Fibre to the Room Design Guide

Redefining Hotel Connectivity for the Future

Building a deeper connection with your guests starts with building stronger connections across your network. Today's hotel guests are traveling with more devices than ever before, putting pressure on even the most robust traditional networks with nonstop streaming, sharing, and downloading.

Fibre to the Room can help you keep up with demand and improve guest satisfaction. Designed to accommodate the explosion in connected device usage, it delivers virtually limitless bandwidth across a network that is secure, reliable, cost-efficient, and future-ready. So, you can meet guests' needs today and be prepared to deliver next-generation experiences tomorrow.

Why Fibre to the Room (FTTR) is an Essential Amenity

In a world of ever-increasing bandwidth needs and guest expectations, your network should never limit what you are able to achieve. The incredible power of FTTR opens a host of new possibilities.

Robust Services, Efficiently Delivered

FTTR deployments enable fast, reliable connections for must-have amenities, such as in-room Wi-Fi, Internet Protocol television (IPTV), and voice over internet protocol (VoIP) phones.

Big Benefits with a Smaller Footprint

FTTR can eliminate the need for parallel network infrastructure and multiple intermediate distribution frame (IDF) closets and allows you to reclaim space for more revenue generation with a smaller cable footprint.

Flexibility to Meet Any Need

FTTR can help you deploy a passive optical network (PON) or an Active Ethernet network that's future-ready and can handle ever-evolving bandwidth needs.

Frustration-Free Upgrades

Because of its modular, scalable nature, FTTR eliminates the need for costly and disruptive "rip-and-replace" upgrades and infrastructure changes.

Savings Today and Tomorrow

With a streamlined network architecture, there's less equipment to install and maintain. Plus, you will save on valuable space, power, cooling, and ongoing tech support for day-to-day network maintenance and changes.

Total Peace of Mind

An FTTR approach can boost network security at your hotel while decreasing network complexity. Fibre is inherently more difficult to physically tap than legacy electric signals. Today's systems also have fewer physical access points, like computer ports, decreasing the opportunity for network intrusions.

How to Get Started with Fibre to the Room

If you are interested in implementing an FTTR approach at your hotel, start by considering the following questions.

Are you building a new hotel or retrofitting an existing one?

The space-saving benefits of FTTR are most optimally realised in a new-build hotel. If you engage a network designer early, you will be able to take advantage of the ideal placement of intermediate distribution frame (IDF) closets—and determine the perfect number to meet your needs. In practice, using an FTTR approach in a new-build hotel will allow you to reduce your IDF closet requirement by at least 50% with the benefits increasing at scale. A smaller, 150-room hotel that would otherwise need two could be reduced to one. Whereas a 1,000-room, 40-story hotel that may have planned on 20 IDF closets could manage with 10 or fewer.

With retrofit projects, you will need to work within the current building structure, taking into consideration things like space, the location and space constraints of your current IDF closets, and how to get new cabling into the rooms.

Thankfully, FTTR architecture lets you take advantage of what precious space you have, adding minimal cabling to already crowded pathways. As with any construction, you will also need to consider how to minimise disruption for your guests. While upgrading to an FTTR approach isn't as disruptive as some construction projects, you will still need to factor how you will manage day-to-day business into your plan.

What is the overall guest experience—and is there more than one?

Determining what you want the guest experience to be across your hotel will help you establish the overall scope of your network in terms of port types, total number of ports, and total number of IDF closets.

How many floors and rooms do you want to be connected to the network? How many varieties of rooms are there?

Most importantly, what applications do you want to deliver now and in the future? Will you stick with the traditional triple play of phone, TV, and Wi-Fi in all your rooms? Or do you also want to accommodate features such as connected minibars and smart speakers? It's also important to consider hallway applications such as vending machines and keyless door locks— what they are, where they are, and how many there are.

Will back-of-house services be included in the design?

While some hotels choose to include everything within the same FTTR design, others prefer to keep them separate and exclusively include guest rooms on the network. Consider whether your existing solution meets your employees' needs or if you think they would benefit from higher speed and reliability. Similarly, decide whether you would like specific applications such as surveillance and point of sale to remain separate due to privacy or security concerns.

What is the powering and Power over Ethernet (PoE) draw?

FTTR allows you to take one flexible cable to the edge of your network—directly into the guest room—with both bandwidth and power enabled. The power source is typically located in an IDF closet to energise the copper conductors and provide both power to the endpoint and PoE to the applications. The space-saving benefits of taking this approach are obvious. Fewer cables running to each room means less cable clutter and more opportunities to reclaim space for other, more productive purposes. That said, taking this approach does mean that you will need to properly size the conductor in the cable that supplies power to accommodate the room's distance from the nearest IDF closet. The thicker the gauge of your conductor, the farther your cable can travel.
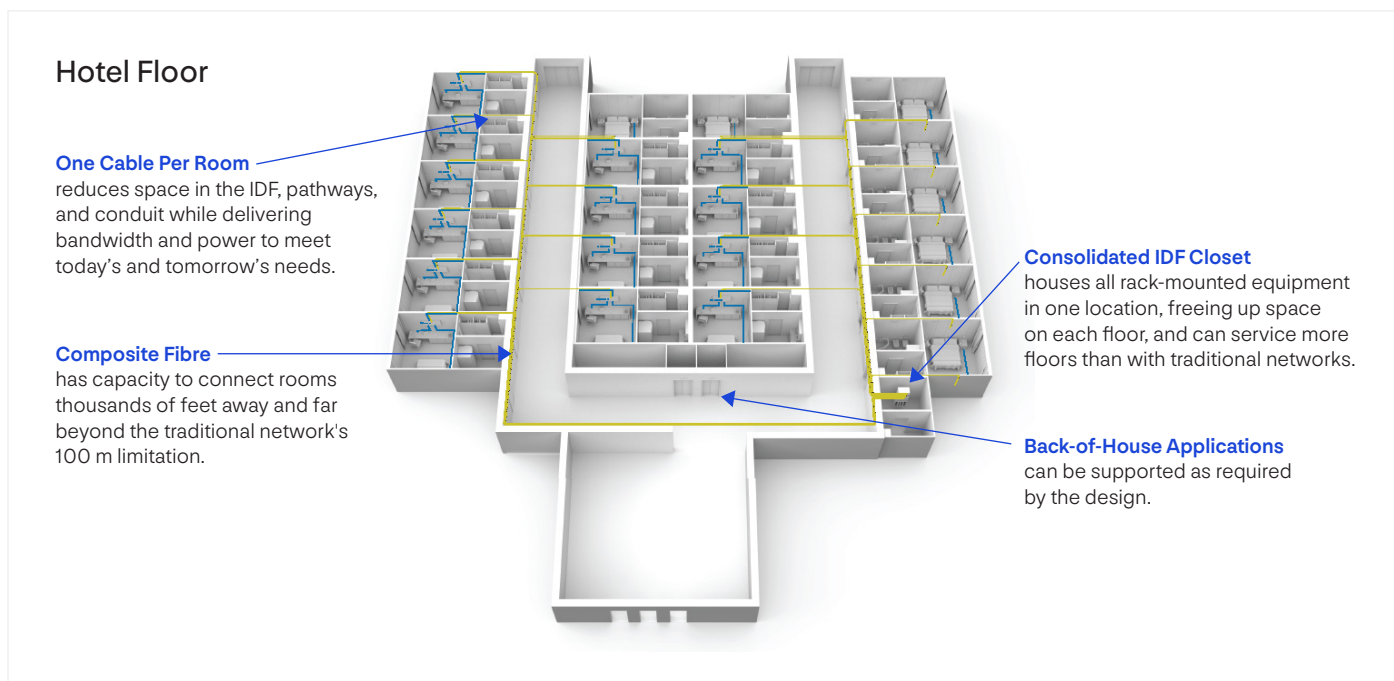
What are your limitations?

It is always important to think about potential obstacles and other factors that may prevent you from pursuing a network upgrade at this time. If you are operating a franchise hotel, do your brand standards permit you to switch to a fibre-based network? Are there local building regulations or safety codes to consider that might prevent the elimination of dedicated IT infrastructure space and achieving the maximum space-saving benefits of FTTR? Ensuring there are no roadblocks at the outset can save you considerable headaches down the line.

What Fibre to the Room Looks Like

FTTR allows you to provide a sophisticated guest experience while freeing your building from excess wires. A typical FTTR approach can reduce your network infrastructure by 50%–80% with a simpler network design.

Hotel Floor

One Cable Per Room
reduces space in the IDF, pathways, and conduit while delivering bandwidth and power to meet today's and tomorrow's needs.

Composite Fibre
has capacity to connect rooms thousands of feet away and far beyond the traditional network's 100 m limitation.

Consolidated IDF Closet
houses all rack-mounted equipment in one location, freeing up space on each floor, and can service more floors than with traditional networks.

Back-of-House Applications
can be supported as required by the design.

Five Considerations When Designing a Fibre-to-the-Room Experience

Once you have fully evaluated your needs and decide to move forward with an FTTR approach, these five considerations can help you design the blueprint that's right for your hotel.

Consideration 1: Planning for Higher Download Speeds at the Network's Edge

To realise its full potential, Wi-Fi 6 needs 10 Gbps for each wireless access point (WAP). Wi-Fi 7, expected to deploy in 2023 or 2024, is projected to need 40 Gbps for each WAP. Traditional networks will not be able to handle these requirements economically— to support 40 Gbps you may need to pull four Cat.6$_A$ copper cables to one WAP. FTTR networks, on the other hand, are designed to handle these demands with ease. Using composite fibre cables, which combine fibre for data with copper pairs for remote power in one sheath, you get the bandwidth you need plus the power to support 40+ Gbps to the edge of your network in a single flexible cable.

Consideration 2: Converging Existing Networks Across One Digital Backbone

Consolidating into one digital backbone reduces the number of networks you need to build and support, minimizing upfront and management costs over time. FTTR is an extremely flexible platform that can easily support traffic beyond voice, data, and video— including property management systems.

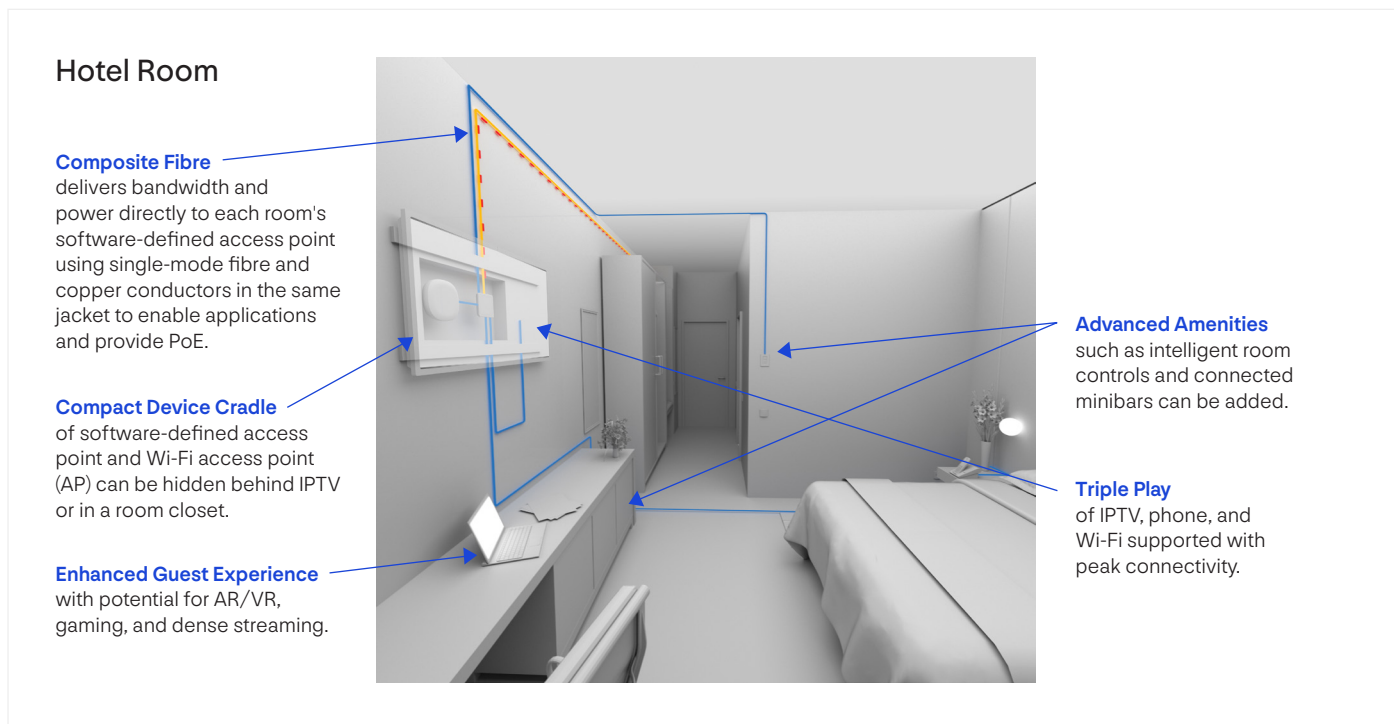## Consideration 3: Adding Partial or Complete Cellular Connectivity

Supplementing Wi-Fi with cellular connectivity can help ensure your guests and employees have a seamless experience no matter their device or connectivity source. That said, there are trade-offs when taking this approach. Providing complete connectivity across your hotel using a neutral host system for coverage across all carriers can be an expensive endeavour. Think about limiting the number of carriers or localising coverage to specific areas such as the lobby if this is something you would like to pursue.

Consideration 4: Using a Fibre Backbone to Support High Data Demands at the Edge

FTTR eliminates most wired network connections, changing your aggregation needs from many lower-bandwidth links to fewer larger-bandwidth links. Switching solutions should be able to migrate to handle 10/40/100 Gbps speeds. Single-mode fibre provides the most flexibility for the future. It allows you to collapse your backbone cabling into a simplified solution that moves all switching functions to one location, saving space and reducing overall complexity.

Consideration 5: Keeping Future PoE Increases in Mind

Instead of choosing a smaller-gauge conductor that only handles your needs today, think about whether you should increase the gauge to handle future PoE increases at the edge of your network. For zone locations such as a conference or meeting room floor, it may make sense to have dark spare fibre and copper conductors on standby so you can add solutions without having to re-cable in the future.

Hotel Room

Composite Fibre
delivers bandwidth and power directly to each room's software-defined access point using single-mode fibre and copper conductors in the same jacket to enable applications and provide PoE.

Compact Device Cradle
of software-defined access point and Wi-Fi access point (AP) can be hidden behind IPTV or in a room closet.

Enhanced Guest Experience
with potential for AR/VR, gaming, and dense streaming.

Advanced Amenities
such as intelligent room controls and connected minibars can be added.

Triple Play
of IPTV, phone, and Wi-Fi supported with peak connectivity.

Want Help Taking Full Advantage of Fibre to the Room?

Corning® Everon® Network Solutions were designed with a better guest experience in mind. By implementing our FTTR technology at your hotel, you can be better prepared to meet ever-increasing bandwidth demands, improve security, and save money at installation and over the life of your network. Learn more at www.corning.com/emea/hospitality

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