AFRIDYNE SYSTEMS · HOME IT & NETWORKING GUIDE

Internet & Home Wi-Fi Setup, Mesh & Troubleshooting

Step-by-step fibre/router setup, adding mesh Wi-Fi nodes for full-home coverage, and a practical fault-finding cheat sheet.

Topic: Internet and Home Wi-Fi Setup | Covers: Initial Setup · Mesh Expansion · Diagnostic Cheat Sheet

1. Initial Internet & Router Setup (Step-by-Step)

Most South African fibre and fixed-LTE connections hand off from an ISP box (ONT or outdoor CPE) to your main Wi-Fi router. Follow this sequence for a clean baseline setup:

1. **Connect the Fibre ONT to the Router WAN Port:** Plug a Cat5e/Cat6 patch cable from the active LAN port (usually `LAN1` or `GE1`) on your fibre ONT into the blue/labelled **WAN / Internet** port on your router—not one of the yellow LAN ports.
2. **Power Up in Sequence:** Power on the ONT first and wait 60 seconds until the `PON` / `Auth` light turns solid green. Power on your router second.
3. **Choose Optimal Router Placement:** Place the main router centrally, elevated (1 m – 1.5 m off the floor), and in the open—never locked inside a metal DB board, behind a TV, or beside a microwave.
4. **Configure Wi-Fi Name (SSID) & Encryption:** Log into the router admin page (typically `192.168.1.1` or `192.168.0.1`) or vendor app:
   - Change the default router admin login password immediately.
   - Set Wi-Fi security to **WPA2-PSK (AES)** or **WPA2/WPA3 Mixed** (avoid legacy WEP/TKIP, which caps speeds at 54 Mbps).
   - Use a single unified SSID name so modern phones and laptops roam smoothly between 2.4 GHz and 5 GHz (only split into `-2.4G` / `-5G` if older smart plugs refuse to pair).
5. **Back Up Power at the Entry Point:** Plug both the fibre ONT (12V DC) and main router into a mini DC UPS so your internet stays live during power cuts.

2. Expanding Coverage with a Mesh Wi-Fi System

Thick double-brick walls, multi-storey layouts, and long passages quickly attenuate 5 GHz Wi-Fi. Instead of cheap plug-in "Wi-Fi extenders" (which halve throughput and create duplicate network names), add a true **Mesh Wi-Fi system** (e.g., TP-Link Deco, Asus ZenWiFi, Ubiquiti UniFi, or Eero).

Step-by-Step Mesh Installation

1. **Eliminate Double-NAT (Bridge or AP Mode):** Either replace your ISP router completely with the main Mesh unit (if your ISP uses DHCP/PPPoE directly on the ONT) *or* switch the Mesh system into **Access Point (AP) Mode** and disable Wi-Fi on the old ISP router so the two don't fight over channels.
2. **Place Satellite Nodes Halfway—Not in the Dead Zone:** A wireless mesh node must receive a strong 5 GHz signal from the main unit in order to rebroadcast it. Place each satellite roughly halfway between the main router and the weak room, ideally with clear line-of-sight through doorways.
3. **Use Ethernet Backhaul Where Possible:** If you have a Cat6 cable run between rooms or floors, plug the satellite node directly into Ethernet. Wired backhaul gives full line speed at every node and frees up radio airtime for your devices.
4. **Keep Nodes Away from RF Blockers:** Avoid placing nodes behind fish tanks, mirrors, metal filing cabinets, or concrete stairwells.

> **Rule of Thumb for South African Brick Homes:** One quality router covers ~80–110 m² on a single level. Plan on **1 mesh node per 2–3 solid brick walls** or at least one wired/mesh node per floor.

3. Wi-Fi & Mesh Quick-Fix Cheat Sheet

Symptom	Likely Cause	Quick Fix
Connected to Wi-Fi, "No Internet"	ONT lost fibre sync, ISP PPPoE session hung, or WAN cable plugged into a LAN port.	Check ONT lights (`LOS` red = fibre line fault—log ISP ticket). Reboot ONT, wait 60 s, then reboot router.
Fast next to router, slow in bedrooms	Brick wall attenuation dropping devices onto congested 2.4 GHz, or mesh node placed too far away.	Move mesh node closer to main unit (aim for > -65 dBm signal between nodes) or wire node via Cat6.
Random brief dropouts / video call freezes	Neighbouring routers overlapping on the same Wi-Fi channel, or DFS radar channel resets.	Lock 2.4 GHz to channel **1, 6, or 11** (20 MHz width). Lock 5 GHz to non-DFS channels **36–48** or **149–161**.
Phone clings to weak distant node	Sticky client roaming behaviour when adjacent mesh nodes overlap too strongly.	Lower transmit power slightly on overlapping nodes and enable **802.11k/v/r Fast Roaming** in mesh settings.
Pages hang or fail to load on all devices	Slow or failing ISP DNS servers rather than a Wi-Fi signal problem.	Set router DHCP DNS to `1.1.1.1` (Cloudflare) and `9.9.9.9` (Quad9), then reconnect Wi-Fi.
Smart plug / printer refuses to join Wi-Fi	2.4 GHz-only IoT chip failing on WPA3-only or combined band-steering SSIDs.	Enable a dedicated **2.4 GHz IoT/Guest SSID** using WPA2-PSK (AES) only.

4. Home Wi-Fi & Mesh Diagnostic Checklist

- ☐ **Test wired speed first:** Plug a laptop directly into the main router via Ethernet to separate an ISP line slowdown from a local Wi-Fi issue.
- ☐ **Verify link rate & band:** Check that modern laptops/phones connect on **5 GHz** (link speed ≥ 400 Mbps) near each node rather than falling back to 2.4 GHz.
- ☐ **Check signal targets:** Aim for **-50 dBm to -65 dBm** in living/work areas; anything weaker than **-72 dBm** needs a closer node or wired access point.
- ☐ **Confirm single DHCP server:** Ensure only one device on your network hands out IP addresses (avoid running two routers both in Router/NAT mode).
- ☐ **Update router & mesh firmware:** Apply pending security and stability updates in the router/mesh app and schedule an automatic weekly off-peak reboot if supported.

Struggling with dead zones, messy ISP routers, or drop-outs? Afridyne Systems helps Helderberg households set up clean router layouts, wired-backhaul mesh Wi-Fi, mini-UPS power backup, and neat network cabling. Call/WhatsApp **062 509 8065** or visit **afridyne.co.za**.