CORNING

The Connectivity Premium:

How Commercial Real Estate Developers
Can Profit from Forward-Looking Strategies

rfconnect
Intelligent Wireless

"Location, Location, Connectivity"

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There's no mystery to it; ABI Research's latest data shows that there are more than 10 billion wirelessly connected devices in the market today, with over 30 billion devices expected by 2020.[1] Moreover, thanks to the proliferation of mobile work applications and bring-your-own-device (BYOD) policies, experts now believe 70 to 80 percent of the world's mobile usage is happening indoors,[2] often inside commercial properties.

But thanks to that unprecedented, unrelenting rise in wireless data traffic, today's outdoor networks can barely handle the data demand; they're overloaded by outside traffic, while at the same time powerless – due to signal loss caused by building materials – on the inside. This puts a tremendous strain on in-building networks and makes delivering any form of wireless communication (especially cellular or Wi-Fi) less reliable, more expensive, and ever more complex.

Fortunately, commercial real estate developers can profit from this unpleasant reality by making decisions – today – that

will alleviate the access, bandwidth, and throughput issues of tomorrow.

In this white paper, Corning and RF Connect will analyze the ins and outs of "future-ready" data networks from a developer's perspective – including methods for choosing the right components, selecting the right sources, and ensuring future service readiness for maximum profitability and return on investment.

Data: The Fourth Utility

According to Intel®, 10 billon applications have been downloaded from iTunes, 200,000 text messages are sent every second, and 35 hours of video are uploaded to YouTube every minute.[3]

There's no end in sight; not only is our extraordinary demand for person-to-person data communications likely to continue unabated, but we're on the verge of a renaissance in what Cisco® calls the "Internet of Everything."

Think, for example, of office security cameras (equipped with real-time analytics) alerting a building's security manager that they've detected a threat. That's digital information - sent wirelessly, via the Internet – to an individual's smart device. And it's a massive amount of digital information, too. According to Cisco, if you're streaming video to a local area network (LAN) file server or storage unit, a single camera might need 11 Mbps of bandwidth; with five cameras, it could take 53 Mbps.

What's more, data is increasingly being driven by machine-to-machine communications, without any human involvement whatsoever. Think, for instance, of that same security camera communicating – autonomously – with a building's HVAC system to aid with the detection of water leaks. Or consider that camera using motion detection software to determine

[1] www.abiresearch.com/press/more-than-30-billion-devices-will-wirelessly-conne
[2] Ovum
[3] www.intel.com/content/www/us/en/communications/internet-minute-infographic.html

a room's occupancy level, then sending that information to the HVAC system to help make real-time heating and cooling decisions.

All told, companies like Bosch estimate that more than six billion "things" will be connected to the Internet by 2015.[4] Already, with a myriad of digital, wireless, and IP-based systems taking root – many of which are now central to the operation of commercial buildings – broadband data has become an unofficial "fourth utility," as crucial as electricity, water, and gas.

To real estate strategists like James Carlini, "the need for [data infrastructure today] is as important to commerce and urban development as the need for good roads, bridges and public transportation." In fact, according to a recent report from Deloitte, attracting tenants and buyers is requiring the "commercial real estate industry to fundamentally change [its] business practices, including redesigning existing space to suit new tenant demands and the growing use of automation."[5]

Today's building occupants are demanding wireless data and cellular communications without restriction – every time, at full speed, and with the dependability of a landline. But beyond that, they're demanding to work with the newest available applications and devices, which means a need for ever increasing bandwidth.

Traditionally, real estate developers and management companies have addressed this need for bandwidth reactively; as technology evolves, they attempt to "catch up" with the building infrastructure by creating multiple parallel networks that in many cases demand higher capacity than the existing cable structure can provide.

Operating like this – by perpetually adding new networks and running new cabling – is a tremendously expensive and unsustainable practice. Tomorrow's tenants will demand a

much more scalable bandwidth infrastructure, and developers will need an inexpensive and efficient way to meet this crucial requirement.

Fortunately, the solution is not uncharted. Gas, water, and electricity are all purchased and installed based on specifications intended to last the lifetime of a commercial building. If we consider data access to be a true "fourth utility," why wouldn't we design and budget its infrastructure in the same way?

Building for the Future – All Fiber

So what does a future-ready data network actually look like?

For starters, we know that in-building communications networks have undergone substantial changes over the past decade. Many businesses have transitioned from twisted copper pair voice lines to either VoIP connections or cellular service. For security personnel, we've seen a shift from two-way radios to IP cameras and closed circuits. And thanks to growing trends like BYOD, secure remote email access, and Web-based tools for asset tracking and conferencing, more and more wireline services have been replaced by wireless.

In this emerging world of all-digital, all-wireless communications, it's safe to say that copper cabling – though it has served us well over the years – is very quickly running out of the capacity to efficiently support our soaring bandwidth needs.

Rather, at this point in time, we must look to fiber; only all-fiber (passive optical LAN) infrastructures have the capacity for unlimited bandwidth. And while fiber is already the industry's standard for intrabuilding riser cabling, today's forward-looking commercial developers are taking the next logical step – installing fiber in the horizontal. As data traffic increases, the copper cabling used in horizontal networking will become an

[4] http://www.bosch-presse.de/presseforum/details.htm?txtID=6599&locale=en
[5] Borchersen-Keto, Sara, "Deloitte Forecasts Moderating Growth in 2014 Real Estate Market," Octobe

The Forward-Looking Network

Convergence extends the core network to support multiple in-building applications, including cellular, Wi-Fi, and other IP-based services.

infrastructure's primary "choke point." Hence, the shift from copper to fiber in the horizontal will be a crucial component of future-ready network planning.

For years, the knock on fiber has been its perceived cost. But in today's business climate, tenants and developers are increasingly finding that fiber actually reduces their costs over time.

Not only are the prices of fiber cable, components, and hardware steadily decreasing, but most fiber installations now cost less to install and to maintain, suffer less downtime, and require less networking hardware than copper cabling systems.[5] At one tenth the size and weight of copper, fiber allows for a much cleaner, simpler cabling infrastructure. (What's more, the availability of preterminated fiber cables can drastically reduce both installation costs and deployment times.)

Most importantly, fiber's virtually unlimited bandwidth (capable of carrying 65,000 times more information than unshielded twisted-pair copper cables)[6] makes a fiber-based system future-ready, which eliminates the brutal costs of continuous rip-and-replace upgrade cycles.

Building for the Future – Convergence

Another way the forward-looking network reduces costs and improves performance is through convergence – extending the core network to support multiple in-building applications, including cellular (via cost-effective distributed antenna systems), Wi-Fi, and other IP-based services.

Already, there are hundreds of systems and applications that buildings must support (Public Safety, security, building automation, Wi-Fi, LAN, DAS, and PON, to name but a few) with more arising frequently. Through convergence, developers can save CapEx and OpEx by eliminating the need for parallel

network structures. Instead of managing an unwieldy set of separate networks, the single converged infrastructure transports all of a building's voice, video, and data with the convenience of a one-stop shop.

Moreover, that shop must be fully equipped. For too long, network planners have neglected to provide fast, reliable cellular service throughout an office building's dense, labyrinthine interior. Perhaps yesterday's tenants were willing to forego in-building cellular service; rest assured, today's tenants will demand it. With the number of cellular devices expected to exceed the world's population sometime in 2014, sophisticated tenants can no longer abide the potential for missed calls, opportunities, or revenue.

Fortunately, robust cellular service through cost-effective distributed antenna system (DAS) technology – once reserved only for large-scale public venues – is now available to everyone. And with new converged solutions and shared cost models, in-building cellular voice and data service needn't be complex or costly.

Selecting a Source

An additional cost driver for commercial real estate developers is the number of subcontractors (and the amount of specialized labor) needed to complete an in-building networking project.

Having a single-source integrator – instead of hiring separate consultants, low-voltage contractors, and cable contractors – can reduce time, cost, and project delivery risk. But when it comes to choosing an integrator with the requisite expertise, commercial developers should consider several criteria.

First and foremost, the integrator should be highly familiar with fiber-based networking solutions that can deliver a truly future-ready infrastructure. Second, the integrator should have

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experience fielding converged solutions that support multiple services and applications, and that can easily be modified (via telecom closet or headend in the building) to adjust or add services.

Next, the integrator should be familiar designing solutions that can provide flexibility to tenants when they inevitably change floor plans or the locations of services.

In-building wireless implementations are multifaceted and complex, with multiple stakeholders and a myriad of details. At a minimum, these projects require a well-coordinated effort, performed by experienced RF engineers with specialized tools, analytics, testing, and problem-solving methodologies.

Last but not least, an integrator must be able to deal effectively with wireless carriers – negotiating, coordinating, scheduling secure design approval and rebroadcast rights, and getting the system tested and commissioned to the carrier's satisfaction.

Commanding a Premium

With the commercial real estate industry anticipating continued market improvements to rent and occupancy levels, as well as asset prices, transactions, and capital availability, now is the perfect time for investing in future profitability.

As such, developers will be examining projects carefully to ensure their potential for return, with a special emphasis on building assets – particularly in major metropolitan markets that are seeing prices move closer to 2007 peaks – and ensuring that those assets are competitively positioned to command appropriate premiums.

Network infrastructure planning – designed for the future, not the present – will be essential to this pursuit, and successful developers must be forward thinking in their efforts to attract sophisticated future tenants and buyers.

More specifically, commercial developers can benefit from taking the specific actions outlined in this paper:

1. Treating data access as a core utility, and accordingly, choosing a data infrastructure based on specifications intended to last the lifetime of the commercial building.

2. Creating future-ready bandwidth capabilities by choosing fiber in the horizontal, instead of copper.

3. Creating future-ready service capabilities – including robust cellular service – by efficiently converging networks and applications.

4. Choosing a single-source integrator with expertise in fiber, convergence, in-building networks, and other areas beyond basic networking.

Overall, developers must be wary of cheap imitators – focusing on long-term profits instead of short-term savings. And they must be creative in achieving new future-ready solutions and intelligent infrastructures and amenities, supporting the next generation of devices, services, and networks.

Done strategically, today's infrastructure planning can be tomorrow's profit.

For additional information please visit:
http://opcomm.corning.com/1-RealEstate.html

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