



Esper Guide

How to Select the Right Connectivity Method for Your Company-Managed Devices

Get Started



Start here.



In this guide we'll walk through the core set of considerations you need to look at when deciding whether to use wifi, cellular, or both, for your data connectivity on dedicated devices.

Please note this guide does not cover the details of emerging technologies such as Wi-Fi 6, Wi-Fi 7, 5G, or 6G. As these aren't mainstream yet, we'll be focusing on choosing between established wifi technology or 4G LTE.

See a [summary comparison](#) or click on a tile to jump into a specific concern area.

Use case

Deployment location

User experience

Economics

Robustness

Provisioning

Serviceability

Security

Summary comparison



Wifi

Pros



- Free to use
- Can plug into existing wifi infrastructure
- Can automate wifi connection set-up (with Esper and if access point is known)

Cons



- Requires user set-up (in most cases)
- Performance can be dependent on user internet service provider
- No control over security in consumer use cases

Cellular

Pros



- Works out-of-the-box for end users
- Qualified performance from mobile operator network
- Consistent security

Cons



- Requires paying for data plan and possibly incurring surcharges
- Requires manual SIM activation
- Poor coverage areas or data rate can decrease customer satisfaction

Use case



Your use case is the key factor when choosing your wireless communication method as it's the main driver in designing your solution. It's crucial to think about what your use case is and how the wireless technology will fit into it.

Wifi

Scenario: Retail store

In this use case your devices are being used by retail store employees. They're familiar with the in-store wifi set up process, as they use several connected devices in their jobs, and someone on the team is likely to have a sufficient level of technical skills. In this case, asking them set up wifi access point credentials wouldn't be detrimental to the user experience.

Cellular

Scenario: Remote patient monitoring

In this use case you're often dealing with an elderly population and/or people who are ill. These users may not be tech savvy or have the time or training to fiddle with device settings. Having them set up wifi access point credentials on the device most likely won't deliver an enjoyable or efficient user experience. Residential wifi also may not be sufficiently reliable for MedTech devices so having cellular or cellular backup could be important.



Esper tip

In some use cases a blended solution, using both wifi and cellular, works best.

Scenario: A snowplow with a tablet uses wifi to communicate with peripheral devices on the vehicle, such as a camera or a proximity sensor. Then, it uses cellular as the backhaul for the data flow to the cloud.

Deployment location



What environment are you delivering your devices into? It's crucial to know the characteristics of the location and the minimum requirements of operating there.

Wifi

Ideal fit

Best for deployment locations that have an existing wifi infrastructure that is generally available.

Examples

- ▶ Enterprise or corporate scenarios
- ▶ Restaurants
- ▶ Retail

Cellular

Ideal fit

Use cases where the wireless environment at the deployment location is unknown and delivering a smooth user experience outweighs other factors like cost.

Examples

- ▶ Consumer use cases like remote patient monitoring

Coverage

Be sure to choose a cellular provider or network operator that has good cellular signal in the coverage area your devices are deploying to.

User experience



Achieving customer satisfaction requires curating the full experience end users will go through when the devices arrive at the deployment location.

Wifi

Ideal fit

Use cases, such as employee or technician facing, where setting up the wifi won't hinder the experience. There are trade-offs for this approach, such as customer support loops if things don't go smoothly.

Scenarios where you know the wifi access point ahead of deployment. Not requiring users to do any configuration creates a smooth experience. Esper enables you to preload credentials so devices simply connect to the deployment location's wifi access point and work.

Cellular

Ideal fit

Scenarios where you don't know the deployment location's wifi access point ahead of time.

This is often the case in consumer use cases, as it's not generally feasible to obtain their wifi access point information. Cellular in this case is a much better way to go. To work out of the box, devices only need be onboarded to the cellular network beforehand.



Esper tip

Access to wifi settings doesn't have to mean full settings access

With the Esper Device SDK, you can create a controlled way for users to enter their wifi access point credentials without being exposed to other setting options in Android.



Cost is a key factor when selecting your connectivity method. It's crucial to determine if your desired connectivity method fits into your business model.

Wifi

Leveraging existing Wifi access for your devices is a very economical choice as there's no additional cost to connect to the internet and use it.

Data limits for wifi are generally high, so you don't have to worry about data volume.

Cellular

Cellular requires an additional cost, and determining this can be fairly complicated.

Key considerations

- ▶ Can your business model handle that extra recurring charge associated with cellular?
- ▶ How much cellular data will you be using?
- ▶ How does cellular relate to the use case and the user experience you're trying to create?
- ▶ Is the user experience it creates worth the extra cost and operational overhead to run it?

If you decide to use cellular, you'll need to determine the right data plan for you. For pooled data plans, you'll need to track your data usage and ensure you don't exceed your data allocation and incur surcharges.

Robustness



Understanding the performance level of your connectivity method at your deployment location is key in determining which one you use.

Wifi

Determine robustness level

Know how good the connectivity is for the underlying ISP that your end user is using.

Understand how your hardware works with wifi

Sometimes you're beholden to the wifi implementation on a particular device. If the device exits the wifi access point, does the OS itself reconnect when it enters into range? This is variable across Android devices, so it's important to trial. This scenario can cause customer support loops as the user can't get the wireless connectivity they need.

Esper provides customers with self-healing wifi so if a device loses connectivity, it automatically attempts, in an efficient way, to re-establish the connection.

Cellular

Qualified performance

Don't typically deal with hardware re-syncing issues like on the wifi side as a cellular stack's robustness is qualified on the mobile operator network.

Coverage considerations

- ▶ Does the deployment location have good cellular coverage?
- ▶ Are you delivering a sufficient data rate to be able to accomplish your use case? (This is crucial for edge deployments moving larger data sets. For most use cases, data rate is not a problem.)

Provisioning



Knowing how to properly prepare your devices to connect with your chosen wireless connectivity method before deployment can save you a lot of operational headaches down the line.

Wifi

Known deployment location wifi access point

With Esper you can preload credentials, even if the access point is not available at staging. Devices will simply connect to the deployment location's wifi access point and work.

Unknown deployment location wifi access point

Whether you have a technician or an end user set up the wifi access point at the deployment location, Esper makes it easy. With the Esper Device SDK you can create a controlled way for them to enter wifi access point credentials without being exposed to other setting options in Android.

Cellular

Activation process

Activation is a service that requires the mobile network operator to deliver it to you. Generally this is a manual activation of the SIM going into the device. There are Mobile Virtual Network Operators specializing in dedicated device fleets that use API driven activation methods.

Activating on-site

On-site SIM activation issues are hard to solve remotely. Have a strong team at your staging location to complete the activation before you deploy. For in-the-field activation, have an escalation tiger team that can solve problems on behalf of field personnel.

Serviceability



The ability to solve problems that occur with devices out in the field is crucial to delivering a quality user experience.

Wifi

Lack of wifi connectivity

What access do you have on the device to be able to get out of a situation with no connectivity?

Esper settings is one way you can do it. Esper has some customers that use Esper settings to expose the settings to their end users. A typical end user can use these settings to connect the device to wifi locally.

Cellular

No service or connectivity

Service issues are more problematic on the cellular side because no connectivity means no ability to get to the devices.

Esper provides a way for devices to be worked on locally in cases where they can't connect to the internet. We've also seen some cases where customers swap devices out to take care of the problem.

Security



Security is often a top concern in the dedicated device space. The key here is determining how important it is to your particular use case.

Wifi

Limited control

If you're doing wifi and you are deploying to an end user environment, you really don't have any control over security. They could be doing things like connecting to the wrong wifi network or using WPA instead of WPA2.

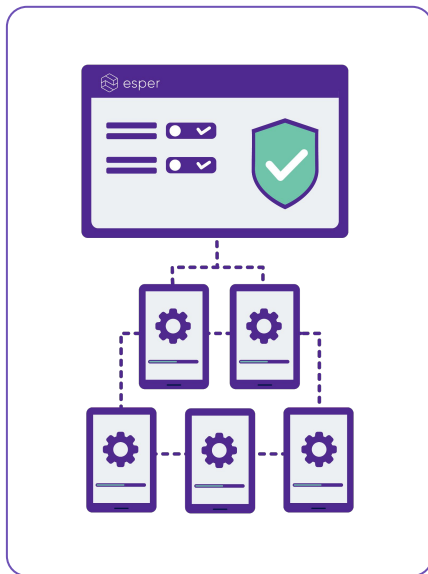
For corporate deployment environments, you'll have more control over security. But for consumer use cases, depending on the type of data you're collecting and how it relates to your cloud, cellular might be a better way to go.

Cellular

Consistent protection

Through the mobile operator you're getting consistent security. This is often a better choice in terms of security for consumer use cases.

Need more help?



Learn more about Esper

Esper can help you select the wireless connectivity option that's best for your use case. We've helped thousands of leading organizations build and design their ideal dedicated fleet.

Learn more about how we can help you build agility into the ways you deploy, manage, update, and secure your fleet of devices and the software it runs on.

[Visit our website](#) or [connect with an in-house expert](#).