White Paper

Hotel Guests Say Broadband Is Important
Can You Meet Their Expectations?

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Introduction

The past 10 years have witnessed a major shift in consumer use of broadband. Increases in home networking and the integration of wireless networking into portable computing platforms have transformed how users communicate, create, and consume content.

Nearly 12 years ago, a study conducted by Cahners In-Stat Group determined that 73 percent of the hundreds of hotel companies interviewed were contemplating broadband in guest rooms, and 52 percent were planning to install such services in the next 12 months. Fast-forward 11 years: both fixed and wireless broadband have become ubiquitous and a standard feature in hotel guest rooms.

The introduction of the Intel Centrino chip into laptops in 2003 accelerated the mobilization of consumers and changed the landscape of enterprises and consumer-facing industries. Now, in addition to portable computing devices, dual-equipped smartphones are driving the need for Wi-Fi, and together they are compelling businesses to offer broadband experiences as a core component of their operating models.

According to Infonetics Research, the dual-mode Wi-Fi market grew 116 percent between 2004 and 2005, and was projected to double in ensuing years. The demand for Wi-Fi in the same timeframe exploded.[1] The introduction of tablets, network computers, and an assortment of always-on devices has precipitated a market transition.

With average home broadband speeds approaching 3 Mbps, hotel guests increasingly expect and demand high-performance broadband in their rooms. In light of accelerating growth of consumer Wi-Fi devices and bandwidth consumption, hotels are seeking strategies to rightsize their broadband/Wi-Fi solutions.

This paper from the Cisco® Internet Business Solutions Group (IBSG) offers insights into device, content, and connectivity trends driving broadband consumption, and strategies for hotels to stay ahead of consumer demand and meet operational needs.

Hotel Wi-Fi Speed and Reliability Are Key Differentiators

J.D. Power and Associates' 2010 North America Hotel Guest Satisfaction Survey indicates wireless Internet access is among the top five amenities guests note about hotels. While the survey is silent on whether wireless Internet is a principal factor in hotel selection, according to the Association of Corporate Travel Executives, 80 percent of travel managers indicated that Wi-Fi performance was a deal maker/breaker in choosing a hotel (see Figure 1).

[1] Infonetics Research, 2006-2007.

Figure 1. Internet Access Is Among Top 5 Things Most Guests Note About Hotels.

Top 5	Total Industry	Luxury	Upscale	Midscale Full-Service	Midscale Limited Service	Economy / Budget	Extended Stay
1	Wireless Internet Access / Wi-Fi	Wireless Internet Access / Wi-Fi	Wireless Internet Access / Wi-Fi	Wireless Internet Access / Wi-Fi	Compli-mentary Breakfast	Wireless Internet Access / Wi-Fi	Wireless Internet Access / Wi-Fi
2	Compli-mentary Breakfast	Bedding and Pillow Choices	Compli-imentary Breakfast	Compli-mentary Breakfast	Wireless Internet Access / Wi-Fi	Compli-mentary Breakfast	Compli-mentary Breakfast
3	Bedding and Pillow Choices	Compli-mentary Breakfast	Bedding and Pillow Choices	Bedding and Pillow Choices	Bedding and Pillow Choices	Bedding and Pillow Choices	Bedding and Pillow Choices
4	Pillowtop Mattress	Pillowtop Mattress	Pillowtop Mattress	Pillowtop Mattress	Pillowtop Mattress	Free Parking	Pillowtop Mattress
5	Free Parking	Flat Panel TV /HDTV / Plasma	Free Parking	Free Parking	Free Parking	Pillowtop Mattress	Free Parking

Source: J.D. Power and Associates, 2010

A range of factors influences guest loyalty and visit frequency, and broadband performance is an increasingly important determinant of guest satisfaction—a useful and early indicator of guest loyalty. In the meeting-planning business, advance corporate teams make broadband performance a key criterion in hotel selection. In other areas of hospitality such as restaurants, Wi-Fi again is an important determinant of venue selection.

FoodServiceWarehouse.com reports that 64 percent of respondents in a recent survey make a restaurant choice based on availability of Wi-Fi services. Similarly, passengers have made Wi-Fi a selection criterion for airline and flight itineraries. The question now is not whether to offer Wi-Fi, but how to use it for maximizing customer experience, loyalty, and revenues.

Hotel Guest Broadband Consumption Habits

Over the last decade, consumers have seen an increase in average Internet connection speeds, a proliferation of devices, and a shift to video-based content. These changes all contribute to estimated 34 percent annual growth in Internet Protocol (IP) traffic from a base of around 5 gigabytes per month (around 164 megabytes per day).[2] As in other industries, hotel guest use of broadband resources has evolved over the past 10 years; over the past three years, the shift has been surprisingly rapid.

The emergence of social networking and, most recently, the availability of high-quality online entertainment content have changed consumer Internet habits. While technology adoption in the hotel industry has improved over the last decade, much of the hospitality industry has lagged other industries in making Wi-Fi available to its guests at sufficient performance levels. Our research shows that 80 percent of hotels sampled in our survey offer speeds under 6 Mbps, shared with an entire property that sometimes consists of hundreds of rooms. Such speeds are sufficient to support a legacy guest usage pattern around asynchronous services like email and

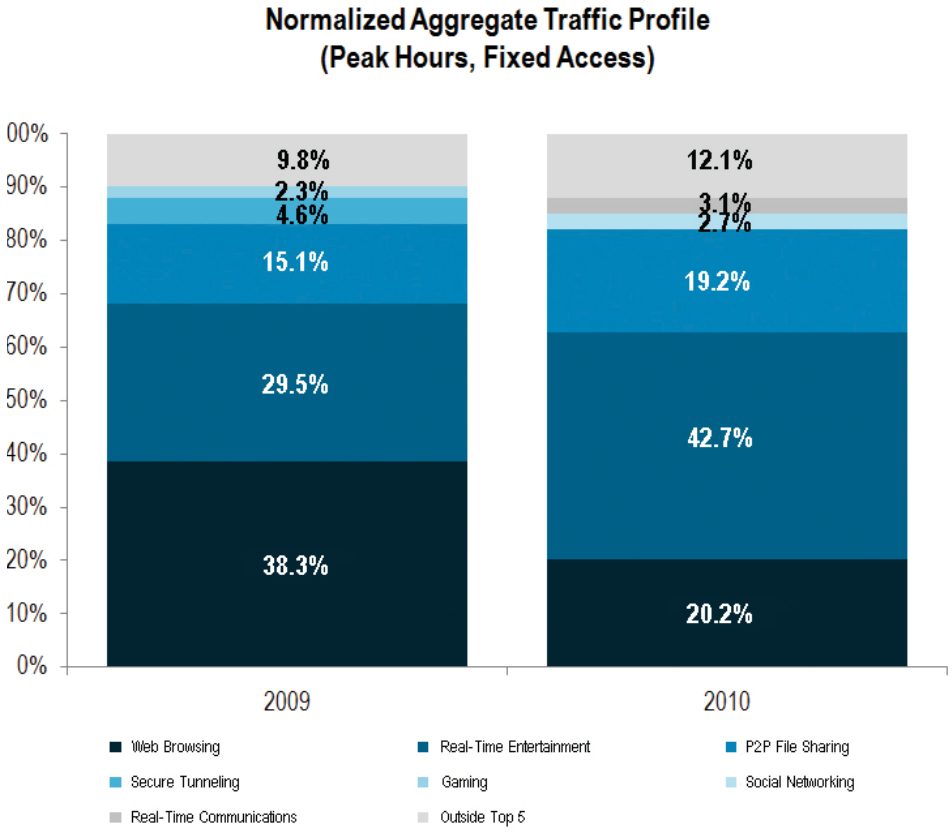
[2] Sandvine Incorporated, fall 2010.

small file transfer, but are insufficient to enable guests to enjoy service levels comparable to those of private residences .

Guests' increasing use of hotel broadband for entertainment, real-time communications, gaming, and exchange of rich media already outstrips the broadband capacities of most hoteliers. Moreover, with guests expecting reliable Wi-Fi services as part of the overall baseline experience, meeting Wi-Fi performance expectations is no longer an option for the hotelier.

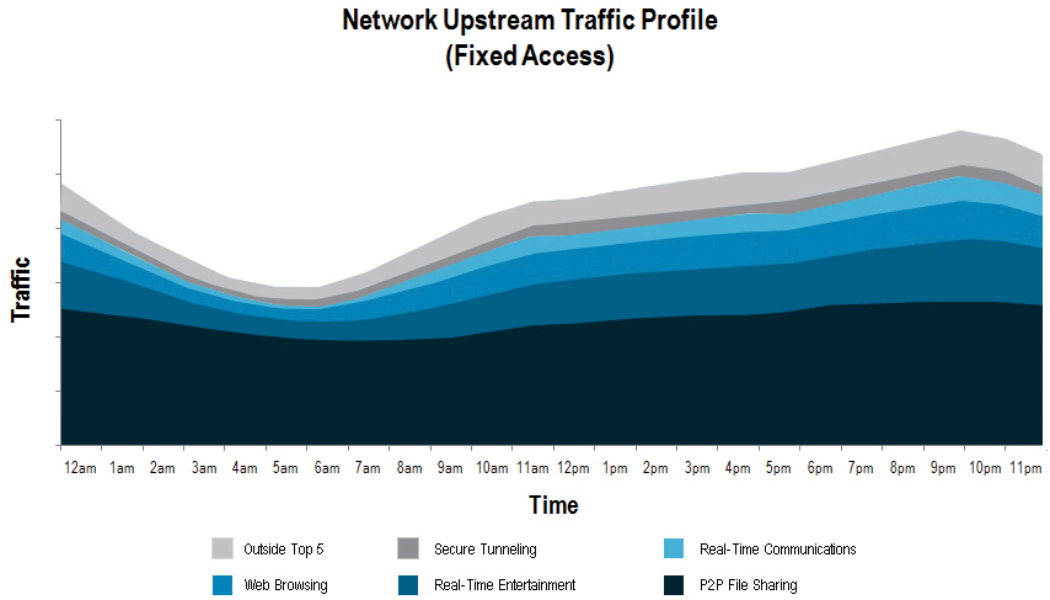
How guests use broadband has changed radically since 2009. Figure 2 illustrates the breakdown of broadband consumption in 2009, which primarily consisted of web browsing (39 percent), real-time entertainment (30 percent), and peer-to-peer (P2P) file sharing (15 percent). The balance is associated with work and virtual private networks. Twelve months later, the usage mix shifted substantially, and new categories have emerged. Web browsing dropped by nearly half, to 20 percent; real-time entertainment grew by nearly 50 percent; and P2P file sharing grew minimally. New entrants emerged around social networking (for example, Facebook) and real-time communications (Skype).

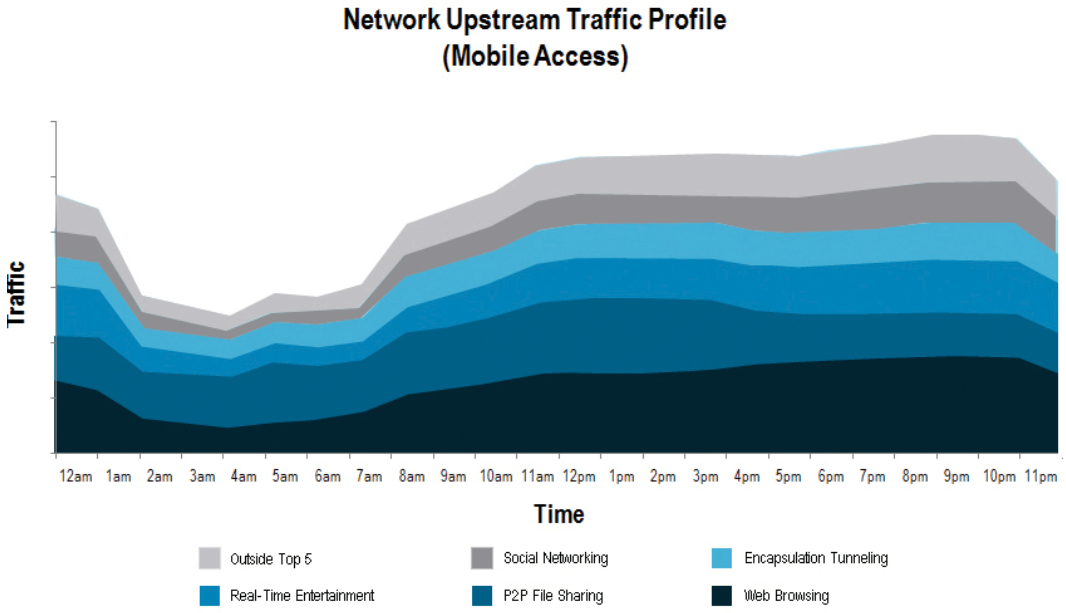
Figure 2. Broadband Consumption Changed Radically from 2009 to 2010.



Source: Sandvine Incorporated, fall 2010

Figure 3. Fixed-Access and Mobile Network Upstream Traffic Patterns Change Throughout the Day.





Source: Sandvine Intelligent Broadband Networks, fall 2010

Figure 3 illustrates the change in consumption patterns over the course of the day for both wired and wireless broadband access. P2P data sharing and real-time entertainment top the charts, particularly late at night and early in the morning.

In addition, video content delivered via video-on-demand providers such as Netflix bolster the trend and create higher peak broadband loads at hotels. For detailed information on how these traffic loads have changed over time, see the following Sandvine report: http://www.scribd.com/doc/54927394/Sandvine-Report

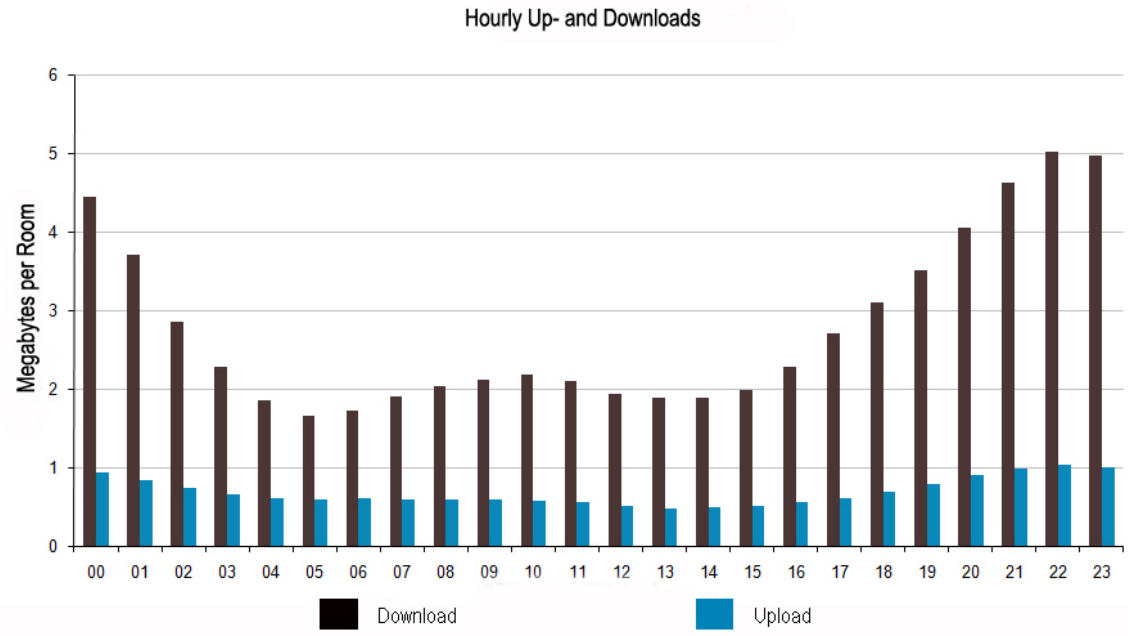
Examination of Actual Hotel Broadband Consumption Data

Prior to this study, there had not been a deep empirical examination of broadband data use to validate long-held beliefs about guest consumption patterns. Working with LodgeNet, Cisco IBSG examined nearly 2 million data records across various franchisors and brands to explore trends and patterns. The following observations and graphical representations are the result of our analysis.

Broadband Use

Figure 4 shows the download and upload traffic per room per hour in an average hotel. The chart indicates a peak download of around 5 megabytes per room from 10 p.m. to 11 p.m., with uploads broadly constant at about 0.75 megabytes per hour per room. Note that no adjustment has been made for rooms without Internet access.

Figure 4. Average Uploads and Downloads by Hour.

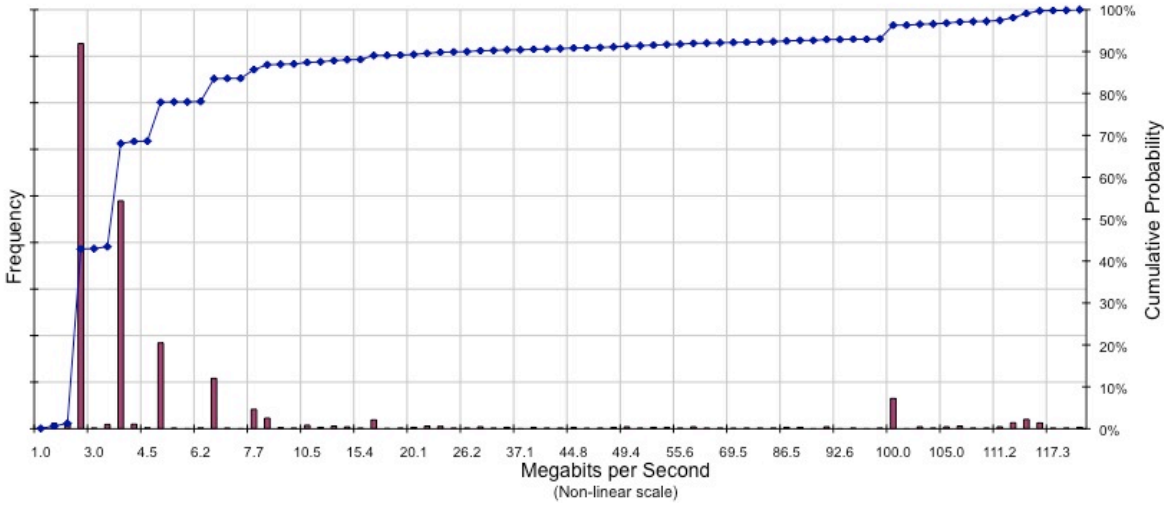


Source: Cisco IBSG, 2011

Hotel Infrastructure and Impact on Guest Broadband Consumption

Figure 5 illustrates the frequency distribution of hotel Internet connection speeds. The distribution is broad, long-tailed, and markedly skewed toward the low end. Reading off the cumulative probability line shows that nearly 80 percent of hotels in the sample have Internet connection speeds of less than 6 Mbps.

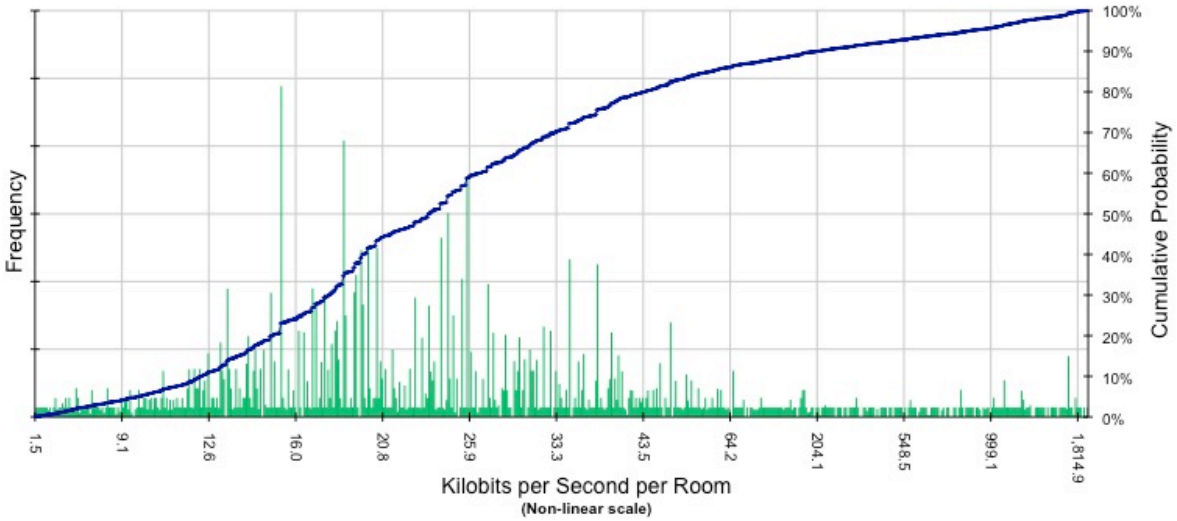
Figure 5. Eighty Percent of Hotels Have Internet Connection Speeds of Less than 6 Mbps (Calculated as the Blue Cumulative Property Line Passes 80 Percent).



Source: Cisco IBSG, 2011

Figure 6 shows the connection speed divided by the total number of rooms in the hotel. This distribution is broad, with a mean of 220 Kbps and a median of around 22 Kbps. This median connection speed is unlikely to result in a consistently excellent customer experience.

Figure 6. Rooms Have a Median Speed of 22 Kbps (Calculated as the Blue Cumulative Property Line Passes 50 Percent).

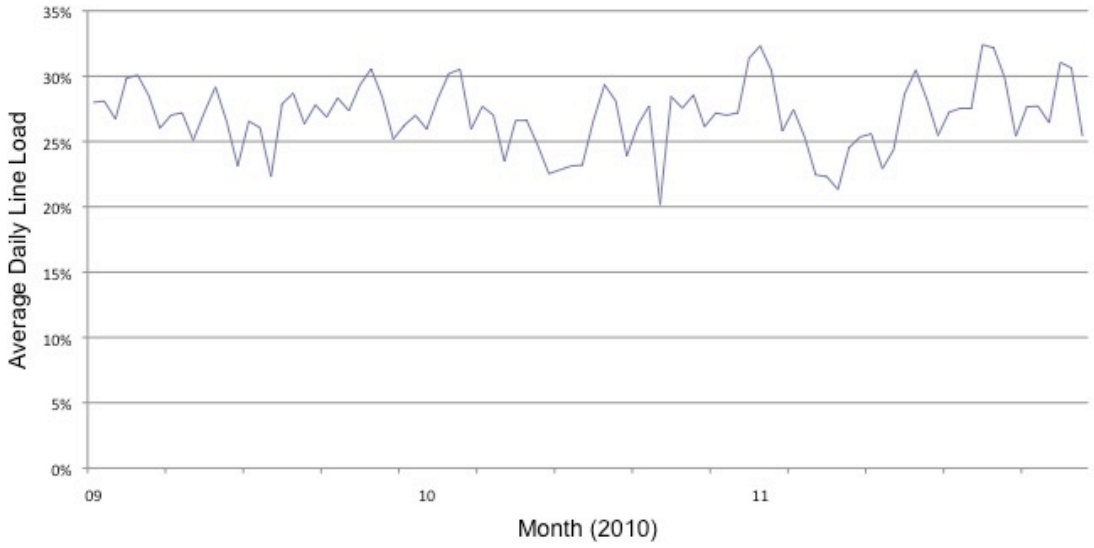


Source: Cisco IBSG, 2011

The load per line can be calculated with the connection speed and the average download. For example, a 6-Mbps line can download 6/8*3600*24 = 64.8 gigabytes per day at a 100- percent load.

The average daily line load for the sample is illustrated in Figure 7, which shows a more or less constant load of about 27 percent.

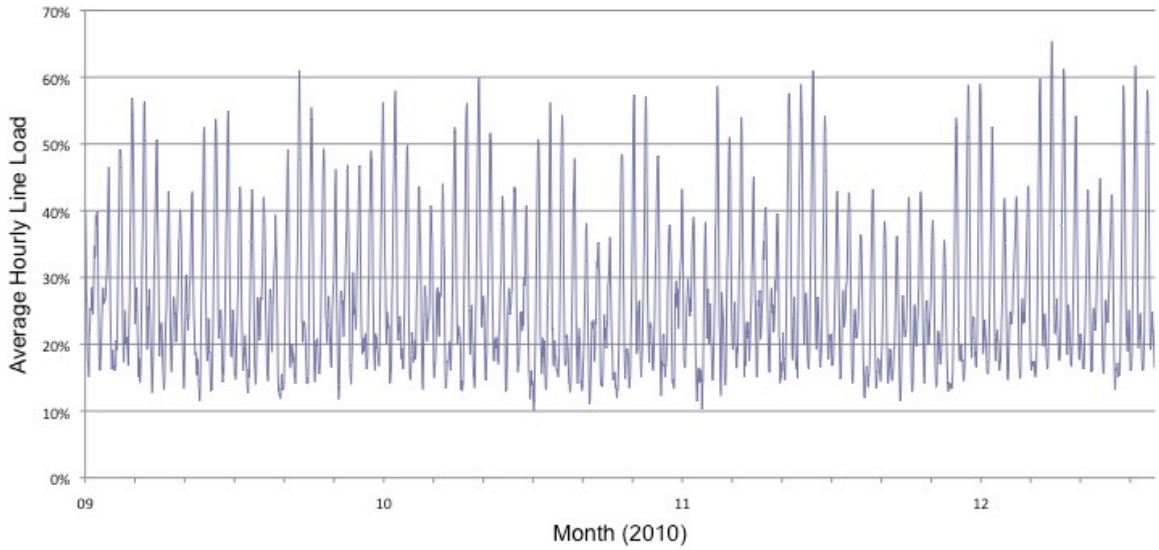
Figure 7. Average Daily Line Load for Hotels Is Fairly Constant at About 27 Percent.



Source: Cisco IBSG, 2011

In the course of a day there is significant change in the load. The hourly load pattern over three months is shown below in Figure 8.

Figure 8. Average Hourly Line Load Shows Large Fluctuations in Broadband Use.



Source: Cisco IBSG, 2011

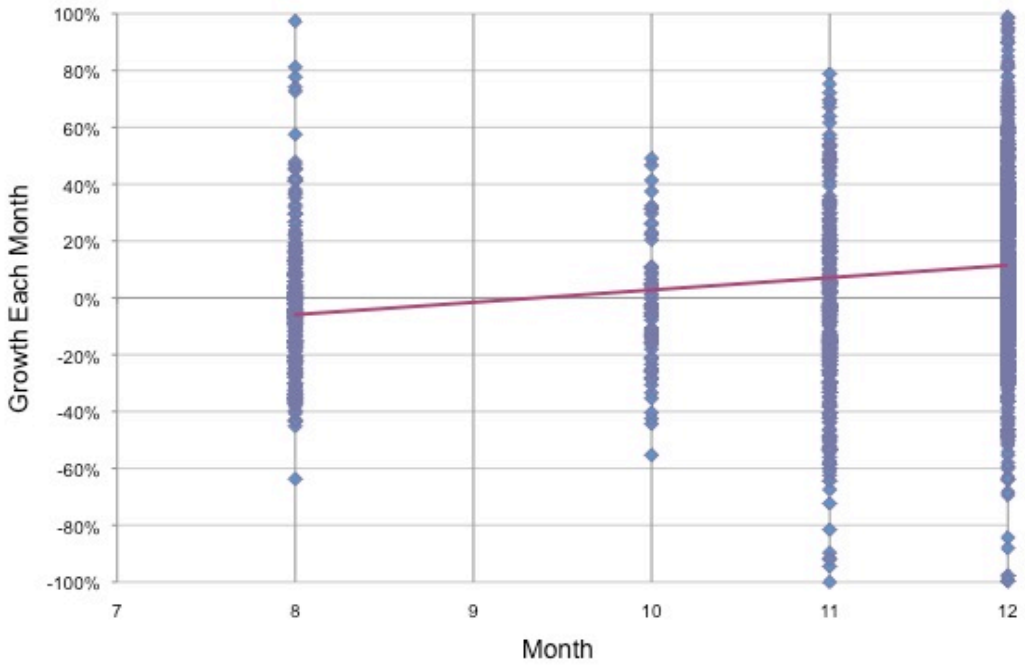
Broadly speaking, as the load increases, the guest experience degrades. With peak loads exceeding 60 percent in some cases, it is unlikely that Netflix, Hulu, YouTube, and other streaming video experiences would be satisfactory.

Broadband-Intensive Applications

Real-time entertainment is one of the most demanding applications, requiring reliable, fast connections. The analysis of guest use in Figure 4 shows uploads remaining broadly constant while downloads increase markedly as guests return to their rooms. As social networking, email, and other real-time communications are often symmetric, with similar uploads and downloads, this difference is best explained by guests' preference for web browsing and real-time entertainment.

Figure 9 shows the percentage change in download traffic from one month to the next. While there is wide variance in growth rates, overall this shows a traffic increase of 4.4 percent each month, equivalent to 67 percent a year. Note that month nine is blank, as data were not available for that period, and that the overall growth rate is broadly preserved if outliers are removed.

Figure 9. Internet Traffic Grows at a Rate of 4.4 Percent per Month.



Source: Cisco IBSG, 2011

This 67 percent annual growth rate is higher than the rates given in the Cisco Visual Networking Index analysis, which estimated an IP traffic annual growth rate of 45 percent in 2009 and an expected compound annual growth rate (CAGR) of 34 percent through 2014. This suggests that hotel guests may be ahead of the wider population in their use of broadband data.

Broadband Implications: Hotel Employee Mobility and Asset Management

Mobility extends employee reach and allows scaling of scarce hospitality resources. Mobile broadband connectivity untethers employees from the back room or check-in areas to permit more guest-facing interactions. With smartphones, tablets, and purpose-built devices, hotel employees can address a broader range of guest needs and alter traditional service-delivery models. Using the same broadband infrastructure, coupled with passive or active location devices, hotels will achieve full, real-time visibility into information such as an asset's location and usage status.

Hoteliers must consider overall enterprise mobility requirements for hotel infrastructure architecture, cabling, networks, and access points, in addition to guest requirements, to maximize the broadband value equation.

Recommendations

New, broadband-hungry devices and shifting consumer content consumption make long-range technology and infrastructure planning difficult. Traditionally, hotel wireless networks were designed for 8:1 oversubscription per access point. This target (as well as technology vendors' recommendations for 25 to 30 devices per access point) is being exceeded by guests who are taxing an already overburdened infrastructure by using multiple devices—often simultaneously.

These consumer behaviors are disrupting business models, eroding revenues, and necessitating new investments to maintain levels of guest satisfaction and loyalty that are critical to gaining mindshare and market share. Yet, just as the hospitality community responded to the introduction of broadband-intensive devices in early 2000, hoteliers must respond to this new inflection point. Successful strategies must address both technology and business-model issues.

Cisco IBSG offers the following recommendations to hospitality industry technology executives seeking sustainable broadband strategies:

- **Dig into the data.** Gain deep understanding of the broadband footprint at your properties, and study consumption patterns. The range of data examined should be sufficient to produce reliable patterns that can be used for forecasting two to three years into the future.
  - *Obtain the Data.* Hoteliers should request at least 12 months of data on existing broadband infrastructure, along with hourly upload and download traffic, and associated geographic information—preferably 24 months—either from their internal IT group or from their service providers. This data set should enable analysis of guest broadband consumption patterns by time of day, brand, and geography.
  - *Analyze the Data.* Using basic forecasting methods, such as regressions with dummy variables, estimate how the load and customers' broadband experience might change over the next few years.
- **Develop an overall strategy.** Determine goals and objectives for taking advantage of wireless infrastructure, such as service differentiation, customer experience, revenue production, asset portability, geolocation services, and employee mobility.
  - *A hotel wireless strategy* should include a holistic framework that accounts for the evolution of core hotel systems (for example, property management, reservations, sales, and revenue management) into cloud and mobile solutions that change how employees interact with and serve guests—and that ultimately transform the hotel's architectural and technical landscape.
  - *A broadband strategy* must include the implications and impact of guest mobility, employee mobility, and enterprise architecture. Too often, guest mobility is the sole focus of a hotel's broadband strategy—a serious failure to take advantage of the technology benefits to hotel operations.

- **Consider the overall value proposition of the investment.** The broadband business case should include guest, employee, and enterprise business models.
- **Evaluate the economics of a tiered broadband "free and fee" service model** where basic services and services in certain locations—for example, email, web browsing, and lobby—are free. Fee-based broadband services would include high-bandwidth applications where content and performance demands are considerable and applications require minimum latency (for example, Netflix, Hulu). The business case should address:
  - Termination of current fee models against the possible erosion of revenues for basic free services and increased revenues for fee services.
  - Possible revenue streams from advertising and increased group and corporate sales.
- **Develop a business case for employee mobility.** Mobility has the potential to empower employees to address guest needs faster and more effectively. If employees have real-time access to information, they can assist guests on the spot.
  - With pervasive broadband, employee service delivery could be transformed by enabling mobile check-in, mobile concierge, mobile maintenance, mobile room service, and a range of mobile transactions to heighten guest satisfaction while maximizing cross-sell and up-sell opportunities.
  - Mobile asset tracking and inventory management will bring new levels of asset management capabilities to hotels, ensuring that high-value items are locatable and available whenever needed, and that asset inventories remain at the minimum level required to deliver outstanding guest services and experience.

For more information about the transformational capabilities of high-speed broadband in the hospitality industry, please contact:

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