FIBRE–WIRELESS

FASTER, RELIABLE AND CHEAPER
ULTRA BROADBAND ARCHITECTURE

c-cor®

Engineering Tomorrows Networks

The explosion in customer data demand that you're probably already tracking is only going to continue growing.

This step-change in demand for huge volumes of lightning-quick data is happening right now.

And the old technologies you might be relying on now will soon not be able to cope.

You already know that your customer data traffic is exploding.

It's happening now and your current legacy video and analogue/RF transmission network architecture is simply not going to match the traffic projections.

This is why MSO operators are developing their investment plans to get ready for the next generation network architecture.

This document explains the new and emerging pathways to migrate an SCTE HFC Cable broadband infrastructure towards wireless capability.

- New functionality can be added to the current cable infrastructure to enhance the fixed broadband capability and capacity to improve customer experience.

- New wireless — Wi-Fi Vantage or mobility — capability can be stacked on to the cable infrastructure as a complementary service to fixed broadband with some OSS/BSS development.

- The fixed broadband infrastructure can be transitioned to a wireless only infrastructure avoiding massive OSS/BSS dis-location, or…

- As a new start-up network, you can engineer and build a new wireless infrastructure delivering the best customer experience outcomes using the latest software-driven technology.

C-COR Broadband offers engineering consulting services to guide you through the myriad optional paths.

So take a few minutes to get up to speed about some of the key applications for this new technology in your business.

HYBRID FIBRE–WIRELESS:
TRANSITION OR TRANSFORMATION, YOUR CHOICE

Pathways to Competitive Advantage

C-COR has an extensive experience in wired and wireless network solutions.

Just as Hybrid Fibre Coaxial (HFC) systems were a revolutionary step in wired networks, C-COR can demonstrate the paradigm shift you can achieve for your residential customers and business segment customers by leveraging the benefits of Hybrid Fibre Wireless (HFW) solutions.

Around the world, network providers are working to connect more and more customers to fibre. And it's working.

But metropolitan brown field areas are a challenge. Because they are more costly and add more risk to investment in upgrading a network.
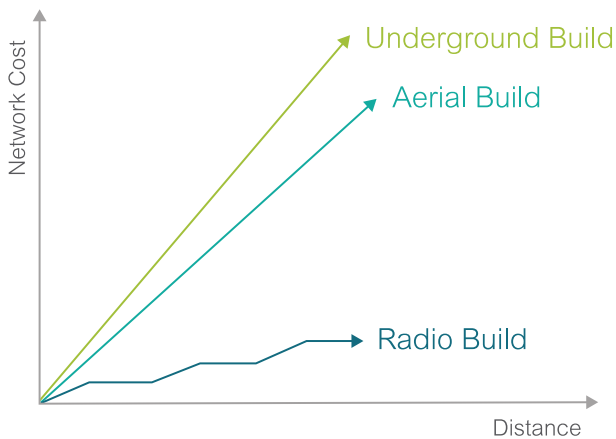
Using a Hybrid Fibre-Wireless (HFW) model however, providers can use fibre-like wireless technology into the urban environment to bring Gigabit access to more people. Compare the network construction cost differentials are well understood in Figure 1 above.

From LTE backhauling to smart cities looking to improve video surveillance connectivity (Ultra HD 4K cameras, camera orchestration), high frequency wireless radios deliver multi-Gigabit rates for a variety of applications…

Hybrid Fibre-Wireless (HFW) is a disruptive model for providing Gigabit to the premises built on field proven technology.

This model adds high frequency mmWave wireless radios to fibre network, drastically reducing deployment costs and time to install with the potential to provide multiple Gigabit services to the end point consumer.

Figure 1: Comparing Network Construction Costs (not to scale)

Simply put: Using a HFW connectivity model in a commercial market will translate to a quantum leap in Return on Investment (ROI).

In fact, for distances over 150 meters, fibre-like wireless becomes exponentially cheaper and faster to deploy than underground or aerial fibre infrastructure.

Whether you are building onto an existing system or commencing a new rollout, C-COR promises to deliver on time and on budget.

How do you make money from this powerful new tech?

The most common business model options for telecommunications and virtual network operators are no longer sufficient.

Customers are consuming ever increasing amounts of digital data. But like all developing technology, people expect to pay less for more as time passes.

For most network operators — wireless and wired networks — average revenue per user (ARPU) is flat. Operating costs continue to rise. These immutable facts present an immense challenge.

So, what can you do to continue making — or increase — a profit in this changing landscape?

Firstly, you have to reduce the average unit cost of service across the entire business, including your networking operating costs.

You are probably pursing cost reduction now: But are you winning or struggling in the battle to reduce your costs to deliver a return on investment your shareholders demand?

You have to identify new approaches and consider an investment plan that effectively substitutes one-time capital cost for recurring operating costs.

We've created the current C-COR product portfolio to help you address these challenges, future-proof your network and help ensure your business thrives in the fast-changing wireless network landscape.

Imagine a community project, where dozens of homes, MDUs, and city buildings are to be connected.

Fibre-like wireless technologies are relatively new and have been widely deployed only recently.

If these technologies follow the same path as fibre, where deployment techniques and equipment evolve to be even more efficient, it is likely that the deployment costs of fibre-like wireless will decrease significantly in the coming years, making it even more attractive.

Ultra Broadband (with enhanced QoS)

Ultra broadband is more than ultra fast.

C-COR firmly believes — and our long-term customers agree — that networks will converge, keep growing denser and become more intelligent.

Ultra broadband services will require ultra-fast, ultra secure and ultra reliable connections.

And, the applications for ultra broadband will become increasingly unique, leveraging programmable network parameters that enhance QoS for subscribers, networks and applications.

Our solutions allow you to deliver ultra broadband security, density, intelligence and flexibility today, and will continue to evolve to meet the needs of the ultra broadband era.

In other words, working with C-COR Broadband to roll this technology out for your business now will allow you to get out ahead of this massive and looming trend in wireless connectivity.

Security Gateway (SeGW)

The growth in mobile devices and the rise of Internet of Things is transforming how people and machines communicate.

Naturally, with that come new threats and ways to exploit users, IoT/M2M (machine to machine) devices and networks, alike.

Protecting this ever-growing number and variety of end points has become an important priority — and challenge.

In this new operating environment, security gateway functionality is a must.

Our SeGW enables network densification with best-in-class IPSec tunnels, IPSec tunnel setup rates, number of subscribers and latency per rack unit so mobile traffic can be secured without sacrificing performance.

Voice over LTE (VoLTE)

As you transition to VoLTE, it's a good time to take another look at your small cell plans.

Our Apex multi standard small cells combined with IMS VoLTE provide a smooth transition as you evolve and reallocate your networks along the 2G/3G/4G and upcoming 5G spectrum.

It's clear that business cases for both small cell deployments and VoLTE are stronger when addressed in tandem.

Our multi standard small cell and Axyom ultra broadband edge application platforms provide the optimal coverage, capacity and functionality to advance VoLTE deployments cost effectively, simply and quickly.

Our Apex Ultra Broadband small cell product also delivers lower latency for user traffic.

Small Cells as a Service (SCaaS)

You're looking to leverage your existing network assets and capabilities in order to generate new revenue streams from the burgeoning demand from small cells connectivity, whether it's through expanding your portfolio with wholesale backhaul services or providing a fully managed small cell solution.

We can meet your needs with small cell solutions, including auto configuration and SON to enable simplified deployment offerings.

Voice over Wi-Fi (VoWiFi)

With voice over Wi-Fi, you can extend your networks to take advantage of new opportunities, such as unmanaged public venues. But to realise its full potential, you need solutions that enable seamless mobility between cellular and Wi-Fi networks.

Our ultra broadband edge platform, Axyom, provides integrated, multi standard and distributed virtual network functions so you have the flexibility and controls you need to enhance your networks with VoWiFi and scale in multiple dimensions — all without sacrificing performance.

c-cor

Indoor Location Intelligence Services

The ability to capture granular insights about the location and movement of users, particularly in indoor environments like shopping malls, museums and other venues, gives you a game-changing opportunity to compete with managed or value-added services to business segment or retail customers.

But rolling out these services cost effectively is a major concern, as is the need to assure user anonymity.

With C-COR and partners, you can capture and aggregate data across all users so individual information remains anonymous and without requiring users to opt in.

Our solution lets you strike the right balance so you can power new revenue-generating services, manage costs and benefit from flexible deployment options while protecting the core from signalling overload.

Private LTE

There are many cases where autonomous operation of an LTE network makes sense – and your business segment customers are asking for it.

For business segment customers that want more control over policy, capacity and coverage, private LTE enables the full potential of LTE, but on their terms.

In remote locations like mining sites, cruise ships and other closed communities, it offers an ideal solution.

And for public safety organisations that need dependable mission-critical solutions, it's becoming the preferred alternative.

Our unique approach enables the richest set of network functionality for private LTE networks on the market.

You can flexibly deliver private LTE where it's needed, while eliminating the need for costly, high-capacity backhaul and reducing demand on the network core.

Our solutions for mobile private LTE networks mean you can start generating and optimising new revenue streams today.

Hospitality

Hotel guests increasingly expect easy access to fast and dependable Wi-Fi. A good experience can influence recommendations and return visits. However, deploying Wi-Fi in hotels can be costly, disruptive to guests and highly complex to manage — particularly in existing hotels with legacy networks.

Our Wireless LAN (WLAN) solutions are optimally suited to meet current and emerging Wi-Fi demands in hospitality environments.

Our integration of the Wi-Fi network with the DOCSIS® network allows hotels to reuse existing coaxial cable infrastructure for Wi-Fi to deliver unique, highly customisable guest experiences.

Think seamless reservation management tools, room service tabulation, and toggling user access to digital TV networks and conference facilities.

MDUs

MDU tenants expect access to high-performance Wi-Fi, but living in close proximity in often highly congested environments can lead to poor Wi-Fi experiences.

Our Wi-Fi Vantage network solutions make it easy to deliver and manage Wi-Fi services to residents or as part of a community of Wi-Fi solutions. With the Casa Systems wireless gateway, you can ensure optimal user experiences for MDUs through multi-vendor, cloud-based management and control, including standards-based radio resource management (RRM) and other virtualised network functions.

Coupled with our distributed access cable architecture and the ability to deploy Wi-Fi edge services over existing cable infrastructure or separately, you have the tools you need to rapidly and economically deliver Wi-Fi, broadband and video services to MDU residents.

Municipal Wi-Fi

The emergence of smart cities and always-on connectivity is driving the demand for access to public Wi-Fi, from both subscribers and non subscribers alike. In addition to providing data access, there are opportunities to deploy new value-added services, such as a VoWiFi.

But these applications can be fraught with technical challenges, as many of these Wi-Fi deployments are pure overlays to the DOCSIS network, adding overhead and management complexity.

> **Our WLAN solution ends the separation between the DOCSIS and Wi-Fi networks, making it easier to scale new services and transition smoothly and securely between indoor and outdoor networks.**

Community Wi-Fi / Hotspots

Wi-Fi has become critical to the cable portfolio, allowing you to tap into your base of residential Wi-Fi access points to offer wireless coverage and other value added services that can compete with other quad-play providers.

However, many deployments today lack the visibility and control needed to improve performance and address issues that can impact the quality of experience.

With C-COR and our partners, you can ensure optimal customer experiences through multi vendor, virtualised management and control, including standards-based Radio Resource Management and other virtualised network functions.

Optimisation

As you deploy Wi-Fi in support of new services, you need to deliver the same high-quality user experience expected from an operator-provided service.

Key to this is ensuring the radio environment is optimally configured with a standard based Radio Resource Management (RRM).

However, many residential access points in cable Wi-Fi networks don't support RRM functionality. And implementing it can be a challenge in heterogeneous environments with access points from multiple vendors.
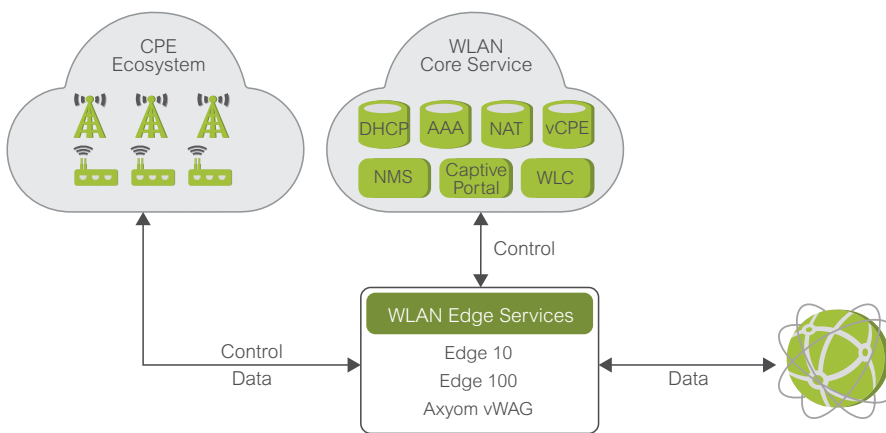

Figure 2: Wireless Edge Service Integrated with CCAP

As an MSO, you can be assured that our virtualised Wireless LAN Core Services (WCS) support the CableLabs initiative to provide a vendor-neutral RRM interface, allowing you to implement consistent WLAN IEEE802.11 RRM policies across your network.

IP Video

As multiple technologies converge to "all IP," video can be one of the more daunting services to tackle.

Yet, consumer demands for anywhere, any-device viewing are continuing to drive your transition or transformation initiatives and industry's competition to provide ultra-fast, streaming video services to the market.

We can help you transform your networks today with ultra broadband solutions — to get ahead of impending bandwidth crunch — that enable multi-cast IP video and provide QAM replication to help ease your transition.

C-COR expertise in the delivery and integration of OTT video delivery to and from both fixed and wireless devices. Let our engineering skills improve your customers' experiences.
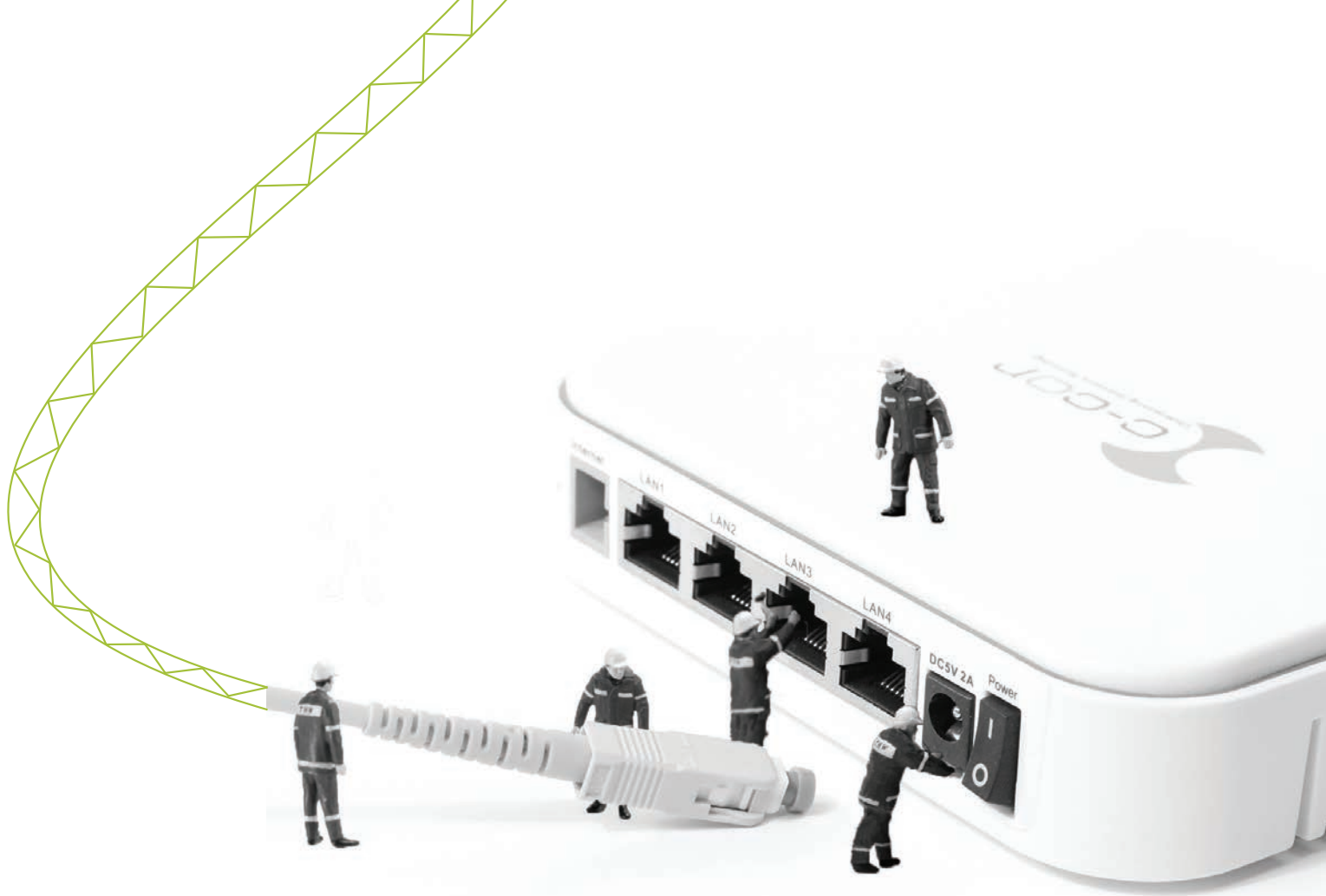
To learn more about C-COR next generation cable architecture and wireless edge solutions in an ultra broadband era, and how we can change the economics to your favour so that you can build faster, smarter access networks, cheaper…

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