Wi-Fi Connectivity

Subsections:

- General Guidance
- Answers to Frequently Asked Questions
- What to Discuss with the Venue
- What to Ask Exhibitors and Other Event Participants

General Guidance

1 Event organisers are strongly advised to consider the complexities of providing Wi-Fi technology for a large number of users in an event environment and to liaise with the Venue well in advance of the event to avoid disappointment.

2 The demands placed on Wi-Fi technology have increased dramatically from the basic domestic or bar/cafe environment to the requirements of the professional business user. The high density and complex live event environment generally requires advanced planning with experienced partners to avoid congestion and connectivity problems – deployment of "out of the box" solutions will typically lead to disappointing results.

3 The primary Wi-Fi challenges within a live event environment are that networks not specifically designed to serve large numbers of modern laptops, smartphones and other devices will not generally be powerful enough, plus the impact of competing "rogue" Wi-Fi networks set up unofficially by exhibitors and other event participants causes interference and impedes performance further still.

4 The following section provides some technical guidance to Wi-Fi technology, explaining the factors organisers will need to consider to ensure their expectations are realistic and achievable.

Answers to Frequently Asked Questions

What is Wi-Fi?

5 Wi-Fi technology allows an electronic device to exchange data wirelessly (using radio waves) over a computer network, including high-speed Internet connections. A device that can use Wi-Fi (such as a personal computer, video game console, smartphone, tablet, or digital audio player) can connect to a network resource such as the Internet via a wireless network access point. Such an access point (which may broadcast a hotspot) has a range of about 20 meters (65 feet) indoors and a greater range outdoors depending on the model and power of antennas. Wi-Fi coverage can be restricted to an area as small as a single room by walls that block radio waves or extend to many square miles, achieved by using multiple access points.

What are its limitations?

6 Connecting to poorly planned Wi-Fi networks in busy enclosed event environments can be problematic. This is often due to either of the factors described in para 3: either a network not designed to service the density of the devices that require connections or because other systems are causing interference.

7 Wi-Fi devices use one of two bands to connect. These are 2.4GHz (802.11b, g or n) and 5GHz (802.11a or n). The majority of smart phones (including the older generation Apple iPhones), and older laptops, all work on the 2.4GHz band which due to the limited amount of separate frequencies to communicate on may become congested quickly. This limitation is typically due both to insufficient planning of the wireless network and to the way some devices interact with the network (regardless of how robust it is). 5GHz Wi-Fi currently offers a much better performance in these environments.

Are there technological solutions available to remedy this?

8 Yes, with the appropriate planning, communication and expectation setting, thousands of people can connect to 2.4GHz and 5GHz Wi-Fi networks. In the longer term 5GHz networks will ease the current congestion of 2.4GHz networks, which still work well and are widely used by businesses on a daily basis. However, Wi-Fi technology should still be considered as a "good" connectivity option by organizers as opposed to a wired connection that will perform better since the risk of external factors impacting the service is much less.

Why is the provision of Wi-Fi in event venues different from coffee shops, hotels etc

9 Size, scale and use. Whilst a coffee shop or hotel bar/lounge Wi-Fi infrastructure is generally adequate for a small number of users checking emails, it would not be able to cope with a much larger number of business users accessing more data-intensive functionality. The expectations of business users in an event environment are much higher too. Therefore, it may be important to convey to your event participants that a paid-for, "Business Class" Wi-Fi solution is necessary in order to give them the same experience and capabilities that they have to pay for in their office locations or, generally, in hotel rooms.

What causes interference with Wi-Fi that is different to other installations?

10 The following are some of the factors that can cause interference to Wi-Fi connectivity:

- Third-party wireless networks in close proximity
- Some lower specification microwave ovens
- Some older cordless phones
- Bluetooth devices
- Wireless video cameras
- Some audio senders
- Outdoor radio links
- Some wireless game controllers
- Zigbee devices (input devices such as mice/keyboard/wands etc, with longer range than say infrared that does not rely on 'line of sight')
- Some fluorescent lights
- Some poorly maintained electric motors
- Some industrial equipment
- Some physical barriers (including exhibition stands and other event structures)
- People - the human body is anywhere from 45 percent to 75 percent water depending on age and fitness level, and water can hamper Wi-Fi speeds as radio waves do not penetrate water as well as air.

Does Wi-Fi need wires?

11 Yes, the numerous access points that are installed within Venues have to be wired to the network and then to the internet connection (leased line or phone/cable line), in the same way domestic Wi-Fi is delivered, however the lengths of cable are significantly longer and more complex often with scores of access points needed to provide coverage within the halls and other areas.

When should Wi-Fi use be planned?

12 As soon as possible. Early planning is strongly recommended and encouraged by venues, many of whom offer discounts for early orders. This allows any potential issues to be discussed and worked through rather than encountering problems during the event.

What to Discuss with the Venue

13 To ensure that you understand exactly what Wi-Fi connectivity the Venue will be able to deliver during your event and can accurately set your customers' expectations, you will need to discuss the following with your Event Manager:

14 Does the Venue have a Wi-Fi provision in the:
- Public areas
- Meeting rooms
- Halls

15 Is the Wi-Fi provision free of charge or a paid for service in the:
- Public areas
- Meeting rooms
- Halls

16 What do you foresee the Wi-Fi provision being used for:
- Checking emails
- Streaming video
- Research projects
- Running websites & demos

17 What is the maximum number of concurrent users your system allows for, and how much bandwidth could each user expect as a minimum during maximum utilisation?

18 Is this number based on an even spread throughout the venue?

19 Do you have any way of increasing capacity in high density areas, such as cafes?

20 What system does your venue use for logging users on, how easy is it and is there any opportunity for the landing page to be sponsored and provide a possible revenue stream?

21 Do you allow event participants to create their own Wi-Fi networks following the purchase of a hard wired connection? Note, most venues will not allow this as independently set-up Wi-Fi competes for airwave capacity with the official infrastructure, causing saturation and the disruption of all wireless applications within the Venue.

22 Do you actively manage and potentially shut down rogue/unauthorised Wi-Fi networks? Note, most venues will do this although in cases where they do not, or where they make concessions from time to time then your event participants will still need to be completely familiar with the technology and follow the following guidelines:

- Hide the SSID so only specified devices can find it.
- Avoid open Wi-Fi access, as allocated bandwidth will very quickly be used up by surrounding exhibitor and visitor devices. This may also result in an inferior experience.
- If the wireless router has the option it should be set to the lowest power setting so it does not broadcast across the venue and interrupt the rest of the show.
- If a wireless router is being used for hard wired distribution then the wireless element should be turned off.
- Where the option is available only the 5 GHz frequency should be broadcast. 2.4 Ghz is unlikely to work so it will simply add to the traffic in the venue. If it is turned off better connectivity will result.
- If a router has multiple radios to broadcast over and only one is required the others should be disabled.
- Most venues reserve the right to terminate connections should they cause interference with the rest of the show.

What to Ask Exhibitors and Other Event Participants

- What do you intend to use the Wi-Fi network for?
- Hard wired solutions offer a more robust connection, would this serve your needs better?
- How many devices are you intending to connect to the network?

- How many concurrent users do you expect?
- What levels of data transfer are you anticipating?
- Are those devices using the latest software upgrades (iPhones, iPads etc), as this will affect their connection as opposed to the infrastructure that is put in place?
- Even on wired connections do you have the 'Administrator' passwords for any computers and devices you plan to use as these may be needed to configure the connection?
- Will the event be utilising a mobile app? If so what size is it (eg 10Mb), will users upload the app before attending the event, or on site, and would there be updates/downloads for the duration of the event?

The full eGuide can be downloaded at www.aev.org.uk/eGuide