



# NEXT GENERATION INFRASTRUCTURE EXECUTIVE SUMMARY

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## About HTNG

Hospitality Technology Next Generation (HTNG) is a non-profit association with a mission to foster, through collaboration and partnership, the development of next-generation systems and solutions that will enable hoteliers and their technology vendors to do business globally in the 21st century. HTNG is recognized as the leading voice of the global hospitality community, articulating the technology requirements of hotel companies of all sizes to the vendor community. HTNG facilitates the development of technology models for hospitality that will foster innovation, improve the guest experience, increase the effectiveness and efficiency of hotels, and create a healthy ecosystem of technology suppliers.

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## Next Generation Infrastructure Executive Summary

The pace of evolving technology is staggering. Devices, applications, mobility, and the constant need for ever-increasing speed and bandwidth, along with ubiquitous services greatly affects the hospitality industry. Guests are increasingly expecting the same or better services while on the road as they have in their homes. Not only must the guest-facing technology be cutting edge, but the Back of House (BoH) network must improve right alongside this technological growth to support the applications and services necessary to run a property.

Guest devices, operations, and other applications in use today were typically not contemplated when most hotels were being designed, built, or renovated. The goal of the *Next Generation Infrastructure Technology Guide* is to illustrate the options available today, the pros and cons of each, to design and implement a network infrastructure that anticipates and supports the increasing bandwidth demands to meet the expectations of guests, and the demands required of staff today and in the future.

Legacy hospitality networks utilize a dedicated infrastructure for each application and service. This causes a silo effect for each system required for the property. For example, the telephone, video, and High-Speed Internet Access (HSIA) systems each have their own infrastructure running in parallel. See the Siloed Network Topology Illustration in *Figure 1* below. Additionally, there are many Room Management Systems (RMS) and Building Management Systems (BMS) that require their own, dedicated infrastructures.

As applications and services evolve, they are increasingly switching to Internet Protocol (IP) and Ethernet for communications. There are more and more services required to support the property and some of these services see an exponential increase in bandwidth demands. This evolution provides the opportunity to converge the different siloed networks onto a common, single infrastructure. See Converged Network Topology Illustration in *Figure 1* below. The business case for a converged infrastructure involves combining some or all these applications and services throughout the property onto a single infrastructure with the capability to support them. This means that the converged infrastructure must support the current bandwidth requirements of all applications and services as well as anticipate the future bandwidth demands of both guests and the BoH.



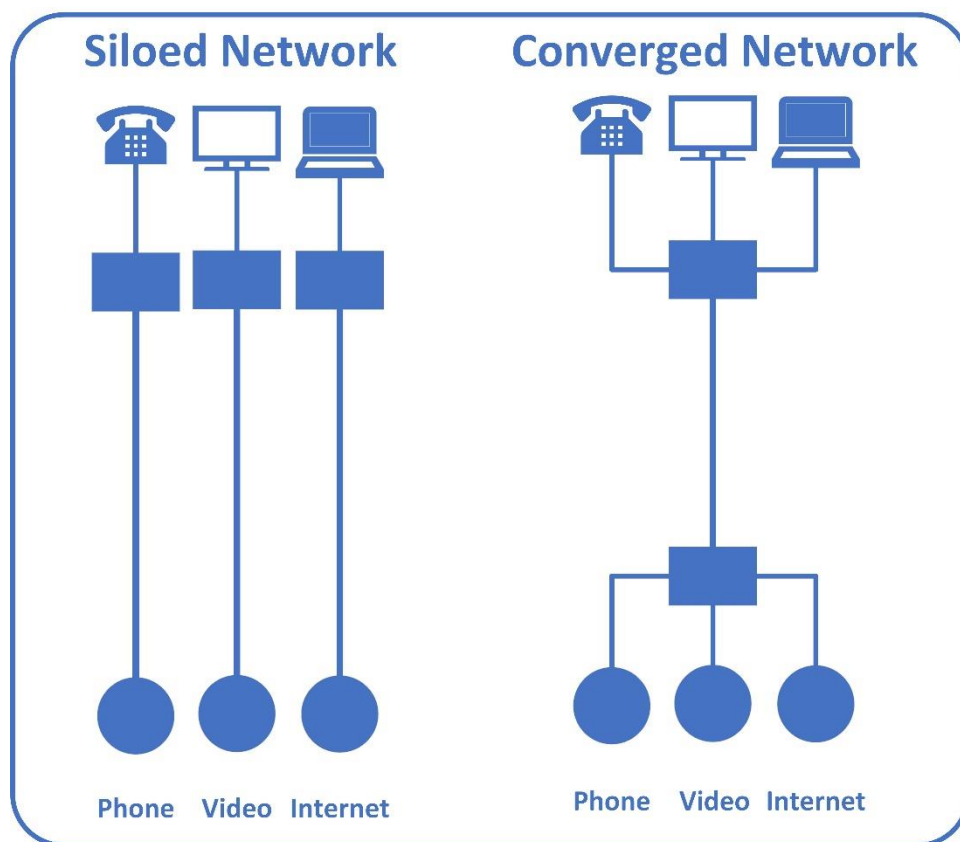


Figure 1

The number of devices connected to the hospitality network is increasing at a rapid rate. Today's typical guest has between three and four devices expected to connect to the network during their stay, most of which are connected wirelessly. Similarly, the BoH applications are evolving, and more devices require a connection to the network. All the wired and wireless connectivity is placing a growing burden on the infrastructure to support them. Additionally, the bandwidth demands are increasing for some if not all the connected devices. Video services are the main culprit of increasing bandwidth demands in a hospitality network. The industry has gone from providing several live television channels via satellite or cable service providers to guests streaming video content to their personal devices and then casting that stream to the in-room television. Each evolution presents greater bandwidth demands on the infrastructure and thus requires additional planning and design with a focus on forward-looking technologies and products.

Alternatively, the converged **infrastructure** can use a variety of mediums. Traditional structured, twisted pair category copper cables or fiber optic cables are typically used in a new build or greenfield deployment. In the case of a renovation or even a technology refresh, or brownfield deployment, reusing the coaxial cable plant may make the most sense from both a cost and a time perspective since the cable is already in place. Using an existing network to support a partially converged infrastructure may serve as the best path to a fully converged infrastructure. The



technologies and bandwidth supported on these different mediums continues to evolve to improve speed and throughput. Likewise, the wireless infrastructure is very important, and it is growing almost exponentially. Wi-Fi is the most common technology for HSIA or Ethernet-only connectivity and this technology is changing so rapidly that new major standards are being released every several years (i.e., Wi-Fi 6, 6E, 7). There is also a myriad of wireless protocols being used for BMS and RMS solutions to support the property. These are often grouped together and called the Internet of Things (IoT). And then there's cellular technology. The use of Distributed Antenna Systems (DAS), and Small Cell technologies enable solutions like Private Long-Term Evolution (LTE) and 5G which are being used for wireless connectivity with an assortment of devices. Each of these support particular use cases in a hospitality environment including BoH communications, network capacity offload, improved guest experiences, and much more.

Considering all the above, there are decision points to be considered when choosing the optimal network infrastructure. *Figure 2* below shows a high-level list of questions that will guide the reader to the right decision.

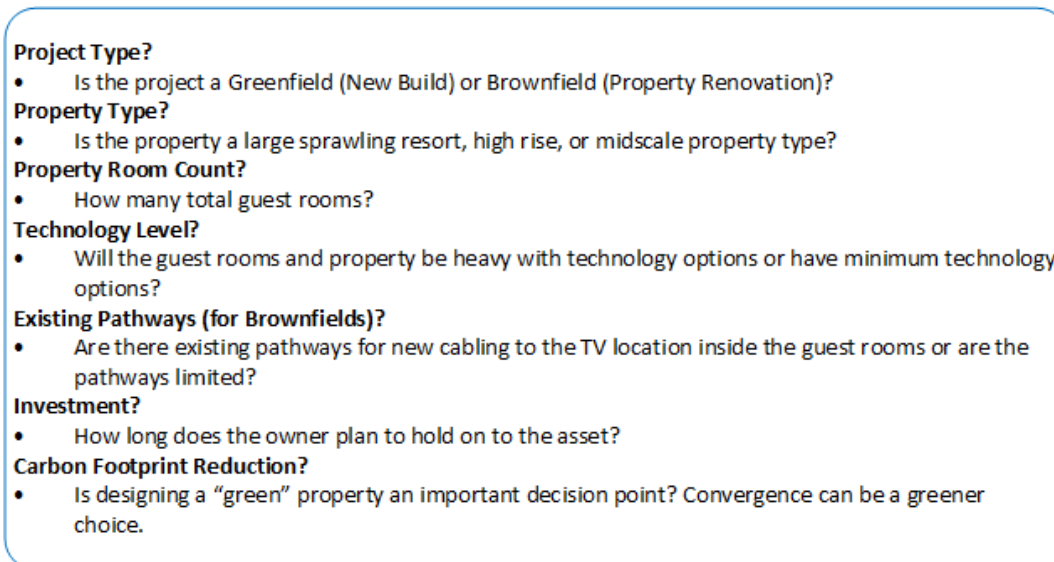


Figure 2

Ongoing support and maintenance of networks are crucial, requiring the retention of project design documents throughout the network's lifespan. Accurate documentation aids in troubleshooting network failures, and cable testing establishes a baseline for wired networks. Changes to networks should be planned carefully, considering potential ramifications and possible network outages. Remote troubleshooting and configuration adjustments are necessary as applications and services evolve. Defining roles and implementing a comprehensive strategy for troubleshooting, both on-site and remotely, is essential. Service-level agreements with network Managed Service Providers (MSPs), corporate IT resources, and local IT staff facilitate this process. Change management should also be defined accordingly.



The *Next Generation Infrastructure Technology Guide* discusses the business and use cases for a converged infrastructure with specific details for each property type, construction type, and applications to be supported. Details and their associated impacts are provided for the different wired and wireless infrastructure options along with implementation recommendations and tips. This Guide further explores ongoing support considerations.

The outline of the Next Generation Infrastructure Technology is shown below in *Figure 3*.

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Business Case / New And Existing Hotel Application Requirements
Typical Current Hotel Network Description
Hotel Applications Requiring Network Connectivity
Structured Cable System Options
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Indoor Wireless Converged Network Technology Options
Indoor Cellular And 2-way Wireless Solutions
Recommended Network Infrastructure And Potential Limitations
Application Network Mapping
Implementation Requirements And Considerations
Ongoing Support Considerations

Figure 3

*The Guide* is a must for hotel owners, developers, consultants, architect and engineering firms, hotel technology integration companies, and the ecosystem involved with designing, deploying, and operating a hotel network. A link to the full Next Generation Infrastructure Technology Guide will be added here upon its publication.

