**WiFi Network Guide for Schools**

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**Introduction**

As schools have introduced more and more devices, the school’s wireless network has become a key component of the ICT infrastructure in a school. Using wireless devices with a “fit for purpose” wireless network promotes collaboration, teamwork and inclusivity among students and is vital to support teaching and learning. As schools tend to increase their use of wireless devices and as school environments have a higher density of use compared to other environments, it is important that when they are upgrading or procuring a new wireless network, they plan and implement a specification suitable for their school’s needs and which is also scalable to an extent for their future potential needs.

**Causes of Wifi problems and possible solutions**

* When a suitable WiFi system is in place and working well, teachers and students should not experience any ad-hoc or intermittent drops in connectivity due to WiFi.
* Good WiFi should be able to support a full classroom of students in each classroom. If some students are having difficulty getting reliable connectivity then there may be a problem with the WiFi system itself or with how it is configured.
* WiFi may be working well in certain parts of the school but not in other areas. This could be due to problems with individual access points (APs) in certain school areas.
* When a very large number of WiFi enabled devices, such as tablets, laptops, chromebooks or mobile phones, are being used in a particular area, the WiFi access points (APs) covering that area may not have the capacity to support this large number of devices.
* Sometimes when schools think that their school WiFi system is having problems, it may be something else, such as the school broadband connection or other IT equipment within the school. In order to find the root cause of the issue we recommend requesting your IT support company to check both your WiFi, broadband connection and other possible causes.

**NOTE**

* To check their broadband connection schools should contact our Broadband Service Desk at [broadbandservicedesk@pdst.ie](mailto:broadbandservicedesk@pdst.ie) or at 1800 33 44 66.

If schools experience these type of problems they should contact their WiFi support provider, who should then either resolve the problem by

1. Making a configuration change
2. Adding additional access points (APs)
3. By recommending either the relevant upgrades or
4. In some cases that a new WiFi system be installed

**WiFi connectivity factors**

Connectivity to a wireless network depends on a number of factors such as

* The broadband provision you have.
* The network configuration you have e.g. is the cabling okay in the network, the type of switches you have.
* How the wireless access point(s) (WAP’s) are connected back to the broadband router.
* The type of wireless access point you are using (model) and the amount of wireless access points and location in the school of each.
* The number of devices you are concurrently trying to connect to the wireless network.

There can be some other factors such as thick walls, interference but for the most part the above is what would be central for consistent WiFi.  Also it would depend on how devices are used i.e. browsing, opening, saving files, upload versus downloading, video streaming etc.

**School self-review – checklist for WiFi**

* Is the WiFi system working well, and meeting school needs?
* Are staff happy that it is supporting teaching and learning in their classrooms and not causing problems?
* How old is the school WiFi system?
* WiFi systems suitable for home i.e. domestic use, are not suitable for schools
* Suitable WiFi providers need to have a good track record with schools, and be able to supply references from other schools where they have installed and support similar systems.
* For example, if you have a third party provider that installed your wireless network, the following are some questions you could ask them to have a better understanding of your existing wireless network:-
  + Was a heat map of the school completed to ensure all areas where wifi is required are covered?
  + How many wireless access points (WAP’s) are in the school?
  + Are all WAP’s the same make and model, if not what are they?
  + Is there an admin console that the ICT co-ordinator in the school can access to see the WAP’s are all up and running/functioning or is it the sole responsibility of the third party to maintain the wireless network (including software updates)?
  + Is the wireless network currently under warranty?
  + How many SSID’s (Service Set Identifier or Network Names) are on the wireless network e.g. is the WiFi segregated for Teacher, Student and Visitor so respective users connect to their respective network?
  + Is there only one SSID (school name for example) why is that? It is advisable to have a separate SSID (Network Name) for Teachers, Students and Visitors, for security of your network and data as well as optimising the functionality of the wireless network.
* If the school is planning to significantly increase the number of mobile student devices in the next year or two, (for example adding Chromebooks, iPads, Laptops etc., or if the schools is intending that students have their devices i.e. either a 1:1/BYOD model), has the school checked with the Wifi provider if the current system will handle the increased load.

If considering a new wireless network, consider the latest standards available or to seek additional advice and guidance regarding specifications etc., schools can contact PDST-TiE at [ictadvice@pdst.ie](mailto:ictadvice@pdst.ie)

PDST-TIE Website Link:

[https://www.pdsttechnologyineducation.ie/technology-infrastructure/WiFi/](https://www.pdsttechnologyineducation.ie/technology-infrastructure/wifi/)

**Reviewing if school Wifi needs to be upgraded**

If your school WiFi system is a number of years old, or if there has been a significant increase in devices and demand, then your WiFi network may no longer be able to support this increased demand or even be fit for purpose. The WiFi may need to be upgraded or in some instances be replaced with a new system. In this scenario we recommend requesting your IT support company conducts an audit and check of your WiFi system and to provide you with a recommendation.

If their recommendation is that new WiFi system is required, they, along with some other IT companies, should be able to provide your school with a proposal and quote for such a system.

**Procuring a new wireless network**

The Wireless purchasing framework that had been in place for schools for the last 4 years, and which many schools and ETBs successfully used to procure “fit for purpose” Wi-Fi has recently expired.

Schools vary in terms of location, building size and shape, number of students/pupils/staff/devices and therefore their needs differ for their wireless network. We will be happy to provide advice along with specifications around your school’s particular needs.

If/when seeking quotes the following is an example of the “process” that should occur:-

1. The supplier should seek a copy of the floor plans of the school.
2. The supplier should conduct a site survey.
3. They should ask you how and for what purpose you require your wireless network.
4. They should ask how many devices at a given time (running concurrently) in a single area and the types of devices needing to access the wireless network (e.g. different WAP’s support different densities of devices).
5. What applications that will be used via Wi-Fi i.e. simple web browsing? video streaming? Voice over Wi-Fi?
6. Where do you want coverage e.g. total school grounds i.e. to cover courtyard areas / caretaker or outbuildings / toilets / car park or just specific areas like classrooms, meeting rooms etc?
7. How you want your devices configured – WAP’s should support multiple SSID’s i.e. this allows for example Admin / Teachers / Students / visitor – separate wireless network names.
8. You will require switches that are POE managed switches. These power the WAP’s as well as being used to patch them in and allow for multiple SSID’s.
9. Finally when the supplier gathers this information they typically use software and their expertise to generate a report outlining the number of WAP’s etc. required.
10. When the installation is complete the supplier should re-visit the school and do a “walk through” of the school and “test” to confirm wireless connectivity throughout the school.
11. The total cost will depend on the number and type of WAP’s required. Typically a WAP can cost anything from €200 upwards and the cost breakdown would typically be
12. Number of WAP’s @ €x amount each
13. POE switch(s) @x€ amount each
14. Installation of WAP’s – number hours @x€/hour
15. Configuration of wireless networks i.e. Teachers / students / admins 1-2 days senior engineer x€rate/hr
16. Training. ½ -1 day
17. Warranty and support – may be included / additional

**Acronyms**

|  |  |
| --- | --- |
| AP’s / WAP’s | Wireless Access Points |
| POE | Power over Ethernet |
| SSID | (A service set identifier (SSID) is a sequence of characters that uniquely names a wireless local area network (WLAN). An SSID is sometimes referred to as a "network name." This name allows stations to connect to the desired network when multiple independent networks operate in the same physical area.  e.g. Teachers / Students / Visitor |

**Checklist for procuring suitable WiFi**

* Selecting quality suppliers with a track record is very important, we recommend seeking references from other and similar sized schools.
* Select quality products e.g. recently the newer standard of WiFi, "WiFi 6" was released, so it may be prudent to consider access points with this standard for some future proofing if procuring a new wireless network. WiFi 6 offers considerable improvements over previous WiFi standards under dense environments like schools and is deemed very efficient.
* Take into account security elements e.g. Separate SSID for Admin staff, Teachers, Students,

Guests, etc.

* Technical Support – what is included, NBD, hours, how to log a support issue.
* Warranty – how long is it for and what does it include?
* Training/Documentation – will this be provided to the school?
* What are the ongoing support costs?
* When schools receive proposals/quotes for WiFi from IT companies, and if they need some objective advice and support, they can contact PDST-TiE at [ictadvice@pdst.ie](mailto:ictadvice@pdst.ie) .
* For schools involved in New Builds and/or refurbishments the link below to our website contains Technical Guidance documents for both Primary and Post Primary for the Provision of Wireless Network installations and will assist schools in working with their schools builders in helping to understand the WiFi building specification.

This document is located at the following PDST-TiE link:

<https://www.pdsttechnologyineducation.ie/technology-infrastructure/wifi/>

For additional queries on Wifi schools can email [ictadvice@pdst.ie](mailto:ictadvice@pdst.ie)