

Student Housing Technology Best Practice: Avoiding the wiring trap

The wiring at your student housing property is essential for delivering the stable Internet access that all residents demand. A very high number of Student Housing properties have significant latent problems in this wiring, and asset managers, operators and developers can avoid the worst pitfalls with a few straightforward strategies and some planning. In this paper we examine the problem, its causes, and what can be done.

By Andrew Marshall, Campus Technologies Inc, November 2017

You probably don't think too much about the low-voltage wiring in your properties once they've been built and the residents have moved in. It just works, and it's invisible, so why should you?

If your properties were all built in the last few years and were built to the correct specifications you could be right, you don't need to worry about it much - but many property owners and managers have older properties in their portfolios, or newer properties that have been built to an unknown and possibly sub-par specification and standards.

If you got this far and were considering stopping reading because this is a boring subject, don't. Let me try and regain your attention: you could be sitting on a ticking time-bomb – a six figure problem *per property*.

Here's why: even in today's wireless centric student living communities, the wired network is an essential component. It's the workhorse that delivers data to connected gaming consoles, TV's and streaming devices in the unit, to the Wireless access points that deliver wireless signal, and increasingly CCTV and access control as well.

The wiring I'm talking about here is UTP wiring, sometimes referred to as Category or Cat6 (or Cat5, or Cat5E as its predecessors).

So how can that be a big problem? Well, when properties are built, the UTP wiring is an easy and common target for Value Engineering, aka saving money. Using a lower grade or no-brand components, using unqualified installers, not following an appropriate specification – all these things can and will cause issues. Even if you didn't value engineer your new construction low voltage wiring, it's probable that it wasn't built to an adequate standard.

Chances are that you don't have much of an idea of the state of the wiring infrastructure in your properties.

In some cases, it can just be too old – some properties were wired 15-20 years ago, and the wiring just isn't up to the job. In others, the wiring can be fit for purpose, but the jacks on the wall are worn out, broken or filled with paint from countless turns, or unreliable from many previous repairs.



Figure 1: a student apartment wall jack after several years of painting and repairs

The demands and expectations of the wiring are increasing with time, and older wiring may not be able to support the bandwidth that you may need to deliver to be competitive in a market. With many properties delivering well over 100 megabits a second per bed, and current Wireless Access Points needing 1,000 megabits and

beyond, an older infrastructure may not be able to cope.

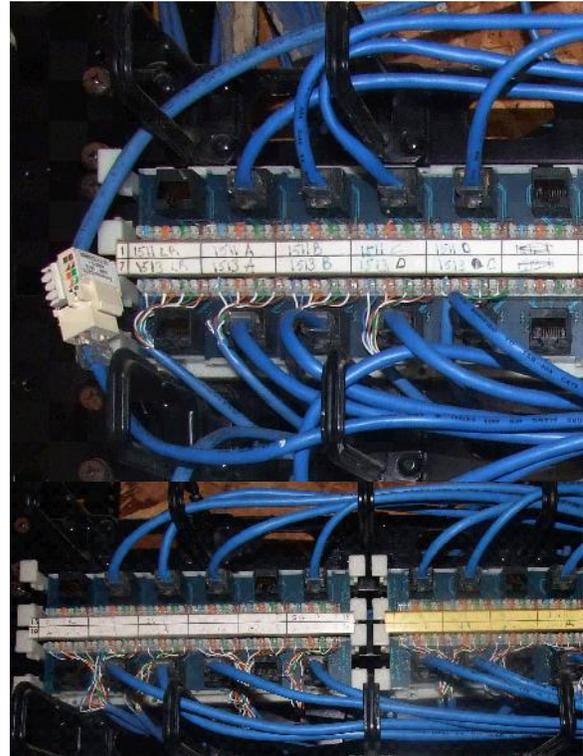


Figure 2: Outdated wiring from 1999 still in use today

The main point to make here is that the cost of having to remediate wiring problems can be jaw-dropping, and you absolutely have to remediate them – student residents will not tolerate poor internet service under any circumstances. Poor service will directly affect your occupancy and your NOI.

All is not lost. There are several strategies that you can adopt to understand and avoid these risks:

Look before you leap: the wiring survey

During due diligence when acquiring a property, make sure that the wiring infrastructure is part of the technology survey and that the state of the wiring and the cost of any remediation is taken into

account. This survey should include physical inspection of the wiring in random units, and sample testing using a tool called a Certifier. This survey should, as a minimum, tell you what quality and grade of wire is in place, the state of the jacks and patch panels and whether there is adequate slack to allow re-termination of jacks when they wear out. This survey will arm you with information on if, when and how much you will need to spend.

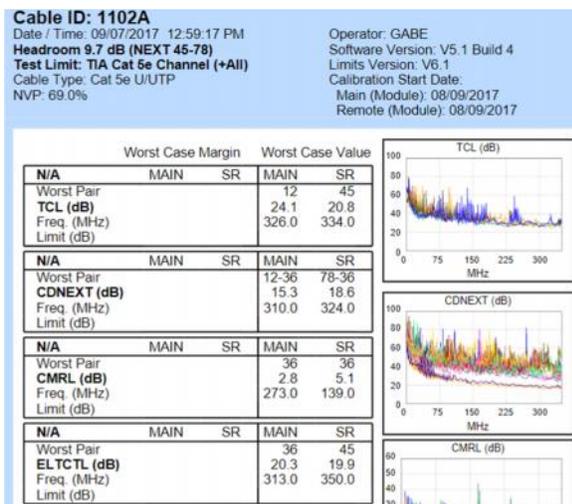


Figure 3: Cable certifier output. You should have this on file for every wire on your property.



Test Summary: PASS

Build it the right way

If you're building new construction, make sure you have an adequate specification and that the contractor and sub-contractor installing the wiring follows those standards. Best practice would be to conduct inspections during construction, and have the end result audited by your technology

operator before move-in. Make sure your contracts enforce certification (not just testing) of all UTP drops. A well installed good quality wiring system should have a lifespan of twenty years and beyond.

The ten year maintenance interval

Plan that you'll need to replace all the jacks and re-terminate and re-certify all your UTP wiring every ten years or thereabouts. The reason is that jacks wear out after repeated insertions and removals, and student apartments get painted frequently, with contractors continually getting paint in the jacks.

Turn tip: Buy a big bag of modular jacks – they're inexpensive - and make sure your painters insert them in the jacks before painting, and remove them when painting is complete. (Before using them they must be crimped to avoid damaging the jacks)



Figure 4: Ten years of turn painting takes its toll. This jack is not functional.

Worst case scenario: replace all the wiring
When all else fails, you're left with limited options, and you may end up having to replace all the UTP wire at a property. This is both expensive and disruptive. I

Common misunderstandings and problems

I don't need wiring because everything is going wireless ...

Those Wireless Access Points need to be connected to a wired network, without it they don't work. In addition, to provide the best UX or User Experience to users, it's always recommended that game consoles, media streamers and TV's are connected by wire to a wired network – because it's faster.

I installed Cat6 throughout my new property, so I don't need to be concerned ...

The physical wire is only one part of a Cat6 system; unless all the other parts – patch panels, patch cables, jacks – are also Cat6 components, and they've been installed to Cat6 standards (and Certified) you don't have a Cat6 system. In addition, sufficient slack or 'service loop' needs to be left to allow several re-terminations.

It's common to see situations where developers have paid for what they think is a Cat6 system, only to find it will only certify at a lower standard. This is where good specifications come in.

My Internet supplier or management company is on the hook to take care of this

Most, if not all, Internet service contracts make the inside wiring the responsibility of the owner.

Finally

If you don't know what potential problems you may have in your portfolio, now is the time to find out. Have your properties surveyed and make sure your capex plan takes into account the results. If you're building new construction or major rehabs, make sure you build to the right quality standard.

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Campus Technologies is a national vertically integrated managed network service provider designing, building and operating highly effective wired and wireless networks exclusively in student housing. See more at www.campustechnologies.com

Standards reference:

ANSI/TIA-568.0-D, Generic Telecommunications Cabling for Customer Premises, Ed. D, 09-2015

ANSI/TIA-568.1-D, Commercial Building Telecommunications Cabling Standard, Ed. D, 09-2015

ANSI/TIA-568-C.2, Balanced Twisted-Pair Telecommunication Cabling and Components Standard, Ed. C, Err. 04-2014