A Forecast of

Submarine Cable Deployment in the State of Florida

Prepared for:
North American Submarine Cable Association

Prepared by:
Michael Ruddy
Undersea Cable Market Analyst
Terabit Consulting, Inc.
875 Massachusetts Avenue, Suite 45
Cambridge, Massachusetts 02139 USA
Tel: +1 (617) 492-1500
Fax: +1 (617) 491-1600
Email: michaelruddy@earthlink.net

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NOTICE

Terabit Consulting, Inc. has made its best effort to collect and prepare the information presented in this report. Terabit based the information on numerous sources, including interviews, collected statistics, and published information. The submarine cable industry is volatile by nature and as such, the information and statistics in this report are subject to fluctuation.

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I. EXECUTIVE SUMMARY

In December of 2000, Terabit Consulting performed an independent analysis of international and domestic capacity markets into and out of the state of Florida in an effort to determine the average number of undersea telecommunications cables that would be deployed over the next ten years. This analysis was segmented both geographically and chronologically.

Terabit's geographical analysis was broken down into five sections, representing the five possible types of cables that would land in Florida. The first section comprised domestic cables, which would provide capacity solely to destinations within the continental United States. The second section covered only those cables that would connect North America to the South American continent. The third section covered cables connecting North America to Central America. The fourth section comprised those cables that would connect North America with Caribbean countries. The fifth covered any other destinations that would be served by undersea cables landing in Florida (these were primarily transatlantic routes which Terabit did not find to be plausible markets, given international traffic and deployment patterns). Terabit Consulting believes that these five categories represent 100 percent of the possible undersea telecommunications cables that could land in the state of Florida.

Chronologically, Terabit's forecast of deployment was broken down according to short-term deployment (within the next two years) and long-term deployment (within the next ten years). Terabit's short-term forecast is believed to be highly accurate, since it is based on Terabit's knowledge of announced and rumored systems. Because undersea infrastructure projects typically take at least two years to plan, finance, and construct, there is very little likelihood that cable systems that are not presently in the planning stage could be constructed within the next two years. Further, because of the relatively limited supply of undersea cable, it is possible that this two-year time-to-market process could take as long as three years.

Terabit's long-term forecast of undersea telecommunications cable deployment was a multi-step process. First, Terabit developed a ten-year, detailed forecast of demand along each route where deployment was economically viable. Next, Terabit determined the point at which the capacity market was expected to be saturated (i.e., where demand would exceed the supply of capacity). Terabit developed upper-bound and lower-bound assumptions about the number of cables that could be supported by excess demand, and the number of years in advance of the saturation point that deployment could take place. In order to complete the model, it was necessary to forecast the capacity of future cable systems; this was also done on an upper- and lower-bound basis.

In this way, Terabit forecasted two scenarios of cable deployment. The first represented what Terabit believed to be an optimistic, upper-bound scenario. The second represented what Terabit believed to be a pessimistic, lower-bound scenario. Terabit was able to arrive at what it believes to be an extremely credible and useful forecast of the average number of cable systems (and the resulting number of individual cables) landing in Florida from 2000 to 2009.

Terabit's analysis revealed that deployment in the state of Florida was viable only when serving three of the five possible types of routes. They were the North America-South America route, the North America-Caribbean route, and the North America-

Central America route. Terabit determined that the North American domestic undersea route faces significant cost disadvantages relative to its terrestrial competition. Terabit also determined that the only other prospective route along which submarine cable developers might deploy cable was the Florida-Europe route (either as a direct route or as a segment in Europe-South America deployment). However, this route is subject to higher costs because it is longer than North Atlantic routes. Further, the price of capacity along the alternative routes (North American terrestrial and northern transatlantic) are among the lowest in the world, which would make it difficult for any Europe-Florida cables to compete.

In developing the cable forecasts for each of the three routes that it believed to be economically plausible, Terabit took great lengths to use the most optimistic and pessimistic inputs that it believed possible. For its upper-bound deployment forecast, Terabit assumed that three cable systems could be supported by a demonstrated excess of demand; for its lower-bound forecast, it assumed that only one system would be required to support excess demand. The assumption as to the number of years preceding excess demand that cable systems could enter service was two years in Terabit's optimistic scenario, and one year in its pessimistic scenario.

Terabit also made assumptions as to the capacity of systems that would be deployed in the future. Terabit proved through its historical analysis that on average, the capacity of the most technologically-advanced cable systems has doubled every year. In its upper-bound scenario, Terabit attempted to depict a scenario in which systems would fill as quickly as possible, thus prompting higher levels of deployment. As such, Terabit assumed that the capacity of the most technologically-advanced cable systems would double only once every two years (half the historical average). In its lower-bound deployment forecast, Terabit forecasted that the historical doubling of capacity would continue to the end of the forecast period.

Based on these assumptions, Terabit developed the forecast of deployment of undersea telecommunications cables in the state of Florida shown in **Figure 1.1.**

Figure 1.1: Forecasted Range of Deployment of Undersea Cables In Florida, 2000-2009

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Total
Lower-Bound Systems Forecast	4	1	0	0	1	1	0	0	0	0	**7**
Lower-Bound Cable Forecast	7	2	0	0	2	2	0	0	0	0	**13**
Upper-Bound Systems Forecast	4	1	0	3	3	0	0	0	6	0	**17**
Upper-Bound Cables Forecast	7	2	0	6	6	0	0	0	12	0	**33**

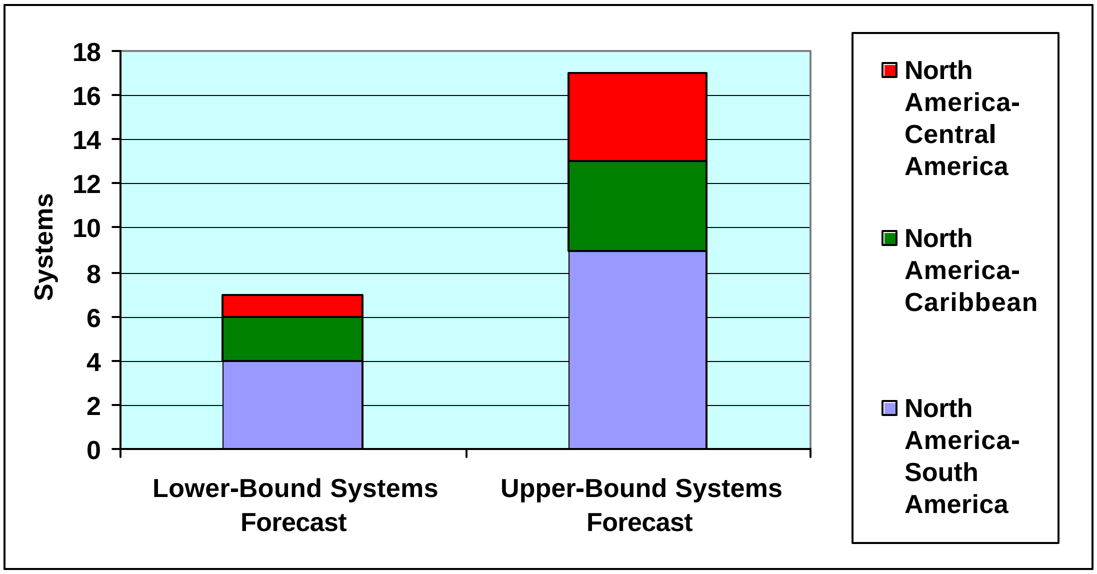
Although Terabit made every effort to ensure the logic of its forecast, Terabit would emphasize that the value of the above forecast lay not necessarily in its chronology, but rather in its forecasted totals. Terabit is very confident in saying that between 2000 and 2009, there will be between 7 and 17 cable systems deployed in the state of Florida, which translates to between 13 and 33 physical cables.

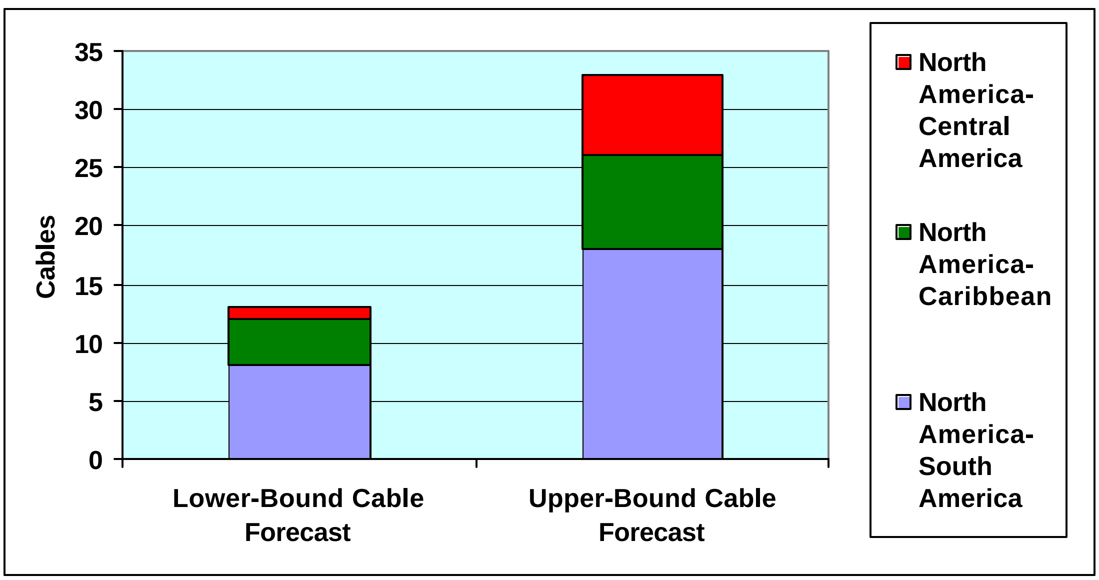
This forecast includes those systems which entered service in 2000 or are presently under construction. They are: 360Americas, Emergia (SAm-1), Mid-Atlantic Crossing/South America Crossing, Arcos-1, and Maya-1 (physical deployment of all other existing cables in the state of Florida, including Columbus-3 and Americas-2, was determined to have occurred prior to 2000).

Figure 1.2 shows the geographic breakdown of the cable systems that are forecasted to be deployed.

Figure 1.2: Forecasted Geographic Breakdown of Deployment in Florida, 2000-2009

	North America-South America	North America-Caribbean	North America-Central America
Lower-Bound Systems Forecast	4	2	1
Lower-Bound Cable Forecast	8	4	1
Upper-Bound Systems Forecast	9	4	4
Upper-Bound Cables Forecast	18	8	7





II. FORECASTING METHODOLOGY

Terabit's analysis required three different types of forecasts. First, demand for capacity was forecasted along each of the three routes where deployment was determined to be viable. Capacity demand constituted voice demand, private enterprise demand, and Internet demand. Next, Terabit forecasted deployment as a function of this demand for capacity. This deployment forecast required a third forecast, namely, a forecast of the technological capabilities of submarine cables.

II.A Capacity Demand Forecasting Methodology

Terabit's forecasting of demand for international capacity examines the three primary types of traffic: voice, dedicated private enterprise circuits, and Internet.

II.A.1 Voice Demand Forecasting Methodology

Voice demand modeling was based on an analysis of the historical number of international minutes that were generated into and out of each country (i.e., incoming and outgoing international minutes). This data was obtained from the International Telecommunications Union.

The historical data covered the three-year period from year-end 1997 to year-end 1999. The three-year compound annual growth rate was then used to develop a straight-line ten-year forecast. The use of the historical growth rate as a forecasted straight-line growth rate is a safe assumption given the maturity of international voice markets worldwide. For the most part, the growth in international voice minutes averages between 7 and 20 percent, depending on the country; there is little likelihood that future growth rates of international voice minutes will fall outside of this range.

The next step in Terabit's modeling was to determine the percentage of each country's international voice minutes that were outside of the Latin American region. It is this voice demand that will be served by any potential cables that would be landing in Florida, since Florida is the preferred landing point of most intercontinental cables serving Latin America. This percentage was determined by consulting sources on the direction of international voice flows; such data can be obtained from the International Telecommunications Union as well as Telegeography, Inc. An analysis of this data determined that on average, 80 percent of Caribbean international voice demand was directed outside of the Latin American region; 75 percent of non-Mexican Central American voice demand was directed outside of Latin America; and 75 percent of South American voice demand was directed outside of Latin America.

Once the total number of extra-regional incoming and outgoing international voice minutes were forecasted, a model was used to translate voice minutes into demand in gigabits per second and STM-1s. Traditionally, network engineers have provisioned international circuits by assigning a certain number of minutes to each voice circuit (a voice circuit is 64 kilobits per second). The assumptions used by network engineers ensure that there will be enough circuits to handle the peak-hour demand; that is, that there will never be a lack of circuits under normal circumstances.

Terabit has concluded that the average ratio used by network engineers to provision international voice circuits into and out of Latin America is approximately 100,000 minutes per circuit. That is, for every 100,000 minutes of voice traffic, carriers typically purchase one 64-Kbps circuit. This ratio is somewhat higher than the international average because of an increased use of digital circuit multiplication equipment (DCMEs) among Latin American carriers.

The forecast of international voice demand was thus a straightforward calculation using the following steps: first, total international incoming and outgoing minutes were forecasted using historical growth rates. Second, intra-regional demand was subtracted from this total to depict the number of minutes that were originating from and directed to points outside of Latin America. Third, the number of international, extra-regional minutes was divided by 100,000 to determine the number of voice circuits that carriers would provision. Finally, this number was translated into STM-1s and gigabits per second; there are 2,016 64-Kbps voice circuits per STM-1, and each STM-1 represents a bandwidth of 155.520 Mbps.

II.A.2 Private Enterprise Demand Forecasting Methodology

The second type of traffic modeled by Terabit, private enterprise demand, represents dedicated private-line circuits. These circuits are typically purchased by multinational corporations in order to connect branches worldwide and provide for dedicated intranet services. Terabit's model of private enterprise demand is based largely on historical corporate spending levels, bandwidth demand, and pricing per circuit. Such information was extracted from the United States Federal Communications Commission's *43.61 International Circuit Status Data Report,* which compiles data from all US-based licensed international carriers regarding their sales of private enterprise data circuits.

The data in the FCC's report depicts total spending on circuits and the total bandwidth of all circuits sold. As such, Terabit was able to model not only total spending and total bandwidth, but average price per circuit as well (by dividing spending by bandwidth). Terabit was able to develop a historical record of each (spending, bandwidth, and price).

Terabit's forecast used a projection of historical growth rates of spending (subject to what Terabit believes to be a natural limit of 25 percent per year), and expected erosion of pricing, based on Terabit's ongoing research of international circuit pricing. The forecast of spending was then divided by the forecast of price to yield a forecast of demand in STM-1s and Gbps. This allowed for a much more dynamic analysis of private enterprise demand (and ultimately a higher forecast) than a straight-line forecast of bandwidth would have allowed. Terabit believes that this methodology is credible given the relatively steady growth in corporate spending on international data circuits and telecommunications services in general. Further, Terabit was able to apply its expertise in forecasting price erosion. In this way, the relatively unpredictable demand for private enterprise bandwidth is grounded in a methodology that relies on the forecast of two more predictable variables: spending and price.

The final step in Terabit's forecast of total private enterprise demand was to determine the percentage of total extra-regional private enterprise demand that is depicted in the FCC's annual report. As noted, the report depicts only those circuits that are provisioned by US-based carriers. Terabit's analysis revealed that this demand represents approximately 55 percent of total Latin America extra-regional demand (approximately 40 percent is served by Latin American-based carriers and the remaining 5 percent is served by European and Asian carriers).

II.A.3 Internet Demand Forecasting Methodology

Because Internet demand will form the overwhelming majority of future total demand, Terabit has spent considerable time developing a model of Internet demand. The model takes each of the following variables into account:

- Total number of Internet users;
- Percent of Internet users on-line during the peak-hour (a function of the average amount of time spent on-line);
- The amount of time spent using different types of applications, including multimedia, email, dynamic web pages, static web pages, and File Transfer Protocol (FTP);
- The bandwidth of those applications that is required for optimal performance;
- The penetration of Internet access technologies, including:
    - plain old telephone service (POTS),
    - digital subscriber line (DSL),
    - cable modem, broadband wireless,
    - broadband satellite,
    - optical connections,
    - integrated digital services network (ISDN), and
    - wireless access protocol (WAP);

  and the associated speeds per user of each of those applications, in order to determine an average access speed of all users; and
- The direction of Internet demand, taking into account the use of caching and regional mirroring.

The combination of each of the above variables yields a reliable forecast of total Internet demand. Although this report does provide complete granularity in its forecasting, Terabit was able to use data compiled from its prior reports to provide an abbreviated version of its Internet demand modeling.

For each of the three regions in question, Terabit forecasted the total number of Internet users. Terabit's forecasts were based on historical growth rates as well as published forecasts from governmental and private sources. Terabit's forecasts of Internet users reached a plateau when the number of Internet users exceeded 55 percent of the number of main telephone lines in service. Terabit determined through its conversations with carriers and Internet service providers that this represents the point at which Internet penetration is likely to slow.

Next, Terabit determined the percentage of users on-line during the peak-hour. Presently, this percentage is roughly 10 percent of the population. However, this percentage continues to grow, and is estimated to reach 28 percent (as an average for the entire region) by the end of the forecast period. This increase is due primarily to two factors: first, the average daily on-line time continues to increase and eclipsed 60 minutes in 2000. Further, the penetration of "always-on" broadband access technologies such as DSL and cable modem will grow significantly.

The number of Internet users on-line during the peak-hour was multiplied by an average bandwidth per user. Normally, this average bandwidth per user is the result of a granular forecast of Internet usage by application, the associated bandwidth of those applications, and the average accessible bandwidth as a function of broadband penetration forecasts. However, in the interests of time, Terabit substituted a bottom-line per-user bandwidth forecast that represents Terabit's recent prior forecasting of Latin American Internet usage.

The product of the number of Internet users on-line during the peak-hour multiplied by the average bandwidth per user yields a forecast of total Internet demand. This demand can be classified as either domestic, intra-regional, or intercontinental. Terabit determined from conversations with carriers that 90 percent of Latin American Internet demand is presently intercontinental, although this percentage is expected to decrease in the future as the result of regional caching and mirroring, as well as the overall regional development of the Internet throughout Latin America.

By multiplying the total Internet demand in each region by the percentage of that demand directed outside of Latin America (so as to yield the intercontinental demand that would ultimately be served by Florida cables), Terabit arrived at its forecast of total intercontinental Internet demand.

Note that although international voice demand and international private enterprise demand is bi-directional, taking into account incoming and outgoing traffic, Terabit's modeling of international Internet demand is unidirectional. This represents the asymmetrical nature of Internet traffic. Although voice and dedicated data lines are circuit-based, Internet Protocol is packet-based, and multiple streams can be multiplexed over the same circuits. In this way, the required Internet capacity along a given route is equal only to the greater of the two traffic flows and not the sum. If a circuit is large enough to accommodate the greater of the two uni-directional traffic flows, then it will be able to accommodate the lesser of the two flows.

II.B Cable Deployment Forecasting Methodology

Terabit developed two forecasts of cable deployment: a high case, representing what Terabit believes to be a reasonable upper bound on deployment, and a low case, representing what Terabit believes to be a reasonable lower bound on deployment. Both of these forecasts are drawn from Terabit's demand modeling methodology as described above.

Terabit's cable deployment model relies primarily upon a comparison of forecasted demand for capacity and the supply of capacity (i.e., number of cables) that could be supported by such demand. It takes into account the capacity of existing deployment, as well as the capacity of those cables which are either under construction or extremely likely to be built. Based on its analysis of planned cables, Terabit was able to develop a reasonably definitive picture of cable deployment up to year-end 2001. Future deployment was forecasted as being in addition to systems deployed up to year-end 2001.

II.B.1 Upper-Bound Cable Deployment Forecasting Methodology

Terabit's upper-bound cable deployment forecast used a combination of liberal assumptions with respect to demand for capacity, and conservative assumptions with respect to the supply of capacity. In this way, the upper-bound cable deployment forecast represents what Terabit believes to be the maximum number of cables that could be supported by the market.

Terabit applied two liberal assumptions to the demand side of its modeling. First, it was assumed that carriers would begin purchasing capacity on submarine cables two years prior to anticipated end-user demand, and that cables could therefore be deployed no sooner than two years before the anticipated capacity saturation point. This represents an advance purchase schedule that is twice as long as Terabit's normal estimates of advance purchasing patterns: for the most part, Terabit has employed a one-year advance purchase schedule in all of its prior modeling. Using this assumption, Terabit's upper-bound model forecasts that new cable deployment will occur two years prior to the forecasted saturation point of all planned capacity.

The second liberal assumption applied to Terabit's demand modeling was the assumption that three cables can be supported by each international route. Although this is a reasonable assumption on more lucrative international routes such as the transatlantic and transpacific routes, it is a liberal assumption on the North America-South America route, which is less developed. However, Terabit decided upon this assumption based on the historical fact that it has happened once before, in 2000. It is important to note, however, that there was never more than one fiber optic undersea cable deployed between North and South America in any year prior to 2000.

The assumption that three cables can be supported on any international route is even more liberal with respect to the North America-Caribbean and North America-Central America routes. In any given year, there have never been any more than two cables deployed between North America and Central America (this happened only once, in 2000), and there has never been more than one cable deployed annually between North America and the Caribbean.

In contrast to its upper-bound modeling of demand for capacity, Terabit's upper-bound modeling of supply for capacity was subject to a conservative forecast. Terabit's upper-bound modeling of technological advancements effectively limits the expected ability of cables to satisfy demand, thereby resulting in higher levels of deployment.

Historically, the capacity of new undersea cable systems has at least doubled every year. However, Terabit's upper-bound forecast calls for a doubling of capacity only once every two years. In this way, Terabit forecasts that a greater number of cables will be required in order to handle demand requirements.

II.B.2 Lower-Bound Cable Deployment Forecasting Methodology

Terabit's lower-bound forecast was a series of conservative demand-side assumptions and liberal supply-side assumptions as to the lowest number of cables that could plausibly be deployed in order to satisfy demand. Although Terabit is generally optimistic in its forecasts of cable deployment and believes that the industry is competitive by its nature (driving deployment of multiple cable systems), this lower-bound forecast is provided to show the minimum number cables required based on Terabit's demand forecast. Historically, this type of single-cable deployment characterized the undersea fiber optic industry from its inception in 1988 until 1998. At that point, the consortia of carriers which dominated the industry were replaced by private groups of investor-led developers. During the age of the consortia, however, groups of up to 100 carriers worldwide would band together and build single cable systems that would be replaced only when demand warranted.

Terabit's lower-bound assumptions, therefore, call for a single cable system to be deployed one year prior to the expected saturation of capacity in each market.

The lower-bound forecast also calls for these single systems to last as long as possible, so the assumption was made that the capacity of the most technologically-advanced cable system would continue to double every year, subject only to technological limits on the transport capacity of fiber.

II.C Technological Forecast

In order to forecast the likely supply of capacity along undersea routes into and out of Florida, Terabit first determined the historical increase in capacity of the most technologically-advanced submarine cables available in the marketplace. The first undersea fiber optic cable ever deployed, TAT-8, was a transatlantic system that had a total transport capacity of 560 million bits (megabits) per second (Mbps). By contrast, the most technologically-advanced cable system that has been contracted to date, the transpacific FLAG Pacific-1 system (scheduled for activation in 2002), will have a total transport capacity of 5.095 trillion bits (terabits) per second (Tbps).

The growth rate of the maximum transport capacity of the most technologically-advanced cables, from the deployment of TAT-8 in 1988 to the scheduled deployment of FLAG Pacific-1 in 2002 will have been 92 percent compounded per annum. This is shown in **Figure 2.1.**

Figure 2.1: Compound Annual Increase in Greatest Commercially-Available Undersea Capacity, 1988-2002

Ready-for-Service Date	Cable System	Design Transport Capacity (Gbps)
1988	TAT-8	0.560
2002	FLAG Pacific-1	5,095.936
Compound Annual Increase in Capacity of Most Technologically-Advanced Cables, 1988-2002		**92%**

At present, the growth rate of the capacity of the most technologically-advanced cable available is even higher than the rate over the last 14 years. As shown in **Figure 2.2,** the growth rate of the greatest available capacity will have been 138 percent from 1998 to 2002. During the last four years, the technology allowed for a maximum transport capacity of 159.248 Gbps in 1998 and it will allow for more than 5 Tbps in 2002.

Figure 2.2: Compound Annual Increase in Greatest Commercially-Available Undersea Capacity, 1998-2002

Ready-for-Service Date	Cable System	Design Transport Capacity (Gbps)
1998	Atlantic Crossing-1	159.248
1999	No Major Transoceanic Systems Completed	
2000	360Americas	1,273.984
2001	TyCom Global Network	2,547.968
2002	FLAG Pacific-1	5,095.936
Compound Annual Increase in Capacity of Most Technologically-Advanced Cables, 1998-2002		**138%**

Advances in the capacity of cable systems are the result of increases in three different variables. First, the number of fiber pairs in long-distance (repeatered) systems has increased from just two in 1988 to eight in the systems planned for 2002 (there are four fiber pairs in the most technologically-advanced systems entering service in late-2000 and early-2001).

Second, the bit-rate of the transmission equipment has increased significantly. In 1988, the fastest bit-rate of transmission equipment was only 280 Mbps. This rate increased significantly in the early-1990s with the advent of synchronous technologies that employed time division multiplexing (TDM). The protocols for these technologies are Synchronous Digital Hierarchy (SDH) and Synchronous Optical Networking (SONET). The speeds of these protocols has increased from STM-1/OC-3 in the early 1990s (which operates at a speed of 155.520 Mbps) to STM-64/OC-192 in the late 1990s (operating at 9.953 Gbps). Presently, 9.953 Gbps is the highest commercially-available bit-rate for time division multiplexing equipment. However, several vendors are in advanced trial stages with STM-256/OC-768 transmission technologies, allowing for line-rate transmission of 39.812 Gbps.

The third variable which is resulting in increased transmission capacity is wavelength division multiplexing (WDM), a technology which can be used simultaneously with time division multiplexing. Wavelength division multiplexing was introduced in the mid-1990s and exploited the relatively large window of transmissible infrared light that exists around the 1,550 nanometer range of the light spectrum. Prior to the advent of WDM, all TDM transmission occurred at the same wavelength. However, WDM allowed for simultaneous transmission of multiple TDM wavelengths over the same fiber, by employing different wavelengths, or colors, within the 1,550 nanometer range. Early WDM systems typically allowed for four to eight wavelengths to be transmitted over single fibers. However, technology soon allowed for smaller spacing between wavelengths (colors) and present-day terrestrial technology allows for more than 100 wavelengths of STM-64/OC-192 (100? * 9.953 Gbps) to be simultaneously transmitted over a single fiber pair. In the undersea arena, the greatest number of wavelengths in a contracted system is 64, in the FLAG Pacifc-1 system which is scheduled for cutover in 2002.

Future advancements in dense WDM technology will likely involve the simultaneous transmission of TDM wavelengths in multiple color ranges, in addition to the 1,550 nanometer range.

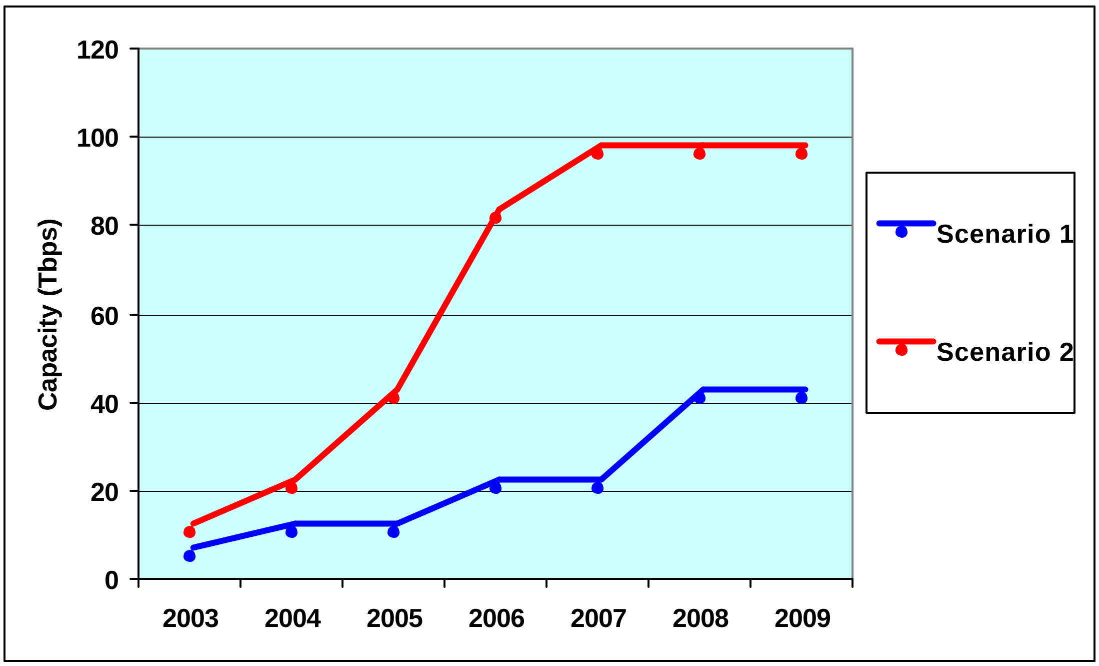
Each of the three variables described above (number of fiber pairs, bit-rate of TDM technology, and number of WDM channels) is increasing simultaneously, resulting in the over 100 percent annual increase in cable system capacity that has been witnessed over the last four years. Terabit developed two forecasts of maximum available capacity per cable. The first, which was employed in Terabit's upper-bound forecast of cable deployment, assumed that technological advancements would double a cable's carrying capacity only once every two years, rather than the doubling that is presently occurring once every year. In this way, Terabit's upper-bound forecast resulted in a greater number of cables being necessary to satisfy forecasted capacity demand.

Terabit's lower-bound forecast calls for the continued doubling of cable capacity once every year. However, Terabit even applied a conservative assumption to this forecast. Terabit instituted an upper bound on technological advancements by assuming that a long-distance (repeatered) cable would carry no more than 8 fiber pairs, and that the theoretical limit on the presently commercially-employed dispersion-shifted fibers is 12 Tbps. As such, Terabit applied a maximum capacity per cable of 96 Tbps to serve as a technological restraint on its lower-bound cable deployment forecast. It is possible, however, that these limits (8 fiber pairs per cable and 12 Tbps carrying capacity per fiber) may well be overcome by continued technological advances.

Figure 2.3 shows Terabit's forecast of the greatest commercially-available undersea capacity in two cases. The first assumes a doubling of capacity technology once every two years, and the second assumes a continuation of the doubling of capacity that has historically occurred once every year (subject to theoretical limits on a fiber's capacity). The former was used in Terabit's upper-bound forecast of deployment, while the latter was used in Terabit's lower-bound forecast of deployment.

Figure 2.3: Forecast of the Greatest Commercially-Available Undersea Capacity, 1988-2002
(Scenario 1 Assumes Doubling of Capacity Every Other Year)
(Scenario 2 Assumes Doubling of Capacity Every Year and a Maximum Cable Capacity of 96 Tbps)

Year	SCENARIO 1 Capacity per Cable (Tbps)	SCENARIO 2 Capacity per Cable (Tbps)
2003	5.095	10.191
2004	10.191	20.383
2005	10.191	40.767
2006	20.383	81.534
2007	20.383	96.000
2008	40.767	96.000
2009	40.767	96.000



III. GEOGRAPHICAL FORECASTS OF DEPLOYMENT

Terabit's geographical forecasts of deployment cover each of the following five route classifications: domestic United States, North America-South America, North America-Caribbean, North America-Central America, and a final classification of "other regions." As noted in the Executive Summary, Terabit determined that deployment was only economically plausible along the North America-South America, North America-Central America, and North America-Caribbean routes. A capacity demand analysis was performed for each of these routes, and the components of those analyses can be found in the Appendix.

III.A Forecast of Deployment of Undersea Fiber Optic Cables between Florida and the Continental United States

There is very little evidence that any domestic undersea cables will be deployed in Florida within the next ten years. In the short term, Terabit knows of one domestic cable system that has been proposed, but that system is unlikely to come to fruition, as discussed below. With regard to long-term deployment, Terabit's analysis reveals that an abundance of fiber has been deployed terrestrially throughout the United States, and that it will be difficult for undersea cables to compete with these networks given each medium's inherent cost structure.

Terabit is aware of only one proposal to construct a domestic undersea cable system that would land in Florida. The system, Global Link, has been proposed by Asset Channels, Inc. but Terabit has learned that it is it is virtually certain that the development of the project will not proceed. Terabit believes that the failure of this system to come to fruition was due primarily to the deployment of multiple, high fiber count terrestrial systems along the east coast of the United States.

Terrestrial systems in the domestic United States benefit from several advantages over submarine systems. First, domestic systems offer direct connectivity to metropolitan telehouses, and in many cases, to customer premises. Undersea cables are at an inherent disadvantage in domestic markets because of their termination at the shore. Therefore, submarine cable operators must either construct their own terrestrial backhaul to the telehouse, or purchase capacity from terrestrial operators.

Second, terrestrial fiber systems possess significant cost advantages over domestic undersea systems as a result of network construction techniques. A comparison of the costs requires an examination of the two different types of undersea cables.

Undersea cables can be deployed in two configurations: repeatered or unrepeatered (repeatered systems contain underwater erbium-doped fiber amplifiers, while unrepeatered systems do not). The maximum number of fiber pairs in any commercially-available repeatered undersea cable system is eight, because additional fiber pairs increase the diameters of repeaters, and existing cable ships are equipped to handle repeaters only up to a certain size. Therefore, any domestic system in the United States attempting to compete with multiple-fiber terrestrial systems would necessarily be an unrepeatered, "festoon"-type system. Although this allows for up to 72 fiber pairs at present, it requires that the optical transmission signal be fully regenerated on land at intervals of no more than 250 kilometers.

Because of this distance restriction, any domestic cable laid off the coast of Florida would be laid almost entirely in shallow water, requiring that the cable be completely buried in order to avoid damage from ship's anchors, fishing and trawling, and shark bites. This is a significant cost burden – transoceanic, repeatered cable systems are typically only buried at the continental shelf and simply laid along the ocean floor in deepwater areas, thus enabling significant cost reductions. By contrast, the burial of an entire cable requires significantly more manpower, equipment, and time.

Undersea cable developers wishing to land domestic cables in Florida are at a particular disadvantage because Florida benefits from particularly high deployment of terrestrial fiber. Each of the three original fiber network operators (AT&T, MCI Worldcom, and Sprint) have extensive legacy fiber networks connecting to virtually every city in the state. Next-generation "green-field" fiber network operators such as Qwest, Williams, and Level 3 deployed significant amounts of fiber throughout Florida in the late-1990s and continue to do so. Further, Florida boasts one of the largest regional fiber network operators in the country, Epik Communications.

III.B Forecast of Deployment of Undersea Telecommunications Cables between Florida and South America

Florida serves as a primary North American landing point for most undersea cables connecting North America and South America.

III.B.1 Short-Term Deployment of Undersea Telecommunications Cables Between Florida and South America

Terabit believes that it has identified all possible North America-South America deployment that could occur in the next two to three years. This is because the construction cost for cables connecting North and South America is several hundred million dollars, and several thousand kilometers of cable are required to construct such systems. Because of the difficulty in raising the required capital, and the order backlog that has been reported by manufacturers of undersea cable, only those cables that are presently in their planning stages will be able to enter service over the next two to three years.

Through its conversations with several industry sources, Terabit has determined that the potential universe of North America-South America undersea cables consists of seven systems, each with a differing level of probability. Three of these systems are under construction and have either completed or are in the process of constructing cable stations in Florida. They are: 360Americas (originally Atlantica-1), Emergia (originally Sam-1), and Mid-Atlantic Crossing/South America Crossing. There are also at least four other systems that have been proposed to connect to South America (including Magellan, 1CyberNetwork, Mercus-1, and Americas-3). (Terabit's demand analysis does not depend on which of these systems is actually constructed.) Based on Terabit's demand analysis, the earliest that any of these proposed systems could plausibly enter service would be 2003. **Figure 3.1** shows the details of each of the three systems that are under construction between North America and South America.

Figure 3.1: Existing and Under-Construction Systems Between North America and South America

System Name	Original Name	Ready-for-Service Date	Intercontinental Design Capacity (Gbps)	Route Kilometers	Estimated Cost ($Mil)	System Type/Owners
Existing Systems						
Americas-1		1994	9.952	8,000	$258	Carrier Consortium (AT&T 25%)
Americas-2		1999	39.808	8,300	$360	Carrier Consortium (>30 Carriers)
Systems Under Construction						
360Americas	Atlantica-1	2000/2001	1,273.984	29,000	$825	Private: 360Networks (from GlobeNet)
Emergia	SAm-1	2000/2001	1,910.976	23,000	$900	Private: Telefonica, Tyco International, IDT
Mid-Atl. Cross/ S.Amer. Cross		2000/2001	39.812	24,000	$700	Private: Global Crossing

III.B.2 Long-Term Deployment of Undersea Telecommunications Cables Between Florida and South America

Terabit developed a forecast of submarine cable deployment between Florida and South America by examining the demand for capacity and the resulting number of submarine cables that could exist in that marketplace. The starting point for this analysis was a determination of the amount of capacity that will be provided by the combination of all existing systems (Americas-1 and Americas-2) and all systems under construction (360Americas, Emergia, and Mid-Atlantic Crossing/South American Crossing).

The two existing systems provide a total capacity of 49.760 Gbps, once all upgrades are completed (Americas-2 is presently undergoing an upgrade that will double its capacity). Based on Terabit's demand analysis, year-end 2000 South American intercontinental demand is 73 percent of the total design capacity of these two systems.

By 2001, the capacity provided by the three next-generation systems under construction (360Americas, Emergia, and Mid-Atlantic Crossing/South American Crossing) will be available. Although each of these systems will begin with a transport capacity of approximately 40 Gbps each, they will feature the ability to be upgraded to a total of 3.224 Tbps as demand warrants (upgrades take place only to equipment in the cable stations and can be completed in less than one year).

Forecasted demand will exceed the design capacity of all existing and under-construction systems, including their expected upgrades, by year-end 2005.

III.B.2.a Upper-Bound Forecast of Deployment of Undersea Telecommunications Cables Between Florida and South America

Terabit's upper-bound deployment forecast assumes that a maximum of three cables can be supported in a competitive market along the North America-South America route. Although the deployment of three cables is a reasonable assumption along more developed international undersea routes, this is a liberal assumption along the North

America-South America route. The deployment of three competing cables simultaneously has only occurred once on the North America-South America route, in 2000; prior to that, there had been a maximum of only one cable deployed in any one year.

Terabit also made the liberal assumption that deployment would occur two years in advance of anticipated capacity saturation. It is possible, however, that cables in the future could be deployed even closer to anticipated capacity saturation; an analysis of the deployment that occurred in 2000 reveals that it occurred only one year in advance of anticipated capacity saturation. Given the hefty costs involved in the installation of undersea cable, it is very unlikely that deployment would ever occur more than two years in advance of anticipated capacity saturation.

Using these assumptions, Terabit's upper-bound forecast of deployment calls for three new cables to enter service in 2003, two years prior to the anticipated saturation of the total design capacity of all existing and under-construction systems. The capacity of these systems, according to Terabit's conservative forecast of technological advancement, would be 5.096 Tbps. Thus, the combined capacity of the three new cables would be 15.288 Tbps, bringing total capacity to 18.562 Tbps.

The amount of capacity supplied by this first round of new deployment, in addition to the capacity of existing and under-construction systems, would satisfy demand until the end of the forecast period. However, because demand exceeds two-thirds of the available capacity in the final year of the forecast (2009), Terabit used the liberal assumption that demand would exceed capacity in the first year beyond the forecast period (2010). Thus, Terabit's forecasts call for a second round of new deployment to occur in 2008, two years prior to the assumed saturation point. Again, Terabit forecasted that three new cables would be supported by the market.

In conclusion, Terabit forecasts that in addition to the two existing cables that presently serve the North America-South America route, three systems will be completed by early 2001 (360Americas, Emergia, and Mid-Atlantic Crossing/South America Crossing), another three systems will enter service in 2003, and an additional three systems will enter service in 2008. Terabit used the assumption that each of these systems would feature two cable landing points (allowing the systems to be configured as self-restoring rings).

The upper-bound deployment scenario is shown in **Figure 3.2.**

Figure 3.2: Upper-Bound Forecast of North America-South America Deployment, 2000-2009

North America-South America										
	2000	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**
Forecasted Total Intercontinental Demand (Gbps)	36.297	103.938	218.738	397.168	1,388.182	3,929.174	7,598.681	9,266.597	10,981.359	12,429.319
Transport Capacity of Existing Cables (Gbps)										
Americas-1 (RFS 1994; Includes Upgrade)	9.952	9.952	9.952	9.952	9.952	9.952	9.952	9.952	9.952	9.952
Americas-2 (RFS 1999; Includes Upgrade)	39.808	39.808	39.808	39.808	39.808	39.808	39.808	39.808	39.808	39.808
Total Transport Capacity of Existing Cables	49.760	49.760	49.760	49.760	49.760	49.760	49.760	49.760	49.760	49.760
Transport Capacity of Next-Gen Cables Under Construction (Gbps)										
360Americas (RFS 2000; Includes Upgrades)	1,273.984	1,273.984	1,273.984	1,273.984	1,273.984	1,273.984	1,273.984	1,273.984	1,273.984	1,273.984
Mid Atlantic Crossing/South American Crossing (Intercontinental Capacity) (Includes Upgrades)	39.812	39.812	39.812	39.812	39.812	39.812	39.812	39.812	39.812	39.812
Emergia (RFS 2001; Includes Upgrades)	1,910.976	1,910.976	1,910.976	1,910.976	1,910.976	1,910.976	1,910.976	1,910.976	1,910.976	1,910.976
Total Transport Capacity of Next-Gen Cables in Construction	3,224.772	3,224.772	3,224.772	3,224.772	3,224.772	3,224.772	3,224.772	3,224.772	3,224.772	3,224.772
Demand versus Existing Capacity Plus Capacity Under Construction (Gbps)										
Forecasted Total Intercontinental Demand (Gbps)	36.297	103.938	218.738	397.168	1,388.182	3,929.174	7,598.681	9,266.597	10,981.359	12,429.319
Total Existing Capacity Plus Capacity Under Construction (Gbps)	3,274.532	3,274.532	3,274.532	3,274.532	3,274.532	3,274.532	3,274.532	3,274.532	3,274.532	3,274.532
Fill Level of Existing Capacity Plus Capacity Under Construction	1%	3%	7%	12%	42%	120%	232%	283%	335%	380%
First Round of New Deployment, Assuming Deployment Occurs Two Years Prior to Expected Saturation of Market and Assuming that Competitive Market Supports 3 Cables										
New Cable System 1 (RFS 2003)				5,095.936	5,095.936	5,095.936	5,095.936	5,095.936	5,095.936	5,095.936
New Cable System 2 (RFS 2003)				5,095.936	5,095.936	5,095.936	5,095.936	5,095.936	5,095.936	5,095.936
New Cable System 3 (RFS 2003)				5,095.936	5,095.936	5,095.936	5,095.936	5,095.936	5,095.936	5,095.936
Total Transport Capacity of Round of New Deployment				15,287.808	15,287.808	15,287.808	15,287.808	15,287.808	15,287.808	15,287.808
Demand versus Existing Capacity Plus Capacity Under Construction Plus First Round of New Deployment										
Forecasted Total Intercontinental Demand (Gbps)	36.297	103.938	218.738	397.168	1,388.182	3,929.174	7,598.681	9,266.597	10,981.359	12,429.319
Total Existing Capacity Plus Capacity Under Construction Plus First Round of New Deployment	3,274.532	3,274.532	3,274.532	18,562.340	18,562.340	18,562.340	18,562.340	18,562.340	18,562.340	18,562.340
Fill Level of Existing Capacity Plus Capacity Under Construction Plus First Round of New Deployment	1%	3%	7%	2%	7%	21%	41%	50%	59%	67%
Second Round of New Deployment, Assuming Deployment Occurs Two Years Prior to Expected Saturation and Assuming that Competitive Market Supports 3 Cables										
New Cable System 4 (RFS 2008)									40,767.488	40,767.488
New Cable System 5 (RFS 2008)									40,767.488	40,767.488
New Cable System 6 (RFS 2008)									40,767.488	40,767.488
Total Transport Capacity of Second Round of New Deployment									122,302.464	122,302.464

III.B.2.b Lower-Bound Forecast of Deployment of Undersea Telecommunications Cables Between Florida and South America

Terabit's lower-bound deployment forecast uses the same starting point as its upper-bound forecast. That is, the lower-bound forecast takes as given the existence of 3.274 Tbps of capacity by 2001, supplied by two existing cables and the three cables that are under construction. It also assumes that this capacity will be saturated in 2005, based on the demand forecasts for South America.

The lower-bound forecast diverges from the upper-bound forecasts with its first assumption that deployment will occur only one year prior to anticipated saturation of available capacity. It also assumes that rather than three cables being deployed, only one cable will be deployed. And it assumes that the capacity of that cable will be determined by technological growth that is twice as fast as the growth forecasted in the upper-bound forecast.

In this way, the lower-bound forecast calls for one new system to be deployed in 2004. The capacity of that cable will be 20.384 Tbps. This lone system, in addition to existing and under-construction capacity, will satisfy all demand requirements during the forecast period. As a liberal assumption, Terabit assumed that capacity on the system would be fully-protected and that the system would therefore feature two cables.

The lower-bound forecast scenario is depicted in **Figure 3.3.**

Figure 3.3: Lower-Bound Forecast of North America-South America Deployment, 2000-2009

North America-South America										
	2000	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**
Forecasted Total Intercontinental Demand (Gbps)	36.297	103.938	218.738	397.168	1,388.182	3,929.174	7,598.681	9,266.597	10,981.359	12,429.319
Transport Capacity of Existing Cables (Gbps)										
Americas-1 (RFS 1994; Includes Upgrade)	9.952	9.952	9.952	9.952	9.952	9.952	9.952	9.952	9.952	9.952
Americas-2 (RFS 1999; Includes Upgrade)	39.808	39.808	39.808	39.808	39.808	39.808	39.808	39.808	39.808	39.808
Total Transport Capacity of Existing Cables	49.76	49.76	49.76	49.76	49.76	49.76	49.76	49.76	49.76	49.76
Transport Capacity of Next-Gen Cables in Construction (Gbps)										
360Americas (RFS 2000; Includes Upgrades)	1,273.984	1,273.984	1,273.984	1,273.984	1,273.984	1,273.984	1,273.984	1,273.984	1,273.984	1,273.984
Mid Atlantic Crossing/South American Crossing (Intercontinental Capacity) (Includes Upgrades)	39.812	39.812	39.812	39.812	39.812	39.812	39.812	39.812	39.812	39.812
Emergia (RFS 2001; Includes Upgrades)	1,910.976	1,910.976	1,910.976	1,910.976	1,910.976	1,910.976	1,910.976	1,910.976	1,910.976	1,910.976
Total Transport Capacity of Next-Gen Cables in Construction	3,224.772	3,224.772	3,224.772	3,224.772	3,224.772	3,224.772	3,224.772	3,224.772	3,224.772	3,224.772
Demand versus Existing Capacity Plus Capacity Under Construction (Gbps)										
Forecasted Total Intercontinental Demand (Gbps)	36.297	103.938	218.738	397.168	1,388.182	3,929.174	7,598.681	9,266.597	10,981.359	12,429.319
Total Existing Capacity Plus Capacity Under Construction (Gbps)	3,274.532	3,274.532	3,274.532	3,274.532	3,274.532	3,274.532	3,274.532	3,274.532	3,274.532	3,274.532
Fill Level of Existing Capacity Plus Capacity In Construction	1%	3%	7%	12%	42%	120%	232%	283%	335%	380%
First Round of New Deployment										
New Cable System 1 (RFS 2004)					20,383.744	20,383.744	20,383.744	20,383.744	20,383.744	20,383.744
Total Transport Capacity of First Round of New Deployment					20,383.744	20,383.744	20,383.744	20,383.744	20,383.744	20,383.744
Demand versus Existing Capacity Plus Capacity Under Construction Plus First Round of New Deployment										
Forecasted Total Intercontinental Demand (Gbps)	36.297	103.938	218.738	397.168	1,388.182	3,929.174	7,598.681	9,266.597	10,981.359	12,429.319
Total Existing Capacity Plus Capacity Under Construction Plus First Round of New Deployment	3,274.532	3,274.532	3,274.532	3,274.532	23,658.276	23,658.276	23,658.276	23,658.276	23,658.276	23,658.276
Fill Level of Existing Capacity Plus Capacity In Construction Plus First Round of New Deployment	1%	3%	7%	12%	6%	17%	32%	39%	46%	53%
Second Round of New Deployment										
NONE										

III.B.3 Forecasted Range of Deployment (Lower-Bound to Upper-Bound) of Undersea Telecommunications Cables between Florida and South America

Figure 3.4 shows the range of Terabit's forecast of deployment between Florida and South America from 2000 to 2009, including those systems presently under construction.

Figure 3.4: Forecasted Range of Deployment of Undersea Cables Between Florida and South America

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Total
Lower-Bound Systems Forecast	3				1						**4**
Lower-Bound Cable Forecast	6				2						**8**
Upper-Bound Systems Forecast	3			3					3		**9**
Upper-Bound Cables Forecast	6			6					6		**18**

III.C Forecast of Deployment of Undersea Telecommunications Cables between Florida and the Caribbean

It is expected that most intercontinental (extra-regional) undersea telecommunications cables serving the Caribbean will land in Florida.

III.C.1 Short-Term Deployment of Undersea Telecommunications Cables Between Florida and the Caribbean

Because the undersea telecommunications cable market has shifted away from monopoly-sponsored cables and toward privately-financed, investor-led cables, it is believed that future cables serving the Caribbean will connect to as many destinations as possible. This will allow cable operators to increase their economies of scale and make private financing of cables more profitable. For this reason, Terabit's forecast focuses exclusively upon those cables that will serve pan-Caribbean demand.

Because the analysis examines pan-Caribbean demand and not the demand generated by any specific country, it was first necessary to determine existing pan-Caribbean fiber capacity. Pan-Caribbean capacity is presently provided by a combination of older cables, including Bahamas-2, TCS-1, the Cayman-Jamaica Fiber System, and the Eastern Caribbean Fiber System. Based on its analysis of international traffic flows in the region, Terabit determined that the effective pan-Caribbean capacity provided by the combination of these systems was 1.120 Gbps (equivalent to the carrying capacity of the Eastern Caribbean Fiber System).

Admittedly, there are several other cables deployed throughout the Caribbean, with some providing intercontinental capacity. However, the impact of these cables on pan-Caribbean demand is not able to be determined. In this way, Terabit's supply and demand analysis for Caribbean deployment is skewed toward an overestimate of the number of cables.

The only pan-Caribbean system that is planned at the present time is the Arcos-1 system, which as of January 2001 had completed shore-end installations in the Bahamas, the Dominican Republic, and the Turks and Caicos Islands. The system intends to land in Florida in 2001 and will ultimately connect 14 markets throughout the Caribbean and Central America.

Also, Terabit has become aware of another system, the Bahamas Internet Cable System, which is entering its initial phases of construction. The system would initially serve to connect Florida and the Bahamas. Terabit's analysis of the system has led it to conclude that the system may ultimately be expanded to serve pan-Caribbean markets (although the system's developers have not been explicit about this point, Terabit believes this to be the most economically-viable scenario). However, financing for a pan-Caribbean extension of the system will likely take several more years. In this way, the system can be viewed as the initial phase of one of the forecasted cables that would be deployed in either of the forecast scenarios. Even if the system does not expand to become a pan-Caribbean system, it is likely that any other pan-Caribbean systems would make use of BICS because of its high fiber count.

Figure 3.5 shows the characteristics of the existing pan-Caribbean capacity and of Arcos-1.

Figure 3.5: Existing and Under-Construction Systems Between North America and the Caribbean

System Name	Alternate Name	Ready-for-Service Date	Intercontinental Design Capacity (Gbps)	Route Kilometers	Estimated Cost ($Mil)	System Type/Owners
Existing Systems						
Effective Pan-Caribbean Capacity			1.120			
Systems Under Construction						
Arcos-1	New World Network, Americas-8	2001	955.488 (for both Central Amer. + Carib.)	8,600	$350	Private: New World Networks (some carrier participation)

III.C.2 Long-Term Deployment of Undersea Telecommunications Cables Between Florida and the Caribbean

Terabit's forecast of deployment in the Caribbean followed the same methodology as its analysis of North America-South America deployment. An analysis of demand versus supply reveals an existing shortage of capacity. For year-end 2000, demand was estimated to be 3.5 Gbps while the existing pan-Caribbean capacity supplied only 1.120 Gbps worth of pan-Caribbean capacity (it is probable that most of this demand was served by satellite capacity).

Terabit assumed that one-half of the capacity of the Arcos-1 system will be available to serve pan-Caribbean demand (it is assumed that the remaining one-half of the network's capacity will be used to serve Central American demand).

Once the Arcos-1 system is completed in 2001, Caribbean intercontinental demand will not exceed the supply of capacity until 2006.

III.C.2.a Upper-Bound Forecast of Deployment of Undersea Telecommunications Cables Between Florida and the Caribbean

Terabit's upper-bound deployment of North America-Caribbean deployment once again assumed that three cables could be supported by a market with servable demand. This is an extremely liberal assumption, since there was only one pan-Caribbean system deployed in the entire 1990s.

Terabit once again assumed that deployment would occur two years prior to the expected saturation date. It also assumed that the capacity of such deployment would be lower than one would expect, given historical technological growth.

Terabit's upper-bound deployment forecast therefore forecasts that three systems, each with a capacity of 10.192 Tbps, will be deployed two years prior to the expected saturation date of 2006. However, these systems will represent all deployment for the forecast period, since even at the end of the forecast, demand represents only three percent of available capacity.

The upper-bound deployment scenario is shown in **Figure 3.6.**

Figure 3.6: Upper-Bound Forecast of North America-Caribbean Deployment, 2000-2009

North America-Caribbean									
	2000	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
Forecasted Total Intercontinental Demand (Gbps)	3.546	7.973	16.902	31.864	115.196	330.423	639.258	781.365	927.845
Transport Capacity of Existing Cables (Gbps) (Represents Weakest Link in Pan-Caribbean Capacity - liberal Assumption w.r.t. Unserved Demand)									
Effective Pan-Caribbean Capacity	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
Total Transport Capacity of Existing Cables	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
Transport Capacity of Next-Gen Cables in Construction (Gbps)									
Arcos-1 (RFS 2001) (Assumes 1/2 of Capacity Assigned Each to Caribbean and Central America)		477.744	477.744	477.744	477.744	477.744	477.744	477.744	477.744
Total Transport Capacity of Next-Gen Cables in Construction		477.744	477.744	477.744	477.744	477.744	477.744	477.744	477.744
Demand versus Existing Capacity Plus Capacity Under Construction (Gbps)									
Forecasted Total Intercontinental Demand (Gbps)	3.546	7.973	16.902	31.864	115.196	330.423	639.258	781.365	927.845
Total Existing Capacity Plus Capacity Under Construction (Gbps)	1.120	478.864	478.864	478.864	478.864	478.864	478.864	478.864	478.864
Fill Level of Existing Capacity Plus Capacity Under Construction	317%	2%	4%	7%	24%	69%	133%	163%	194%
First Round of New Deployment, Assuming Deployment Occurs Two Years Prior to Expected Saturation and Assuming that Market Supports 3 Cables									
New Cable System 1 (RFS 2004)					10,191.872	10,191.872	10,191.872	10,191.872	10,191.872
New Cable System 2 (RFS 2004)					10,191.872	10,191.872	10,191.872	10,191.872	10,191.872
New Cable System 3 (RFS 2004)					10,191.872	10,191.872	10,191.872	10,191.872	10,191.872
Total Transport Capacity of First Round of New Deployment					30,575.616	30,575.616	30,575.616	30,575.616	30,575.616
Demand versus Existing Capacity Plus Capacity Under Construction Plus First Round of New Deployment									
Forecasted Total Intercontinental Demand (Gbps)	3.546	7.973	16.902	31.864	115.196	330.423	639.258	781.365	927.845
Total Existing Capacity Plus Capacity Under Construction Plus First Round of New Deployment	1.120	478.864	478.864	478.864	31,054.480	31,054.480	31,054.480	31,054.480	31,054.480
Fill Level of Existing Capacity Plus Capacity Under Construction Plus First Round of New Deployment	317%	2%	4%	7%	0%	1%	2%	3%	3%
Second Round of New Deployment, Assuming Deployment Occurs Two Years Prior to Expected Saturation and Assuming that Market Supports 3 Cables									
NONE									

III.C.2.b Lower-Bound Forecast of Deployment of Undersea Telecommunications Cables Between Florida and the Caribbean

Terabit's lower-bound forecast begins with the expected saturation of the combined existing pan-Caribbean capacity and the Arcos-1 system in 2006. The lower-bound forecast assumes that one 40.767 Tbps cable deployed one year prior to expected saturation (i.e., in 2005) would satisfy demand until the end of the forecast.

It was once again assumed that all cable deployment will consist of protected ring configurations featuring two cables.

The lower-bound forecast scenario is depicted in **Figure 3.7.**

Figure 3.7: Lower-Bound Forecast of North America-Caribbean Deployment, 2000-2009

North America-Caribbean										
	2000	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**
Forecasted Total Intercontinental Demand (Gbps)	3.546	7.973	16.902	31.864	115.196	330.423	639.258	781.365	927.845	1,051.891
Transport Capacity of Existing Cables (Gbps) (Represents Weakest Link in Pan-Caribbean Capacity - liberal Assumption w.r.t. Unserved Demand)										
Existing Pan-Caribbean Capacity	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
Total Transport Capacity of Existing Cables	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120	1.120
Transport Capacity of Next-Gen Cables in Construction (Gbps)										
Arcos-1 (RFS 2001) (Assumes 1/2 of Capacity Assigned Each to Caribbean and Central America)		477.744	477.744	477.744	477.744	477.744	477.744	477.744	477.744	477.744
Total Transport Capacity of Next-Gen Cables in Construction		477.744	477.744	477.744	477.744	477.744	477.744	477.744	477.744	477.744
Demand versus Existing Capacity Plus Capacity Under Construction (Gbps)										
Forecasted Total Intercontinental Demand (Gbps)	3.546	7.973	16.902	31.864	115.196	330.423	639.258	781.365	927.845	1,051.891
Total Existing Capacity Plus Capacity Under Construction (Gbps)	1.120	478.864	478.864	478.864	478.864	478.864	478.864	478.864	478.864	478.864
Fill Level of Existing Capacity Plus Capacity Under Construction	317%	2%	4%	7%	24%	69%	133%	163%	194%	220%
First Round of New Deployment										
New Cable System 1 (RFS 2005)						40,767.488	40,767.488	40,767.488	40,767.488	40,767.488
Total Transport Capacity of First Round of New Deployment						40,767.488	40,767.488	40,767.488	40,767.488	40,767.488
Demand versus Existing Capacity Plus Capacity Under Construction Plus First Round of New Deployment										
Forecasted Total Intercontinental Demand (Gbps)	3.546	7.973	16.902	31.864	115.196	330.423	639.258	781.365	927.845	1,051.891
Total Existing Capacity Plus Capacity Under Construction Plus First Round of New Deployment	1.120	478.864	478.864	478.864	478.864	41,246.352	41,246.352	41,246.352	41,246.352	41,246.352
Fill Level of Existing Capacity Plus Capacity Under Construction Plus First Round of New Deployment	317%	2%	4%	7%	24%	1%	2%	2%	2%	3%
Second Round of New Deployment										
NONE										

III.C.3 Forecasted Range of Deployment (Lower-Bound to Upper-Bound) of Undersea Telecommunications Cables between Florida and the Caribbean

Figure 3.8 shows the range of Terabit's forecast of deployment between Florida and the Caribbean from 2000 to 2009, including those systems presently under construction.

Figure 3.8: Forecasted Range of Deployment of Undersea Cables Between Florida and the Caribbean

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Total
Lower-Bound Systems Forecast		1				1					**2**
Lower-Bound Cable Forecast		2				2					**4**
Upper-Bound Systems Forecast		1			3						**4**
Upper-Bound Cables Forecast		2			6						**8**

III.D Forecast of Deployment of Undersea Telecommunications Cables between Florida and Central America

Terabit's forecast of deployment between North America and Central America assumes that all of these cables will land in Florida. However, there is the possibility that these cables would land in California (as is the case with the Pan-American Crossing cable system) or Texas.

Terabit's analysis of Central American demand excludes Mexico, since that country is served by large numbers of cross-border terrestrial circuits, as well as by a next-generation network deployed by Qwest. For reasons discussed earlier in the report, such terrestrial deployment possesses a significant advantage over undersea systems.

III.D.1 Short-Term Deployment of Undersea Telecommunications Cables Between Florida and Central America

There is presently no undersea capacity serving the Central American region; all demand is either routed through terrestrial systems or via satellite.

There are three systems in the process of being constructed in Central America. They are Maya-1, Arcos-1, and Pan-American Crossing.

For the purposes of this analysis, only one of these systems, Maya-1, is classified as being a Florida-Central America system. The Arcos-1 system was already identified and counted in the previous section as a North America-Caribbean system (although this analysis shares its capacity 50/50 between the Caribbean and Central America), and the Pan-American Crossing system is located in the Pacific Ocean, connecting California with Central America.

The Maya-1 system is likely to be the last of the point-to-point collapsed ring systems. Because it is not a ring, it has only one landing point in Florida.

In this way, Terabit's short-term forecast of deployment between Florida and Central America calls for only one unique system, with one landing point, to be constructed by year-end 2001. This forecast is shown in **Figure 3.9.**

Figure 3.9: Existing and Under-Construction Systems Between North America and Central America

(Note: In the deployment forecasts, Arcos-1 was counted as a N.A.-Carib. system; Pan-American Crossing was not counted because it has no Florida landing point)

System Name	Original Name	Ready-for-Service Date	Intercontinental Design Capacity (Gbps)	Route Kilometers	Estimated Cost ($Mil)	System Type/Owners
Existing Systems						
None						
Systems Under Construction						
Maya-1		2000/2001	39.812	4,400	$200	Carrier Consortium
Arcos-1	Americas-8, New World Net	2001	955.488 (for C.A. + Carib.)	8,600	$350	Private: New World Networks
Pan-American Crossing		2000/2001	477.744	9,000	$450	Private: Global Crossing

III.D.2 Long-Term Deployment of Undersea Telecommunications Cables Between Florida and Central America

The combined capacity of the three North America-Central America systems (assuming that one-half of Arcos-1's capacity is designated to carry Central American traffic) is 557.368 Gbps. This is expected to satisfy demand until the end of the forecast period. In the final year of the forecast, available capacity would be only 67 percent utilized.

III.D.2.a Upper-Bound Forecast of Deployment of Undersea Telecommunications Cables Between Florida and South America

Terabit was extremely liberal in its upper-bound forecast of deployment between North America and Central America. Although existing and under-construction capacity will be only 67 percent full in 2009, Terabit assumed that capacity would be saturated in the following year (this was a liberal assumption with respect to the forecasted number of cables that would be deployed). If cables were to be deployed two years in advance of the anticipated saturation date, deployment would occur in 2008. Terabit once again used the liberal assumption that three cables could be supported simultaneously by any excess demand. Therefore, Terabit's upper-bound analysis forecasts that three 40.767 Tbps cables will be deployed in 2008.

The upper-bound deployment scenario is shown in **Figure 3.10.**

Figure 3.10: Upper-Bound Forecast of North America-Central America Deployment, 2000-2009

North America-Central America (Excludes Mexico, which is served by abundant terrestrial fiber)									
	2000	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
Forecasted Total Intercontinental Demand (Gbps)	2.380	4.635	8.446	15.488	58.491	184.727	384.488	487.959	586.669
Transport Capacity of Existing Cables (Gbps)									
None	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Transport Capacity of Next-Gen Cables in Construction (Gbps)									
Maya-1 (RFS 2000)	39.812	39.812	39.812	39.812	39.812	39.812	39.812	39.812	39.812
Pan-American Crossing (RFS 2000) (NO FLORIDA LANDING POINT)	477.744	477.744	477.744	477.744	477.744	477.744	477.744	477.744	477.744
Arcos-1 (RFS 2001) (Assumes 1/2 of Capacity Assigned Each to Caribbean and Central America)	477.744	477.744	477.744	477.744	477.744	477.744	477.744	477.744	477.744
Total Transport Capacity of Next-Gen Cables in Construction	995.300	995.300	995.300	995.300	995.300	995.300	995.300	995.300	995.300
Demand versus Existing Capacity Plus Capacity Under Construction (Gbps)									
Forecasted Total Intercontinental Demand (Gbps)	2.380	4.635	8.446	15.488	58.491	184.727	384.488	487.959	586.669
Total Existing Capacity Plus Capacity Under Construction (Gbps)	995.300	995.300	995.300	995.300	995.300	995.300	995.300	995.300	995.300
Fill Level of Existing Capacity Plus Capacity Under Construction	0%	0%	1%	2%	6%	19%	39%	49%	59%
First Round of New Deployment, Assuming Deployment Occurs Two Years Prior to Expected Saturation of Market and Assuming that Competitive Market Supports 3 Cable[s]									
New Cable 1 (RFS 2008)									40,767.488
New Cable 2 (RFS 2008)									40,767.488
New Cable 3 (RFS 2008)									40,767.488
Total Transport Capacity of First Round of New Deployment									122,302.464
Demand versus Existing Capacity Plus Capacity Under Construction Plus First Round of New Deployment									
Forecasted Total Intercontinental Demand (Gbps)	2.380	4.635	8.446	15.488	58.491	184.727	384.488	487.959	586.669
Total Existing Capacity Plus Capacity Under Construction Plus First Round of New Deployment	995.300	995.300	995.300	995.300	995.300	995.300	995.300	995.300	123,297.764
Fill Level of Existing Capacity Plus Capacity Under Construction Plus First Round of New Deployment	0%	0%	1%	2%	6%	19%	39%	49%	0%
Second Round of New Deployment, Assuming Deployment Occurs Two Years Prior to Expected Saturation and Assuming that Market Supports 3 Cables									
NONE									

III.D.2.b Lower-Bound Forecast of Deployment of Undersea Telecommunications Cables Between Florida and Central America

Terabit's lower-bound analysis reveals that no additional cables would be needed to satisfy Central American intercontinental demand during the forecast period. Demand would only be 67 percent of supply in 2009, and therefore a conservative forecast of deployment would assume that no additional deployment would be needed during the forecast period.

The lower-bound forecast scenario is depicted in **Figure 3.11.**

Figure 3.11: Lower-Bound Forecast of North America-Central America Deployment, 2000-2009

North America-Central America (Excludes Mexico, which is served by abundant terrestrial fiber)										
	2000	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**
Forecasted Total Intercontinental Demand (Gbps)	2.380	4.635	8.446	15.488	58.491	184.727	384.488	487.959	586.669	666.000
Transport Capacity of Existing Cables (Gbps)										
None	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Transport Capacity of Next-Gen Cables in Construction (Gbps)										
Maya-1 (RFS 2000)	39.812	39.812	39.812	39.812	39.812	39.812	39.812	39.812	39.812	39.812
Pan-American Crossing (RFS 2000) (NO FLORIDA LANDING POINT)	477.744	477.744	477.744	477.744	477.744	477.744	477.744	477.744	477.744	477.744
Arcos-1 (RFS 2001) (Assumes 1/2 of Capacity Assigned Each to Caribbean and Central America)	477.744	477.744	477.744	477.744	477.744	477.744	477.744	477.744	477.744	477.744
Total Transport Capacity of Next-Gen Cables in Construction	995.300	995.300	995.300	995.300	995.300	995.300	995.300	995.300	995.300	995.300
Demand versus Existing Capacity Plus Capacity Under Construction (Gbps)										
Forecasted Total Intercontinental Demand (Gbps)	2.380	4.635	8.446	15.488	58.491	184.727	384.488	487.959	586.669	666.000
Total Existing Capacity Plus Capacity Under Construction (Gbps)	995.300	995.300	995.300	995.300	995.300	995.300	995.300	995.300	995.300	995.300
Fill Level of Existing Capacity Plus Capacity Under Construction	0%	0%	1%	2%	6%	19%	39%	49%	59%	67%
First Round of New Deployment										
NONE										

III.D.3 Forecasted Range of Deployment (Lower-Bound to Upper-Bound) of Undersea Telecommunications Cables between Florida and Central America

Figure 3.12 shows the range of Terabit's forecast of deployment between Florida and Central America from 2000 to 2009, including those systems presently under construction.

Figure 3.12: Forecasted Range of Deployment of Undersea Cables Between Florida and Central America

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Total
Lower-Bound Systems Forecast	1										**1**
Lower-Bound Cable Forecast	1										**1**
Upper-Bound Systems Forecast	1								3		**4**
Upper-Bound Cables Forecast	1								6		**7**

III.E Forecast of Deployment of Undersea Telecommunications Cables between Florida and Other Regions

Terabit does not believe that the deployment of cables from Florida to regions other than the ones listed would make economic sense. The only somewhat plausible route in addition to the three analyzed above would be Florida-Europe. This deployment could occur either as a direct route, or as a segment on a South America-Europe system. However, given the overabundance of fiber on both the North Atlantic route and the interconnecting U.S. east coast terrestrial route, it would be virtually impossible for future cables developers to profitably compete along a direct Florida-Europe route. Because the two latter routes experience the highest levels of demand in the world, prices of capacity are among the lowest in the world.

Further, developers of cable systems in the North Atlantic benefit from distance savings as a result of the polar routes that their cables follow. Florida-Europe cables are significantly longer than trans-North Atlantic cables.

Finally, because demand along the Florida-Europe route would not be as high as demand along the Florida-northeast US route (New York City handles more international traffic than any other hub in the United States), the capacity of such a system would likely be much lower than northern transatlantic cables. This would place Florida-Europe cables at an even greater disadvantage.

Terabit therefore does not believe that any other undersea cable routes into and out of Florida would be taken into even preliminary consideration by cable developers.

IV. FORECAST OF TOTAL DEPLOYMENT OF UNDERSEA TELECOMMUNICATIONS CABLES IN FLORIDA

Based on the preceding analysis, Terabit forecasts the upper and lower bounds of deployment shown in **Figure 4.1.**

Figure 4.1: Forecasted Range of Deployment of Undersea Cables In Florida, 2000-2009

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Total
Lower-Bound Systems Forecast	4	1	0	0	1	1	0	0	0	0	**7**
Lower-Bound Cable Forecast	7	2	0	0	2	2	0	0	0	0	**13**
Upper-Bound Systems Forecast	4	1	0	3	3	0	0	0	6	0	**17**
Upper-Bound Cables Forecast	7	2	0	6	6	0	0	0	12	0	**33**

The value of this forecast is not so much in its precise years of predicted deployment (although Terabit took great care to develop the methodology of its forecasting) as it is in the forecasted totals. Terabit concludes that it is reasonably certain that the total number of cables systems landing in Florida from 2000 to 2009 will be between 7 and 17 (this includes the 5 systems in the process of being constructed: 360Americas, Emergia/SAm-1, Mid-Atlantic Crossing/South American Crossing, Arcos-1, and Maya-1). It is also reasonably certain that the number of physical cables landing in Florida will range from 13 to 33 (this includes 9 cables that are in the process of being constructed).

Terabit's analysis results in the average expected annual deployment ranges shown in **Figure 4.2.**

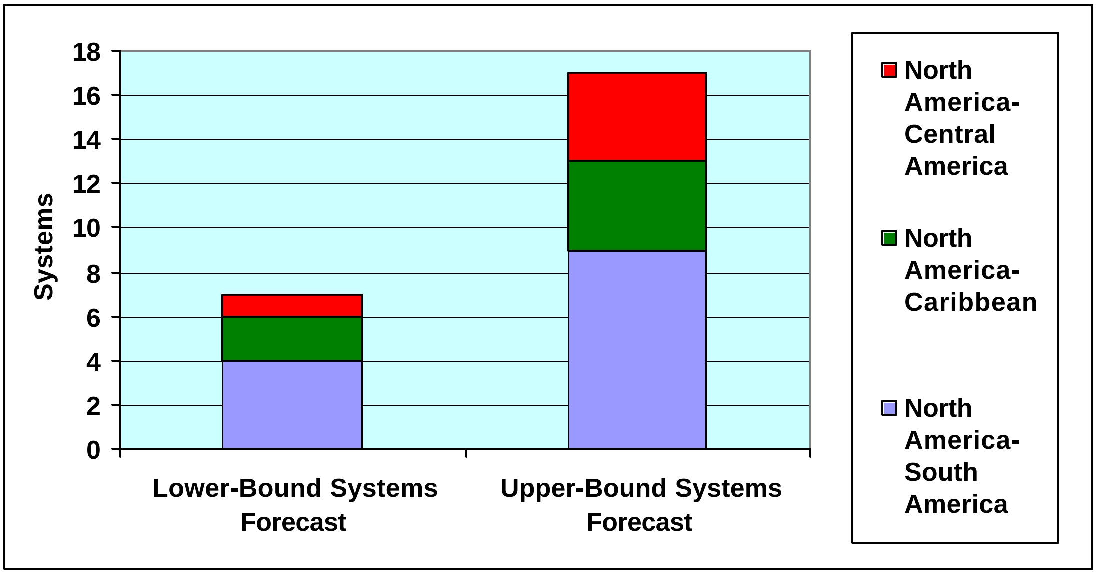
Figure 4.2: Forecasted Average Deployment of Undersea Cables in Florida, 2000-2009

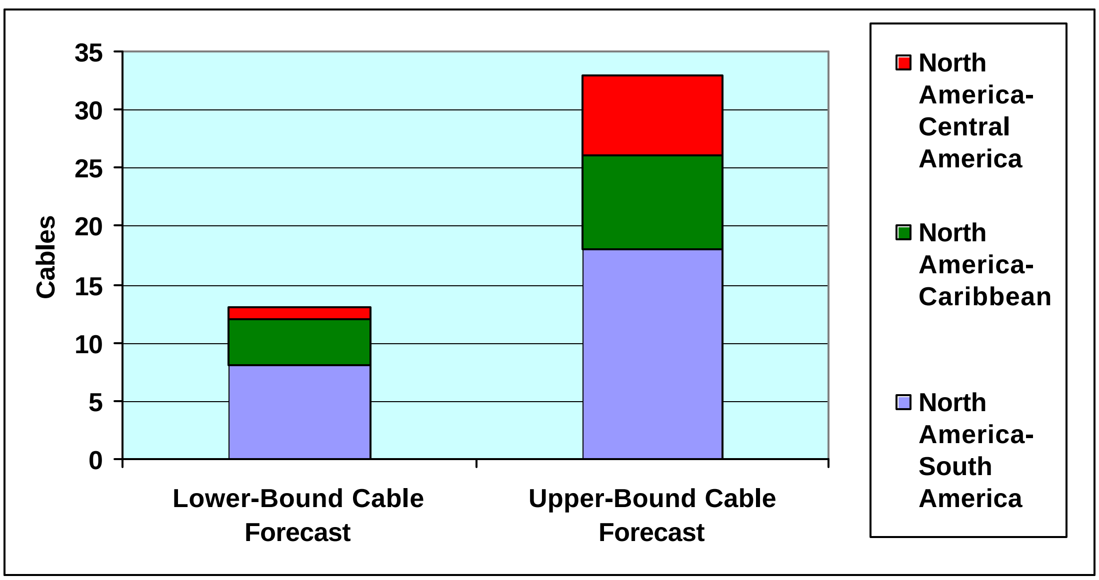
Forecasted Lower Bound of the Average Number of Systems per Year from 2000 to 2009	**0.7**
Forecasted Upper Bound of the Average Number of Systems per Year from 2000 to 2009	**1.3**
Forecasted Lower Bound of the Average Number of Cables per Year from 2000 to 2009	**1.7**
Forecasted Upper Bound of the Average Number of Cables per Year from 2000 to 2009	**3.3**

Figure 4.3 shows the expected geographic breakdown of deployment in both the upper-bound and lower-bound deployment scenarios.

Figure 4.3: Forecasted Geographic Breakdown of Deployment in Florida, 2000-2009

	North America-South America	North America-Caribbean	North America-Central America
Lower-Bound Systems Forecast	4	2	1
Lower-Bound Cable Forecast	8	4	1
Upper-Bound Systems Forecast	9	4	4
Upper-Bound Cables Forecast	18	8	7





APPENDIX: CAPACITY DEMAND FORECASTS

A.A North America-South America Capacity Demand Forecast

A.A.1 South America Intercontinental Voice Demand Forecast

Figure A.1: Historical Incoming and Outgoing International Voice Minutes for South America, 1997-1999

	1997	1998	1999
Argentina	575,516,016	783,928,000	1,093,146,118
Bolivia	104,599,000	119,623,000	120,276,000
Brazil	1,253,600,032	1,339,956,960	1,429,829,952
Chile	489,500,000	529,497,975	551,837,161
Colombia	516,000,000	658,828,000	684,501,710
Ecuador	241,089,012	205,972,028	387,000,000
French Guiana	26,207,584	21,521,162	24,719,155
Guyana	166,488,992	122,012,000	117,070,000
Paraguay	79,146,284	95,133,956	87,931,000
Peru	345,223,000	379,155,008	404,819,000
Suriname	35,460,261	45,523,039	40,273,700
Uruguay	166,666,824	185,247,656	190,777,200
Venezuela	445,230,272	469,207,616	475,000,000
South America Total	**4,444,727,277**	**4,955,606,400**	**5,607,180,996**
Percent Change		11.5%	13.1%
CAGR, 1997-1999	**12.3%**		

Figure A.2: Forecasted South American Intercontinental Voice Demand, 2000-2009

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Forecasted Total South American International Voice Minutes (Millions)	6,297.9	7,073.7	7,945.0	8,923.7	10,022.9	11,257.5	12,644.2	14,201.8	15,951.2	17,916.0
Percent of Calls outside of Latin America	75%									
South American Extra-Regional Voice Minutes (Millions)	4,723.4	5,305.2	5,958.7	6,692.8	7,517.2	8,443.1	9,483.2	10,651.3	11,963.4	13,437.0
Minutes per 64 Kbps Circuit	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
64 Kbps Circuits	47,234	53,052	59,587	66,928	75,172	84,431	94,832	106,513	119,634	134,370
Total South American Intercontinental Voice Demand (Gbps)	**3.644**	**4.093**	**4.597**	**5.163**	**5.799**	**6.513**	**7.316**	**8.217**	**9.229**	**10.366**
Total South American Intercontinental Voice Demand (STM-1s)	**23**	**26**	**30**	**33**	**37**	**42**	**47**	**53**	**59**	**67**

A.A.2 South America Intercontinental Private Enterprise Demand Forecast

Figure A.3: Historical Corporate Spending on International Private Data-Line Circuits between the United States and South America (Circuits Supplied by US Carriers Only)

Country	1996	1997	1998
Argentina	$8.040	$10.983	$14.777
Bolivia	$1.190	$1.272	$1.384
Brazil	$14.680	$17.829	$26.236
Chile	$5.401	$8.194	$8.323
Colombia	$5.576	$6.373	$14.350
Ecuador	$0.978	$1.346	$5.918
French Guiana	$0.035	$0.000	$0.030
Guyana	$0.510	$0.486	$0.540
Paraguay	$0.074	$0.155	$0.081
Peru	$2.854	$4.063	$5.084
Suriname	$0.716	$0.956	$0.669
Uruguay	$0.719	$0.775	$1.213
Venezuela	$7.673	$9.931	$14.696
TOTAL	**$48.446**	**$62.363**	**$93.300**

Figure A.4: Historical Bandwidth of International Private Data-Line Circuits between the United States and South America (Circuits Supplied by US Carriers Only)

Country	1996	1997	1998
Argentina	0.022	0.043	0.088
Bolivia	0.002	0.005	0.008
Brazil	0.048	0.086	0.188
Chile	0.021	0.042	0.048
Colombia	0.022	0.031	0.106
Ecuador	0.003	0.004	0.016
French Guiana	0.000	0.000	0.000
Guyana	0.001	0.001	0.002
Paraguay	0.000	0.000	0.000
Peru	0.006	0.011	0.019
Suriname	0.002	0.003	0.003
Uruguay	0.001	0.002	0.004
Venezuela	0.027	0.035	0.085
TOTAL	**0.156**	**0.264**	**0.568**

Figure A.5: Forecast of Total South American Intercontinental Private Enterprise Demand, 1999-2009

Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Argentina	0.250	0.390	0.609	0.952	1.488	2.325	3.633	5.676	8.869	13.858	21.653
Bolivia	0.020	0.027	0.036	0.049	0.066	0.089	0.120	0.162	0.219	0.295	0.397
Brazil	0.535	0.836	1.305	2.040	3.187	4.980	7.781	12.158	18.997	29.683	46.380
Chile	0.137	0.212	0.329	0.511	0.792	1.230	1.908	2.961	4.594	7.129	11.062
Colombia	0.302	0.472	0.738	1.153	1.802	2.816	4.400	6.875	10.742	16.785	26.226
Ecuador	0.046	0.071	0.111	0.174	0.272	0.425	0.664	1.038	1.621	2.533	3.958
French Guiana	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001
Guyana	0.005	0.006	0.008	0.011	0.014	0.017	0.022	0.029	0.037	0.048	0.061
Paraguay	0.001	0.001	0.001	0.002	0.002	0.003	0.004	0.005	0.006	0.008	0.011
Peru	0.053	0.083	0.130	0.203	0.316	0.494	0.773	1.207	1.886	2.947	4.605
Suriname	0.006	0.008	0.009	0.011	0.013	0.016	0.020	0.024	0.029	0.035	0.042
Uruguay	0.013	0.020	0.031	0.048	0.075	0.117	0.183	0.285	0.446	0.696	1.088
Venezuela	0.240	0.375	0.586	0.916	1.432	2.237	3.495	5.461	8.533	13.333	20.832
Total South American Intercontinental Private Enterprise Demand (Gbps)	**1.607**	**2.501**	**3.896**	**6.070**	**9.460**	**14.750**	**23.003**	**35.881**	**55.980**	**87.350**	**136.316**
Total South American Intercontinental Private Enterprise Demand (STM-1s)	**10**	**16**	**24**	**38**	**59**	**92**	**145**	**226**	**353**	**551**	**861**

A.A.3 South America Intercontinental Internet Demand Forecast

Figure A.6: Historical Number of South American Internet Users, 1997-1999 (Millions)

	1997	1998	1999
Argentina	170,000	200,000	900,000
Bolivia	8,000	17,000	35,000
Brazil	1,310,000	2,500,000	3,500,000
Chile	250,000	250,000	625,000
Columbia	200,000	350,000	600,000
Ecuador	13,000	15,000	20,000
French Guyana	1,000	1,500	2,000
Guayana	1,000	2,000	3,000
Paraguay	5,000	10,000	20,000
Peru	100,000	200,000	400,000
Suriname	4,500	7,200	10,000
Uruguay	100,000	230,000	300,000
Venezuela	35,000	350,000	400,000
South America Total	**2.198**	**4.133**	**6.815**
Percent Change		88%	65%
Internet Penetration	**0.645%**	**1.213%**	**2.000%**

Figure A.7: Forecast of South American Internet Users, 2000-2009

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total Internet Users (Millions)	**11.200**	**18.300**	**25.000**	**29.000**	**30.000**	**30.500**	**31.000**	**31.500**	**32.000**	**32.500**
Percent Change	64%	63%	37%	16%	3%	2%	2%	2%	2%	2%
1st Derivative	0.991	0.985	0.578	0.437	0.216	0.483	0.984	0.984	0.984	0.984
Internet Penetration	3.3%	5.4%	7.3%	8.5%	8.8%	9.0%	9.1%	9.2%	9.4%	9.5%
Internet Users as a % of Main Telephone Lines	22.7%	37.0%	50.6%	58.7%	60.7%	61.7%	62.8%	63.8%	64.8%	65.8%

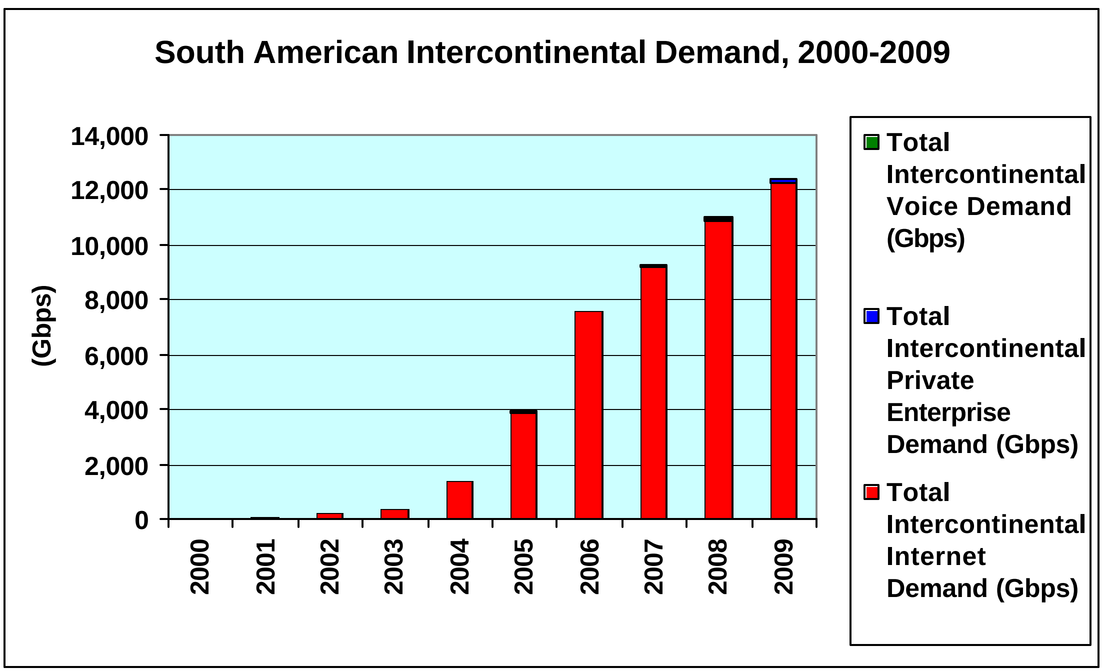
Figure A.8: Forecast of Total South American Intercontinental Internet Demand, 2000-2009

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total Internet Users (Millions)	11.200	18.300	25.000	29.000	30.000	30.500	31.000	31.500	32.000	32.500
Percent On-Line During the Peak-Hour	10%	12%	14%	16%	19%	22%	25%	26%	27%	28%
Peak-Hour Internet Users (Millions)	1.120	2.196	3.500	4.640	5.700	6.710	7.750	8.190	8.640	9.100
Average Bandwidth per User	30	50	70	100	300	750	1,300	1,550	1,800	2,000
Total Internet Demand (Gbps)	33.6	109.8	245.0	464.0	1,710.0	5,032.5	10,075.0	12,694.5	15,552.0	18,200.0
Percent of Demand That Is Intercontinental and Uncached	90%	88%	85%	83%	80%	78%	75%	73%	70%	68%
Total Intercontinental Internet Demand (Gbps)	**30.2**	**96.1**	**208.3**	**382.8**	**1,368.0**	**3,900.2**	**7,556.3**	**9,203.5**	**10,886.4**	**12,285.0**
Total Intercontinental Internet Demand (STM-1s)	**194**	**618**	**1,339**	**2,461**	**8,796**	**25,078**	**48,587**	**59,179**	**70,000**	**78,993**

A.A.4 Total South American Intercontinental Demand Forecast

Figure A.9: Forecast of Total South American Intercontinental Demand, 1999-2008

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total Intercontinental Internet Demand (Gbps)	30.2	96.1	208.3	382.8	1,368.0	3,900.2	7,556.3	9,203.5	10,886.4	12,285.0
Total Intercontinental Private Enterprise Demand (Gbps)	2.4	3.8	5.9	9.2	14.4	22.5	35.1	54.9	85.7	134.0
Total Intercontinental Voice Demand (Gbps)	3.6	4.1	4.6	5.2	5.8	6.5	7.3	8.2	9.2	10.4
Total Intercontinental Demand (Gbps)	**36.3**	**103.9**	**218.7**	**397.2**	**1,388.2**	**3,929.2**	**7,598.7**	**9,266.6**	**10,981.4**	**12,429.3**
Total Intercontinental Demand (STM-1s)	**233**	**668**	**1,406**	**2,554**	**8,926**	**25,265**	**48,860**	**59,585**	**70,611**	**79,921**
Total Intercontinental Demand (STM-1s)	233	668	1,406	2,554	8,926	25,265	48,860	59,585	70,611	79,921
Percent Change		186%	110%	82%	250%	183%	93%	22%	19%	13%
CAGR (2000-2009)	91%									



A.B. North America-Caribbean Capacity Demand Forecast

A.B.1 Caribbean Intercontinental Voice Demand Forecast

Figure A.10: Historical Incoming and Outgoing International Voice Minutes for the Caribbean, 1997-1999

	1997	1998	1999
Antigua and Barbuda	31,766,379	31,766,379	31,766,379
Aruba	46,079,556	52,097,528	52,793,516
Bahamas	141,700,000	144,144,483	147,486,759
Barbados	95,901,000	108,400,000	120,708,425
Cuba	189,026,434	232,069,168	257,825,214
Dominican Rep.	312,400,000	346,500,000	421,740,000
Grenada	44,316,761	41,812,290	46,689,208
Guadeloupe	34,053,800	85,045,166	87,804,904
Haiti	27,007,614	60,304,225	64,243,077
Jamaica	128,640,600	132,220,000	154,112,200
Martinique	15,659,600	17,618,040	17,952,000
Netherlands Antilles	88,410,000	90,255,900	94,500,000
Saint Kitts and Nevis	23,423,400	24,475,500	27,451,200
Saint Lucia	25,735,689	28,190,482	30,879,425
St. Vincent and the Grenadines	33,112,224	36,044,939	35,067,808
Trinidad and Tobago	193,246,884	208,676,432	223,792,528
Caribbean Total	**1,430,479,941**	**1,639,620,532**	**1,814,812,643**
Percent Change		14.6%	10.7%
CAGR		**12.6%**	

Figure A.11: Forecasted Caribbean Intercontinental Voice Demand, 2000-2009

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total Caribbean International Voice Minutes (Millions)	2,044.1	2,302.4	2,593.3	2,921.0	3,290.1	3,705.8	4,174.0	4,701.5	5,295.5	5,964.6
Percent of Calls outside of Latin America					80%					
Caribbean Extra-Regional Voice Minutes (Millions)	1,533.1	1,726.8	1,945.0	2,190.8	2,467.6	2,779.3	3,130.5	3,526.1	3,971.6	4,473.5
Minutes per 64 Kbps Circuit	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
64 Kbps Circuits	15,331	17,268	19,450	21,908	24,676	27,793	31,305	35,261	39,716	44,735
Total Caribbean Voice Demand Directed Through North America (Gbps)	**1.183**	**1.332**	**1.500**	**1.690**	**1.904**	**2.144**	**2.415**	**2.720**	**3.064**	**3.451**
Total Caribbean Voice Demand Directed Through North America (STM-1s)	**8**	**9**	**10**	**11**	**12**	**14**	**16**	**17**	**20**	**22**

A.B.2 Caribbean Intercontinental Private Enterprise Demand Forecast

Figure A.12: Historical Corporate Spending on International Private Data-Line Circuits between the United States and the Caribbean (Circuits Supplied by US Carriers Only)

Country	1996	1997	1998
Antigua and Barbuda	$0.147	$0.401	$0.512
Aruba	$0.122	$0.137	$0.093
Bahamas, The	$2.611	$2.717	$2.514
Barbados	$1.190	$1.620	$1.275
Bermuda	$3.015	$3.653	$3.358
Cayman Islands	$1.114	$2.110	$1.313
Cuba	$5.030	$4.661	$4.410
Dominican Republic	$3.149	$4.720	$4.304
French Overseas Departments	$0.029	$0.052	$0.084
Grenada	$0.035	$0.122	$0.122
Guadeloupe	$0.043	$0.031	$0.031
Haiti	$0.171	$0.373	$0.162
Jamaica	$1.384	$1.905	$1.892
Netherlands Antilles	$0.998	$0.920	$0.829
Saint Kitts and Nevis	$0.094	$0.148	$0.254
Saint Vincent and the Grenadines	$0.114	$0.077	$0.077
Trinidad and Tobago	$0.933	$0.828	$0.980
Turks and Caicos Islands	$0.163	$0.103	$0.459
Virgin Islands, British	$0.494	$0.636	$0.667
U.S. Virgin Islands	$0.070	$0.225	$0.209
TOTAL	**$20.905**	**$25.440**	**$23.547**

Figure A.13: Historical Bandwidth of International Private Data-Line Circuits between the United States and the Caribbean (Circuits Supplied by US Carriers Only)

Country	1996	1997	1998
Antigua and Barbuda	0.000	0.002	0.002
Aruba	0.000	0.002	0.003
Bahamas, The	0.008	0.010	0.011
Barbados	0.004	0.006	0.007
Bermuda	0.013	0.016	0.024
Cayman Islands	0.003	0.016	0.004
Cuba	0.006	0.006	0.030
Dominican Republic	0.012	0.028	0.028
French Overseas Departments	0.000	0.000	0.000
Grenada	0.000	0.000	0.000
Guadeloupe	0.000	0.000	0.000
Haiti	0.005	0.005	0.000
Jamaica	0.004	0.012	0.015
Netherlands Antilles	0.003	0.004	0.002
Saint Kitts and Nevis	0.000	0.003	0.001
Saint Vincent and the Grenadines	0.000	0.000	0.000
Trinidad and Tobago	0.003	0.004	0.006
Turks and Caicos Islands	0.001	0.000	0.002
Virgin Islands, British	0.003	0.003	0.003
U.S. Virgin Islands	0.000	0.001	0.001
TOTAL	**0.065**	**0.118**	**0.137**

Figure A.14: Forecast of Total Caribbean Intercontinental Private Enterprise Demand, 1999-2009

Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Antigua and Barbuda	0.006	0.009	0.014	0.022	0.034	0.052	0.082	0.128	0.200	0.313	0.489
Aruba	0.005	0.006	0.006	0.007	0.007	0.008	0.009	0.010	0.010	0.011	0.012
Bahamas, The	0.024	0.030	0.036	0.045	0.055	0.067	0.082	0.101	0.124	0.152	0.186
Barbados	0.016	0.020	0.026	0.034	0.044	0.056	0.073	0.094	0.122	0.158	0.205
Bermuda	0.057	0.075	0.099	0.130	0.172	0.226	0.299	0.394	0.520	0.686	0.904
Cayman Islands	0.010	0.013	0.018	0.024	0.033	0.044	0.060	0.082	0.111	0.151	0.205
Cuba	0.063	0.074	0.086	0.101	0.118	0.139	0.162	0.190	0.222	0.260	0.304
Dominican Republic	0.074	0.108	0.157	0.230	0.336	0.491	0.717	1.048	1.531	2.237	3.269
French Overseas Departments	0.001	0.001	0.002	0.003	0.004	0.007	0.011	0.017	0.026	0.040	0.063
Grenada	0.001	0.001	0.001	0.002	0.003	0.005	0.008	0.012	0.019	0.030	0.047
Guadeloupe	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Haiti	0.001	0.001	0.001	0.002	0.002	0.003	0.003	0.004	0.005	0.006	0.007
Jamaica	0.039	0.057	0.083	0.122	0.178	0.259	0.379	0.554	0.810	1.183	1.729
Netherlands Antilles	0.005	0.006	0.006	0.007	0.008	0.009	0.011	0.012	0.014	0.016	0.018
Saint Kitts and Nevis	0.002	0.003	0.005	0.008	0.012	0.019	0.029	0.045	0.071	0.111	0.173
Saint Vincent and the Grenadines	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Trinidad and Tobago	0.014	0.018	0.023	0.029	0.037	0.048	0.061	0.078	0.101	0.129	0.165
Turks and Caicos Islands	0.006	0.009	0.015	0.023	0.036	0.056	0.087	0.136	0.213	0.333	0.520
Virgin Islands, British	0.007	0.010	0.015	0.022	0.031	0.046	0.066	0.096	0.140	0.203	0.295
U.S. Virgin Islands	0.004	0.006	0.010	0.015	0.024	0.037	0.058	0.091	0.142	0.222	0.347
Total Caribbean Intercontinental Private Enterprise Demand (Gbps)	**0.333**	**0.446**	**0.603**	**0.824**	**1.134**	**1.573**	**2.198**	**3.093**	**4.381**	**6.242**	**8.940**
Total Caribbean Intercontinental Private Enterprise Demand (STM-1s)	**2**	**3**	**4**	**5**	**7**	**10**	**14**	**20**	**28**	**40**	**57**

A.B.3 Caribbean Intercontinental Internet Demand Forecast

Figure A.15: Historical Number of Caribbean Internet Users, 1997-1999 (Millions)

	1997	1998	1999
Anitgua and Barbuda	2,500	3,000	4,000
Aruba	2,500	3,000	4,000
Bahamas	8,000	12,000	15,000
Barbados	2,000	5,000	6,000
Cuba	7,500	25,000	50,000
Dominica	1,000	2,000	2,000
Dominican Republic	10,000	20,000	25,000
Grenada	1,000	1,500	2,000
Guadeloupe	1,000	2,000	4,000
Haiti	1,000	2,000	6,000
Jamaica	25,000	50,000	60,000
Martinique	1,000	2,000	5,000
Netherland Antilles	1,000	1,000	2,000
Puerto Rico	50,000	100,000	200,000
St. Kitts and Nevis	1,000	1,500	2,000
St. Lucia	1,500	2,000	3,000
St. Vincent	1,000	1,500	2,000
Trinidad and Tobago	10,000	20,000	30,000
Virgin Islands (US)	5,000	10,000	12,000
Caribbean Total	**0.132**	**0.264**	**0.434**
Percent Change		100%	65%
Internet Penetration	**0.350%**	**0.698%**	**1.150%**

Figure A.16: Forecast of Caribbean Internet Users, 2000-2009

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total Internet Users (Millions)	0.710	1.150	1.750	2.200	2.450	2.550	2.600	2.650	2.700	2.750
Percent Change	64%	62%	52%	26%	11%	4%	2%	2%	2%	2%
1st Derivative	0.983	0.974	0.842	0.493	0.442	0.359	0.480	0.981	0.981	0.981
Internet Penetration	1.9%	3.0%	4.6%	5.8%	6.5%	6.8%	6.9%	7.0%	7.2%	7.3%
Internet Users as a % of Main Telephone Lines	16.3%	26.4%	40.2%	50.5%	56.2%	58.5%	59.7%	60.8%	62.0%	63.1%

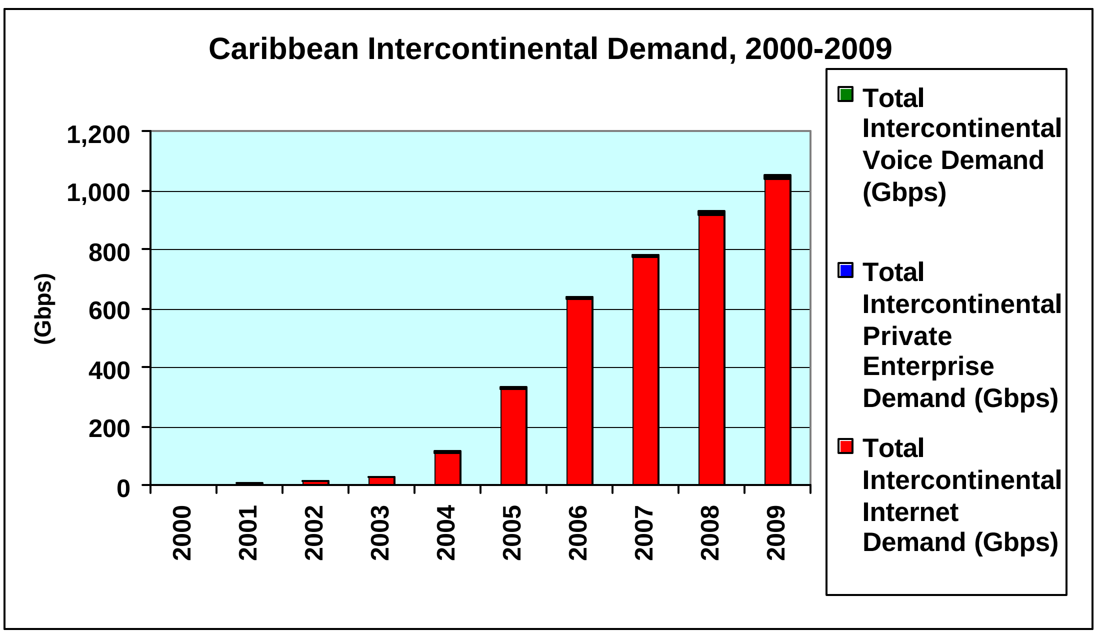
Figure A.17: Forecast of Total Caribbean Intercontinental Internet Demand, 2000-2009

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total Internet Users (Millions)	0.710	1.150	1.750	2.200	2.450	2.550	2.600	2.650	2.700	2.750
Percent On-Line During the Peak-Hour	10%	12%	14%	16%	19%	22%	25%	26%	27%	28%
Peak-Hour Internet Users (Millions)	0.071	0.138	0.245	0.352	0.466	0.561	0.650	0.689	0.729	0.770
Average Bandwidth per User	30	50	70	100	300	750	1,300	1,550	1,800	2,000
Total Internet Demand (Gbps)	2.130	6.900	17.150	35.200	139.650	420.750	845.000	1,067.950	1,312.200	1,540.000
Percent of Demand That Is Intercontinental and Uncached	90%	88%	85%	83%	80%	78%	75%	73%	70%	68%
Total Intercontinental Internet Demand (Gbps)	**1.917**	**6.038**	**14.578**	**29.040**	**111.720**	**326.081**	**633.750**	**774.264**	**918.540**	**1,039.500**
Total Intercontinental Internet Demand (STM-1s)	**12**	**39**	**94**	**187**	**718**	**2,097**	**4,075**	**4,979**	**5,906**	**6,684**

A.B.4 Total Caribbean Intercontinental Demand Forecast

Figure A.18: Forecast of Total Caribbean Intercontinental Demand, 1999-2008

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total Intercontinental Internet Demand (Gbps)	1.917	6.038	14.578	29.040	111.720	326.081	633.750	774.264	918.540	1,039.500
Total Intercontinental Private Enterprise Demand (Gbps)	0.446	0.603	0.824	1.134	1.573	2.198	3.093	4.381	6.242	8.940
Total Intercontinental Voice Demand (Gbps)	1.183	1.332	1.500	1.690	1.904	2.144	2.415	2.720	3.064	3.451
Total Intercontinental Demand (Gbps)	**3.546**	**7.973**	**16.902**	**31.864**	**115.196**	**330.423**	**639.258**	**781.365**	**927.845**	**1,051.891**
Total Intercontinental Demand (STM-1s)	**23**	**51**	**109**	**205**	**741**	**2,125**	**4,110**	**5,024**	**5,966**	**6,764**
Percent Change		125%	112%	89%	262%	187%	93%	22%	19%	13%
CAGR (2000-2009)	88%									



A.C. North America-Central America Capacity Demand Forecast (Excluding Mexico)

A.C.1 Central American Intercontinental Voice Demand Forecast

Figure A.19: Incoming and Outgoing International Voice Minutes for Central America, 1997-1999

	1997	1998	1999
Belize	23,910,208	24,828,250	37,230,943
Costa Rica	176,902,032	189,705,696	161,765,224
Guatemala	202,500,000	214,101,932	233,683,007
Honduras	213,493,928	264,149,270	294,350,000
El Salvador	18,381,600	18,154,717	18,333,294
Nicaragua	88,702,320	107,582,672	123,669,560
Panama	136,747,596	147,559,896	158,175,988
Central America Totals	**860,637,684**	**966,082,433**	**1,027,208,016**
Percent Change		12.3%	6.3%
CAGR		**9.2%**	

Figure A.20: Forecasted Central American Intercontinental Voice Demand, 2000-2009

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total Central American International Voice Minutes (Millions)	1,122.2	1,226.0	1,339.4	1,463.3	1,598.7	1,746.5	1,908.1	2,084.5	2,277.3	2,488.0
Percent of Calls outside of Latin America					75%					
Central American Extra-Regional Voice Minutes (Millions)	841.7	919.5	1,004.6	1,097.5	1,199.0	1,309.9	1,431.0	1,563.4	1,708.0	1,866.0
Minutes per 64 Kbps Circuit	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
64 Kbps Circuits	11,222	12,260	13,394	14,633	15,987	17,465	19,081	20,845	22,773	24,880
Total Central American Voice Demand Directed Through North America (Gbps)	**0.866**	**0.946**	**1.033**	**1.129**	**1.233**	**1.347**	**1.472**	**1.608**	**1.757**	**1.919**
Total Central American Voice Demand Directed Through North America (STM-1s)	**6**	**6**	**7**	**7**	**8**	**9**	**9**	**10**	**11**	**12**

A.C.2 Central American Intercontinental Private Enterprise Demand Forecast

Figure A.21: Historical Corporate Spending on International Private Data-Line Circuits between the United States and Central America (Circuits Supplied by US Carriers Only)

Country	1996	1997	1998
Belize	$0.068	$0.117	$0.031
Costa Rica	$2.128	$3.592	$3.097
El Salvador	$1.090	$1.369	$2.064
Guatemala	$0.816	$1.235	$1.297
Honduras	$0.576	$1.047	$1.582
Nicaragua	$0.130	$0.259	$0.362
Panama	$5.281	$3.991	$2.928
TOTAL	**$10.090**	**$11.609**	**$11.361**

Figure A.22: Bandwidth of International Private Data-Line Circuits between the United States and Central America (Circuits Supplied by US Carriers Only)

Country	1996	1997	1998
Belize	0.000	0.000	0.000
Costa Rica	0.010	0.012	0.021
El Salvador	0.004	0.006	0.009
Guatemala	0.002	0.004	0.009
Honduras	0.002	0.005	0.008
Nicaragua	0.000	0.002	0.002
Panama	0.055	0.057	0.014
TOTAL	**0.074**	**0.086**	**0.062**

Figure A.23: Forecast of Total Central American Intercontinental Private Enterprise Demand, 1999-2009

Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Belize	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Costa Rica	0.057	0.085	0.129	0.194	0.293	0.442	0.667	1.005	1.516	2.286	3.448
El Salvador	0.025	0.039	0.062	0.096	0.151	0.235	0.368	0.575	0.898	1.403	2.192
Guatemala	0.024	0.038	0.059	0.093	0.145	0.227	0.355	0.554	0.866	1.352	2.113
Honduras	0.022	0.035	0.055	0.085	0.133	0.208	0.325	0.508	0.795	1.241	1.940
Nicaragua	0.005	0.008	0.012	0.019	0.030	0.047	0.074	0.116	0.181	0.283	0.442
Panama	0.013	0.012	0.012	0.011	0.010	0.009	0.009	0.008	0.008	0.007	0.007
Total Central American Intercontinental Private Enterprise Demand (Gbps)	**0.147**	**0.218**	**0.329**	**0.499**	**0.763**	**1.169**	**1.797**	**2.766**	**4.262**	**6.573**	**10.141**
Total Central American Intercontinental Private Enterprise Demand (STM-1s)	**1**	**1**	**2**	**3**	**5**	**8**	**12**	**18**	**27**	**42**	**65**

A.C.3 Central American Intercontinental Internet Demand Forecast

Figure A.24: Historical Number of Central American Internet Users, 1997-1999 (Millions)

	1997	1998	1999
Belize	5,000	10,000	12,000
Costa Rica	60,000	100,000	150,000
Guatemala	10,000	50,000	65,000
El Salvador	10,000	30,000	40,000
Honduras	10,000	18,000	20,000
Nicaragua	10,000	15,000	20,000
Panama	15,000	30,000	45,000
Central America Total	**0.120**	**0.253**	**0.352**
Percent Change		111%	39%
Internet Penetration	0.338%	0.713%	0.992%

Figure A.25: Forecast of Central American Internet Users, 2000-2009

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total Internet Users (Millions)	**0.480**	**0.640**	**0.830**	**1.030**	**1.230**	**1.420**	**1.560**	**1.650**	**1.700**	**1.730**
Percent Change	36%	33%	30%	24%	19%	15%	10%	6%	3%	2%
1st Derivative	0.929	0.917	0.891	0.812	0.806	0.796	0.638	0.585	0.525	0.582
Internet Penetration	1.4%	1.8%	2.3%	2.9%	3.5%	4.0%	4.4%	4.7%	4.8%	4.9%
Internet Users as a % of Main Telephone Lines	17.1%	22.8%	29.5%	36.7%	43.8%	50.5%	55.5%	58.7%	60.5%	61.6%

Figure A.26: Forecast of Total Central American Intercontinental Internet Demand, 2000-2009

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total Internet Users (Millions)	0.480	0.640	0.830	1.030	1.230	1.420	1.560	1.650	1.700	1.730
Percent On-Line During the Peak-Hour	10%	12%	14%	16%	19%	22%	25%	26%	27%	28%
Peak-Hour Internet Users (Millions)	0.048	0.077	0.116	0.165	0.234	0.312	0.390	0.429	0.459	0.484
Average Bandwidth per User (Kbps)	30	50	70	100	300	750	1,300	1,550	1,800	2,000
Total Internet Demand (Gbps)	1.440	3.840	8.134	16.480	70.110	234.300	507.000	664.950	826.200	968.800
Percent of Demand That Is Intercontinental and Uncached	90%	88%	85%	83%	80%	78%	75%	73%	70%	68%
Total Intercontinental Internet Demand (Gbps)	**1.296**	**3.360**	**6.914**	**13.596**	**56.088**	**181.583**	**380.250**	**482.089**	**578.340**	**653.940**
Total Intercontinental Internet Demand (STM-1s)	**8**	**22**	**44**	**87**	**361**	**1,168**	**2,445**	**3,100**	**3,719**	**4,205**

A.B.4 Total Caribbean Intercontinental Demand Forecast

Figure A.27: Forecast of Total Central American Intercontinental Demand, 1999-2008

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total Intercontinental Internet Demand (Gbps)	1.296	3.360	6.914	13.596	56.088	181.583	380.250	482.089	578.340	653.940
Total Intercontinental Private Enterprise Demand (Gbps)	0.218	0.329	0.499	0.763	1.169	1.797	2.766	4.262	6.573	10.141
Total Intercontinental Voice Demand (Gbps)	0.866	0.946	1.033	1.129	1.233	1.347	1.472	1.608	1.757	1.919
Total Intercontinental Demand (Gbps)	**2.380**	**4.635**	**8.446**	**15.488**	**58.491**	**184.727**	**384.488**	**487.959**	**586.669**	**666.000**
Total Intercontinental Demand (STM-1s)	**15**	**30**	**54**	**100**	**376**	**1,188**	**2,472**	**3,138**	**3,772**	**4,282**
Percent Change		95%	82%	83%	278%	216%	108%	27%	20%	14%
CAGR (2000-2009)	87%