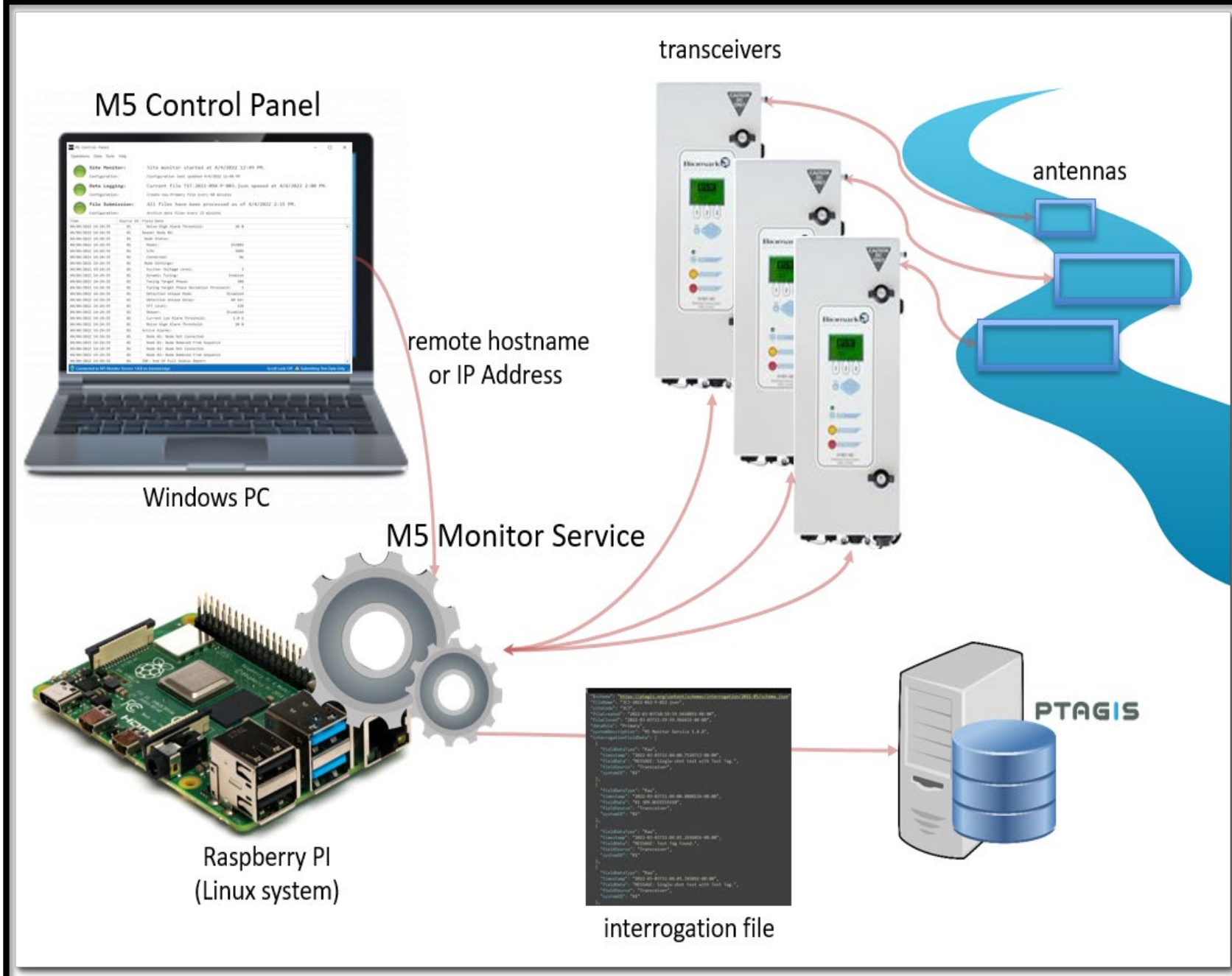
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M5 Network - an overview

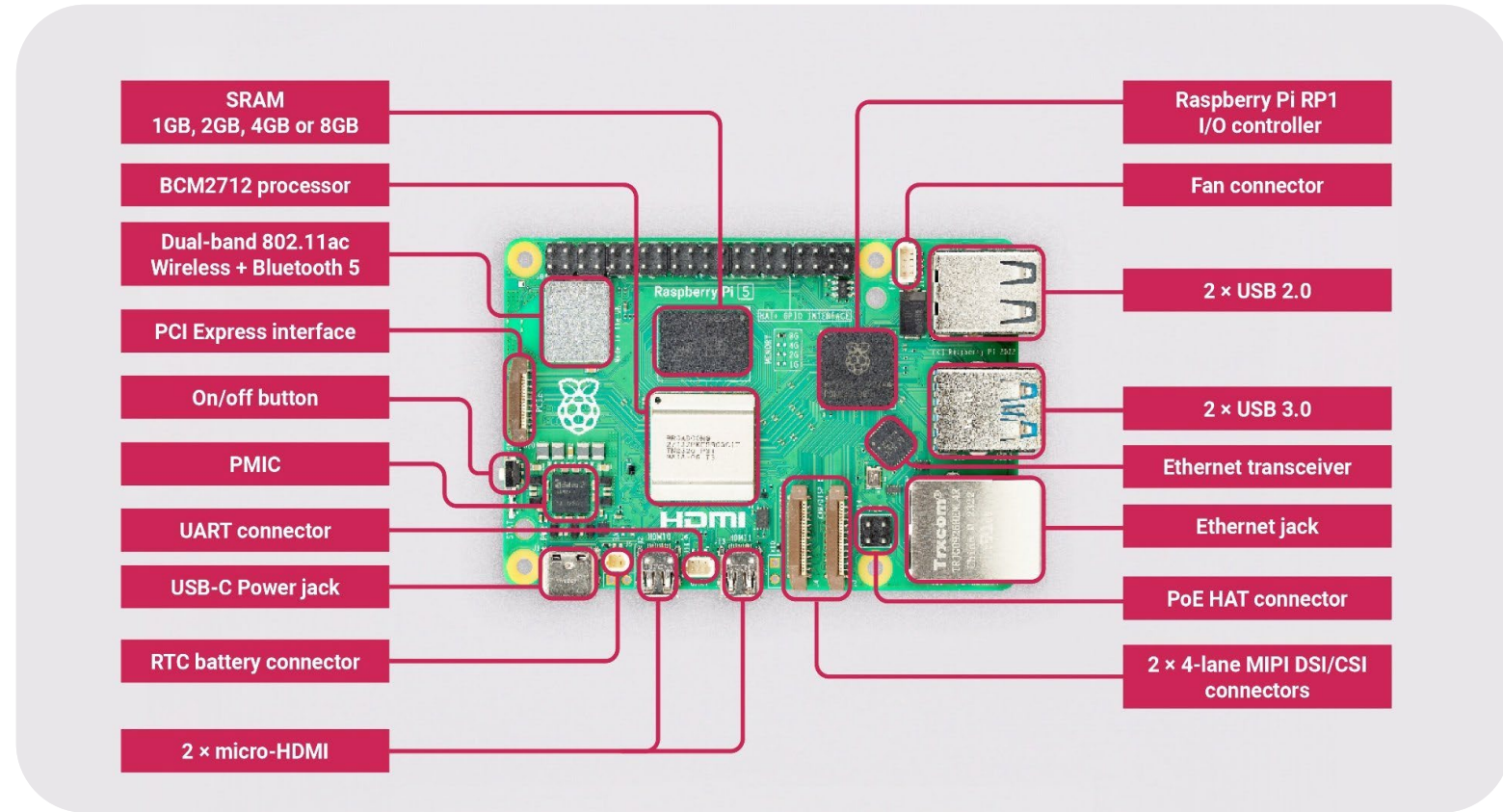
- M5 Software (PTAGIS)
 - Monitor Service
 - Control Panel
- Monitor Service Connections
 - Master Controllers
 - Standalone IS-1001's
 - IS-1001 Mux
 - Bio-probe Boards
 - Temp/pressure
- Control Panel
 - Remote Access to Monitor Service on Rpi.
 - Local or Remote Network



RPI setup

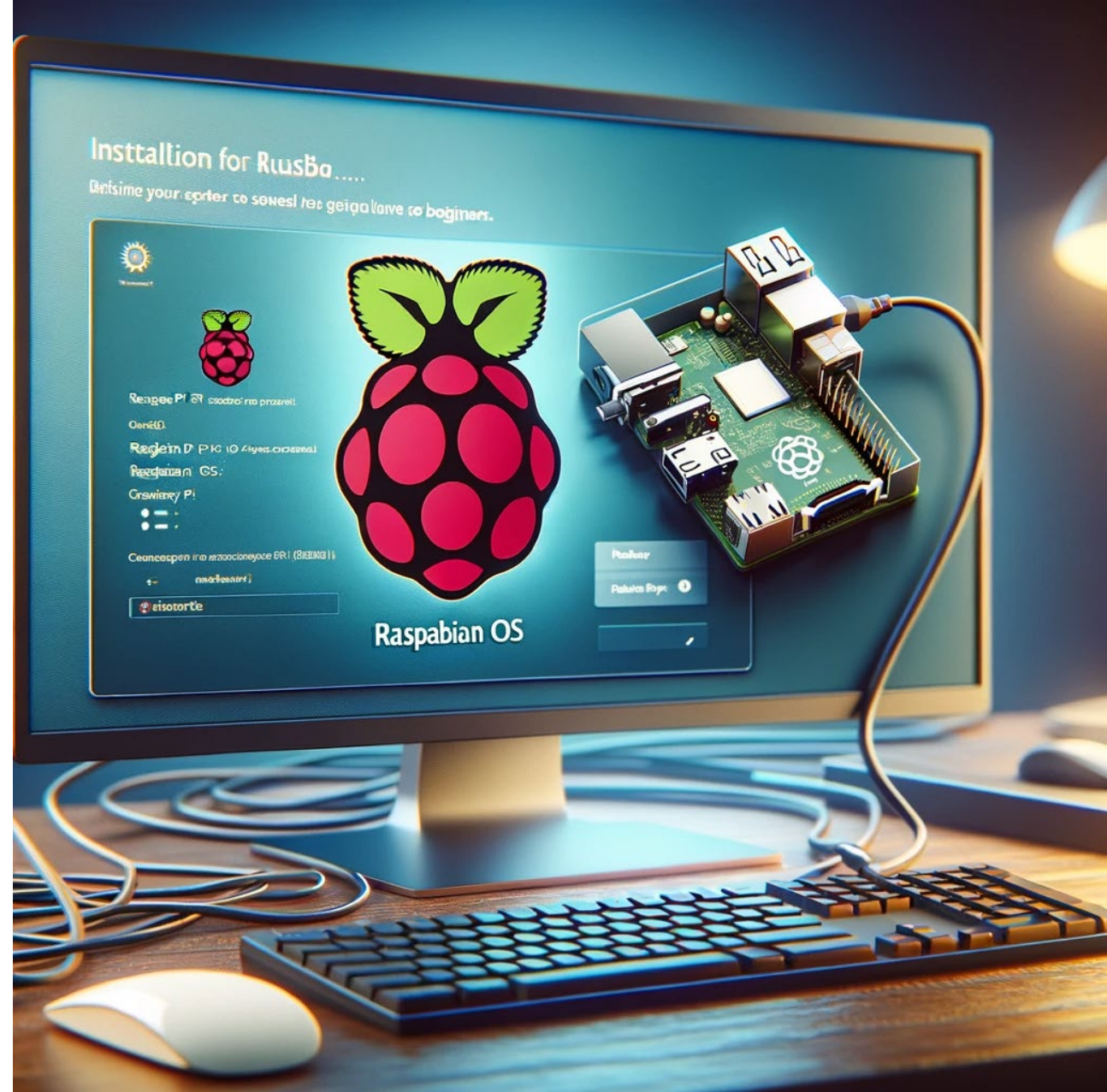
- Recommended to buy [RPI 4](#) or 5 with a power source and case for around \$50-\$100.
- Necessary accessories: [micro SD](#) card (32GB), USB keyboard, mouse, HDMI cable, monitor.
- Connectivity requirements: HDMI cable for monitor, USB-C cable for power, internet connection (wireless or Ethernet).
- Remote power requires [DC-DC power converter](#).
Consumes 3.5W nominal and 7.6W peak.

[12V/24V DC – 5V DC power converter](#)



Install RPI Operating System

- Raspberry Pi Imager and balenaEtcher are tools for OS installation.
 - Image file to micro-SD card
 - [raspberrypi.com/software](https://www.raspberrypi.com/software)
 - Boot after image completed
- After installation, set up includes configuring settings like country, timezone, Wi-Fi and Ethernet Settings.



Download M5

- M5 can be downloaded from PTAGIS website for monitoring and uploading.
- Installation can be done via web browser or command line.
 - Download the M5 monitoring for Linux application from <https://ptagis.org/Software/M5/M5>
 - Or from the command line in Linux on the Rpi:

```
sudo dpkg -i /path/to/file
```

Hack - Install from cloned drive

- Operating system with full suite of software (and full setup) can be installed from a cloned copy that uses your organizations settings.



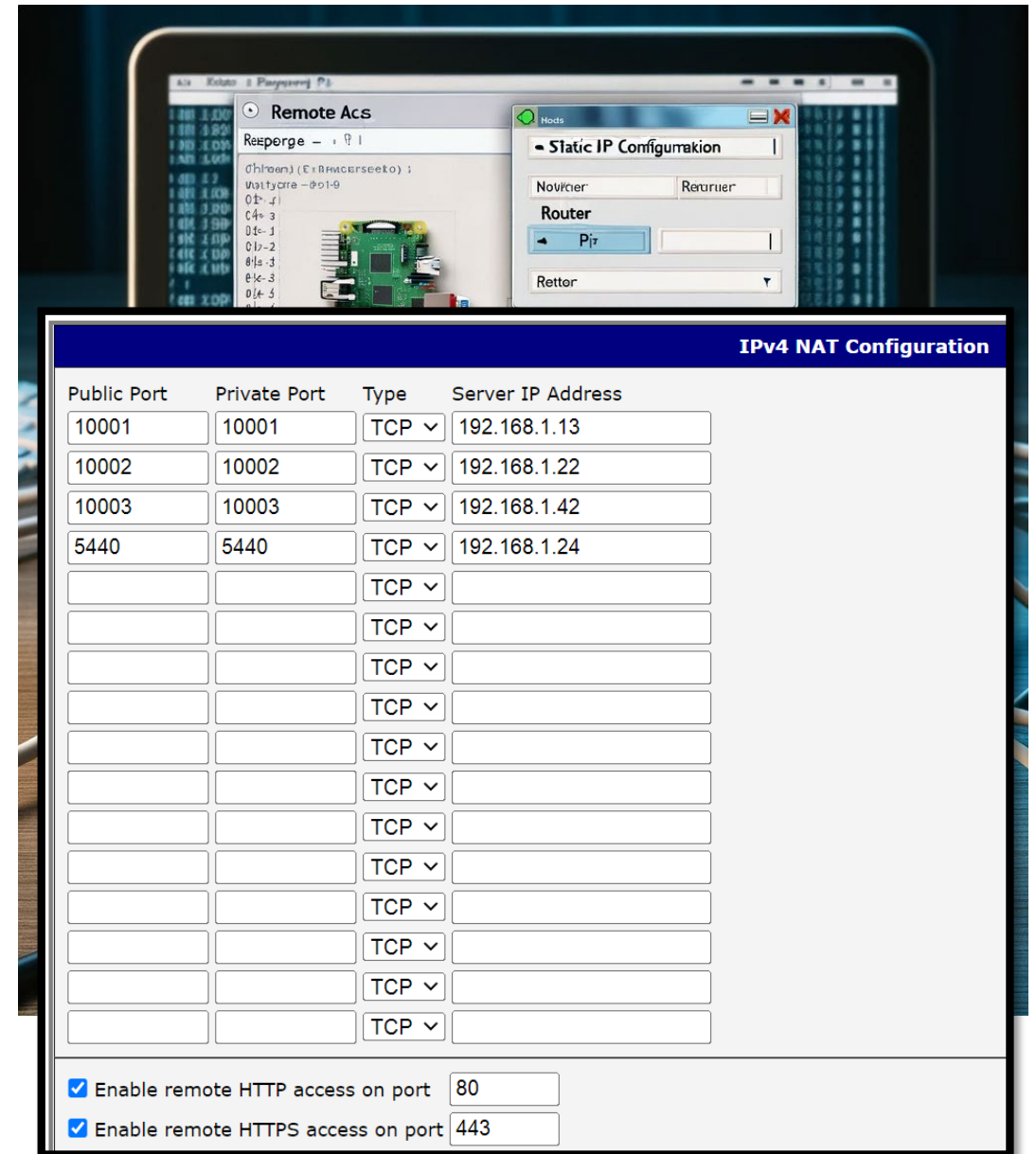
Networking and Remote Access

- Static IP address setup is recommended for remote access.
 - Edit the configuration file from command line:
 - `sudo nano /etc/dhcpd.conf`
 - **Example:**

```
interface eth0
static ip_address=192.168.1.24
static routers=192.168.1.1
static domain_name_servers=8.8.8.8
static domain_search=
```

Remote Modem/Router Setup

- Port forwarding and NAT transparency setup for M5 service, port 5440 must be accessed for M5.
- Secure channel establishment with appropriate SSH protocols if you want a secure channel to the Master Controller.



The image shows a Pi-hole web interface. The top part displays the 'Remote Access' configuration page, which includes a 'Static IP Configuration' section with fields for 'Novikier' (set to 'Returner'), 'Router' (set to 'Pi'), and 'Retter'. Below this is the 'IPv4 NAT Configuration' page, which features a table for port forwarding and two checkboxes for enabling remote HTTP and HTTPS access.

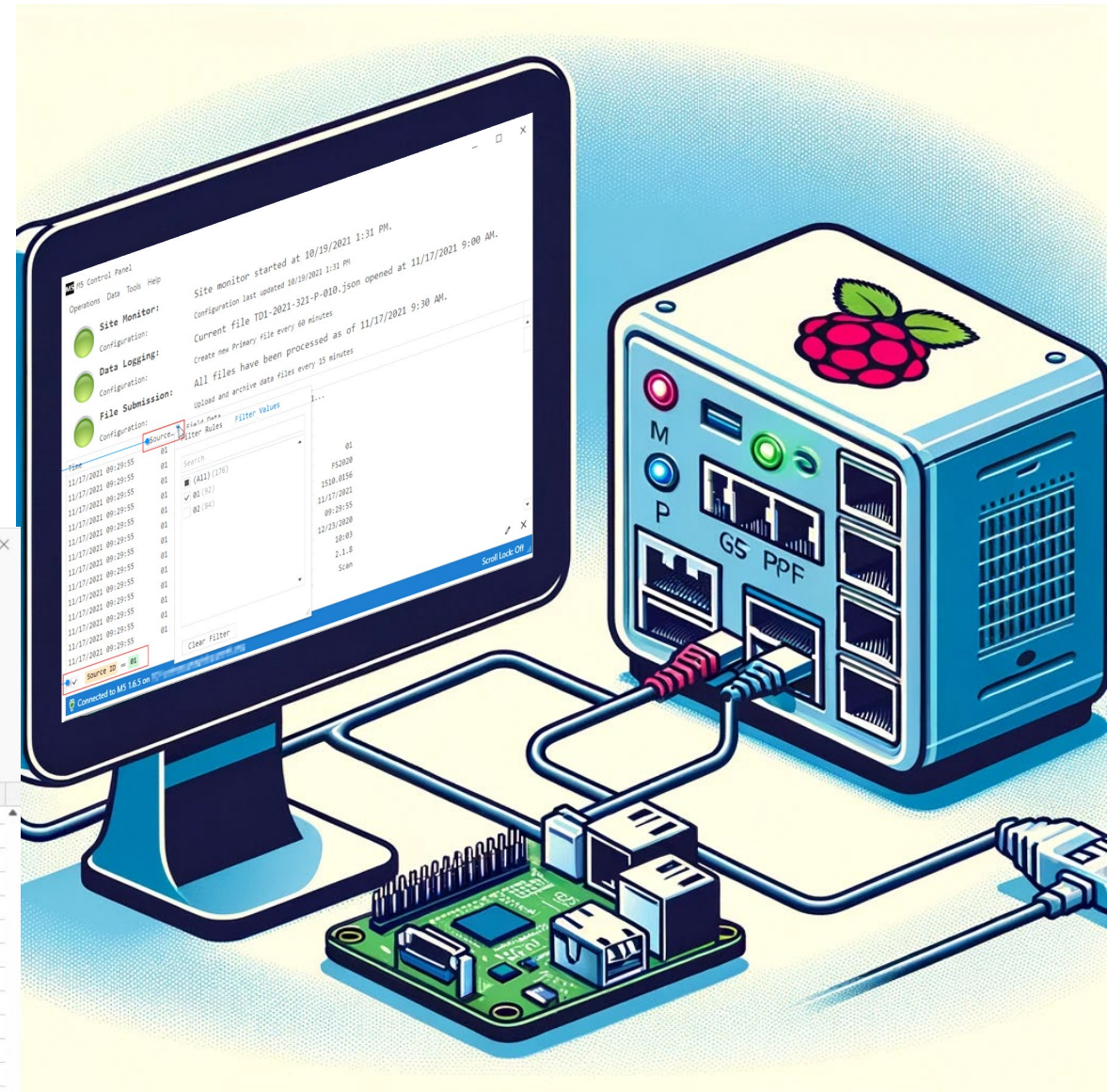
Public Port	Private Port	Type	Server IP Address
10001	10001	TCP	192.168.1.13
10002	10002	TCP	192.168.1.22
10003	10003	TCP	192.168.1.42
5440	5440	TCP	192.168.1.24
		TCP	
		TCP	
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Enable remote HTTP access on port

Enable remote HTTPS access on port

Linking M5 Control Panel to RPI

- Using global IP address for connecting to M5 service.
- Configuration of M5 Control panel according to site profile.



M5 MS Control Panel

Operations Data Tools Help

Site Monitor: Site monitor started at 12/15/2022 12:29 PM.
Configuration: Configuration last updated 12/15/2022 11:46 AM

Data Logging: Current file 158-2022-356-P-015.json opened at 12/22/2022 2:00 PM.
Configuration: Create new Primary file every 60 minutes

File Submission: Uploaded and archived 1 file on 12/22/2022 2:00 PM.
Configuration: Upload and archive data files every 60 minutes

Time	Source ID	Field Data
12/22/2022 14:32:08	D0	MSG: D0 12/22/2022 14:32:08.5
12/22/2022 14:32:08	D0	MSG: D0 12/22/2022 14:32:08.5
12/22/2022 14:32:08	D0	MSG: D0 12/22/2022 14:32:08.7
12/22/2022 14:32:08	D0	MSG: D0 12/22/2022 14:32:08.6
12/22/2022 14:32:08	D0	MSG: D0 12/22/2022 14:32:08.6
12/22/2022 14:32:08	D0	TAG: D0 06 12/22/2022 14:32:08.4
12/22/2022 14:32:08	D0	MSG: D0 12/22/2022 14:32:08.4
12/22/2022 14:32:09	D0	MSG: D0 12/22/2022 14:32:09.000 MESSAGE: Test aborted due to system activity
12/22/2022 14:32:09	D0	MSG: D0 12/22/2022 14:32:09.130 MESSAGE: Test aborted due to system activity
12/22/2022 14:32:50	D0	MSG: D0 12/22/2022 14:32:50.300 PROBLEM: Ant1 noise level
12/22/2022 14:32:50	D0	MSG: D0 12/22/2022 14:32:50.310 PROBLEM: Ant5 noise level
12/22/2022 14:36:30	D0	MSG: D0 12/22/2022 14:36:30.300 PROBLEM: Ant1 noise level
12/22/2022 14:36:30	D0	MSG: D0 12/22/2022 14:36:30.310 PROBLEM: Ant5 noise level
12/22/2022 14:40:10	D0	MSG: D0 12/22/2022 14:40:10.300 PROBLEM: Ant5 noise level
12/22/2022 14:40:21	D0	MSG: D0 12/22/2022 14:40:21.300 PROBLEM: Ant1 noise level
12/22/2022 14:44:12	D0	MSG: D0 12/22/2022 14:44:12.310 PROBLEM: Ant1 noise level
12/22/2022 14:44:12	D0	MSG: D0 12/22/2022 14:44:12.310 PROBLEM: Ant5 noise level
12/22/2022 14:51:43	D0	MSG: D0 12/22/2022 14:51:43.320 PROBLEM: Ant1 noise level
12/22/2022 14:51:43	D0	MSG: D0 12/22/2022 14:51:43.320 PROBLEM: Ant5 noise level

Connect to M5 Monitor Service

Connect to M5 Monitor Service running on a local or remote system

Computer: 166.255.147.33

Connect Cancel

Helpful Tips and Links

Additional Resources for RPI Users

- Remote access services: Dataplicity and VNC Connect.



- Useful Linux commands for navigation and file management.

<https://www.hostinger.com/tutorials/linux-commands>

<https://www.linuxjournal.com/content/linux-command-line-interface-introduction-guide>

<http://linuxcommand.org/tlcl.php>

