

Florida Highrises Bring Fiber to the Unit

This luxury condo complex was future-proofed with GPON fiber – at a price less than copper

By Jeff Beekhoo ■ *DVI Consulting*

Despite the slowdown in new housing, money continues to pour into South Florida real estate these days. An international crowd of buyers and people from the northeastern U.S. seeking second homes are snapping up condos and homes, and builders are constantly looking for ways to distinguish their offerings in a highly competitive market. Boca Developers, a major developer of condominiums, looked for ways to differentiate its new condos by asking a simple question: “What will make people want to buy here 10 years from now?”

The answer turned out to be “bandwidth.” Developers are building multi-million dollar luxury condos, but many are falling behind by not investing in state-of-the-art broadband infrastructure. Instead they are installing the same cable on risers that they have been installing for years and offering the same traditional services. Boca Developers, on the other hand, has made its new 352-unit Marina Grande condo towers in Riviera Beach, Florida, one of the first residential highrise developments in the U.S. to bring fiber to the unit (FTTU). Even in Japan, where fiber is much more common, it is typically terminated in the basement, with copper to the living units.

FTTU enables ultra-high bandwidths to each unit today and unlimited future bandwidth capacities. All of the company’s properties under development now and in the future will also be built with FTTU.

It took a while, however, for Boca

Developers to realize that FTTU was the answer to its need for a future-proof communications service. When Boca Developers started working three years ago with DVI Consulting, it was planning to offer cable service over hybrid fiber coax. But when the company said it wanted a service that would stand the test of time, DVI started looking at companies offering FTTP systems.

DVI saw that FTTP offered a better technical solution and a better return on capital invested in residential construction, including multi-tenant high-rises. DVI selected GPON as the most ad-

vanced FTTP technology and selected Calix as its vendor because of its extensive experience with successful GPON single-family and midrise fiber-to-the-premises deployments. DVI built out the FTTP infrastructure and contracted with Hotwire Communications to provide triple play service for Boca Developers’ properties.

ing office 100 km south in Miami. To ensure that the towers received the high-quality connection required for services such as IPTV, DVI worked with Hotwire to help engineer the fiber link using the latest in optical amplifiers. They also tuned the system to ensure the highest performance.

The Hotwire optical feed terminates in a 8x17-foot room on the first floor of one of the Marina Grande towers in Boca. Six 7-foot relay racks support all the equipment needed to terminate the optical feed, process the IPTV traffic, and convert some of the IPTV traffic to

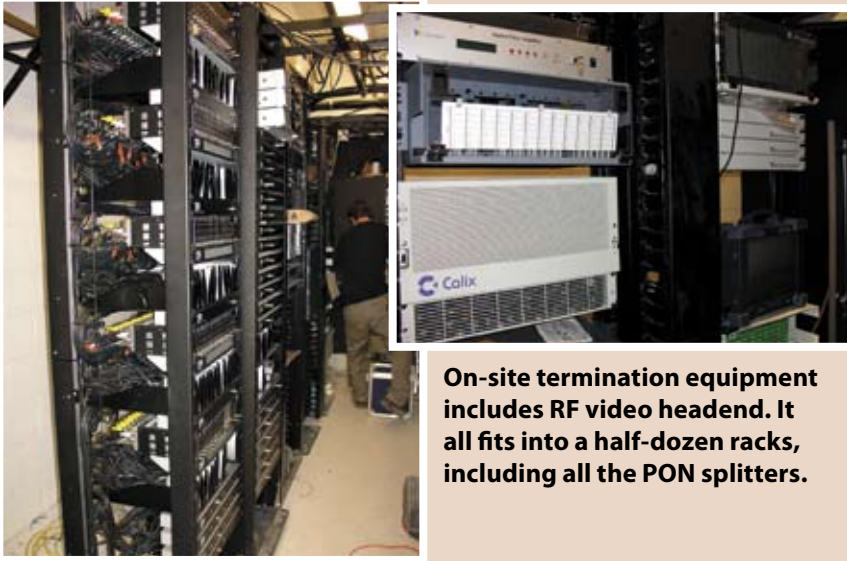
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From Fiber Loop to the Unit

The five Boca condo towers are fed by a 10 gigabit Ethernet (10 Gige) leased fiber cable that connects to Hotwire’s serv-

RF video. The racks also hold all the Calix FTTP Optical Line Terminal (OLT) equipment used to distribute traffic to individual units. The actual infrastructure is owned by Boca Developers, including the passive optical infrastructure and the Calix GPON OLT, a single shelf that can support up to 1024 residences

In addition to the GPON OLTs, the Marina Grande headend includes all the RF video equipment and optical splitters required to service the entire project. A fiber cable extends to an optical main distribution frame (MDF) located in a



On-site termination equipment includes RF video headend. It all fits into a half-dozen racks, including all the PON splitters.

closet in each of the six Marina Grande high-rises. Fiber bundles are then run up through conduit and split out every third floor in a closet with an intermediate distribution frame (IDF), from which the fibers are extended directly to the living units.

Each individual fiber terminates in the structured wiring enclosure in each unit's laundry room. Each enclosure contains a GPON Optical Network Terminal (ONT) from Calix, a power supply, a battery to ensure lifeline services in case of general power failure, an Ethernet switch/hub, and termination blocks for voice, video and data.

The Calix ONTs are one of the keys to 'future proofing' Marina Grande. Subscribers receive basic CATV services via RF video, plus VoIP and 3 Mbps data delivered to the ONT. The RF does not require a set-top box (STB). Residents desiring interactive video services are provided with an Amino IPTV STB and receive IP video through the 100 Mbps Ethernet port on the ONT.

Today, 1.2 Gbs of Ethernet bandwidth and a full 860 MHz of CATV traffic are delivered to the ONTs of every residential unit. In the future, these same living units will be able to receive up to 2.4 Gbs of bandwidth.

Competitive Service at Lower Cost

The system went 'live' in Building 1 at Marina Grande in December 2006, and the first residents started moving in a month later. In addition to the CATV and IPTV video services, Boca Developers is offering all residents a basic high-speed internet service of 5 Mbps at a price 10 percent less than the local incumbent's equivalent DSL service. Unlike the incumbent, however, Boca can also use the infrastructure to offer much higher bandwidths to residents interested in the speeds made possible by fiber. ONTs available from Calix today offer as much as 200 Mbps to each residence, and this will of course increase.

"One of my initial misperceptions

about fiber was about its cost," said Boca Developer's Mark Rekers, who is responsible for telecommunications at Marina Grande. "When you mention fiber optics in the building, everyone sees a red flag; they think the cost will be astronomical. But when I did a cost analysis of triple-play services, I found out that wasn't true. The cost of coax to the riser for video, phone, and Ethernet data is actually about 20 percent more than the cost of fiber, but a lot of people aren't aware of this."

Going with FTTP also saved money in another way. In high-rise buildings, square footage equals money—and optical fiber infrastructure takes up fewer square feet than an equivalent copper plant. Instead of devoting square footage on each floor to an equipment cabinet, the developer now has a cabinet on every third floor. And instead of four 4-inch conduits, developers can use one 3-inch riser conduit and one 1-inch conduit to units.



UPS batteries for emergency power supply within the on-site central office.

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Broadband Is a Selling Point

While the majority of Marina Grande condos were sold well in advance of the development's opening, Rekers notes that "Boca Developers is now highlighting fiber-based broadband in its brochures as a way to market its units. Going forward,



With views like this at Marina Grande, why would anyone need HDTV?

we expect that this service will have a positive impact on sales, as it sets Boca Developers apart from its competitors.”

Many Florida buyers occupy their units only a few months a year, but they still want to be able to conduct business even while away from their primary residences. By offering state-of-the-art communication services Boca opens up a target market with an entirely different demographic than the traditional retirement market. Now Boca Developers can tell buyers in this market that it can offer full access to a business-level communications service.

But fiber isn't all about business communications. Boca's Rekers notes that HDTV and plasma TVs offer such great

Key Players at Marina Grande

Boca Developers, the real estate developer behind Marina Grande, contracted with DVI Consulting to integrate triple play services for this south Florida project.

DVI Consulting used a team approach to create the Fiber-to-the-Unit project at Marina Grande. Using the Calix PON Certification Training program as a baseline, DVI sent its design firm of choice – Premier Cable Design – to Calix GPON training to get certified on PON design.

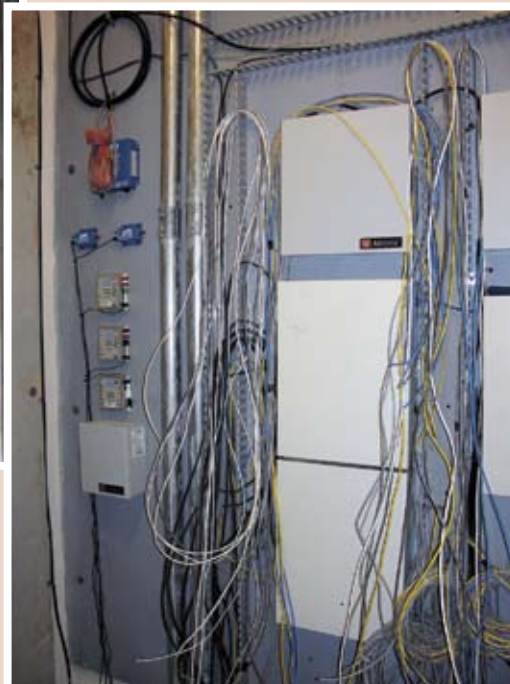
Premier is now able to design an end-to-end solution for a greenfield, high rise development, including the PON infrastructure, generate a complete bill of materials for everything from fiber, splice boxes, handholes, vaults, routers, switches and furnish a complete “as built” CAD file with splicing diagram.

DVI partnered with a local company – CW Solutions – to implement the new FTTU specifications and wiring. DVI worked with CW Solutions to help it become a low voltage wiring company specializing in fiber to the unit and home projects. At the completion of a project CW Solutions turns over a package that includes all the link loss budgets, ONT serial numbers, provisioning information and design for the project.

DVI is building its business model around FTTP technology, with projects now under way in North Carolina, Arizona and Florida.



Fiber to the unit. Note two small riser ducts, wide-radius fiber bends in the service cable, straightforward in-unit ONT installation with battery backup, all in one equipment box.





The VoIP rack in on-site central office.



Video headend racks in on-site central office.



Developers of the highrise condo complex at Marina Grande found fiber to be 20 percent cheaper than copper – and they saved money on space, too.

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quality that standard coax cabling is no longer good enough. Today, viewers are more likely to react negatively to the degraded visual experience caused by lower-quality cable infrastructure. Viewers are particularly sensitive to degradation in IPTV services. Bringing fiber directly to the unit ensures the highest-quality signal reaches residents' TVs. This translates to fewer service calls, happier customers, and lower costs for the service provider. Ultimately, it also translates to higher-value properties for residents of Marina Grande. **BBP**

About the Author

Jeff Beekhoo is CEO of DVI Consulting Group, www.dviconsultants.com. He can be reached at jeffbeekhoo@dviconsultants.com. He has over 18 years of experience in RF, CATV and telecommunications. DVI Consulting was formed to implement state of the art communications infrastructure in new construction. The principals worked previously with private cable operators and developers. With the emergence of IPTV and VoIP, DVI saw a need to bring all these services together.

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