The Network With No Second Chance: Designing Wi-Fi for Events and Exhibitions



https://www.linkedin.com/pulse/network-second-chance-designing-wi-fi-events-jarryd-de-oliveira-okrie

Most networks get months to settle in. An event network gets one morning, in front of everyone.

Every environment in this series so far has had a network that stays.

If something was not quite right on day one, there was a day two. A week two. A quarter two. Time to measure, tune and improve.

Events do not work like that.

An exhibition, conference or trade show network may be designed weeks in advance, built in a matter of hours, used intensively for two or three days and then taken down.

The busiest moment of its life may be the first hour it carries real traffic.

And everyone is watching.

That is the constraint that influences the design here.

Time.

There is no second chance to make that first impression.

The empty hall will lie to you

We covered this with stadiums, and it applies here too.

An exhibition hall during the survey can be a large, empty space with a high roof and very little to absorb signal.

By opening morning, it is a different building.

Hundreds of stands. Metal framing. Raised floors. LED video walls. Exhibitor storage. Display vehicles, machinery or racking. Thousands of people.

Most of that does not exist when the hall is surveyed, and much of it is not finalised until days before the build.

So the RF environment you measured is not the one the network will operate in.

Design from the floor plan and the stand plan, not just the empty hall.

Ask for stand heights, large structures, double-deck stands and the locations of video walls and heavy equipment. Then expect them to change.

Plan to validate again once the stands are built, and once their equipment is running.

That is when the environment you designed for starts to become real.

The neighbours arrive the night before

The multi-tenant article talked about neighbours you do not control.

An exhibition hall concentrates that problem into a single space and a single weekend.

Exhibitors bring their own access points for demonstrations. Travel routers. Mobile hotspots. Wireless video systems. Devices that need to show a cloud service working on the stand.

Production teams bring other wireless systems too. Understanding which frequencies those systems use is part of coordinating the event.

Many devices will power up for the first time on opening morning.

Some will never have appeared in your channel plan.

Set the rules before the event, not during it.

The organiser controls the exhibitor contract and the exhibitor manual. That is where the wireless policy belongs.

Whether exhibitors may run their own Wi-Fi. If they may, how they register it, which channels and transmit powers they may use, and what happens if their equipment affects other services.

Ideally, give exhibitors a reason not to bring their own network at all.

A reliable exhibitor service, wired connections to stands that need them and a clear way to request help can remove a lot of unnecessary equipment before it arrives.

Monitor, then talk to people.

Have spectrum and WLAN monitoring running from the start of the build.

When an unknown network appears on a channel you depend on, investigate whether it is affecting the service. Find the stand and speak to the exhibitor.

The same principle from the multi-tenant article applies. Disrupting someone else’s network is not a design technique, and in the UK unauthorised deliberate interference with wireless communications can be unlawful.

Use the event’s agreed wireless policy and coordinate changes with the exhibitor.

Not every connection matters equally

An event network serves very different groups of users, and they do not all need the same priority.

Registration and badge printing.

Often the first service delegates encounter, and the first failure everyone notices. A queue of delegates at eight thirty in the morning is not the time to discover the scanners cannot hold a connection.

Payments.

Catering, merchandise and exhibitor sales. The same PCI DSS considerations from the retail article apply, and someone needs to know which terminals depend on the event's Wi-Fi.

Production and streaming.

Live streams, presentation systems, recording and press uploads. Often better on wired connections wherever possible.

Exhibitors.

Demonstrations that may be business-critical to the people who paid for the stand.

Organiser operations.

Event apps, staff communications over IP, security, signage and venue systems. Some of these may have requirements that put them above everything else.

Delegates.

Usually the largest number of devices, and often the least critical traffic.

Decide the priorities with the organiser before the event and design them in.

That may mean carefully planned radios and channels for registration, wired connections for production, airtime and bandwidth controls for delegates, and QoS that reflects what the event actually needs.

Those controls help manage the resources you own. They cannot stop neighbouring devices from competing for airtime.

And prioritisation does not mean a separate SSID for every group. Keep the SSID count low, as discussed in the retail article, and use authentication and policy to separate traffic where the platform and client devices support it.

Design for the moments, not the average

Events have predictable peaks.

The registration rush when the doors open.

The keynote, when the main hall fills and everyone checks their phone at the same time.

The breaks, when thousands of people leave the sessions and move onto the exhibition floor.

The close of the day, when the crowds leave and demand falls away.

That is the school article and the stadium article combined.

Map the timetable against the floor plan.

Where will people be at nine o’clock? At eleven? At lunch?

Which areas need capacity at the same time, and where will demand move during the day?

A keynote hall may need stadium-style density for ninety minutes. The exhibition floor may need it for the rest of the day.

Registration may only reach its peak for the first hour, but that hour defines the delegates’ first impression.

Build it like a temporary installation, because it is one

Event infrastructure has to be installed quickly, often overnight, in a space shared with stand builders, riggers, electricians and caterers.

Pre-stage everything.

Configure, update and test the equipment before it arrives. The retail article’s factory approach applies directly here. The same discipline used for store three hundred belongs at event number thirty.

Know where the access points will go, and when.

High-level mounting on truss or roof structures may need to be completed before the stands go up and lifting equipment can no longer reach. Floor-level or stand-mounted access points may need agreement with the stand builders.

Plan cabling and power as carefully as RF.

Temporary cable runs across the floor need appropriate routing, protection and ramps. Power and PoE budgets need to be known for every distribution point.

Cable lengths, temporary switches and shared power all need checking.

Bring spares.

Access points, switches, cables, PoE injectors and power supplies. There is no time to wait for a replacement delivery on the morning of the event.

Test with real clients after the stands are built.

Walk registration, the keynote hall and the exhibition floor with the devices that matter, especially the registration scanners and payment terminals.

Then validate again when the stands are powered.

A completed stand and an operating stand are not necessarily the same RF environment.

A good signal is only the beginning

A device can have excellent signal and still fail to register a delegate, process a payment or reach a demonstration service.

Check the internet connection, DHCP, DNS, authentication and the applications themselves.

Those services need to cope with the opening rush too. Thousands of devices arriving together can expose a problem that an evening walk test never will.

Test the complete transaction.

Scan a registration code. Print a badge. Process a test payment through the agreed procedure. Open the exhibitor’s demonstration application.

Know what happens if the primary internet connection fails. If there is a backup, test the failover and confirm which services it can support.

Agree a workable fallback for the services the event cannot run without.

A wired connection may help if the problem is Wi-Fi. An internet outage needs an alternative upstream connection or an application’s supported offline process.

The fallback has to match the failure.

And the people at the registration desk need to know how to use it before the queue starts.

Operate it live, but carefully

During the event, the network needs people watching it.

An on-site operations team with visibility of client counts, channel utilisation, retries, interference and the services that matter most.

A clear way for exhibitors and the organiser to report problems.

And someone with the authority to make changes quickly.

But fast does not mean careless.

A change made to fix one stand can affect the hall. Changing channels during a keynote can interrupt connected clients at exactly the wrong moment.

Agree what can be changed live, who decides and how it is rolled back.

Where possible, make significant changes during quieter periods rather than in the middle of the busiest session.

Take the lessons with you

Most venues host many events, and many events return to the same venue.

So the network does not have to start from nothing every time.

Keep the survey data, the final AP locations, the channel plan, the utilisation peaks, the interference that appeared and the problems that were reported.

Record what the stand layout looked like and how the network behaved with it.

Next year’s event at the same venue starts with real evidence rather than assumptions.

That is the warehouse article again.

A baseline with a date on it, and a record of what the building looked like at the time.

The scanners that failed at eight thirty

Consider a trade show in a large exhibition hall.

The network has been designed from the floor plan, surveyed in the empty hall and tested the evening before opening.

Everything looks good.

At eight o’clock on the first morning, the exhibitors arrive and switch on their stands.

Demonstration access points. Mobile hotspots. Wireless video links.

By eight thirty, the delegate queue is growing and the badge scanners at registration are struggling to stay connected.

The registration access points share channels with several exhibitor networks that did not exist the previous evening. Monitoring shows heavy airtime contention in the registration area.

The response has to be practical.

Where the equipment supports it, registration workstations and printers move onto wired connections, reducing their reliance on Wi-Fi.

After checking the affected scanners’ capabilities, the team moves the registration radios to a cleaner channel. Other event-managed radios are planned around it, and the operations team coordinates changes with exhibitors under the event’s wireless policy.

Contention falls, and the team verifies that the scanners can complete the registration process.

The channel is still shared spectrum. The improvement comes from reducing competing traffic and coordinating its use.

By the second morning, registration is smooth.

But the first impression has already been made.

The lessons are about preparation and timing.

Exhibitor wireless rules in the manual. Registration treated as a critical service. A tested fallback.

And validation planned for the moment the stands are powered, not just the evening before.

Final Thoughts

Every environment in this series has had a constraint that influences the design.

At an event, that constraint is time.

The network is built quickly, used intensively and removed, and its busiest moment may be its first.

So design from the stand plan, not the empty hall.

Set the exhibitor wireless rules before anyone arrives, and monitor from the start of the build.

Prioritise the services that define the event, starting with registration and the organiser’s critical operations.

Design for the timetable’s peaks rather than the average.

Pre-stage everything, plan cabling and power as carefully as RF, and bring spares.

Test the complete service, from the client device to the application, and make sure the fallback works.

Operate it live, with clear rules about what can change and when.

And keep the evidence, because the next event in the same hall should not have to learn the same lessons again.

Because an event network rarely gets a second chance.

It has to work the first time, in front of everyone.

This is part of a series on designing wireless for real environments, where the constraint that dominates the environment influences the design.

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