Upgrading an Aging DAS

Why indoor cellular upgrades are harder than they look - and how to make a confident decision

Executive Summary

For years, your building's cellular coverage simply worked. Then the complaints began. Calls started dropping. Dead zones appeared where none existed before. Employees lost productivity. Patients, tenants, guests, and visitors became frustrated. What had quietly supported your building every day suddenly became impossible to ignore.

The building usually isn't the problem.

The Distributed Antenna System (DAS) has quietly fallen behind the surrounding wireless ecosystem. Equipment reaches end-of-life. Cellular carriers introduce new spectrum. Networks evolve, merge, and change how they deliver service. A DAS designed to perform well a decade ago may no longer meet today's expectations, or tomorrow's requirements.

At first glance, upgrading a DAS seems straightforward. It is one of the more challenging wireless infrastructure projects a building owner can undertake. Unlike a new installation, an upgrade inherits aging equipment, legacy designs, evolving carrier relationships, and the operational constraints of a building that must continue to function throughout the project.

This paper is designed to help you navigate that complexity with confidence.

Inside, you'll learn why DAS upgrades have become more challenging and how to determine whether your existing system should be upgraded, partially modernized, replaced, or complemented with Wi-Fi-based solutions such as Wi-Fi Calling or Passpoint. You'll also discover what a thorough assessment should include, the questions every building owner should ask before selecting a vendor, and practical checklists you can immediately use to evaluate your own facility.

Most importantly, this paper is vendor-neutral in its guidance. Its purpose is not to convince you to buy a DAS. Its purpose is to help you make the right decision for your building, your occupants, and your budget. **Because the most expensive DAS upgrade isn't the one that costs the most, it's the one that solves the wrong problem.**

Worth remembering. *"My phone doesn't work here anymore" is almost never about the phone and rarely about the building. It signals that the system feeding your coverage has quietly fallen out of step with the carriers it depends on.*

1. The Day Cellular Coverage Stops Being Invisible

It usually starts with a few scattered complaints.

For a while, the help desk logs it and moves on. Then the pattern hardens. Tickets climb. The complaints reach someone with a title. And a system nobody had thought about in years becomes a standing agenda item.

What makes this moment sting is that the coverage used to work, and people remember it working. Cellular service is not a convenience to them - it is the line to a customer, a spouse, a child, or an on-call physician. When that line frays, the reaction is personal, and it lands on facilities and IT to fix.

The building has not changed. The walls are where they always were. What changed is everything on the other side of the antenna - the age of the equipment, the carriers' networks, the agreements that put signal into your system in the first place. The visible symptom is a dropped call. The real problem is upstream, and it has been building for years.

2. Why DAS Upgrades Have Become More Complicated

A DAS is not a single box. It is a chain: a signal source from each carrier, a head-end that processes it, and a distribution network of cabling and antennas that carries it through the building. An upgrade can run into trouble at any link - and lately, several links have changed at once.

Equipment reaches the end of its life. DAS hardware has a service life like anything else. Manufacturers discontinue product lines, stop making spare parts, and end software support. A system installed eight or ten years ago may run on electronics you can no longer buy. When one component fails and no replacement exists, a small repair becomes a forced redesign.

Carriers added spectrum that your system never planned for. The carriers have rolled out new frequency bands, and a DAS carries only the bands it was built to support. A system designed before those bands existed can be technically alive and still blind to a meaningful share of today's traffic. An experienced eye can often spot this before any testing - the install date alone narrows which bands were even on the table.

Carriers merged, and the records moved. Industry consolidation reshuffled who owns what. After a merger, the surviving carrier may have no record of your site or records that point to the wrong equipment and the wrong contacts. Re-establishing that a carrier even acknowledges your building can take longer than the physical work.

Signal sources are no longer given. This is the one that surprises people most. A DAS distributes a carrier signal; it does not create it. That signal must be fed in from a source the carrier provides or approves, and carriers have grown far more selective about committing to and maintaining those sources. No signal source, no DAS - however good the hardware. Planning that ignores this can deliver a flawless system with nothing to broadcast.

The original design assumed a different building. Old designs were built around the usage of their day. Floors get repurposed. A quiet recording room becomes a packed call center. User counts and data demand climb. A system sized for the building as it was can be badly undersized for the building as it is.

> ***The heart of it.*** *A new build starts from a blank slate. An upgrade inherits old cabling, old assumptions, expired carrier relationships, and a live system you cannot simply switch off. That inheritance - not the new equipment - is what makes upgrades hard.*

3. Begin With Understanding, Not Equipment

The instinct, once coverage degrades, is to ask, "What do we buy?" That is the wrong first question. The right one is "What do we actually have, and who uses it how?"

Equipment-first upgrades fail in predictable ways. A vendor quotes a platform before anyone has confirmed whether the carriers will feed it, whether the existing cable can be reused, or whether the design still matches how the building is used. The quote looks decisive. It is a guess wearing a number.

Understanding-first means starting with measurement. Benchmark the coverage you have now, so "it's bad" becomes a map of exactly where and how bad. Survey the site. Confirm which frequencies and signal sources are live and the condition of the infrastructure. Then look at people: who uses the building, where they gather, whether they are stationary or moving, whether they are light callers or heavy data users, and which areas simply cannot lose service - an emergency department, a trading floor, a dispatch desk.

Only after that picture is complete does a conversation about equipment make sense. The assessment is what turns an upgrade from a gamble into a plan, and it tends to pay for itself: the costliest mistakes in this field trace back to decisions made before anyone understood the starting conditions.

> ***A simple test.*** *If a vendor names a product before they have measured your coverage, mapped your signal sources, and asked how your building is used, they are guessing. Make them show their work first.*

4. Evaluating Every Available Path

There is rarely one right answer, and "replace everything" is rarely the cheapest or the wisest. A serious evaluation weighs several paths against your building, your budget, and how your people actually use coverage.

Partial upgrade. Replace or extend only what is deficient - add missing bands, swap end-of-life electronics, reuse sound cabling and antennas. Lowest cost and disruption when the existing infrastructure is healthy. The limit: reused components must genuinely meet today's requirements.

Full upgrade. Modernize the active electronics while keeping the passive infrastructure where it applies. A middle path when the system is dated but the bones are good.

Rip and replace. Remove everything and start fresh. The most expensive and disruptive route - and sometimes the honest one, when cabling is degraded, the platform is unsupportable, or the building has outgrown the old design. Paying once to do it right beats paying repeatedly to patch.

Wi-Fi calling & Passpoint (Hotspot 2.0). Route calls over the building's Wi-Fi instead of the cellular network. Inexpensive where strong Wi-Fi already exists, but it leans on a network built for data, not voice, and the handoff to the outdoor cellular network as someone walks out the door can be rough. Passpoint, or Hotspot 2.0, is a standard that automatically connects cell phones to Wi-Fi without sign-in screens. Promising in some environments, with real variation in device behavior and in how carriers treat it. Carrier acceptability matters here, and it is not uniform.

Hybrid. DAS, where coverage and capacity are non-negotiable; Wi-Fi-based approaches, where they are sufficient and cheaper. Often the most pragmatic answer for a large, mixed-use site.

> ***A word of caution on Wi-Fi-only proposals.*** *Some venues are being approached by Wi-Fi vendors with a simple pitch: strong Wi-Fi coverage is enough, and a DAS upgrade is unnecessary. In some limited scenarios, Wi-Fi calling can carry a portion of the load. In most cases, it cannot - and the gap between what a Wi-Fi vendor promises and what a building's occupants experience can be significant. Wi-Fi networks are designed for data, not voice; handoff behavior as users move through a building is inconsistent; and carrier acceptability for Wi-Fi-based approaches varies. Before accepting a Wi-Fi-only recommendation, ask for a professional wireless assessment from a carrier-grade DAS provider. The assessment costs far less than a deployment decision made on incomplete information.*

Cutting across all of these is a cost most quotes underweight: what the system costs to run. A DAS bought now should serve for years, and its operating costs compound over those years. Power is the clearest example. Electricity rates are under sustained upward pressure - a trend that shows no sign of reversing. For a system expected to run for a decade or more, the difference between a power-efficient platform and a legacy analog system is not a rounding error. Older high- and medium-power analog DAS draw hard on both power and cooling, and in many installations require additional physical hardware to support upgrades - adding cost and complexity each time the carriers or the building's needs change.

Newer digital platforms built on software-defined radios - SOLiD and JMA among them - change that math. Vendors in this class cite power savings of over 40 percent compared with legacy analog systems, with upgrades increasingly delivered via software rather than by bolting on new hardware. The benefits extend further: with the same battery sizing, you can nearly double backup runtime or maintain the same runtime with roughly half the battery footprint.

These are vendor-class figures, not a guarantee for any one site; the point is to include operating costs and sustainability in the comparison, not to take any number on faith. The space and cooling story follow the same logic: smaller remotes and compact head-end hardware may reduce HVAC load and physical footprint, freeing rack space and lowering the building's overall energy draw. For organizations with sustainability commitments, these operational gains are quantifiable and reportable - a lower carbon footprint and a smaller power that compound favorably over a system's full service life.

Worth remembering.
Compare paths on total cost of ownership, not sticker price. A platform that costs more to install and far less to power and cool can be the cheaper decision across its life - and the easier one to defend in a budget review.

5. What a Thorough Assessment Should Include

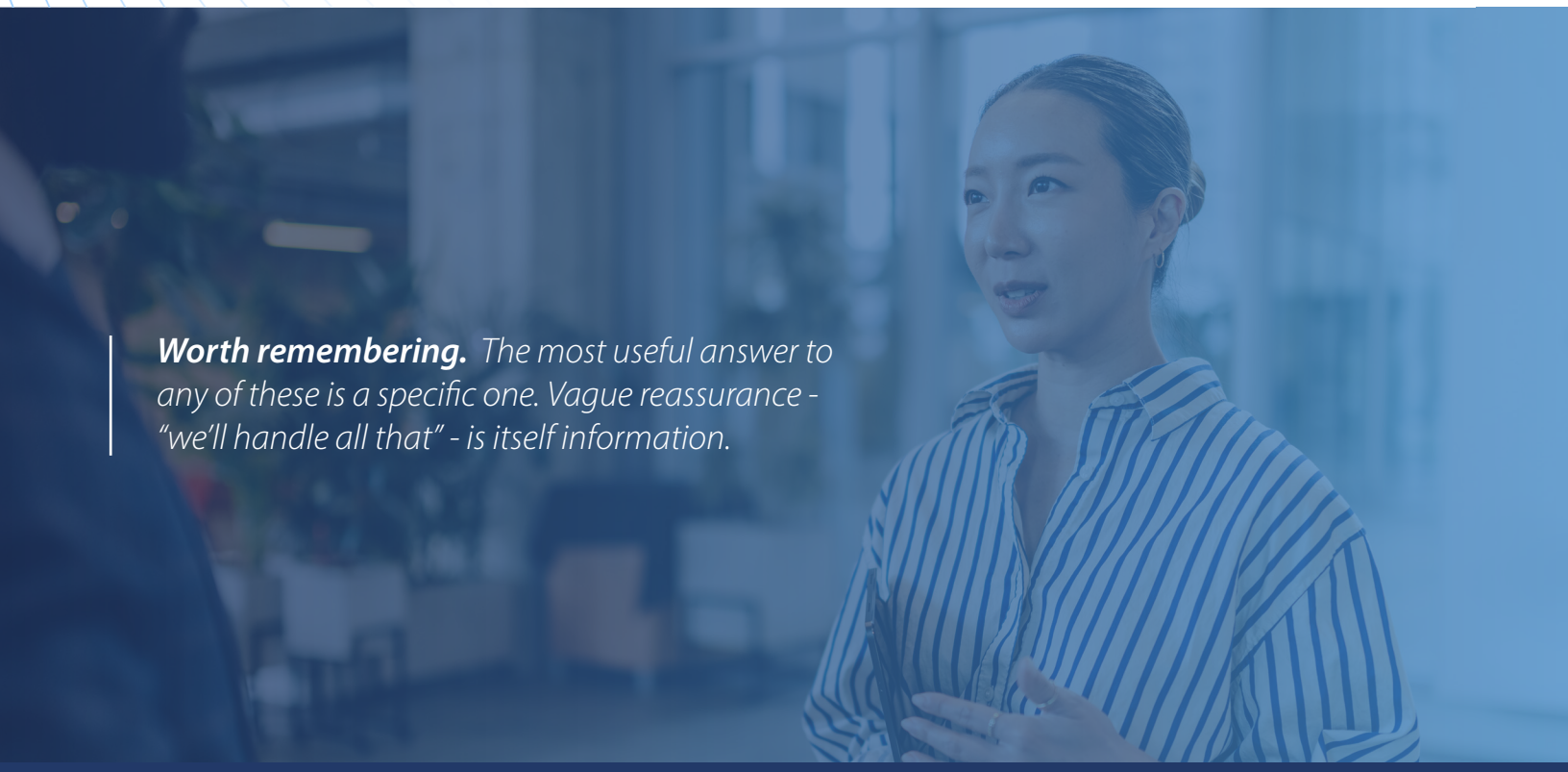
Use this checklist when scoping an assessment. If a vendor's proposed work skips several of these, ask why.

Assessment area	What it covers, and why it matters
Coverage benchmark	Measure the current signal across the building so "poor coverage" becomes specific, mapped data - the baseline against which every later decision is judged.
Site survey	Physically walk and document the building, infrastructure, and equipment as they exist today - not as the drawings claim.
Frequencies & bands	Confirm which carrier bands the system supports and which it misses - often the single biggest gap in an aged DAS.
Platform condition	Inspect the active electronics and confirm whether they are supportable or end-of-life. This decides reuse versus replace.
Infrastructure reuse	Test whether existing fiber, coax, antennas, and couplers meet today's frequency and performance needs. Reuse saves money only if it qualifies.
Signal source status	Verify each carrier's signal source is live, committed, and adequate. Without it, the rest is moot.
User & usage profile	Identify who uses the building, where, and how - stationary vs. mobile, light vs. heavy data. Designs follow people.
High-priority areas	Identify areas where service gaps would have the greatest operational impact and flag them for priority treatment and redundancy.
Future & technology path	Account for upcoming needs and bands so the system is not obsolete on arrival.
Wi-Fi / Passpoint option	Assess whether Wi-Fi calling or Passpoint can carry part of the load, including carrier acceptability and a current Wi-Fi heat map from you (i.e., the customer).
Operational impact	Estimate power, cooling, physical space, interference, and sustainability over the system's life - not just install cost.
Buildable output	Require the assessment to end in documented findings and a construction-ready design package, not a verbal recommendation.

6. Questions to Ask Your Vendor

For each question, why it matters - and what a strong answer sounds like.

Ask your vendor	Why it matters	What a strong answer sounds like
"Do you design, install, and turn up carrier-grade DAS?"	Carrier-grade means the carriers approve the system and inject their own signal. A consumer booster will not. It is the line between a real system and a stopgap.	They distinguish carrier-grade equipment from boosters, specify the carrier design and test requirements, and have previously turned up a live carrier signal.
"Have you negotiated terms with the carriers?"	Signal source is the make-or-break item, and it runs through carrier relationships, not hardware.	They have dealt directly with carrier signal-source teams and can describe how they secure and keep a source live.
"Walk me through your upgrade process at a high level."	Their sequence reveals whether they assess first or sell first.	Assessment and benchmarking come before any product. Compare what they describe against the Chapter 5 checklist.
"Can you run a DAS impact analysis on our facility?"	A structured study of how an upgrade affects coverage, infrastructure, power, cooling, and space prevents expensive surprises.	They offer a defined analysis covering both signal and operational impact, ending in documented output.
"Can you compare a DAS upgrade against a Wi-Fi approach for us?"	A vendor who only sells DAS will only ever recommend DAS.	They evaluate both honestly - pros, cons, carrier acceptability - even when it points away from their bigger sale.
"How do you manage the project and give us visibility?"	Upgrades affect live systems, multiple carriers, and construction simultaneously. Weak coordination is when schedules and budgets break down.	They describe concrete tracking, regular reporting, and risk planning - not just a promise to "stay in touch."



Worth remembering. *The most useful answer to any of these is a specific one. Vague reassurance - "we'll handle all that" - is itself information.*

Conclusion

A DAS upgrade is an ecosystem problem: aging hardware, shifting carrier spectrum, renegotiated signal sources, and buildings used differently than the original system was designed for. The organizations that handle upgrades well are simply the ones that understand the ecosystem before they spend.

The fix follows from the diagnosis. Start with measurement and understanding. Weigh every path honestly. Insist on the operating cost alongside the installation cost. Ask questions specific enough to expose guesswork. Do that, and the decision stops feeling like a gamble.

None of this requires you to become a DAS expert. It requires you to expect that your vendor already is - and to recognize a thorough answer when you hear one. Coverage became visible because something upstream fell out of step. Understanding what to fix and in what order is what quietly makes it invisible again.

Mobile Communications America (MCA) builds and upgrades carrier-grade DAS - the systems carriers approve and feed their own signal into - for healthcare systems, airports, universities, manufacturers, and commercial real estate. The work spans roughly 110 locations nationwide, with DAS engineers, project managers, and field technicians on staff, and includes some of the largest indoor deployments in the country.

A few specifics relevant to the decisions above:

- **Vendor-neutral comparison.** We are genuinely platform- and path-agnostic, including comparing a DAS upgrade against Wi-Fi-based options.
- **Ongoing signal & support.** Our SecurePlan® + Signal Source as a Service program combines monitoring, operational support, and new signal sources to maintain reliable coverage after turn-up - addressing the signal-source risk this paper flags.
- **Budget flexibility.** Projects can be structured as OPEX or CAPEX to fit your budget.
- **Assessment.** Our DASFIT program is a structured DAS impact analysis that evaluates not just coverage but a system's operational footprint - power, cooling, space, interference, and carbon - so the operating-cost picture is on the table before you commit.
- **Execution.** Large upgrades touch live systems and multiple carriers at once. Our PQX installation framework, PXPI project-management framework, and Device Level Tracker (DLT) provide field-level visibility and 360° project status, enabling complex deployments to stay on schedule.

Learn more at callmc.com.