

## Buccament Bay Resort Optical LAN's 4-years of Excellence

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### Introduction

Building a new enterprise Information Communication Technology (ICT) network for hospitality comes with unique challenges for both metropolitan high rise hotels and luxury resorts in the most exotic locations. When Harlequin Hotels & Resorts built Buccament Bay Resort in St Vincent in 4-years ago, it chose passive Optical LAN (OLAN) and single mode fiber (SMF) for its' ICT infrastructure needs. The choice of OLAN to deliver guest room voice, video and internet/data services at Buccament Bay Resort was made because OLAN offered:

- Services and Network Convergence
- Benefits of Fiber Optic Cabling
- Tangible Contributions to Sustainability

The purpose of the paper is to provide additional details supporting services and network convergence, benefits of fiber optic cabling and tangible contributions to sustainability. This will be accomplished by providing examples relative to the Tellabs® Optical LAN deployment at Buccament Bay Resort.



*Figure 1: Buccament Bay Resort in St Vincent*

Buccament Bay Resort is an all-inclusive 5 star resort. It is located in St Vincent and The Grenadines which enjoys an already excellent but still growing reputation in the media, including being the only Caribbean destination to make the CNN “World’s Top Destinations for 2012” list, where it is ranked fifth. Buccament Bay Resort offers 368-rooms including 95 villas with one, two and four-bedrooms floor plans. The ICT guest room services include 60 digital TV channels and 12 music channels, high speed wireless internet and direct dial telephone with voicemail. The resort holds USGBC LEED Certification and Green Globe Certification.

In the past, legacy ICT infrastructure for guest room voice, video and internet/data services at hotels and resorts consisted of racks of by their fixed point-to-point connectivity, a hierarchy of racked and stacked Ethernet switches in the main data center and telecommunications closets, which created tangles of meshed copper cabling in order to support some degree of reliability. Service delivery reach is limited by 100m for copper and 550m for multimode fiber (MMF) cabling. This created the need for additional aggregation, distribution, and telecom closets to rack and stack additional Ethernet switches for the regeneration of the signal to travel longer distances. The end result was that these traditional copper based LAN systems consumed greater amounts of power, occupied more space and costs more money to purchase and operate.

In 2010, a Tellabs Optical LAN was installed at Buccament Bay Resort. An Optical LANs is characterized by shared point-to-multipoint architecture, a passive optical distribution infrastructure and near future proof single mode fiber (SMF) connectivity. The architecture of a passive optical LAN has the centrally located Optical Line Terminal (OLT) in Buccament Bay's main data center. This OLT can serve up to 8,000 gigabit Ethernet end-points over SMF cabling reaching across a passive optical distribution network (ODN) of 30km/18mi. The OLT has the ability to converge networks services: voice (analog POTS & VoIP w/PoE), video (IP & RF video), video conferencing services, wireless and monitoring services (such as building automation system security cameras & building sensors) that are all supported across the Optical LAN.

Buccament Bay's OLT can support multiple both 1 Gbps and/or 10 Gbps connectivity to the WAN and to the internet, and to other corporate resources in the main data center. Across the passive ODN there are unpowered, unmanaged, highly reliable optical distribution splitters that handle the aggregation and distribution functions of the guest room ICT services. There is flexibility for where these ODN splitters are positioned with little restrictions (e.g. data center, telecom closet, inside enclosure, outside enclosure). The Optical Network Terminals (ONT) are where the fiber based network are transitioned back to electrical. These ONTs can be positioned in a multitude of locations and ultimately provide the gigabit speed connectivity for guest room ICT services. Buccament Bay IT staff appreciated how the simple architecture of the Tellabs optical network helps reduce our IT workload and eased the overall end-to-end network support."

## Services and Network Convergence

**Voice** - Optical LAN can accommodate analog (POTS) voice, VoIP and unified communications simultaneously. This allows hotels and resort properties to use low cost and high cost telephone receivers more cost effectively. It also provides a graceful migration from legacy POTS voice analog PBXs to VoIP/unified communications IP PBXs in an efficient and cost effective manner.

**Video** - Optical LAN can deliver CATV, satellite video, IPTV, video surveillance and video conferencing content across the same all-fiber infrastructure. The video content can be in RF format or IP format. This allows hotels and resort properties to cost effectively deliver ALL video requirements. Where Power over Ethernet (PoE) is needed to deliver electricity to IP video surveillance cameras, passive Optical LAN ONT support both low power PoE and high power PoE+. Just like with voice, these video options allow for a graceful migration from legacy RF to future IP in an efficient and cost effective manner. Optical LAN also has the ability to apply strict quality of service that allows IP video applications to co-exist with data and voice services.

## Benefits of Fiber Optic Cabling

Fiber optical cabling such as Single Mode Fiber (SMF) has no theoretical bandwidth limit. This cannot be said for copper cabling. Today SMF has proven to support 101Tbps, but that ceiling is only an artificial limit based on today's electronic transmission technology available. Passive Optical LAN delivers gigabit rate speeds to hotel/resort guests and to all hotel/resort IP/Ethernet end-point needs. As a result, Buccament Bay IT staff was able to provide a better user experience for our resort guests with the faster speeds and better reliability with the higher network availability.

Historically copper cabling cannot keep pace with the bandwidth demands of hotels and resort properties. Over the past decade we have witnessed CATx copper cabling standards change from CAT3 to now CAT8 is being defined. Over 5 generations CATx copper cabling was required as hospitality service moved from 1Mbps to 10Mbps to 100Mbps to 1Gbps. With each generation CATx copper cabling, hotels and resort properties were expected to upgrade to the next generation (wasting money and negatively impacting facilities operations). Fiber optic cabling is smaller, lighter, stronger, tighter bend radius, higher bandwidth, greater reach, better EMI/RFI, faster connectors, longer life, less cost and more secure. The optical cabling infrastructure provided Buccament Bay with the best possible future-proof network and it allowed IT staff to keep pace with the latest technology.

Optical LAN can reach 30 kilometers (18 miles) across a passive network, which is 300x greater distance than copper. This means hotels and resorts can eliminate telecommunications closets and convert that space to revenue generating purposes, such as larger guest rooms and even more guest rooms. Large hotels and resorts with acres of property gain benefits by maintaining one main data center that supports total property.

One of the main reasons that Buccament Bay chose Optical LAN, was due to the fact that fiber optic cabling is non-corrosive and non-susceptible to lightning for seaside tropical hotels and resorts. It was Buccament Bay's assessment that passive Optical LAN and fiber optic cabling was a MUST HAVE for high-humidity, high-corrosion, high-salt and high-lightning climates associated with any tropical seaside resort.

## Tangible Contributions to Sustainability

Harlequin Hotels & Resorts has created a sustainability strategy which was first implemented at Buccament Bay. It consists of corporate responsibility goals around construction, materials, transportation within the resort, power generation, waste to energy, lower energy systems, water, reduced waste, landscaping. The Tellabs Optical LAN system contributes by introducing less ICT equipment, cabling and associated material that results in the best cradle-to-grave impact. Furthermore, Optical LAN equipment consumes less energy while the fiber optic cabling requires less plastics and PVCs.

**Less equipment and cabling** – Since the architecture of Optical LAN removes equipment and materials from the distribution, aggregation and access, there are fewer things needing power, management, maintenance, repair and ultimate dispose.

**Less energy saving** – With fewer electronics in the LAN, hotels and resorts enjoy lower power and less thermal. And, remember that power consumption savings and broader energy savings are reoccurring OpEx savings that pay dividends year over year. Finally, when the ICT equipment consumes less power and emits less heat, there is a rippling effect with smaller building power plant, battery backup, A/C and ventilation requirements

**Less plastics and PVCs** – With Optical LAN being a point-to-multipoint architecture, there is less ICT cabling needed to serve guest room services across the property. Plus, SMF cabling is much smaller in diameter than CAT6e cabling. In fact, there is 61% less jacketing with SMF, 61% less plastics and PVCs are introduced to the hotel or resort property. Finally, Optical LAN and SMF supports higher density of gigabit Ethernet endpoints, thus multiplying the benefits of less equipment, cabling, materials, plastics and PVCs.

Finally on this sustainability topic it should be noted that SMF has no known horizon for obsolesces. This cannot be said for any copper cabling whether CAT3, CAT5, CAT6 or CAT8 – all of which have known obsolesces when they will need to be removed. The past decade has seen the extreme waste associated CAT3 and CAT5 replacements – and CAT6 will repeat this same waste once again. Buccament Bay has the confidence in knowing that their fiber infrastructure installed today can support 10GbE connectivity. The Tellabs Optical LAN solution allowed the IT staff meet and even exceed our sustainability initiative which is important to the guests, the local community and the managing company.

## Summary

Harlequin Hotels & Resorts made a smart decision installing passive Optical LAN and single mode fiber for its' ICT infrastructure at Buccament Bay Resort. Since 2010 they have enjoyed services and network convergence, benefits of fiber optic cabling and tangible contributions to sustainability with the Tellabs Optical LAN system. And they continue to have confidence that they can deliver excellent ICT guest room services with this future proof passive Optical LAN and SMF infrastructure for many years to come.

**About Harlequin Hotels & Resorts** - Harlequin Hotels & Resorts specializes in creating first class luxury resorts in some of the best locations in the Caribbean and tourist destinations worldwide. The essence of the Harlequin brand is that its resorts will redefine luxury in the Caribbean. Harlequin's mission is to deliver an unprecedented new level of supreme luxury at each resort to create a world class destination experience offering something for everyone.

<http://www.harlequinhotelsandresorts.com/>

**About Buccament Bay Resort in St Vincent** - Buccament Bay Resort is a luxury, all-inclusive hotel on the beautiful island of St Vincent: the pearl crowning 32 islands and cays called the "Jewels of the Caribbean". Cradled by lush mountains and vibrant rainforest - an inviting sample of the many riches on offer from this unspoiled treasure - the resort boasts stunning features, like a white sandy beach meeting the clear, warm turquoise sea, and stylish accommodations that typify the Harlequin Hotels & Resorts standards. A unique range of top class activities and facilities - many associated with famous brands - leave guests spoilt for choice, whilst warm, considerate staff delivers a truly Caribbean 5 star experience in a charming, village-style setting.

<http://buccamentbay.com/>

**About Tellabs Access** - Tellabs delivers ICT technology that transforms the way the world communicates. Tellabs experts design, develop, deploy and support wireless and wired network solutions. Tellabs comprehensive passive optical networks portfolio empowers the building of high performance LAN infrastructure that are simple, secure, stable, scalable, sustainable and cost less. <http://www.tellabs.com/>

**Next Steps** — Visit [www.tellabs.com](http://www.tellabs.com) to learn more about how Tellabs Optical LAN solutions are solving enterprise network challenges while significantly reducing CapEx and OpEx, power consumption, and space requirements. If you have a question, please email [ask@tellabs.com](mailto:ask@tellabs.com).