The Mobile Internet Handbook

written by Chris Dunphy and Cherie Ve Ard
hosts of MobileInternetInfo.com
The Mobile Internet Handbook
For US Based RVers, Cruisers & Nomads
5th Edition
FREE PREVIEW
Get the full book at:

by
Chris Dunphy & Cherie Ve Ard

hosts of the
Mobile Internet Resource Center
www.MobileInternetInfo.com
The subject of this book is constantly evolving.

It's almost guaranteed that as soon as we publish this book, there will be an industry development that makes something in this book out-dated.

That's why we also host MobileInternetInfo.com, the website meant to complement this book. We are constantly staying on top of this topic - analyzing tech news for nomads, updating in-depth guides, reviewing products, creating videos and more.

For free periodic wrap-up articles that update this book:

www.MobileInternetInfo.com/changes

Other places you can keep updated:

• Join our free monthly newsletters:
  www.MobileInternetInfo.com/subscribe

• Join our free public Facebook discussion group:
  www.facebook.com/groups/rvinternet

• Follow our free Facebook News Page:
  www.facebook.com/MobileInternetInfo

• Add our news feed to an RSS reader:
  www.mobileinternetinfo.com/feed/

• Subscribe to our YouTube Channel:
  www.youtube.com/MobileInternetResourceCenter
# Table of Contents

## Introduction to This Book
- Prologue to the 5th Edition .................................................................................. 1
- Who This Book Is For ......................................................................................... 2
- The Mobile Internet Resource Center and Membership ......................... 3
- Your Authors: Chris & Cherie ........................................................................ 5

## Laying the Groundwork
- Basic Differences Between the Common Options ......................................... 10
- What Exactly Is Data? ......................................................................................... 11
- Rule #1: Reset Your Expectations .................................................................. 13
- Companion Online Glossary ........................................................................... 16

## Assessing Your Needs
- Personal Considerations .................................................................................. 17
- How Much Data Do You Need? ....................................................................... 20
- Assembling & Organizing an Arsenal ............................................................. 21

## Going Wireless
- Understanding the Difference Between Cellular & Wi-Fi ......................... 24
- Things That Impact Wireless Signals .............................................................. 26
- What on Earth is MIMO? ................................................................................. 28
- Knowing Where to Find Signal ...................................................................... 29
- Testing Your Connection .................................................................................. 31
- There’s Only So Much You Can Do .................................................................. 34

## Cellular Data: Carriers & Plans
- The Four Nationwide Carriers ......................................................................... 35
- On-Device Data vs. Hotspot/Tethering Data ...................................................... 41
- Understanding the Limits of “Unlimited” Data Plans ................................ 42
- MVNOs, Resellers & Prepaid Plans ................................................................. 45
- Shopping for Plans ............................................................................................ 46
- Understanding Roaming ................................................................................... 47

## Cellular Data: Gear
- Smartphone/Tablet Hotspotting & Tethering .................................................. 50
- Mobile Hotspots & Modems ........................................................................... 51
- Cellular Integrated and Mobile Routers ........................................................... 53
- Understanding SIM Cards ................................................................................ 54
- Locked & Unlocked Cellular Devices ............................................................... 55
- Cellular Frequencies & LTE-Advanced Technology ..................................... 55
- Cellular Signal Optimization - Antennas & Boosters ................................. 58
- Bars vs. dBm vs Speed .................................................................................... 61
Introduction to This Book

For anyone thinking of exploring a mobile lifestyle, figuring out how to best keep online while exploring the world offline becomes critically important.

Whether you use the internet to keep in touch with loved ones, plan your next destination, manage your finances, learn online, pursue entertainment, or working remotely – building a connectivity arsenal that suits you is an essential chore most tech-connected nomads face.

Even those who don't consider themselves techno-savvy at all still face needing at least some connectivity these days.

Prologue to the 5th Edition

After years of sharing about our own RV travels while working remotely, we set out in the spring of 2013 to write a comprehensive blog post about the best options for keeping online while mobile.

Our prime goal was to slow the flood of questions we kept fielding.

By the time we were partway through, we realized this topic was way too big to be covered in a single post!
Introduction to This Book

And thus, on the spur of the moment, the first edition of *The Mobile Internet Handbook* was born. We had never published a book before, and we put together the first edition in under three weeks on a shoestring budget, eager to get back to our real jobs.

We did not expect the book to take on a life of its own-there was clearly a huge need for unbiased mobile internet advice.

In mid-2014, we updated and vastly expanded the book and we also launched a companion member-supported website which has now become a comprehensive online resource center, originally focused on RVers.

We have been thrilled that enough folks have proven willing to join a premium membership tier to support the ongoing work through now three additional book editions, and the creation of our ever-expanding library of in-depth written and video content.

We are proud to be reader & member funded - thank YOU!

Now this brings us to this new fifth edition, being released in 2018.

The mobile industry continues to evolve at a rapid pace, and though we had written the 2016 edition of the book to be as evergreen as possible, after nearly two years an update was essential.

This new edition takes the book back to its roots, more of a handbook-sized overview than the comprehensive, overwhelming and quickly outdated standalone resource that prior editions of the book had become.

This edition focuses on explaining the basics, helping you assess your needs, and laying the foundation for your continuing research. To go further, we've provided links to accompanying guides on the [MobileInternetInfo.com](http://MobileInternetInfo.com) website that we keep current with the latest options.

Also new in 2018 - we've expanded our target audience beyond just RVers. We are now focused on all US-based nomads traveling by land or water!

Who This Book Is For

This book focuses on connectivity options for RVers, cruisers, and nomads - whether full-time, seasonal or those on extended excursions.

If you are setting out to explore the vast expanse of the USA for a prolonged period of time and want to remain connected while doing so, we've written this book for you.
Introduction to This Book

We aim to present information in a clear manner that will be accessible to most, ranging from novices who don't yet understand the difference between Wi-Fi and cellular, to the fellow super geeks.

This book isn't intended to be consumed in one sitting, nor do we expect that you'll understand it all immediately. Dive in at your own pace.

There is no denying that at the root of it all, *The Mobile Internet Handbook* covers pretty technical stuff. We try to start each topic off as fundamentally as we can, and then ramp up from the basics.

Armed with the information in this book, you will be much better equipped to understand and evaluate the current offerings on the market – and to decide what plans and technologies personally fit you best.

It is not our goal to give you a shopping list for the singular perfect mobile internet setup. Our goal here is to arm you with the information you need to research and create your own.

Keep in mind, you're going to be out there needing to manage whatever connectivity toolkit you assemble, often miles away from any geek help.

And, if you are having trouble getting online, you may end up being unable to ask for assistance in online forums and groups.

So, before you get lost in the wilds (figuratively or literally), make sure you understand what you have and how to use it!

This handbook is here to help lay that foundation.

The Mobile Internet Resource Center and Membership

The world of mobile internet is constantly evolving. There are always new plans, products, and options coming onto the market.

With as often as things change, it's impossible to keep a comprehensive book current. Even annual updates would not be enough.

So instead of cataloging specific...
plans and products that will immediately be out of date, this book is just a primer.

The companion website MobileInternetInfo.com is focused on the things that are constantly changing, sometimes on a daily basis. There we track the current plans and products.

We have news articles, dozens of very in-depth guides, video content, product overviews, hands on tutorials, field testing data and much more.

We've now also launched a new resource for our members - the Mobile Internet University. This online classroom goes along with this book, walking you through our content to help assemble your own unique mobile solution.

The book and online content are intended to complement, not replicate, each other.

Our team works full time to track the industry and keep our guides updated, and our deeper in-depth guides & product reviews have hundreds of hours of research, testing and content creation invested in them.

Sales of this book alone don't begin to cover that massive effort.

So instead of seeking corporate sponsorships and advertising, we have chosen to be community funded via premium memberships. This way, we are accountable only to you, our readers and our members.

In return for their support, premium members get this book and even more resources, such as interactive access to us via our forums and webinars, expanded video content, even more in-depth guides, hands-on product reviews, access to our online classroom, and special alert newsletters.

Some of the guides you'll find linked to from this book might contain a mix of free and member-exclusive content, so do be aware that your purchase of this book does not give you access to everything we offer online.

We strive to draw the line between free and member content so that most casual mobile internet consumers will find everything they need without needing to join.

This book is written to be informative on its own, and is not meant to be a hard sell pushing the membership.

But for those for whom mobile internet is essential, there is a lot to be found by diving in deeper with us. Come join us when you are ready and please accept the discount code we've offered at end of the book in thanks for your purchase.
Introduction to This Book

Your Authors: Chris & Cherie

We're Chris and Cherie, also known as the Technomads of Technomadia.com.

We gave up our fixed based homes and began traveling full time in 2006.

Currently we split our time between RVing the US in our vintage bus conversion, and cruising America's waterways in our boat as we slowly explore America's Great Loop.

We hit the road when we were in our early 30s, too young to be traditionally retired and not fortunate enough to be retired early.

And we have some serious wanderlust.

Thankfully, mobile technology allowed us to take our high-tech careers in software development, strategy advising, and technology consulting on the road, working remotely every step of the way.

We formed our business Two Steps Beyond LLC (www.twostepsbeyond.com) to do all of our work projects under - including now hosting MobileInternetInfo.com.

We consider ourselves to be “technomads” and have been able to create a lifestyle that combines our careers and our desire for mobility.

We know this topic intimately because we absolutely depend on mobile internet to keep connected to our clients, manage our projects, keep in touch with loved ones, and make new friends on the road.

And well, we're just geeks who have been surfing online since the mid-80s. We just can't imagine living life offline for long.

About Chris: Before going nomadic, Chris had a career in Silicon Valley focused on mobile technology.

He started out as the founding Technical Editor of boot Magazine, mastering the art of explaining complex topics to a mainstream audience.
Introduction to This Book

His most recent corporate job before going nomadic was as Director of Competitive Analysis (aka “Chief Spy”) for Palm and PalmSource, the companies behind the pioneering Palm Pilot. His job was to be intimately familiar with every mobile device and technology in existence, and he was tasked with traveling the world to dig up information to chart the future of the mobile industry.

It was not uncommon for him to be carrying dozens of mobile devices with him at a time, always raising eyebrows passing through airport security scans.

Times haven’t changed much actually - we still have dozens of mobile devices on board!

About Cherie: Cherie began running a software development business from home in the mid-1990s, and has a long history of working remotely for her clients, including pursuing personal travel adventures.

Aside from developing custom business software, her career involved technical writing and teaching high-tech topics to non-technical people.

When she met Chris during his first year on the road, she was well accustomed to already carrying smartphones able to tether her laptop to the internet.

Devising a reliable mobile internet solution was essential for her to join him full-time on the road while still running her business.

Together, our first year on the road was spent in a tiny teardrop travel trailer equipped with just the essentials – solar electricity and mobile internet. We've switched it up several times since then in various modes of travel.
Introduction to This Book

Covering mobile internet is a perfect meshing of our passions for technology, mobility and helping people pursue their dreams.

It has now become our professional focus.

It is truly an honor to provide this resource to you.

Follow our personal nomadic adventures:

Blog:
www.technomadia.com

Facebook:
www.facebook.com/technomadia

YouTube:
www.youtube.com/Technomadia

Instagram:
@cherie_technomadia / @chris_technomadia

And, our personal mobile internet setup:
www.technomadia.com/internet
Laying the Groundwork

Let’s get right to the question we know you bought this book to answer:

What’s the best way to get online while traveling?

The answer is...

... whatever works best at your current location.

And that is the challenge of a mobile lifestyle. Your location is always changing, so the best way online may be changing too.

Some days a cellular hotspot with a direct wired antenna might be best.

But at your next stop you might find workable guest Wi-Fi offered, or be able to subscribe to your own cable internet hook-up.

And in some places you might need to switch to a different cellular carrier, or use a booster, or even a directional antenna - all just to get even the slightest hint of signal.

And sometimes, relying on satellite internet may very literally be the only option for miles around.

Or you might have to relent and commute into town to find Wi-Fi at a local library or cafe.

In other words, there is no one single “best way.”
Laying the Groundwork

The key is striking the right balance between your needs, budget and sanity.

To do that, you need to understand the challenges of mobile internet, your specific needs and the trade-offs of the options available.

Basic Differences Between the Common Options

There are multiple ways to access the internet while on the go, and each of them has attributes that might make one more attractive than the others.

Here is a quick grid comparing the primary options:

<table>
<thead>
<tr>
<th></th>
<th>Unlimited or Capped</th>
<th>Mobile Friendly</th>
<th>Cost</th>
<th>Speed</th>
<th>Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable/DSL</td>
<td>(Usually) unlimited</td>
<td>Not mobile - fixed location</td>
<td>Reasonable</td>
<td>Fast</td>
<td>Always on</td>
</tr>
<tr>
<td>Cellular</td>
<td>Often &quot;unlimited&quot;</td>
<td>Fully mobile – wherever there's signal</td>
<td>Reasonable to pricey</td>
<td>Slow to faster than cable</td>
<td>Variable</td>
</tr>
<tr>
<td></td>
<td>with caps &amp; management</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public Wi-Fi</td>
<td>Variable</td>
<td>You hunt signal at each location</td>
<td>Free to cheap</td>
<td>Highly variable</td>
<td>Highly variable</td>
</tr>
<tr>
<td>Satellite</td>
<td>Capped</td>
<td>Mobility can be limited, but if allowed - works in even the most remote places</td>
<td>Pricey to beyond pricey</td>
<td>Varies, with latency issues</td>
<td>Variable</td>
</tr>
</tbody>
</table>

- **Cable/DSL**: This might be what you’re used to at a stationary home, but on the go, this option is only sometimes available in places that cater to longer-term stays.

- **Cellular**: Cellular data is quite prevalent and has gotten amazingly fast. It is now even available in sometimes surprisingly remote locations. While many carriers now offer unlimited data, you’ll quickly find there are lots of limits to “unlimited” to understand. You might also need extra equipment to optimize utilizing cellular in remote locations. You’ll need to select your carrier(s) and equipment wisely to best match your planned travel destinations and routes.

- **Wi-Fi**: Public Wi-Fi hotspots are often free or low cost, but they can vary vastly in quality and are frequently too overloaded to be reliable. Unless you’re willing to take your laptop physically closer to the hotspot, you may need additional gear to get a usable signal from the comfort of your RV or boat.
Assessing Your Needs

There is no one single technology for keeping online that is appropriate for all the different situations mobile users might find themselves in.

Rarely do we see two mobile households select identical setups.

Your ideal arsenal is going to be very personalized to you and dependent upon several factors related to your travel style, internet needs, budget, and technical comfort level.

In creating your arsenal, consider the following questions...

**Personal Considerations**

**How important is internet access to you?**

- Do you NEED to be online during certain hours of the day to work or attend classes? Are you addicted to social media, streaming video, or playing online games?
- Or will your mobile internet access needs be more flexible?

If you won't get the shakes (or lose your job) if you can't get online today - or heck, even this week - then you might not need as many options onboard as someone who absolutely must get online by a certain time every morning.

If your needs are more in the 'absolutely essential' camp, then you'll want to plan your setup to include multiple levels of redundancy and signal enhancing solutions to ensure better odds of getting online.
Going Wireless

As you shift from stationary internet to mobile internet, you’re going to need to come to grips with the realities and unique challenges of wireless signals.

Wired connections like you might be used to with cable or DSL tend to either work well, or not at all.

Wireless signals, on the other hand, can be fickle. To put it mildly.

That solitary bar of signal is a cruel tease, usually not enough to actually reliably use, but it’s there - taunting you.

If you maybe just hit reload one more time... or shift your position a bit...

Right at the moment you are about to give up, it works! For a few minutes at least. Just long enough to keep you on the hook trying.

At least when there is no signal at all, you can concentrate on doing other offline things. But having a hint of signal... that is the path to madness and investing hours accomplishing nothing.

There are, however, things you can do to improve a bad situation - taking a weak signal and making the most with it. With external antennas, cellular boosters, and long range Wi-Fi gear, the results can sometimes be near miraculous.

Other times, no amount of enhancing can help. That cruel solitary bar might remain unusable, taunting you still.

With some basic understanding of how wireless signals work, you can optimize things on your end to ensure you get the best possible performance.
Cellular data is probably the easiest and most accessible option for getting online in most places across the USA.

There have been amazing advancements in speed, coverage, and reliability over recent years and cellular technology continues to advance.

But as simple as it can seem on paper, cellular is also sometimes a confusing subject, primarily because there are just so many options!

When considering cellular, you have to choose which carrier(s), which plan(s), what equipment, and how much speed and data you actually need.

The Four Nationwide Carriers

The first choice to make is which cellular carrier, or carriers, to set up service with to best cover your mobile data needs.

In the US, the four major nationwide carriers are (ranked by size):

- Verizon
- AT&T
- T-Mobile
- Sprint

Quick Glance

Pros
- Widely available
- Easily accessible
- Can be blazingly fast

Cons
- Expensive
- Limitations
- Variable signals
Wi-Fi: Using Hotspots

Often the fastest, cheapest, and easiest way to get online is to use public Wi-Fi networks, and these are often pretty easy to find.

Many libraries, coffee shops, RV parks, marinas, breweries (yay!), motels, municipal parks, and even fast food restaurants now offer free Wi-Fi. There are also plenty of paid Wi-Fi networks to be found.

Though Wi-Fi has the potential to be blazingly fast, some shared Wi-Fi networks can be horribly overloaded. A public Wi-Fi hotspot is highly dependent upon its upstream source of internet (cable, DSL, satellite, etc.) and how many people are sharing that connection.

Clearly, not all Wi-Fi is created equally.

In some cases, the upstream connection may actually be little better than old dial-up modems. In some remote places, the upstream connection may actually BE an old dial-up modem!

Unfortunately, in many situations, even though you may be able to get online via Wi-Fi it may not be worth the effort.

The other major limitation of Wi-Fi is range.

Quick Glance

Pros
- Widely available
- Easily accessible
- Frequently free

Cons
- Variable quality
- Frequently unreliable
- Security concerns
Satellite: Internet Everywhere

There is something magical and futuristic about being connected in the absolute middle of nowhere. Where only a satellite in space can keep you online.

As fun as it is to fantasize about connectivity everywhere, today's satellite options come with many tradeoffs to consider.

Compared to cellular service, satellite internet is often slower, higher latency, and more expensive. The gear to get connected can be bulky and requires setup at each stop.

If you plan to focus your travels on being way out in the boonies, the challenges of satellite internet might be worthwhile.

If you are hoping for a simple go-anywhere solution, satellite will likely frustrate you - at least for now.

Getting Internet from Space

It is important to make sure that you understand the basics of satellite.

Satellite TV vs Satellite Internet

Receiving a signal from space isn't particularly hard.

Sending a signal back to a satellite is where it gets tricky.
Use Cases

What you need or want to do online will have a huge impact on the mobile internet setup that best keeps you connected.

We went over some of the general considerations in the Assessing Your Needs chapter at the beginning of the book, but now that you've had a chance to read about some of the options, we'll go over some specific considerations for some common use cases.

Every one of these topics could be a book of their own, so definitely click through to the linked guides which contain more in-depth details on each.

**Working Remotely**

If you’ll be working remotely online, then mobile internet isn’t just a “nice to have.” It can be absolutely essential. Your livelihood may be dependent upon your ability to get connected to get your work done.

**Assessment**

There is a lot of variability in the requirements for online work.

Do you need to be connected during specific work hours or have frequent scheduled conference calls?

Or do you have a flexible work life where your deliverables matter more than the specific hours you happen to be online?
Congratulations. You've gotten through this book, which is a basic start to understanding the challenges of mobile internet and the options out there.

But don't let your learning stop here!

There is so much more to know about mobile internet to keep successfully connected, and we could easily turn this into a 500+ page book that would completely overwhelm most.

Not to mention, the details change so often we'd have to rewrite it monthly.

Instead, we have comprehensive living guides online that are awaiting you when you're ready to dive in deeper at your own pace. These guides include details on specific current products, plans and options. We're constantly keeping these guides updated as technology shifts.

Here's our bookshelf of popular guides to start with:

Our Featured Guides:

www.MobileInternetInfo.com/featured

We are always expanding our library with new guides, videos and resources as we track the industry, test gear and interact with our fellow nomads on this topic. We try to offer a lot of it for free, but some is exclusive for our members.

Our premium membership also includes an organized classroom to walk you through our guides and video content to continue your education - as well as regularly scheduled interactive webinars.

Get a sneak peak at Mobile Internet University:

www.MobileInternetInfo.com/classroom

It is with huge gratitude to our premium members for funding our resource center, as books sales alone don't cover the efforts to keep these guides constantly updated and expanded.