



## Introduction

This document will explain the network standards that we work to. We ensure that we have the necessary systems in place and expertise to use these systems to ensure that our core network is monitored allowing our customers to enjoy a great service.

This document will cover the following:

- Network Monitoring – Core Network
- Contention Planning – Peak time speeds
- Speed Measurements (Demarcation / Customer Measurements)
- Network Uptime (Core vs Customer) (99.9%)
- Fault Management Procedures
- Support Procedures (How customer report issues) **In** and **Out** of Business Hours

## Network Monitoring

- We have a monitoring platform / toolset to constantly monitor the status of the core Backhaul & Access Layers with alerting on core infrastructure. (This includes customer devices but not to the same standard as core network).
- Core Network – LibreNMS
- Business Customers – LibreNMS
- Residential Customers – AirControl
- Our minimum standards are that every device on the network must be monitored 24/7 x 365 with some historical data / graphing being available to Network Engineers
- Example monitoring screens:



## Contention Planning

- We design our wireless network to take into account the likely customer numbers from both residential and business properties. We then setup a maximum limit of customers that can be connected through this section of the core network.
- Once a section of the core network or infrastructure becomes full, we look at solutions for upgrading the equipment.
- Through our monitoring systems, one aspect we monitor is capacity and look to spot any heavy load areas prior to customers experiencing any issues.
- For business SLA & Private Link customers contention is defined via the SLA agreement with the customer.

## Speed Measurements

- During our installation handover, we carry out an internet speed test via internally hosted infrastructure and/or public speed test servers.
- In each customer Welcome Pack, we provide a how to guide on testing your internet speed, which includes;
  - That speed testing must be done directly wired into the router if possible, in order to avoid possible low results.
  - Ensuring that no other devices are connected to the internet during testing

## Network Uptime

- We continually monitor through monitoring systems core network uptime and availability. This includes all routers, nodes and network switches across our network.
- We take great care to ensure that at critical locations there is no single point of failure.
- For any impacting events on network uptime, we complete an RFO (Reason for Outage) document for each event. This document is then reviewed and any improvements that are required are actioned.

## Fault Management Procedures – Non-customer facing

- We have a set procedure for dealing with network issues, within the procedure different types of faults are defined. For example, an issue with a repeater site would be treated with greater urgency / response than a residential customer.
- We have a system in place to monitor the progress of faults and the conclusion of each fault. This is then available to all members of the team, to ensure that any improvements that could be made are implemented.

## Support Procedures

- We have a customer facing web page, on our website for customers to find out how to receive support from us - <https://www.highlandwireless.co.uk/support/>

- Our support page also includes a definition of faults covered by the contract and those that aren't covered and attract an additional cost;
  - We want to ensure that customers are not landed with additional charges, so we ensure that we inform customers, verbally and by email of any additional charges before an engineer is booked to carry out any work
- Customers do not have to click more than twice from our website to reach this document.