The Promise of Wi-Fi on the Casino Floor
from TribalHub's Executive Officer, Mike Day

Casinos across the world have long hidden a spider web of physical low voltage cabling within their floors, walls, ceilings and back offices. For any casino built in the last 30 years, the entire gaming floor was traditionally designed as a raised floor or with a walkerduct system to manage the miles of physical low voltage cabling connecting the dozens of gaming tables and various gaming kiosks, hundreds of surveillance cameras, dozens of slot machine banks and thousands of individual gaming devices - connecting them each back to the server room(s) and appropriate management systems. Moving anything on the gaming floor has always been a production requiring quite a coordinated effort from multiple staff.

The connectivity and low voltage cabling needs for gaming and hospitality properties have changed over the past 20 years, but complexity and amount of cabling has only increased. The casino slot machine floor transitioned from serial cabling to a more standard ethernet based cable. Fiber has become a standard for long haul cable runs and any "backbone" network connections. The introduction of hundreds (if not thousands) of video displays in slot machines, on slot banks, in signage, kiosks and menu boards across every property has added to the low voltage cable chaos.

Most casino resorts already have some form of Wi-Fi network in place on top of their existing complex infrastructure of low voltage cabling. For the most part, that Wi-Fi network is being used primarily for connecting either a few employee mobile devices to the network and casino patrons to the internet. Wi-Fi has much broader potential connectivity benefits to every casino. It can eliminate the need to invest in and manage all of the low voltage cabling and connections throughout the property. Wi-Fi allows the movement of any device anywhere within the Wi-Fi coverage area with relative ease and speed. Adding and removing Wi-Fi connected devices is greatly simplified over physically connected devices.

So, this begs the question: Why has Wi-Fi not already been adopted by more casinos and resorts as the de facto infrastructure connectivity standard? There are a number of reasons that Wi-Fi has not yet become the infrastructure standard, including concerns regarding speed/latency, security, dependability and existing staff expertise. Most casino properties are not yet comfortable with a Wi-Fi solution to their "mission critical" business systems, and they continue to take a "wait and see" approach to this transition.

Early adopters of Wi-Fi replacing traditional low voltage cabling infrastructure are already reporting some success stories. As Wi-Fi capabilities continue to increase, we should all expect to see this transition away from physical cabling continue. For most properties, now is probably a good time to begin to test Wi-Fi connectivity using a hybrid approach by moving small parts of some physically connected systems onto Wi-Fi connectivity.

In this month's Insights we hear from some tribes that are contemplating this move to Wi-Fi as well as a service provider and integrator with Wi-Fi expertise. If your tribe or tribal enterprise has ventured down the Wi-Fi connectivity road and have a story to share, please be sure to share that with me (mday@tribalhub.com) or the TribalHub team and we will plan to share that with the entire member community.
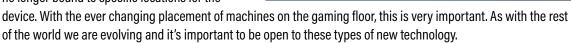
Hear From Your Peers

This month, we asked several TribalHub Members supporting tribal casinos their thoughts on this topic. Is Wi-Fi ready to replace low voltage copper cable and fiber solutions and if so what are the pros and cons?

Joel Libby
Systems Administrator
Gun Lake Casino

Joel Libby, Systems Administrator at Gun Lake Casino: Wi-Fi is becoming more and more important to casinos. It has a lower cost to implement as you do not need to run cables to some of those hard to reach places and it allows for flexibility in placement of devices so you are no longer bound to specific locations for the device. With the ever changing placement of machines on the gaming floor, this is very important. As with the rest of the world we are evolving and it's important to be open to these types of new technology.

I see four challenges at the moment. **1. Reliability.** At this time, wired connections are still well above wireless in terms of staying up and consistent. **2. Cost on this is a double edge.** Casino networks are incredibly complex, with most casinos having to support gaming, retail, public access, and internal information all on separated networks. With most current WI-FI solutions available the speed decreases exponentially with the number of networks supported. Some instances you may need separate WI-FI access points. **3. Security.** Wireless security is still a concern, especially if you use the same WI-FI access points for slots and public access. **4. Staffing and expertise.** Most casinos already have overwhelmed IT staff that are asked to be experts in low voltage cabling. Wireless communication could be its own specialty especially if it is used for critical infrastructure.

Travis Williams
Director of IT Engineering
Pearl River Resort

Travis Williams, Director of IT Engineering at Pearl River Resort: Wi-Fi is extremely flexible and significantly less impactful to gaming floors. Reducing construction costs and interruptions to the gaming floor is very appealing. However, issues you can get with wireless such as channel overlap or reduced bandwidth can cause impactful issues. The gaming floor environment, regulatory standards and a lack of vendors that can support it would be big cons. As for tribal readiness, it would be on a case by case basis. Do they have the in-house expertise to properly manage this? Do they have the partners to assist? Also, tribal organizations would likely approach the gaming regulations surrounding wireless slots with caution since the technology is not so prevalent.

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Adam Morrison
CIO
Mississippi Band of Choctaw Indians

Adam Morrison, CIO at Mississippi Band of Choctaw Indians: The most obvious pro of using wireless in a casino would be for the slot floor. Casino slot floors are a sea of change. New games coming on, lower performers going out, and the rock star machines moving around to move customers. A wireless slot floor gives more flexibility on the arrangement of machines and removes the time and pains of moving or re-cabling the underlying networking. Cashless solutions, guest service solutions, and digital displays can all benefit from the use of Wi-Fi. Add in mobile gaming and sports betting applications on top of those use cases and wireless has just become a great, flexible, and critical piece of business infrastructure. The cons of Wi-Fi are that now you have all these wonderful use cases built on a best effort and shared medium technology. Finding skilled networking technicians can be a challenge for small or rural tribal casinos. Finding skilled wireless technicians can be even harder. Additionally, most of the slot machines have not been designed with Wi-Fi in mind. The construction materials, lights, and displays all can create attenuation of wireless signals. To be successful on the technical side, there would need to almost be a collaboration between networking vendors and slot machine vendors. I am confident there are tribal casinos that would test this type of collaboration for a partner. I also feel that LTE is a solution overlooked by slot machine vendors today.

However, none of those technical issues are the force stopping the rollout of floor wide Wi-Fi for gaming. The real fear stopping WI-FI adoption is trust. A cabled floor is easy to understand. It is reliable, proven, and you can lay our eyes on the physical medium and feel that it is secure. Wireless is thought to be unreliable. We have all experienced dead spots for wireless. The thought of a dead spot on the slot floor is scary. Most slot floors are very resilient, but the "feeling" in the industry is "unreliable". The second fear is planted wholly in security. If the slot floor data can travel through the air, then we assume someone could just steal it. Again, cables you can see, touch, and check. Wireless is simply invisible.

The wireless slot floor will not be won on technical merit. It will be won on marketing dollars and getting two or three respected casinos in Indian country to try it, succeed, and share with others.

Are most tribal casinos ready to replace low voltage copper cable and fiber solutions? Having been directly involved with the planning and design of this type of floor, I can say that the idea is out there. I do not think a "rip and replace" option will become the norm, but for new construction it could be a possibility. Adeeper dive into the network bandwidth needs of our gaming system at Pearl River Resort gave me a much better understanding of the actual requirements of a slot floor. The transactional requirements to run a floor are very low compared to modern networking speeds. If you remove streaming marketing traffic from the equation, it is hard to tell there is any network traffic at all on a slot machine. So, that puts me in mind that some other need will have to drive fiber to the slot (FTTS). That would be some interactive game, or immersive experience that would require an incredibly low latency and high bandwidth network. The driving force behind why we examined a FTTS design was for future proofing. We did not know what would be needed from our slot floor in the next five or ten years. But we did know that if some new fantastic "must have " machine came out our floor would be ready. I can say that in the years since our review, I have not seen anything come to market that would warrant a FTTS fiber floor.

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TribalHub Community - Join in the Conversation!

For a great discussion - visit the TribalHub community (https://community.tribalhub.com/) and search "casino Wi-Fi". The TribalHub community was created specifically for anyone working for a tribe or tribal enterprises. Our goal is to create a community platform for individuals within tribal organizations to support, network, and inspire each other. **Join today!**

In the meantime, here's a sneak peak of a recent community discussion thread regarding casino Wi-Fi!

......"confident" is a STRONG word. Here are my thoughts on your question. Historically, our IT team at our resorts have struggled with Wi-Fi in our properties. But, I would also say that was mainly in either larger venues such as concert areas, or with our back of house (BoH) areas. I'm pretty sure the BoH was either due to construction materials ... or ghosts in the network. We spent a lot of frustrating time trying to play "ghostbusters" on our Wi-Fi. All that said, at our last TribalNet I was approached by a company that was attempting to partner with Cisco to do a wireless gaming floor. My first response was to tell them "that is going to be a hard sell for casinos" from the reliability and security side of things. But, the more I thought about it, you have a fixed device for the most part. Slot machines move some. But not like a user on an iPhone. Slot moves are planned. I think the concept can be done. You would need a dedicated band just for your slot floor. You would also need an easy way for IT operations and slot operations to see interference in some kind of visual display for troubleshooting and confidence. On the gaming vendor side, all boxes have the ability to queue to some degree so we are not losing transactions. However, Wi-Fi is a shared medium unlike Ethernet. So the transactions would need to leave heavily on TCP transactions to make sure any failed transactions were retried.

"Great insight, I imagine our slot manager would love the concept, and now that I think about you are correct most issues seem to be BOH and at the concert halls. On paper it sounds like a great idea. It also might mitigate some of the Security concerns, can't tell you how many times I have seen slots leave a floor bank switch unattended."

"...if I remember correctly, the few players in this field are limited to only a small number of manufacturers using an even smaller number of models to do this. To me, this means that the solution is coming in at a premium cost. Cisco was the only actual manufacturer that I am aware of that is certified to do this up to last November. I am interested to see if anyone else here has gone down the rabbit hole because having the ability to adjust your floor without pulling up carpet and finding ducts/channels would be amazing. I'll definitely follow this discussion. Great topic."

".....Wi-Fi to a casino floor is viable (I know because I have a wireless floor) but it comes with a couple of gotcha's. First one is you are subject to the same wireless outages that are not common with wired connections. Like when we made the leap from PBX to VOIP with phones, you increase points of failure by going wireless. The other issue that wireless is supposed to resolve is the walker duct situation. Except you still need to get power to the machine, so you still need walker duct. So, moving machines isn't any less restrictive with wireless. You do solve the amount of cable in the tray issue, which is helpful...."

Solution Provider Message - MS Benbow & Associates

We asked TribalHub Associate Member MS Benbow & Associates about Wi-Fi being used as a solution on tribal casino floors and additionally what sets them apart from others who offer similar services within the tribal space. Here is their answer.

TribalHub - Wi-Fi is becoming more widely used at casino properties. What are your thoughts on this topic - are you seeing Wi-Fi as a solution to replace low voltage copper cable and fiber solutions, and if so what are the pros and cons? Have you seen this done successfully within a tribal casino?

Kit Keen, Sr. Technology Consultant with MS Benbow & Associates: We are certainly witnessing the maturation of Wi-Fi as a relied-upon network connectivity solution. It's fun to remember that Wi-Fi started out 25 years ago with the primary goal of solving a connectivity problem. The primary goal has since evolved to that of greater and greater capacity, with speeds approaching near gigabit levels, and use cases for both consumer and enterprise ballooning to levels not imagined at the start. Today we're being asked to design and build Wi-Fi networks in tribal casino and resorts using the latest Wi-Fi 6 protocol that leverages technologically advanced feature-sets that enable optimal Guest Experiences, Location-Based Services, Wayfinding, In-Seat ordering, On-Line Betting, Asset Tracking, Analytics driven Insights, and even Virtual and Blended Reality experiences, but it wasn't long ago that conversations about Wi-Fi were quite different.

For years Wi-Fi received a bad rap for poor performance, terrible security, and spotty coverage. A lot of that criticism was deserved. We've all experienced "bad" Wi-Fi and there's no shortage of reports about hacks and identity thefts. However, the Wi-Fi industry has taken some recent significant strides and there's no arguing that as a culture we've made the shift to utilizing mobile devices as the primary tool to access applications for both work and play. Your guests and employees expect their devices will work while they're on your property and when they don't it's immensely disruptive!

The most significant advance in Wi-Fi within the last 2 years was the release of Wi-Fi protocol 802.11ax (Wi-Fi 6) and the subsequent WiFi 6e update. In a nutshell, 6Ghz was added to the 2.4Ghz and 5GHz frequency bands that were already in use. This addition was the equivalent of widening the Wi-Fi highway from 4 lanes to an 8-lane high-speed interstate. That along with a slew of enhancements have really helped solidify Wi-Fi as a reliable, high-performance network connectivity solution with greater security that satisfies most requirements from an IT and Business unit perspective.

For all the advancements in performance and reliability, poor network design and configuration is extremely difficult to overcome. When assets such as Point-of-Sale devices and gaming machines are involved there is no room for error. A good wireless consultant with experience designing, configuring, and optimizing these networks can be worth their weight in gold.

Is Wi-Fi successfully replacing copper and fiber solutions? It certainly is in one specific area, and that's where the network "Edge" meets the user device. Wi-Fi continues to supplant the ethernet "corded" connection. How many desktop PCs has your org unit bought this year? Odds are hardly any. How many guests have asked you for help with connecting their personal device to an ethernet port lately? Likely none. Wireless is the #1 preferred way for users to make connections simply due to the higher data rates that Wi-fi now provides and for the convenience that comes with mobility. Your network edge, where your guests and employees connect, now must be wireless and the coverage must be pervasive across your property.

TribalHub - What sets your team apart from others who offer similar services within the tribal space?

MSB - Poor Wi-Fi is a typical complaint an IT department receives. The good news is that the solution isn't as complex or daunting as many assume. MSB highly recommends to our clients that they develop a Wireless Technology Master Plan for all of their operations. The purpose of the Master Plan is to evaluate both existing and new technologies and develop a roadmap that addresses stakeholder use cases and requirements, evaluates technological options, and provides recommendations for infrastructure consolidation and operational efficiencies

For over 40 years, our Engineering team has taken a consultative approach to solving our clients' technical challenges. During that time we've been fortunate to work on some incredible projects, and have established deep relationships within industry leaders and influencers. This is what sets us apart at designing, building, configuring, and optimizing wireless networks of every variety (Wi-Fi, Private Cellular, BLE, Public Safety DAS, Cellular DAS, WISP, and more).

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TribalValue Partner Spotlight: NexGen

NEXGEN
TECHNOLOGY
FAST CASH

Our TribalValue partner, NexGen Technology, offers a Cage Cash Wireless Unit that conducts Credit Card Cash Advance, POS Debit, and Check Cashing transactions without connectivity to a server, monitor, PC, Printer, Check-Scanner, Pin Pad, or gaming system. NexGen can also reduce your cost of cash, cash liability and labor as well as eliminate your cost of equipment with their payments and processing technology. NOW AVAILABLE – Special Agreements for Tribal Casinos with NexGen's Fast Cash Mobile Unit for Table Games. For more information, visit tribalvalue.com or reach out to Michelle.