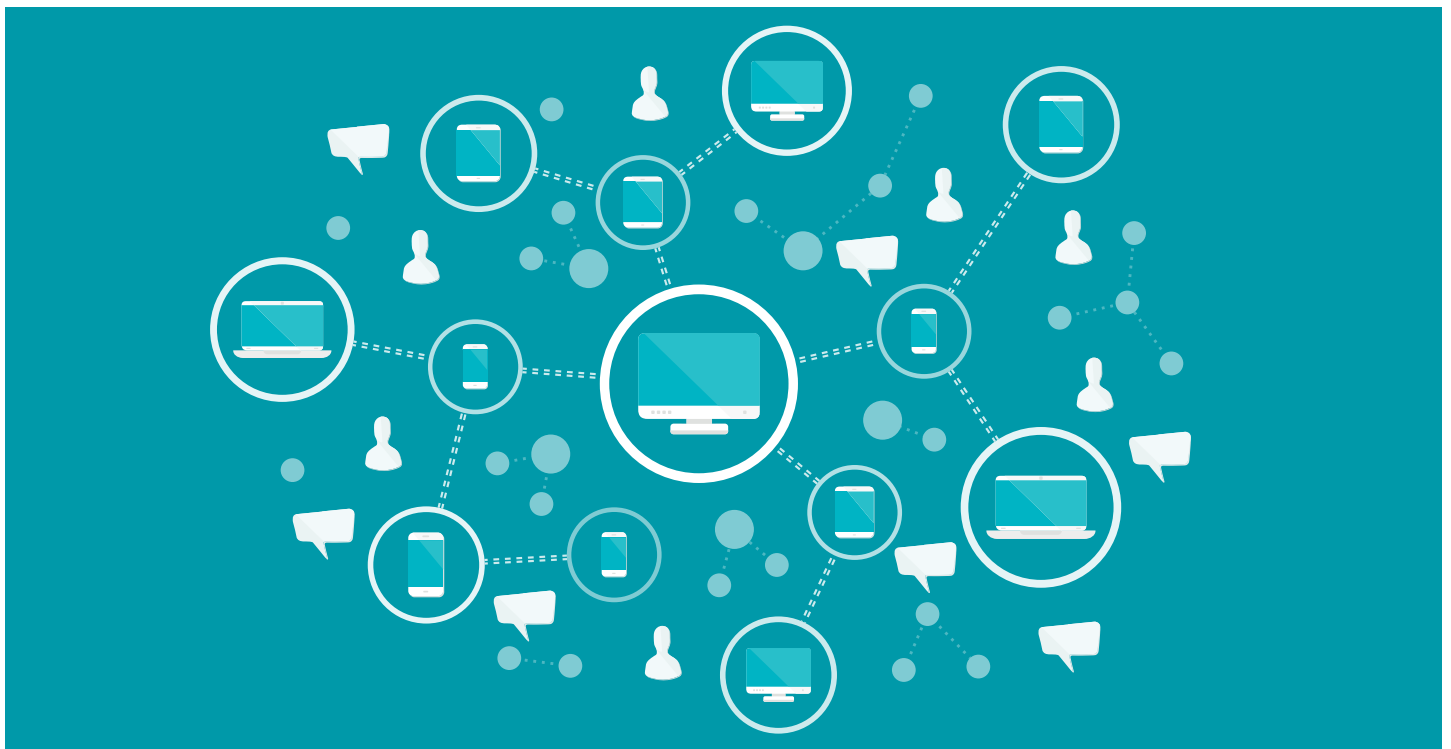


WIRELESS... GO GREAT OR GO HOME; **How businesses can use public Wi-Fi to attract and retain customers**



READ ABOUT:

- > The challenges faced when installing Wi-Fi in public spaces
- > Revenue opportunities for businesses
- > How to satisfy Wi-Fi users
- > Things to consider during the installation of public Wi-Fi in small & large venues
- > Security considerations with public Wi-Fi
- > Solving issues related to the connection of multiple device types

As more and more people carry Wi-Fi enabled devices with them, their expectation of high quality Wi-Fi service increases. Paired with the ease and reliability of many home networks, the expectation is that businesses offer them Wi-Fi service that matches what they have at home.

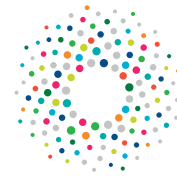
This desire on the part of customers offers businesses, such as hotels and restaurants, a big opportunity. By offering high quality Wi-Fi to their customers, it is possible to establish brand loyalty that encourages return customers and longer stays within a venue. It also opens up opportunities for branding, such as branded splash screens, and promotions through social analytics.

The starting point for any great public Wi-Fi

service is understanding the expectations of customers and planning their user experience. Matching the experience of a home network is a big task for a business providing a public Wi-Fi service. While a home network is unlikely to ever have more than 10 to 20 devices online. A busy venue's Wi-Fi may need to support thousands of devices at any given time.

An improperly executed Wi-Fi network can cause frustration, amongst other things, for users and ultimately backfire for the provider. More often than not, setting up a reliable Wi-Fi network for customer use is beyond the technical abilities of existing staff.

A business looking to set up a customer Wi-Fi network should work with an IT



company that has experience delivering safe, reliable public networks. Providing a Wi-Fi network that meets customer expectations and a business' needs is a complex undertaking. An IT company that understands this complexity can ensure a well-managed and monitored public Wi-Fi network that will leave everyone happy.

The Challenge:

Wireless, wireless everywhere (but can your customers log on to the right network?)

While the first wireless networks were set up in the 1990s, the provision of public Wi-Fi is still something of a novelty. Yet it is a novelty that many customers have come to expect, particularly from businesses like hotels, restaurants, and event venues.

Armed with smartphones, tablets, laptops, and other devices, users want to be able to instantly connect. Although more areas are covered by 3G and 4G networks, this coverage does not reach inside many older buildings. Across London and other major cities, the limitations of mobile networks is still felt by customers on a daily basis. Whether because of the limited indoor reach of mobile networks or a desire to limit the amount of mobile data usage, users still want the ability to connect via Wi-Fi. They want a network that is easy to use, fast, and persistent.



Many users bring with them the expectations they have of their home or business networks. In these familiar environments, their devices may automatically connect or connect with minimal effort. The connection, with limited users, is fast and reliable.

Businesses want to provide this high quality Wi-Fi connection for their customers. The expectation of most providers is that the connection is fast and reliable for users. However, as businesses, they also have further expectations of their Wi-Fi networks. They expect it to be easy to

maintain and to offer the ability to connect to other systems. They also want it to have the ability to add value, such as through branding or advertising. They also need it to offer security for both the business and its customers, such as blocking inappropriate content or websites from being accessed by those logged on.

The technological advancements in wireless networking, which have made it easy for users to have reliable Wi-Fi in their homes, have allowed for improvement in public Wi-Fi. The desire of both users and providers come directly from this improved ability.

The Problem:

“When it’s great, it’s great; when it’s not, go home.”

While the desire for high quality public Wi-Fi is clear, it is not without problems for both the venues providing the service and the end users.

The typical end user problems will come as no surprise to anyone who has experienced public Wi-Fi access. The main issues include connection timeouts and dropped connections, both of which result in the user being asked to log in repeatedly during their usage session.

A growing problem is the result of the larger range of devices being used. Users regularly find problems with device compatibility. The ideal situation for users is one in which there is ease of use regardless of what device they are using, be it iPhone, Android, iPad, tablet, or laptop.

One symptom of this lack of compatibility often comes in the splash screen rendering. Being asked to log on to a Wi-Fi network via a landing page creates problems when that splash page is not responsive to the device.

Users may also find that the requirements of some splash pages, in which the user must accept terms and conditions, are off-putting. The much repeated warnings about the dangers of public internet connections leave many users worried about the conditions of use.

As one user said,

“Logging in through a badly designed splash page – often not designed for a handheld device as it’s done cheaply, it is difficult to see where you need to accept terms,

and you feel like your data is being harvested!”

Of course, problems are not simply limited to the users. For the providers of public Wi-Fi there are many other concerns to consider. The implementation of a Wi-Fi network for public use can have problems, whether it is for a small or large space

In smaller venues, problems are often related to the positioning of hardware, including switches, cabling, and wireless access points. Many of these problems are beyond the control of venue managers. The structural makeup of a building, for instance, will determine AP positioning. In order to manage the signal properly, access points must be laid out for optimal coverage.

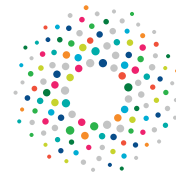
Similarly, network hardware must be located within the space. For smaller venues, finding an appropriate location for large switches can be a challenge, particularly when the wireless network is being retrofitted into an existing venue.

Short term networks, such as a network provided for attendees of an event, can also create problems. Cabling often needs to be temporary, but still arranged and housed safely.

Providers also share their users' concerns about the reliability of a network. Where the internet provision is coming from - whether from a concentrator or bonded broadband ADSL circuit or a fibre-based WAN circuit, for instance - will greatly affect performance. Interference from other sources, including wireless networks incorrectly set up by users themselves, can further hinder the Wi-Fi network in a small space.

Large venues have a particular set of problems, too. For many larger venues, ensuring that the service is uniformly reliable across the entire space can be difficult. This, in turn, leads to the problem of end user perception. Many users feel that degraded Wi-Fi performance implies the venue is not managed properly. Here again, the reliability of home Wi-Fi networks results in higher expectations of public Wi-Fi networks.

As in smaller venues, the performance of a Wi-Fi network can be hindered by interference from other networks and the access point location. For many larger venues, there is the risk of increased 'noise' from other networks. Encouraging users to find



the correct network can be difficult if it has not been set up properly, with ease of use taken into consideration.

Larger venues are also more likely to have a wider range of devices. While a small conference room might have many users working on the same type of device, a larger venue will have a more diverse range of user types.

For both users and providers, there are also inherent security issues. While an individual user of a public Wi-Fi network will have concerns about the security of data passing through an open access network, the concerns of providers have much larger legal implications.

When providing a public Wi-Fi network, the venue itself is held responsible for any activity that may occur on that network. The direct solution -- monitoring and logging all traffic in and out of the network -- is costly and far from perfect. Complete monitoring is an imprecise security measure and often fails to protect against or correctly identify those who are using a network for illegal purposes.

Even when requiring a login or identity authentication, there is a difficult balance to strike. Using email addresses as an authentication leaves the venue with less accurate identity data but will provide an easier login process for users. Social media authentication offers a better way of identifying users, but it may alienate those users who do not want to sign up to Facebook in order to check their email

while at a business event.

Filtering network traffic is itself a costly endeavour. Although it allows many sites to be blocked, there will inevitably be false positives that will leave customers unhappy. The licensing cost for filtering products for large numbers of concurrent users are prohibitively expensive for many venues looking to add public Wi-Fi as an added selling point to their customers.

When it comes to security of a public Wi-Fi network, the challenge faced by a provider is to protect themselves while still offering a service that meets the customer's needs. This means finding a solution that is secure, easy to use, and reliable, all at a price that makes sense for the provider's bottom line.

The Solution:

The problems faced by public Wi-Fi network users and providers all come back to the same three concerns: reliability, security, and ease of use. Providers want to offer their users a network that meets the needs of their customers, but may not know where to begin.

To implement an effective public Wi-Fi network, the correct network structure is essential. A good underlying design for LAN and WAN to connect to the WLAN is the backbone on which the Wi-Fi network is developed. It is also important that the Wi-Fi solution match the actual needs of the business and its customers.

Different providers will have different Wi-Fi network needs, but they all share a common need for a tailored solution and appropriate support. Whether it is a network for a small cafe or hotel, with several dozen users, or a network for a large event venue, with thousands of users, an IT company should create a solution that is right for an individual business. This also includes offering a range of support after the Wi-Fi network is set up, whether it is simple telephone support or a more full-featured support including network monitoring and onsite presence.

For any venue, the development of a reliable and robust public Wi-Fi network does require some investment. In the short term, a venue will see costs associated with out of hours labour, which may be required when installation cannot be done during operating hours. The network infrastructure, including switches and access points, will need to be installed and tested. For time-limited installations, such as at conferences, the venue also faces the costs of implementing and then re-purposing the hardware.

For long term public Wi-Fi networks, there must be investment in permanent solutions and ongoing support. It is necessary that the network WAN and LAN already be in place and stable. If there is no network in place, the venue must also be prepared to install these correctly.

CASE STUDY: The Brewery

With a tech-savvy and device rich customer base, The Brewery wanted to maintain its position as London's best technology venue. A high quality Wi-Fi network for customers would serve as a reinforcement of The Brewery's overall capability.

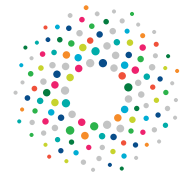
The Brewery regularly holds events for financial institutions, tech giants, and media organisations. These companies require fast, reliable Wi-Fi that can be accessed on any device. This often means there are thousands of devices connecting to the network at the same time.

The building itself presents challenges for the Wi-Fi network. Occupying the site of the former Whitbread brewery in East London, parts of the venue date back to 1750. The structure of the building prevents mobile and wireless signals passing through walls.

The challenge given to Panoptics was to provide a public Wi-Fi network that could be used across the venue. In order to offer a great user experience anywhere in the building, Panoptics had to carefully consider the design. The solution was a robust network with multiple access points, ensuring that a user could freely move around the venue without losing their connection.

Panoptics also offered The Brewery on-site support for specific events. This means that, in addition to a reliable Wi-Fi network, the venue can provide additional technical capabilities to business events. The Brewery can also offer special Wi-Fi logins to events as well as the opportunity to have event specific splash pages.

For The Brewery, the public Wi-Fi network means that customers can get the best experience from the venue. Although housed in an old building, The Brewery does not leave its customers needing to step outside to catch up with the world. Thanks to Panoptics, the venue's Wi-Fi network is reliable, robust, and easy to use.



CASE STUDY: House of Vans

Starting out as nothing but four tunnels of dust and darkness underneath London's Waterloo Station, The House of Vans needed to become a social hub within a short timeframe. The venue needed a public Wi-Fi solution for its visitors, a reliable LAN for public and internal use, and top quality internet connectivity.

Offering a space for young people in London, The House of Vans brings together art, music, skateboarding, and culture as part of its charitable mission. Having already announced its opening date, Panoptics was given a large task to complete quickly.

Working with the fit out crew, Panoptics learned about the building, its limitations and its opportunities. This allowed the team to create a network design strategy that ensured network availability throughout the venue with aesthetically aware cable runs.

Through a combination of access points, visitors to the venue have uninterrupted connectivity. For The House of Vans, this has meant a high level of social media engagement, allowing everyone to update whether they are in the skate park or checking out an exhibition.

The advanced connectivity has also allowed The House of Vans to stream some of their events. With performances by major acts, such as the Foo Fighters, Public Enemy, and Imagine Dragons, this has brought significant publicity and public awareness of their charitable mission.

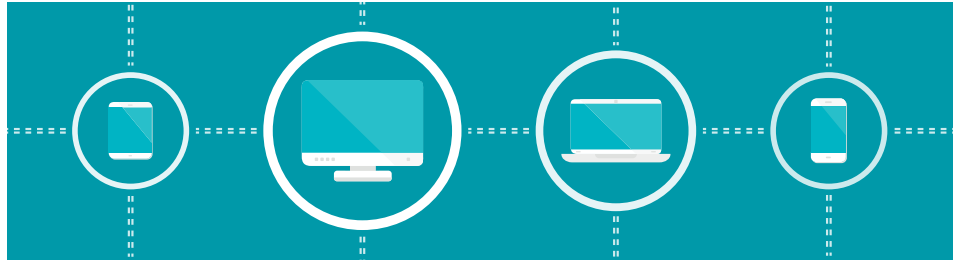
Panoptics has also provided The House of Vans with connectivity, cloud services, and VoIP telephony. This has given the venue's back of house operations the fast, reliable service they need for the wide range of events held there.

For The House of Vans, a reliable public Wi-Fi network is an essential part of what they offer London's youth. An underground hangout in the truest sense of the word, it provides a safe environment that is able to keep up with the needs of its users.

The creation of a reliable public Wi-Fi network is more than simply plugging in a home wireless router. Security is a primary concern for many users, and for providers as well. The increased technical functional-

ity that can be delivered to venues make the provision of public Wi-Fi a much more useful and profitable tool.

Location tracking, footfall monitoring, and social analytics can offer a venue significant information about their customers. In the case of a large brand brewery tour in Dublin, the provision of Wi-Fi also offers an opportunity to provide an enhanced customer experience. At the same time, the venue can gather data regarding types of device used, sites visited, etc. to better target their marketing.



A properly implemented public Wi-Fi network will also offer advanced security. By making network assignment dependant on device recognition, it allows a venue greater control over access without denying the internet to any user. Instead, an unrecognised device can be automatically placed in a dirty VLAN.

This type of security makes it safer for a business to have their public Wi-Fi network connected to their existing private network. In doing this, they can capitalise on the benefits of supplying public Wi-Fi. These include promotional opportunities, such as splash screen branding as well as the promotion of products by use of social analytics. Perhaps most importantly, though, it negates the need for customers to leave the venue to 'catch up' with their personal or business internet use.

The security of a public Wi-Fi network also means protecting against malicious use. One cost effective and secure solution is to provide a fast, fully filtered, unsupported free service using a product such as Websense. In doing this, it is possible for a venue to have certain sites blocked.

When one of these products blocks a site, it delivers a customisable pop up message to the user. This message can include an opportunity to upgrade to a paid service offering unrestricted access to the internet along with support. By providing a payment method, the user's identity is verified and their activity can be tracked. In doing this, the provider has taken all reasonable steps to ensure compliance with local laws and minimised the risk of untraceable, illegal activity on the network.

At the same time, the majority of users will have the fast, free public Wi-Fi experience they want within the venue. Most will likely never encounter a site that triggers the paywall message. Because of this, their experience of the venue's network is that it is fast, free, and easy to use.

A well implemented public Wi-Fi network also reduces some of the regular problems experienced. One major problem is user

error. This can include connecting over 3G and creating their own Wi-Fi hotspot, showing non-existent 'ghost' networks, and having phone settings for use of a static IP address.

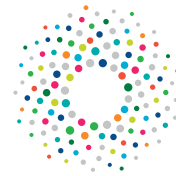
Having an easily identified public Wi-Fi network with a clear usage process can reduce the noise of additional networks and other user errors. Often this is a matter of patience and consultation, explaining the need to log in to the network.

The Real Difference:

While many of the concerns raised by users and venue owners are technical frustrations, there are others that go beyond issues of connectivity. With a well designed and well maintained public Wi-Fi network, it is possible to all but eliminate the technical problems.

With 99.999% network availability and full monitoring and management of networks, Panoptics offers clients a frustration-free experience. The additional managed services of Panoptics, including cloud services, give clients a holistic approach to connectivity. The assurance of business grade WAN and LAN can also provide the same speeds for both uploads and downloads, the ability to connect anywhere on site, and the ability to have confidence in the connection to the internet.

However, end users will still often have certain concerns. *“In our experience, a well designed splash page is critical. Removing frustrations with logins and ensuring the design works*



across all devices can significantly increase the usage of a public Wi-Fi network”, said James Lewis, Commercial Director of Panoptics. “This removes a significant barrier to use, and in a case such as The Brewery, it reinforced the concept of the venue as tech-savvy. At the same time, the network needs to be robust enough to cope with the usage and still offer the right amount of security. If you have 1,000 users moving around a building, you have to be sure they’ll keep their signal the whole time.”

Panoptics solved this problem for The Brewery in a few ways. With multiple access points and multiple channels for the Wi-Fi network, the venue is able to handle visitors on the move as well as high volumes of users online all at the same time. By using the A band as well as the B/G band, the venue offers users the best possible experience, whether they are on a laptop or mobile device.

The Brewery is just one example of a business that needs to offer great Wi-Fi coverage for a device-rich customer base. For hotels, the provision of wireless networking is essential, particularly for business customers. While the cost of access is often higher in hotels with a business clientele, it is something that frustrates many users.

Mark Brookbanks, Panoptics Managing Director, is familiar with the problem faced by customers. “I had a terrible experience with a hotel room at Gatwick,” he said. ‘There was poor coverage and then they wanted to charge for it - £4 per hour or £8 per day. I didn’t buy it but felt it was unnecessary to charge for something so simple. A small thing like free Wi-Fi can have a large impact on someone’s experience at a hotel and whether they’ll book another stay there.”

While some hotels roll out free Wi-Fi in public areas, the real success stories will be those that are able to implement it across the entire site. This requires a robust Wi-Fi solution that can manage a signal from room to room and floor to floor.

Providing a great public Wi-Fi network does require both IT experience and an understanding of customer needs. Panoptics has worked with clients, including The Brewery, Clarion, Capital & Counties, House of Vans, and Lords Cricket Ground, to provide public Wi-Fi networks and support businesses in the maintenance of their networks.

Panoptics clients benefit from the company’s expertise in both public Wi-Fi provision and the provision of other services. They know that their Wi-Fi network will be properly structured, meaning they will be able to connect anywhere on site easily and reliably. At the same time, they can access a range of cloud services, such as Hosted Virtual Machines and Backup as a service. Panoptics can help a business set up corporate connectivity that allows employees in the field to connect back to their corporate networks securely.

The real difference with Panoptics is a commitment to giving clients and their customers exactly what they need from a public Wi-Fi network. James Lewis sums up their philosophy simply:

“When it’s great it’s great; when it’s not go home. This is the challenge most providers face with public Wi-Fi. Not Panoptics!”

This is because the company has a greater understanding of what end users expect from public Wi-Fi, as well as what the providers need from the network. The Panoptics difference gives everyone a better experience.

“We don’t just want to create public Wi-Fi networks, we want to improve the supply of public Wi-Fi.” said Mark

Brookbanks. “At Panoptics, this means remembering users so they can log in quickly or automatically. It means introducing smart commercial models to give businesses additional revenue from advertising, social analytics, and product placement. It means using a greater spectrum to provide more connections.”

Panoptics also aims to improve consumer understanding of the challenges of public Wi-Fi networks. Acceptance that the performance of a network depends on what the users are doing can help manage expectations. However, unlike some free or cheap IT solutions, Panoptics can help a provider overcome the bandwidth usage of customers who want to update social media and upload images and videos.

The Future of Wi-Fi, Today:

Today’s customers want to have the world at their fingertips at all times. Providing a reliable, secure, free, public Wi-Fi network allows them to fulfil this desire.

For businesses, providing this type of network will keep customers on site, encourage them to return, and present the venue as one that is forward thinking and tech-savvy.

This, in turn, can lead to:

- > Higher revenue
- > Better analytics
- > Social promotion
- > Improved perception

While there are costs associated with the implementation of any network, the benefits far surpass them. Because of this, any venue or business can and should work to offer their customers public Wi-Fi as soon as possible.



Find out how Panoptics can help with your public Wi-Fi network.
Get in touch today.