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# Build Cheaper, Greener, Higher Bandwidth LAN's

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## INTRO

# NETWORKING HAS CHANGED

Technology's role is transforming and expanding touching our lifestyle. However, the differentiation lies in the ability to adapt and adopt in order to reap the most out of this transformation. Mainstream technologies offer a good deal of reliability, service continuity and quality of service; however, at a certain point it falls short of meeting the full growing demand by service provider (serving their customers) and enterprises alike.

Legacy LAN technologies are now struggling to meet the growing demand for more bandwidth and more service support while keeping affordability and meeting green deployment requirements.

## INTRO

# NEW NEEDS ARE NOW EMMERGING

### *The Cloud*

Cloud computing is defining the future of services and application delivery. This paradigm of moving towards a more centralized approach enables thinner user terminals and higher bandwidth

### *Legacy & Next Gen.*

The enterprise network must be capable of supporting a mix of legacy and next generation services running over the same infrastructure

### *Security*

With the convergence of the inside and outside worlds, security is becoming of the essence! If you can't build a secure network, you might as well not build one at all!

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# COPPER

- 
- + *Short Reach*
  - + *Complicated Deployments*
  - + *Multiservice Support*
  - + *Upgradability*
  - + *Not Green*

01

## COPPER

# + *SHORT REACH*

*Ethernet as a technology has the great limitation of not reaching beyond 100 meter using copper, or 550 meters using multimode Fiber.*

Ethernet Switches connect via copper to each PC in a descending manner, from core, distribution and edge.

While this is the standard way of doing things, designers still struggle with the reachability of copper, as they have to deploy subtenant switches every 100 meters or 500 meters if multimode fiber is used.

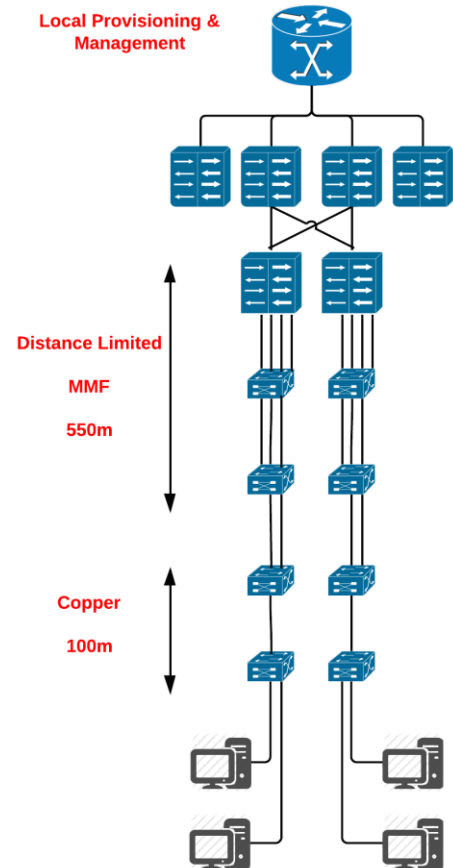
This entails the need for a communications closet one each floor, or every other floor to accommodate the increasing demand for bandwidth and service versatility.

## COPPER

# + *Complicated deployments*

*Due to the 1:1 nature of Ethernet, and with the increased demand for bandwidth and multiservice support, copper based LAN's are becoming increasingly more complex*

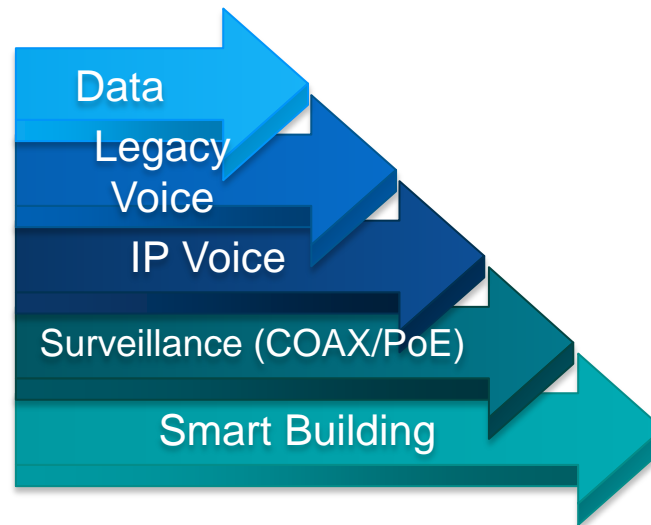
In a modern office, users are now connecting multiple devices all at once. And compounding the complexity by the advent of BYOD (Bring Your Own Device), the model of delivering bandwidth over copper to support this approach becomes extremely challenging.



## COPPER

# + *Multiservice support*

*Copper based Ethernet networks inability to support a multitude of services pose a serious limitation driving network cost and complexity up!*



In many cases, the network operator needs to extend a multitude of services across a certain building or campus, these include POTS (analogue) voice, Data, surveillance where cameras require coaxial cable connection, Fire Alarm systems, Access Control Systems, and so on.

All of these systems require different types of cabling such as CAT5/6/8, CAT 3, COAX and so on.

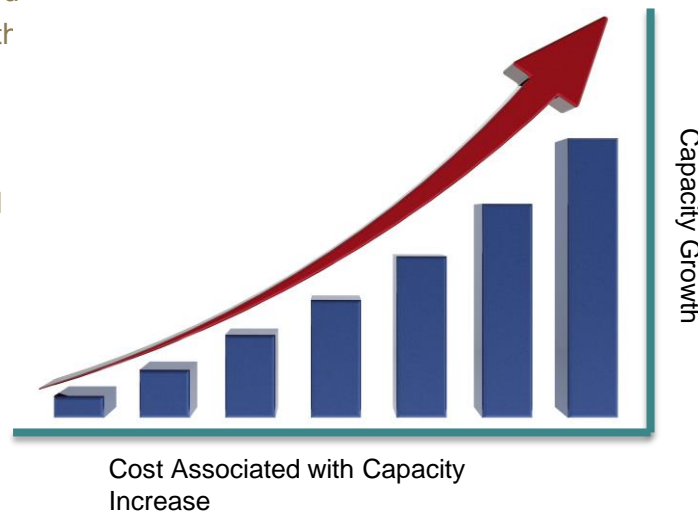


## COPPER

# + *Upgradability*

*Upgrading networks in the future to extend bandwidth and add more endpoints means drastic, costly forklift changes*

Typical copper based LAN speed for data transfer is 100 mbps with newer systems capable of 1000 mbps, the newest systems require 4 pairs of copper to accommodate these high speed and require sophisticated noise canceling processes.



Adding more end points, devices, and services means additional switches, wiring and possible refurbishment of the entire network.

Where is investment protection here?

## COPPER

# + *Not Green!*

*The increasing cost of our power bill has made green initiatives take a more national scale importance and is now being enforced everywhere!*

With the limitations of copper based Ethernet technology, you are forced to install active components everywhere in your building or campus, which means additional space, power and cooling requirements as you advance.

The increasing number of active components means a higher energy bill, adding to the already high operational costs of such networks.



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# *Passive Optical Fiber*

*Significant savings, unmatched performance!*

- 
- + Miles not meters*
  - + Simplify Deployments*
  - + Multiservice Support (Legacy & Next Gen.)*
  - + Future Proof*
  - + Green*

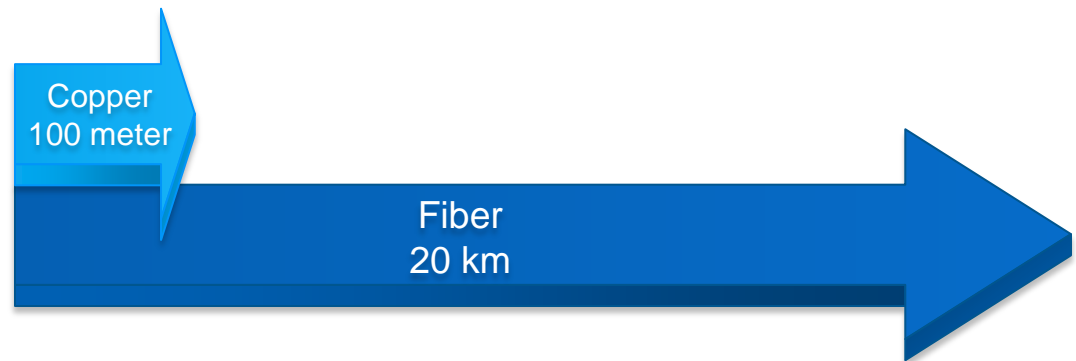
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## FIBER

# + *Miles not meters*

*Unlike copper based Ethernet, single mode Fiber can reach up to 20 kilometers, providing great reachability over any layout*

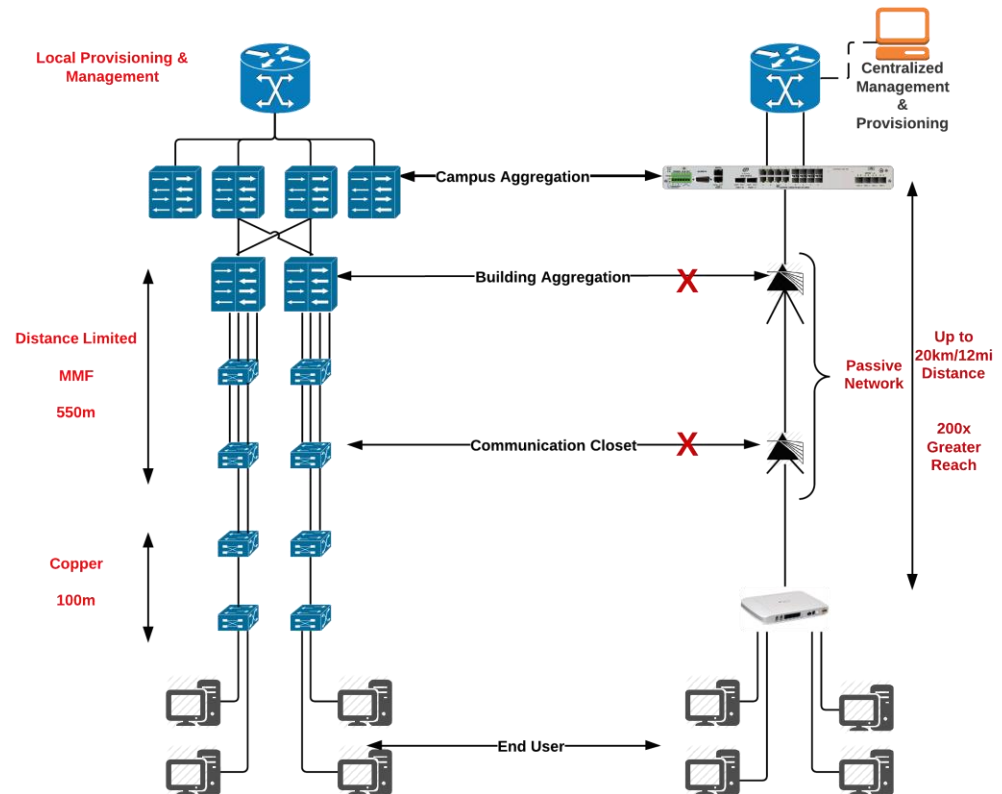
Composed almost entirely of single mode fiber optic cable, a Passive Optical LAN can span for 20 km (12.5 miles) or more depending on the optics and splitter ratios deployed. While not all networks may need to span such distances, it is particularly advantageous for multi-story buildings and campus networks where mid-span switching equipment is eliminated entirely.



# FIBER

## + Simplify deployments

*By replacing unnecessary active components between the core switch and the end point with completely passive infrastructure, LAN's have never been simpler!*

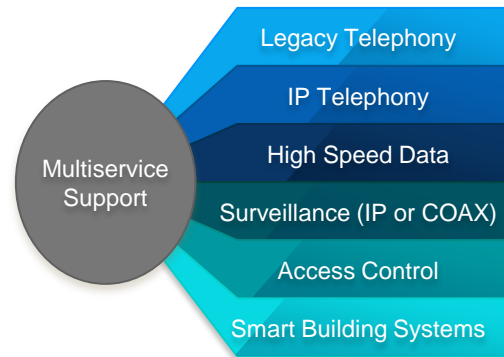


The transition from Copper-based LAN to Passive Optical LAN reduces CAPEX & OPEX costs while increasing performance and capacity dramatically

## FIBER

# + *Multiservice support*

*Passive optical fiber is capable of transporting any media regardless of the format or capacity! Making it the best single medium of transporting any kind of data*



The passive nature of Fiber enables it to accept any input and transport it over long distances. As all data is converted into light, Fiber does not care whether it is TDM or IP data, hence any device, be it legacy or next generation can transmit any type of multimedia across it.

Combined with advanced switching gear, equipped with interfaces to suit all types of data, you don't have to dedicate infrastructure to certain services anymore.

## FIBER

# + *Future Proof*

*Passive optical fiber can carry capacities of 1G, 10G, 40G and even 100G in the future without the need to change the physical infrastructure.*

The beauty about passive optical Fiber is its ability to provide unmatched capacities over the exact same physical infrastructure. Means in the future, you can double, triple or even increase your network capacity by 10 folds without changing a single cable or ripping off the floors and walls in your building or office!

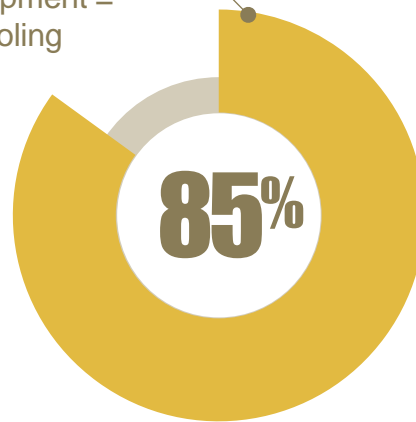
The upgrade requirements on optical LAN equipment is also minimal and doesn't exceed changing some line cards in most cases.

## FIBER

# + Green

### Power Consumption Reduction

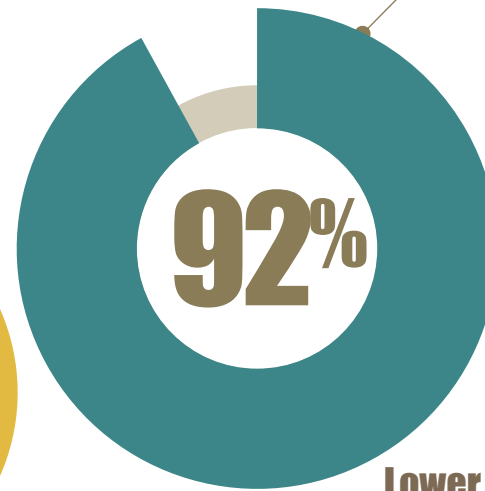
Less active equipment = less power & cooling requirements



*With the cancellation of most active components on your LAN, you will introduce significant saving into your energy bill, heat and radiation emissions as well as space and cooling requirements*

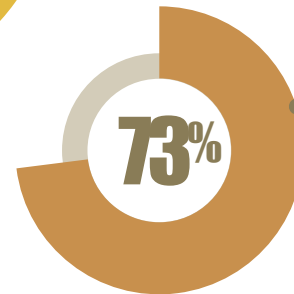
### Less Space

Significant reduction in space requirements



### Lower TCO

The amount of savings in contrast to the immense capacity and capabilities increase is too good to be true! But we can prove it!





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# *FiberLAN*

*The Future of LAN*

- 
- + *What is GPON?*
  - + *Why Fiber LAN*
  - + *Product Lineup*
  - + *Our Presence*

03

# + *What is GPON?*

*GPON enables networks to deliver great speeds at the speed of light, with download capabilities of up to 10 Gbps and uplink of up to 2.5 Gbps per ports, a single PON port can replace many Ethernet ports*

PON/GPON grew from a requirement for more bandwidth in the Service Provider Market as it provides higher access speeds than traditional DSL could deliver.

It is a proven technology that has been first standardized in 1995, with millions of dollars invested in research and development, and millions of ports installed worldwide, Fiber broadband subscribers now surpass cable subscribers.

- More bandwidth (10 Gbps downstream, 2.5 Gbps upstream)
- Higher subscriber density
- Best replacement for aging copper infrastructure
- Environmentally friendly – Green
- Reduce power and TCO cost
- Reduce reoccurring O&M costs

## FIBERLAN

# + *Why FiberLAN?*

*Designed as a layer 2 transport medium, Zhone FiberLAN delivers converged voice, video, and data services, at Gigabit levels to the end user*

Zhone FiberLAN is a next generation Optical LAN Solution (OLS) built entirely on industry leading standards .

This fully converged solution is scalable for a single or multilevel buildings, or large campus environments where customers are installing new facilities or upgrading their current LAN infrastructures.

FiberLAN Optical technology replaces conventional copper and multimode cables used with traditional network infrastructures to a single mode fiber optic cable allowing you to eliminate the traditional workgroup switches, patch panels, and racks in the riser closets

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# + *Product Lineup*

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+ *MXK OLT*

+ *zNID ONT*

+ *ZMS Centralized Management*

03

## PRODUCT LINEUP

# + *MXK OLT*



The Zhone MXK-190 provides next generation 1U GPON OLT features in a compact, hardened form-factor that makes it easy and cost-effective to deliver uncompromising triple play services throughout the serving area.

*Models are available with 4 or 8 GPON Ports.*

*Modular chassis MXK options are available for high scale deployments.*

A small **1 U high** MXK 194/198 unit can provide up to **20 Gbps** of **downstream** bandwidth as well as **10 Gbps** of **upstream** bandwidth.

The same unit can serve up to **512 end points**, providing up to **4000+** **Ethernet ports** to users.

## PRODUCT LINEUP

# + zNID ONT

Zhone's indoor GPON ONT family has many options for deployment of different services.

Models range from a single Ethernet port to a model with **24 voice ports and 24 Ethernet ports** allowing the network operator to choose the right model for the job.

The indoor GPON portfolio also includes models with T1/E1 interface for transport over a packet network.



Ports density and diversity are of the essence to implement cost effective networks, the zNID ONT provides all sorts of physical interfaces that suit any application or attached devices, from **POTS** ports for Analogue telephony, to **PoE** for IP Phones or IP Cameras, as well as **T1/E1** and **coax** for many necessary applications.

+ Zhone ONT Flavors

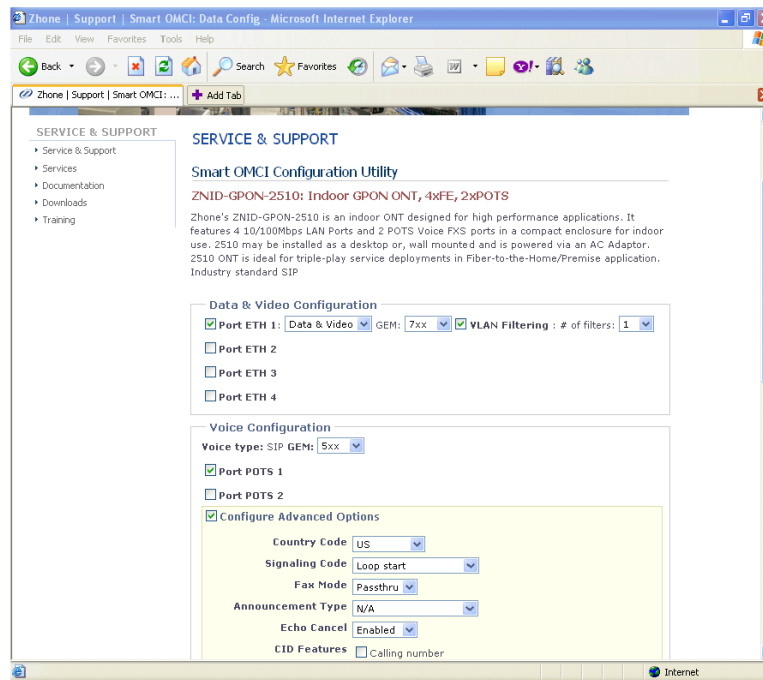
### section 03

## PRODUCT LINEUP

# + ZMS Centralized Management

With centralized management, you have complete visibility and control over your entire network down to the port level.

The ZMS server provides a suite of management applications to support *fault, configuration, performance, security and diagnostics* functions.



## Features

End-to-End Management

Manage Voice, Data and Video Services

Comprehensive FCAPS

Open Interface for OSS Integration

Manages OSMINE-Certified Zhone Network Elements

Scalable to Support Multiple Locations and Millions of Subscribers

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# Case Studies

*Who can use our solution?*

- 
- + *Multi-floor Office Building/Campus*
  - + *Multi-building Campus*
  - + *Multi-floor/building Hotel/Resort*
  - + *Industrial/Factory Environments*
  - + *Selected References*

04



## CASE STUDIES

# + *Multi-floor Office Building*

FiberLAN is well positioned to provide bandwidth relief as new applications to the desktop continue to explode and the emerging “Cloud-Computing” environment threatens to further restrict already clogged LAN arteries.

With the bandwidth and reach capabilities of the FiberLAN solution, you will be able to accommodate any application or user density and upgrade your network in a much more efficient and cost effective manner.



*New graphic intensive applications, video sharing and editing all place new constraints on the Legacy Copper Switched LAN*

## CASE STUDIES

# + *Multi-building Campus*

With the spread of gated communities as an attractive and exclusive living and working areas, and with the needs to cover these areas with high-end sophisticated networks, distance is becoming important.

FiberLAN is well equipped to deliver any service over distances that can span up to 40 kilometers and to virtually any number of end-points.



*Covering long distances  
with Legacy Copper  
Switched LAN requires  
significant investment as  
well as high operational  
costs.*

## CASE STUDIES

# + *Multi-Floor/Building Hotel/Resort*

In the Hospitality Industry where space is limited and demands for High Speed Internet Access, Voice, Television and Security monitoring is increasing, FiberLAN provides optimal performance characteristics for the preferred LAN infrastructure



*Covering long distances with Legacy Copper Switched LAN requires significant investment as well as high operational costs.*

## CASE STUDIES

# + *Industrial/Factory Environment*

Developed for Industrial, Factory or other harsh environments where high speed data, voice and security cameras are mandatory, but space, cooling and power are limited FiberLAN provides Passive Optical Splitters – suited for any environment.



*High speed, secured and extremely reliable data and voice communication network is imperative to industrial environments and can make or break a business*

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# + Selected References

*How others are benefiting from FiberLAN?*

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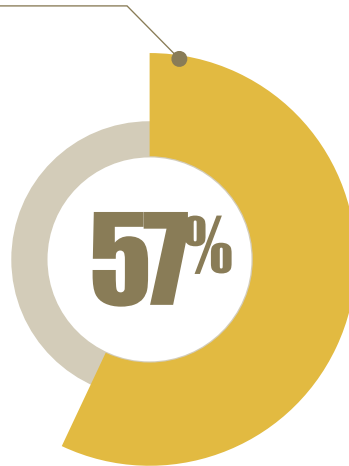
+ *Accor Hotels*

04

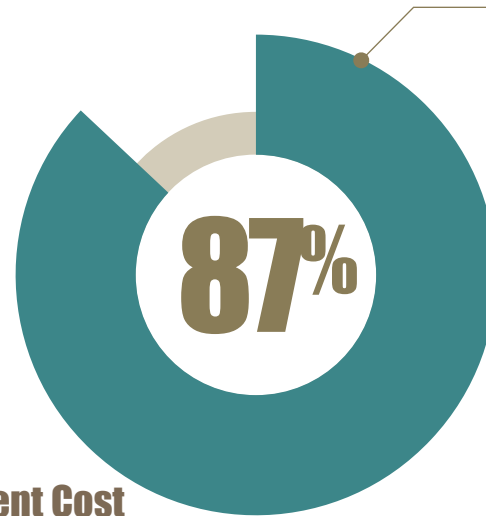
# + Accor Hotels - Novotel



## Power Consumption Reduction

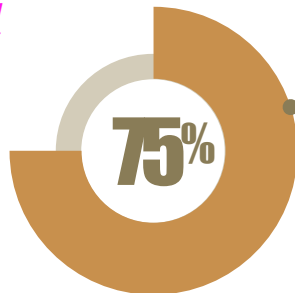


## Cable Weight Reduction



*Novotel selected Zhone Technologies FiberLAN solution for the clear differentiator it had in comparison to legacy copper based LAN solutions and reported significant savings in many areas*

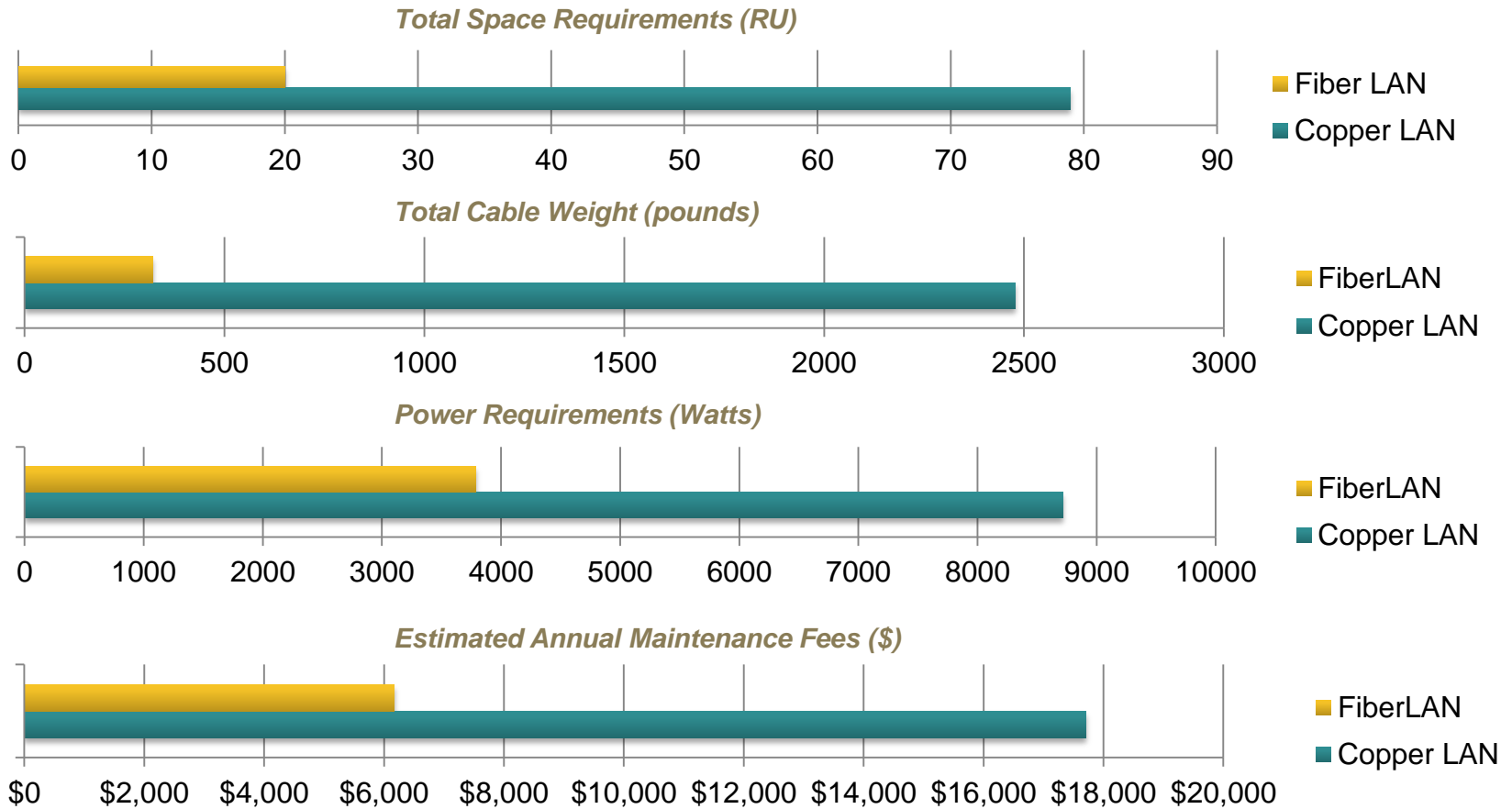
## Equipment Cost Saving



Novotel achieved \$ 75,000.00 in Capital Saving

# + Accor Hotels – Novotel

*Comparison with Legacy Copper based solution*



section 04

# thank you

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