

## The Case for High Density IPTV in MDUs

SKU: IN0904614WHT  
Analyst: Norm Bogen  
norm.bogen@reedbusiness.com  
+1.480.609.4536  
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### Overview

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IPTV is entering a period of extraordinary growth and presents significant opportunities in the multi-dwelling unit (MDU) and hospitality environments. Not only will IPTV offer new revenue opportunities to providers serving these high density environments, but will serve as a differentiator to the properties where it is available, thus helping to attract residents/guests to these apartment communities and hotels. There are numerous factors promoting the growth of IPTV in these environments, including:

- **New revenue opportunities:** Service providers, particularly in the hotel market, are looking for new revenue growth opportunities, as the market for broadband access reaches maturity.
- **Property differentiator:** In the competitive rental and hospitality markets, properties are continuously looking for means to differentiate. Being on the cutting edge of video services by offering IPTV, particularly high density (HD) IPTV, is being embraced by property owners as a differentiation strategy.
- **Cost savings:** Deploying IPTV in high density environments offers significant cost savings to single-family markets.
- **Security:** Compared to traditional RF video delivery in an MDU, where the signal is often illegally tapped, IPTV is a more secure video transport technology.
- **Microcosm:** In a traditional telco broadband deployment with thousands of subscribers, the provider must consider bandwidth issues, which largely is not relevant in an MDU.
- **The time is right:** HD IPTV, while new, is in a high growth period. The introduction of HD digital terrestrial cable and satellite services encourages the upgrade of the traditional SMATV and CABD to IPTV platforms, particularly in the hospitality market.

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## Market Assessment

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For roughly the past decade, MDUs and hotels have been the focus of targeted broadband solutions specifically designed for high density buildings. These solutions were adapted to an environment with multiple, unique, broadband subscribers/users in a single building (or across multiple buildings on a single property). Service providers recognized that the MDU and hotel markets offered significant opportunity, but required a different approach from single family environments. Specific business units (such as Verizon Avenue) or, in many instances, companies (Guest-Tek, iBAHN), were developed to address this market.

While many companies that emerged specifically to address the MDU and hotel broadband opportunity ultimately failed, a handful of companies have succeeded. As the market matured, consolidation occurred, and the landscape was left with relatively few players (as compared to the initial “gold rush” stage). Those that survived, however, are now veterans in understanding the unique dynamics of these high density environments.

This knowledge base is now being applied to the next wave of service offerings targeted to the residential market: IPTV. As fiber is pushed to the residence, the opportunity for IPTV is gaining strength. Leading telcos, such as Verizon and AT&T in the US, KT in Asia/Pacific, and France Telecom in Europe, are invested in extending their fiber footprint and a component of this effort is bringing fiber (and IPTV) to MDU communities.

IPTV adoption is an area of heightened interest as the success or failure of the service reflects the culmination of many years of network deployment, content rights negotiations, and marketing campaigns. Additionally, in the hospitality market, IPTV is emerging as the key to future revenue growth as the broadband access market reaches maturity. Because of the special circumstances in the MDU and hotel markets, these spaces warrant unique consideration, as the potential for IPTV is quite distinct and differs on a variety of levels from single-family residential markets, including:

- Deployment architecture: Fiber-to-the-building (FTTB) deployment models allow for a cost effective means to deliver bandwidth-intensive services, specifically IPTV, to multiple subscribers.
- Audience: In certain markets, particularly in the US, MDU demographics tend to reflect a younger, tech-savvy audience that has a higher likelihood for IPTV adoption.
- Business models: Relationships with REITs, management companies, and hoteliers provide important partnerships for service providers in high-density environments when it comes to communicating marketing messages to residents and guests.
- Percentage of market: In some regions, MDUs dominate the housing market, thus making MDU deployment and marketing strategies critical to IPTV success.

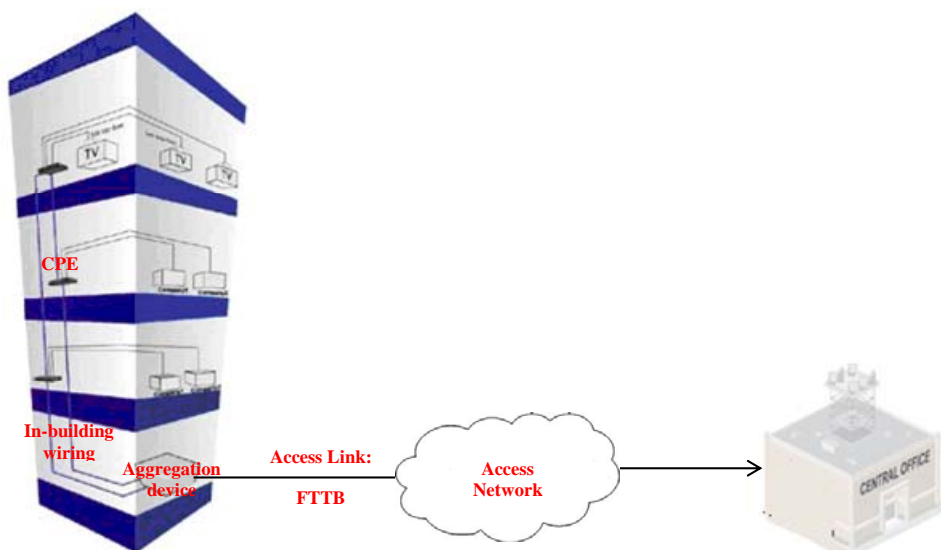
As telecommunication services go, IPTV is a nascent offering. Market acceptance of Internet-based television is yet unclear. However, according to In-Stat, the MDU and hospitality markets both serve as excellent petri dishes to trial, test, and observe how various strategies will affect service adoption and

usage. This whitepaper will examine, in detail, the players, the solutions, and the strategies that are playing out in the MDU and hotel markets worldwide.

## High Density IPTV Deployment Architecture

High density IPTV is based on the in-building design for broadband service delivery. The basic concept behind in-building broadband is that the broadband termination point is moved from an exterior location to within the building. This type of a broadband deployment schematic could be applied to a variety of multi-tenant environments, including hotels, apartments (MDU), or office buildings. For the purpose of this discussion, the term MTU (multi-tenant unit) will be used to universally refer to both MDU and hotel environments.

**Figure 1. In-Building IPTV Network Design**



Source: In-Stat, 3/09

The basic components to the MTU deployment architecture include broadband access/transport to the building, an in-building termination device, internal transport, and the customer premises equipment (CPE). In-building broadband can be based on many flavors of broadband including DSL, cable, wireless, and fiber. While the in-building transport technology may vary, the majority of deployments supporting IPTV will employ fiber as the external building transport technology.

There are two principle design options for fiber deployment in an MTU environment: FTTB (fiber-to-the-building) or FTTP (fiber-to-the-premises). FTTB brings fiber within the building, terminating in an access node placed centrally within the building. Individual residences are then connected via CAT5, VDSL, or some other technology option (discussed in greater detail later in this whitepaper).

The other option is to take fiber all the way to the end-user or premises (FTTP). In this type of deployment, access is terminated in the apartment or guestroom. Fibers from the end-user premises

are then concentrated in a fiber access terminal (FAT) and distributed to cables with higher fiber counts. The FAT is typically placed where the cables change from indoor to outdoor, such as in the basement or ground floor of a building.

## **In-Building Technologies**

For the delivery of IPTV services a variety of in-building transport solutions are being presented as viable alternatives to FTTP. Typically, Ethernet is used as the in-building transport when CAT5 cabling is available. In this instance, a centrally located fiber access node is connected to the premises via CAT5, which terminates directly at the CPE. However, the reach of Ethernet is only 100 meters, so in a large MTU environment, numerous access nodes need to be placed throughout the building to combat this reach issue. The use of Ethernet tends to be in Greenfield environments or in newer buildings where CAT5 cabling is already in place, as the cost of installing new cabling to retrofit older buildings tends to be cost prohibitive.

When CAT5 is not available, VDSL may be applied so as to leverage existing wiring. To deploy VDSL in a building with sub-CAT5 cabling, a VDSL switch is installed in the building (basement) that connects to the external Internet connection. A VDSL splitter may also be implemented, which allows the data signals to be combined with the voice signals from the telephone exchange or PBX. Finally, the customer premises VDSL modem is deployed in the apartment/guestroom, which splits the voice and data signals to the customer's telephone and local computers.

A third option for an in-building broadband architecture that supports IPTV is HPNA. HPNA uses existing phone lines to deliver high bandwidth services throughout an MDU. In the HPNA architecture, the external broadband connection is delivered to an HPNA switch and then deployed throughout the building to individual apartments or guestrooms.

An alternative to CAT5 or twisted pair is the use of coaxial cable for the in-building IPTV distribution. If the in-building twisted pair is not in good condition, then coaxial cable, if present, may be used. An added benefit of coax is that the TV and other media devices are already connected to a coaxial line, indicating that these run to areas in the home where IPTV services would be delivered.

## What Makes This Market Unique?

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Why is the MDU a unique opportunity for IPTV? What makes this market distinct from the larger residential market? How do the opportunities in the MDU compare to other residential markets? In-Stat identifies three primary elements that differentiate the MDU market as well as defines the unique opportunity that this cross-section represents, including architecture, demographics, and business model.

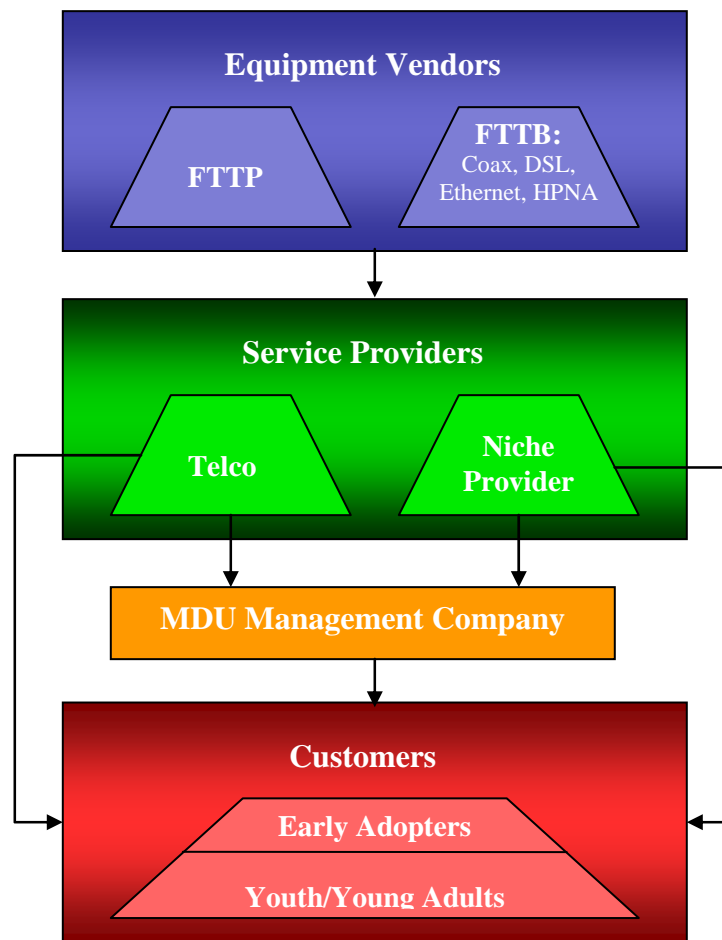
- **Deployment architecture:** As was discussed in previous sections, the MDU is primarily distinguished from single-family environments by the architecture of the broadband network. By placing the fiber termination point within the building, service providers are able to serve an entire community of potential subscribers for a comparatively lower cost. Additionally, the condensed geography of the network allows for alternative access technologies to be applied, such as Ethernet, that are not supported in a single-family environment.
- **Demographics:** Another distinguishing element of the MDU is demographics. In some regions, particularly the US, the MDU tends to host a different demographic as compared to single-family homes. For instance, the population tends to be younger and tends to be more urban than rural. Looking at the MDU, and its correlation to the demographic of those aged 18 to 34 years, there is a distinct set of technology behaviors associated with this demographic compared to older age segments. This segment tends to spend a greater percentage of their discretionary income on technology and communication services and they tend to be more willing adopters of new technologies compared to other segments. Young adults also tend to be very comfortable with the Internet and IP-based services and are less likely to express negative sentiments toward IP-based video services. This distinction is less of a factor in countries that have a high percentage of the population across all age and income segments living in MDUs.
- **Business model:** A final distinguishing factor for the MDU is the business model. Whereas in the single-family market, the provider's only access to the customer is direct, in the MDU, the provider is able to leverage relationships with building owners/management companies to communicate marketing messages. In some instances, depending on the regulatory environment, exclusive relationships can be forged giving the provider a monopoly hold on the property. These relationships will be discussed in greater detail in following section.

## MDU Market Structure

The MDU market offers a unique market structure with differing participants than the single-family residential market. As in the single-family market, the foundation of the market structure is the equipment vendors, as well as the software/middleware vendors. Some equipment vendors, however, have devised scaled-down solutions that are specific for the MDU market.

The middle layer of the market structure, service providers, also resembles the single-family market. These players include incumbent telcos, as well as smaller broadband/IPTV providers. The MDU market is also differentiated by the importance of installers/integrators, which play a significant role in implementing broadband solutions in the MDU market.

**Figure 2. MDU Market Structure**



Source: In-Stat, 03/09

The bottom layer of the market structure is the consumer. However, hovering in a space between the provider/installer and the consumer is the building owner or the management company. This layer includes real estate investment trusts (REITs), apartment management companies, owners, and co-ops. These players make the MDU market structure unique, adding an additional relationship layer, both for service provision and for customer relationships. The building management firm may partner with the service provider to market the service to new residents, they may form an exclusive relationship with the provider and share in the revenues, they may purchase service wholesale and resell to residents, or they may become owner-operators, effectively becoming the service provider for the building.

## **Market Trends and Predictions**

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### **It's Only the Beginning...**

IPTV is at the beginning of a new frontier. The MDU has been an important market for the introduction of IPTV and will continue to be a critical element in developing the service.

### **Asia/Pacific Is Leading the Charge...**

Half of MDU IPTV subscribers in 2009 will reside in Asia and this region represents the greatest increase in number of subscribers in the coming years, but the US will continue to represent the largest revenue opportunity.

### **Telcos Will Dominate...**

Even in the MDU market, which has been host to alternative broadband providers, incumbent telcos will account for the majority of IPTV deployments. In the hospitality segment, however, the market is primarily being served by niche, industry-specific broadband integrators/providers.

### **Here Comes High Definition...**

HD programming is the future of IPTV and while some in-building technologies will support standard IPTV, networks should be designed with the anticipation of supporting HD. Multicast HD-IPTV is the must-have service for both MDU and hospitality customers. In a day and age where customers increasingly have large screen TVs and even HD in their existing homes, it is part of a level of sophistication that people expect from hotels and upscale MDUs.

### **The Future Is Features...**

IPTV will become increasingly sophisticated with a host of features, many native to RF video service, to be introduced and expanded upon in 2009. One of the most important features being developed for IPTV is time-shifting, the process of recording and storing data for later viewing, such as on personal video recorders (PVR). Time-shifting is a feature common now to RF video, but it is still overcoming challenges for IPTV.

### **IP VOD Is Forging the Path in Hotels...**

In the hotel environment, most of the IP-based video deployed to date is IP VOD; however, providers, such as Guest-Tek and LodgeNet, launched IPTV solutions in 2H08 and it is expected that free-to-guest (FTG) IPTV in the hospitality market will take hold in 2009.

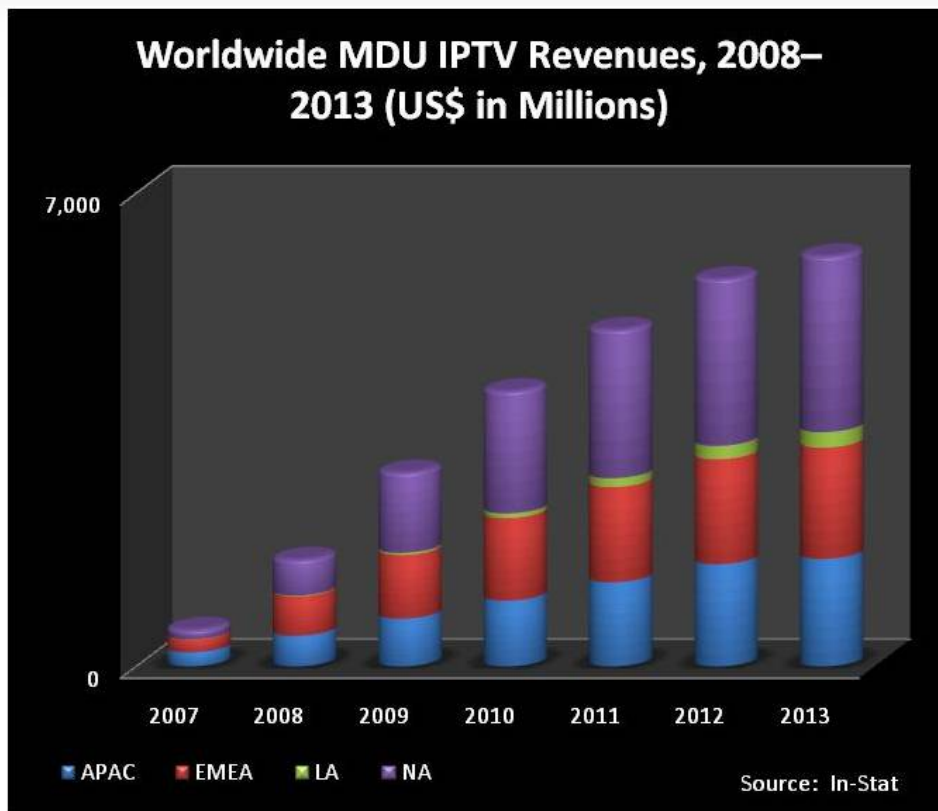
## Market Sizing and Forecasts

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Throughout the forecast period, Asia/Pacific will be the largest market for MDU IPTV subscribers. The strength in this region results from both telco provider initiatives, as well as the concentration of MDU housing. Hong Kong, for instance, while a top IPTV market, is especially strong as an MDU IPTV market due to the dominance of MDU housing, which amounts to 90% of total households. PCCW is the dominant IPTV provider and is largely responsible for the high penetration rates of IPTV in Hong Kong, which are the highest worldwide (although it is not the largest market in terms of total subscribers, as it is comparatively such a small population). With such high penetration rates, however, growth is expected to slow in coming years.

It is In-Stat's belief that growth in FTTU (Fiber-to-the-User) will slow slightly in 2009 and 2010, but will then gain speed in later forecast years. The economic downturn has impinged on some providers' intents to bring FTTU. Thus, existing wiring technologies, principally VDSL, will increase at a slightly greater rate over the next several years. Nevertheless, the fundamentals of FTTU in the MDU market remain, and as the market recovers, growth rates will again outpace those of existing wiring technologies. Ethernet as a last-inch technology will be less prevalent as typically in Greenfield markets fiber will be employed and the vast majority of retrofitted buildings will have twisted pair, not CAT5 wiring.

**Figure 3. Worldwide MDU IPTV Revenues by Region, 2008–2013 (US\$ in Millions)**



Worldwide IPTV revenues are expected to approach \$2.9 billion in 2009. While revenue nearly tripled between 2007 and 2008, the rate of growth will begin to slow. In 2009, MDU IPTV subscriber revenues will grow 82%; however, by 2013, revenue growth will decline to 6%. Nevertheless, revenues will more than double between 2009 and 2013.

In 2008, North America, Europe, and Asia/Pacific had roughly equivalent MDU IPTV revenues. However, beginning in 2009, North America will begin to emerge as the dominant revenue market. By 2013, North America will account for 43% of total MDU IPTV revenues, Asia/Pacific and EMEA, comparatively, will account for 26% and 27%, respectively.

## Methodology

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This whitepaper examines the market for Internet protocol television (IPTV) in high density environments, specifically multi-dwelling units (MDUs) and hotels. The report explores technologies, architectures, and infrastructure, as well as deployment strategies, market strategies, and business models. These aspects are explored in the unique environment of an MDU or hotel, as compared to a single-family environment. The report is global in scope with discussion of regional variances in terms of housing, infrastructure, and regulatory constraints/opportunities.

Data collection and analysis for this whitepaper entailed primary and secondary research of companies competing in this market, both equipment vendors and installers/providers. The majority of the primary research conducted for this whitepaper resulted from phone briefings and email correspondence with product managers and executives with direct market expertise. Among those interviewed for this report were top network operators (Connexion Technologies, Cox, DoCoMo interTouch, and Guest-Tek), installers (BNS), content providers (Revision3), security solutions (Verimatrix), and equipment vendors (Alcatel-Lucent, BitBand, and Industria). Secondary research included analysis of vendor's product literature, review of company product literature, press releases, company profiles, review of financial filings, whitepapers, as well as examination of underlying market dynamics. Statistical information provided by national statistics organizations, as well as international bodies, was used to develop underlying market potential estimates.

In-Stat's high-density IPTV forecasts include usage/revenue forecasts specific to the MDU and hotel markets. Forecasts provide aggregate and annual deployment numbers. Forecasts are built by leveraging multiple sources including, but are not limited to, supply-side market research and secondary sources. Forecasts are based on underlying market models and extensive industry knowledge.

## High Density IPTV: IP-Based Video in Hotels and MDUs Worldwide

### Summary for Report #IN0904471MBS

IPTV in high density environments, such as MDUs and hotels, is, in many ways, different from traditional residential deployments. This report explores the following:

- Detailed discussion of the unique MDU and hospitality environments in terms of network architecture, market structure, and leading providers.
- Discussion of key geographic regions, including North America, Asia/Pacific, and EMEA, chronicles regional distinctions in terms of MDU penetration, infrastructure, and relationship structure.
- Leading solution vendors and providers across these regions are also highlighted.
- Subscriber and revenue forecasts (2008–2013) are provided for each of the MDU and hospitality markets and are segmented by geographic area.

Hospitality is a non-residential market with a unique structure and perceptions of IPTV. These variances strongly affect the market structure and have given rise to a highly focused group of providers that cater to this market, all of which is explored in detail within the report.

### What's in the Report?

- Subscriber and revenue forecasts, 2008–2013, for IPTV in the MDU and hospitality markets, segmented by region.
- Detailed information about MDU penetration by country/region.
- Profiles of leading competitors, including France Telecom, Guest-Tek, NTT DoCoMo, LodgeNet, and Verizon.
- Discussion and schematic of deployment architecture.
- Analysis of telcos, integrators, and niche providers.
- Examination of hotel IPTV as an early-stage market.

For details, go to <http://www.instat.com/catalog/mmcatalogue.asp?id=288#IN0904471MBS>.

### HIGHLIGHTS

- With the single-family unit housing market in a slump, providers are showing renewed interest in the MDU.
- Leading telcos are invested in extending their fiber footprint and a component of this effort is bringing fiber (and IPTV) to MDU communities.
- IPTV is a new, but largely untapped, revenue opportunity for hospitality broadband providers. The hospitality market is on the cusp of significant IPTV growth, with an anticipated \$20.8 million in 2009.

## Offices

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### North America

#### Arizona

+1.480.483.4440

#### Massachusetts

+1.781.734.8674

### China

+86 10 6642 1812

### Europe/Middle East/Africa

+1.480.483.4470

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