SBC

HIGH CAPACITY MARKET STUDY SECOND QUARTER, 1998

November 25, 1998

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DESCRIPTION OF THE STUDY

OBJECTIVES

The primary objective of this report is to provide SBC with a high-level overview of its High Capacity Market (DS1 and above) and to analyze the state of competition for high capacity telecommunications services for the following metropolitan statistical areas (MSAs).

- Little Rock, AR
- Los Angeles, CA (including Orange County and Riverside)
- Sacramento, CA
- San Diego, CA
- San Francisco, CA
- San Jose, CA
- St Louis, MO
- Reno, NV
- Oklahoma City, OK
- Austin, TX
- Dallas/Ft Worth, TX
- El Paso, TX
- Houston, TX
- San Antonio, TX

The report is structured to meet this objective by providing:

- A description of the High Capacity Market and market segments
- Market share for SBC and its competitors in the MSAs
- A description of the High Capacity competitive landscape in the MSAs

This report describes and defines the High Capacity Market and identifies the types of circuits included in the share estimates. The competitive analysis identifies and describes facilities based competitors in the High Capacity Market and market trends.

THE HIGH CAPACITY MARKET

QUALITY STRATEGIES defines the High Capacity Market as the universe of DS-1 and above circuits used either for end user customer's traffic (Provider) or for carrier transport (Transport).

- End users utilize high capacity circuits to connect two business locations in the same LATA (point-to-point) or to connect to a carrier's point-of-presence (POP) (special access).
- Carriers utilize high capacity transport circuits to provide links between POPs, central offices, and tandems.

The High Capacity Market will be viewed based on who PROVIDES the underlying facilities. For purposes of this project we will identify Overall High Capacity market share for facilities-based providers. The Overall High Capacity market consists of the Provider Market Segment and the Transport Market Segment.

THE FACILITY BASED HIGH CAPACITY MARKET

The Overall High Capacity Market combines the Provider and Transport Market Segments and shows overall market share for companies who provide DS1 and above services over their own facilities. This analysis does not include self-provisioning by carriers for transport.

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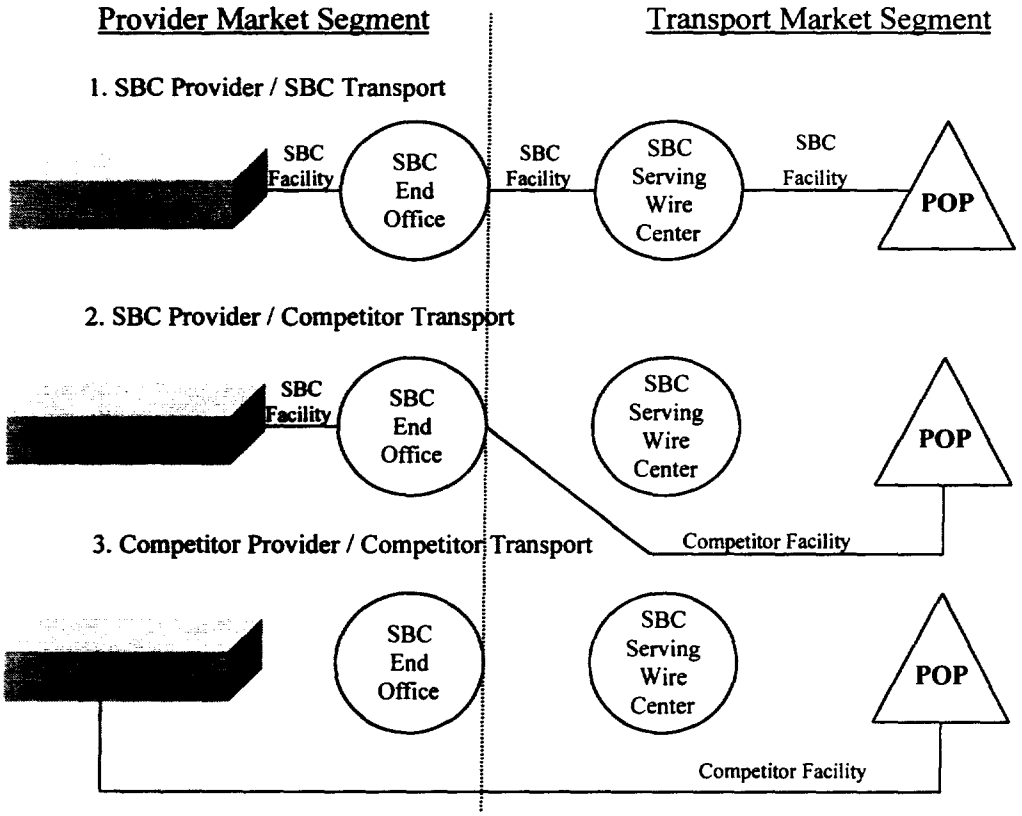
- Provider Market Segment: Provider circuits are DS-1 and DS-3 circuits provisioned by a facilities-based local telecommunications provider (either SBC or a competitor, over their own facilities). These circuits are ultimately purchased by end-users to transmit voice and data traffic between end user locations or from the end user's premise to a POP or competitor's switching center.
- Transport Market Segment: Transport circuits are DS1 and above circuits provided by SBC or a competitor over their own facilities and purchased by carriers to transmit voice and data traffic from one POP to another or to transmit voice and data traffic from a POP to a Central Office or tandems (for distribution). Transport circuits are purchased by one communications company from another communications company.

The following diagram depicts the various components of the Overall High Capacity Market, which is the combination of the Provider and Transport Market segments.

Overall High Capacity Market



COMPETITORS

Prior to the mid-1990's SBC largely had the High Capacity Market to itself. Since 1994, many competitors have established high capacity networks in SBC's territory. Many of these competitors are seasoned, well-financed telecommunications companies.

Some of the competitors that operate their own networks and compete with SBC for Provider and Transport market share are:

- Cox Fibernet
- e.spire
- Electric Lightwave (ELI)
- GST
- ICG
- Intermedia (ICI)
- MCI
- Nextlink
- Teleport Communications Group (TCG)
- Time Warner
- WorldCom (includes MFS and Brooks, which were acquired by WorldCom prior to 2Q98)

Each of the aforementioned competitors has invested resources to build optical fiber networks in SBC's territory that compete directly with SBC. Competitors cater to interexchange carriers and large business customers in particular vertical segments (particularly financial services, health care, and information transfer) commonly characterized as high-usage segments, in dense metropolitan areas. This has allowed competitors to focus on small geographic areas when constructing fiber networks (particularly central business districts and business-intensive suburbs).

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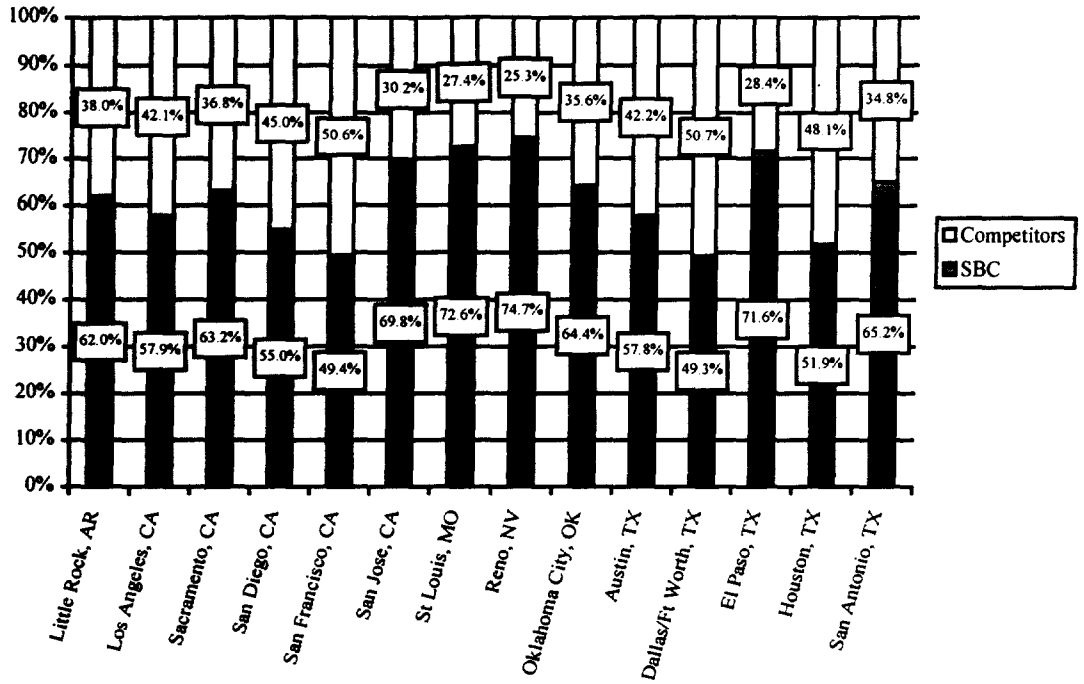
OVERALL HIGH CAPACITY MARKET SHARE RESULTS



Source: QUALITY STRATEGIES, Washington, D.C.

MSA	SBC	Competitors
Little Rock	62.0%	38.0%
LA-Orange-Riverside	57.9%	42.1%
Sacramento	63.2%	36.8%
San Diego	55.0%	45.0%
San Francisco	49.4%	50.6%
San Jose	69.8%	30.2%
St. Louis	72.6%	27.4%
Reno	74.7%	25.3%
Oklahoma City	64.4%	35.6%
Austin	57.8%	42.2%
Dallas/Fort Worth	49.3%	50.7%
El Paso	71.6%	28.4%
Houston	51.9%	48.1%
San Antonio	65.2%	34.8%

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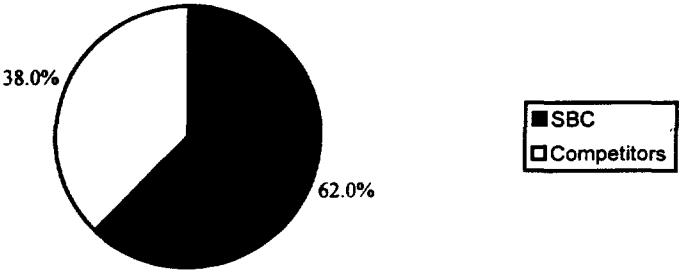
LITTLE ROCK - COMPETITIVE LANDSCAPE

Overview

The Little Rock-North Little Rock MSA has a population of approximately 480,000 people. Its most significant industries have traditionally been agricultural products, bauxite mining, and lumber. While this is true, Little Rock is the center of government activity as the capitol of Arkansas, accounting for approximately 19.3% of the total employment in the area. It also is the headquarters for the state's financial industry – banks, investment firms, and insurance companies -- accounting for approximately 49.6% of the state's employment in these areas and 8.1% of the area's total employment. The Little Rock area is expected to continue to grow steadily in the near future. Competitors include WorldCom, Alltel, e.spire and Hyperion.



Source: QUALITY STRATEGIES, Washington, D.C.

MSA	SBC	Competitors
Little Rock	62.0%	38.0%

Competitors

MSA	Competitors	Facility Type	Route Miles	Building on Network
Little Rock	WorldCom	Fiber	30	Unavailable
	Alltel	Fiber	Unavailable	6
	e.spire	Fiber & Microwave	90	40
	Hyperion	Fiber	120	21

WorldCom

WorldCom, which recently completed its acquisition of MCI continues to provide HICAP services over its 30-mile network in Little Rock.

WorldCom installed a Lucent 5ESS switch in Little Rock and began offering local switched services in the first quarter of 1997. The Lucent 5ESS switch can be configured to handle as many as 100,000 trunks. It can also be specially engineered to provide capacity in excess of 100,000 trunks. Additionally, it can handle between a few hundred and 200,000 subscriber lines. The 5ESS is capable of switching ISDN voice and data, local voice calls, long distance calls, Internet access, wireless PCS, Advanced Intelligent Network services, interactive video and multimedia services. The company is collocated with four Southwestern Bell switches in Little Rock, which give it access to 86% of Southwestern Bell's 170,000 customers in Little Rock.

WorldCom has a 100% SONET fiber optic network in the area, with approximately 30 route miles of fiber. Company representatives claim the company has fiber in all of the major multi-tenant buildings downtown. The company's current lone SONET ring in the area runs at OC-12. Company representatives estimate the portion of network capacity that is currently utilized to be 10%.

The network extends from downtown along Capitol St. to the corridor of Bowman and Shackleford roads and loops back to downtown along 13th St. WorldCom/Brooks also has a fiber-optic loop in North Little Rock, serving the customer base to the north of the Arkansas River.

e.spire

e.spire's 100% SONET fiber optic network has been functional since January of 1995. The company has built out its network over the last year, bringing its current number of route miles to 90. They continue to use their Lucent Technologies 5ESS switch and have connected over 40 buildings in the area to the network. The Lucent 5ESS switch can be configured to handle as many as 100,000 trunks. It can also be specially engineered to provide capacity in excess of 100,000 trunks. Additionally, it can handle between a few hundred and 200,000 subscriber lines. The 5ESS is capable of switching ISDN voice and data, local voice calls, long distance calls, Internet access, wireless PCS, Advanced Intelligent Network services, interactive video and multimedia services.

e.spire's downtown network is completed underground, but the expansions will include aerial fiber. Additionally, e.spire has microwave facilities to serve customers far removed from the fiber network. e.spire also has an ATM POP in Little Rock.

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Alltel

Alltel Communications has installed a DMS500 switch and a fiber network in Little Rock. At the present time they have only 6 buildings on this network. They offer 24 hour, seven days a week customer service and a range of products including basic business lines, T1, PRI, Internet access, paging, centrex packages and calling plans. They are presently collocated in three central offices.

Hyperion

Hyperion Little Rock installed its Lucent Technologies 5ESS switch in December of 1997. The Lucent 5ESS switch can be configured to handle as many as 100,000 trunks. It can also be specially engineered to provide capacity in excess of 100,000 trunks. Additionally, it can handle between a few hundred and 200,000 subscriber lines. The 5ESS is capable of switching ISDN voice and data, local voice calls, long distance calls, Internet access, wireless PCS, Advanced Intelligent Network services, interactive video and multimedia services.

The company has constructed a network, which currently consists of 120 route miles of fiber and is connected to approximately 21 buildings in the area. The network is composed of six SONET rings, one of which runs at OC-12 and 5 of which run at OC-3. Company representatives estimate the portion of network capacity currently utilized to be 20%.

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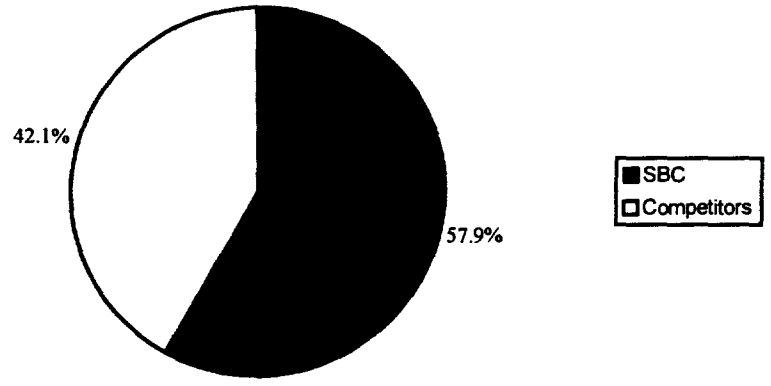
LOS ANGELES - ORANGE CTY. – RIVERSIDE – COMPETITIVE LANDSCAPE

Overview

Los Angeles is the largest metro area in SBC's territory, and the second largest nationwide. The greater Los Angeles metro area, which includes Orange County and Riverside, has a population of over 15 million people, providing vast opportunities for competitors to offer a diversified portfolio of telecommunications services to the business and residential markets. Over the last two years, competitors have found ways of converting SBC customers and securing growth in the local exchange and high capacity markets through investments in local infrastructure and intense marketing efforts.

The competitors have each installed several hundred miles of fiber and connected hundreds of buildings in order to operate networks and serve customers in business-intensive regions in Los Angeles and Orange Counties. The competitor's networks are capable of carrying several thousand conversations simultaneously. These networks are equipped with vast amounts of available capacity, creating an attractive alternative for carriers and large businesses with heavy voice and data requirements. ICG, MCI, WorldCom, and TCG have installed network backbones capable of transmitting voice and data at speeds up to OC-48, although fiber spurs and distribution rings may operate more slowly. The main competitors for High Capacity services in the Los Angeles metro area are WorldCom, TCG, MCI, ICG and NextLink.



Source: QUALITY STRATEGIES, Washington, D.C.

MSA	SBC	Competitors
LA-Orange-Riverside	57.9%	42.1%

Competitors

MSA	Competitors	Facility Type	Route Miles	Building on Network
LA-Orange-Riverside	WorldCom	Fiber	800	250
	TCG	Fiber	1000	200
	MCI	Fiber	50	50
	ICG Telcom	Fiber	200	300
	NextLink	Fiber	200	150
	GST	Fiber	280+	Unavailable

WorldCom

WorldCom is the largest competitor in the Los Angeles area. WorldCom offers local switched services in Los Angeles, routing calls through an Ericsson switch that has been active since January 1995. The company has over 250 lit buildings connected to an extensive fiber network; the newly merged MCI WorldCom's network has over 800 miles of fiber and extends from Irvine in the south to Sherman Oaks in the north, along the coast through Santa Monica, El Segundo, Long Beach and Costa Mesa, and through Orange, Anaheim and downtown Los Angeles. In addition to fiber in the downtown area WorldCom also gains a DMS500 switch, which has been active since 4Q96, through its merger with MCI. The Nortel switch is capable of routing a diverse portfolio of telephony services. WorldCom monitors its networks from its control center in Oakbrook, IL.

WorldCom bundles its telephony services and provides a single invoice for local, long distance, international service, Internet access, and calling card charges. The company also offers volume discounts, and a customer can increase its "volume commitment level" by purchasing all of its telephony needs through WorldCom.

TCG

TCG has a 5ESS switch in LA that has been active for about three years, routing various types of services throughout the company's extensive network. TCG has a very large network consisting of approximately 1,000 route miles and covering 37 cities in the greater Los Angeles metro area and parts of Southern California. There are 385 route miles in the downtown Los Angeles area alone that serve business customers' varying telephony needs. The remainder of the TCG's fiber network covers parts of Southern California including El Segundo, Santa Monica, Irvine, Long Beach and Pasadena. There are just over 200 buildings lit in the Los Angeles area.

Additionally, TCG runs a Network Operations Center in Staten Island, NY from which it constantly monitors networks and coordinates responses to problems. TCG technicians report the network operations facility allows the company to spot problems before the end-user does and alleviate them before transmission outages occur. Furthermore, TCG customers often report hearing of problems from TCG representatives before it has affected service and been noticeable to them. TCG will work with its customer's long distance carrier to provide a total service solution.

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MCI

MCI, recently acquired by WorldCom, has a small fiber network consisting of approximately 50 route miles and a Nortel DMS500 switch. In contrast to the other three major providers, MCI is much less averse to relying on other carriers to help it reach its customers. The company has connected fewer than 50 multi-tenant buildings, and therefore the vast majority of MCI's high capacity customers are located away from its network. The majority of MCI customers in the area receive service via type II connection to the MCI central office (or long distance POP). In this scenario, MCI will lease a T-1 from the incumbent (or another provider) to provide the link. It prefers this arrangement to pure service resale service because it controls part of transmission and eliminates certain cost elements. However, MCI always attempts to serve its most valuable account over it own facilities (frequently dictating which buildings in a central business district are connected to the network).

ICG

ICG has dramatically increased the scope of its fiber presence it the Los Angeles MSA over the past several years by establishing competitive alliances with utility operators across the Golden State. Through these relationships, ICG has added over one hundred route miles to its original fiber backbone since 1996. The company has a total of 200 route miles, which includes a 117-mile ring in Orange County and downtown Los Angeles, and its network stretches from Oxnard in the Northwest to San Bernadino in the Southeast. Additionally, ICG built its network according to SONET ring architecture to allow maximum reliability and redundancy. ICG routes traffic through its 5ESS switch on Grand Avenue that has been active since 1995, allowing the company to offer a diverse telephony package. To reduce the amount it relies on other providers, ICG has connected more than 300 buildings to its Los Angles area network. This allows the company to provision its own service and manage lines and circuits end to end. Additionally, all metropolitan area networks are monitored constantly from ICG's network control center in Englewood, Colorado.

NextLink

NextLink became a player in the Los Angeles area in 1996 when it purchased Linkatel Pacific's network, although the company has only offered local services in the metro area for just over a year. NextLink operates a 200-mile network in the Los Angeles and Orange County area, and unlike other competitors, NextLink focuses its attention on areas outside the city instead of downtown. Its network runs along the coast through El Segundo, Gardena and Long Beach and through Anaheim, Bellflower and Santa Ana. NextLink has installed a DMS500 switch that is capable of handling local, toll, operator and long distance services. The company currently has over 150 buildings on-net.

GST

GST operates 500+ miles fiber network from Los Angeles to San Francisco, with over 130 route miles of fiber in its Los Angeles network. GST employs a Nortel DMS 500 switch in Los Angeles. The GST Los Angeles network is one of four GST operational networks in California. The majority of the network links the cities of Riverside, Rialto, and San Bernardino.

GST offers a full line of dedicated and switched services to on-net customers in metropolitan Los Angeles. GST began offering local dialtone services during third quarter, 1996. On October 1, 1996 Pacific

Lightwave finalized terms to purchase Call America, a facilities-based long-distance reseller based in Central California with customers in the following areas: Fresno, Salinas, San Luis Obispo, Santa Barbara, and Ventura. Additionally, GST purchased Tri-Star Residential Communications Corp., a shared tenant service provider, in October 1996.

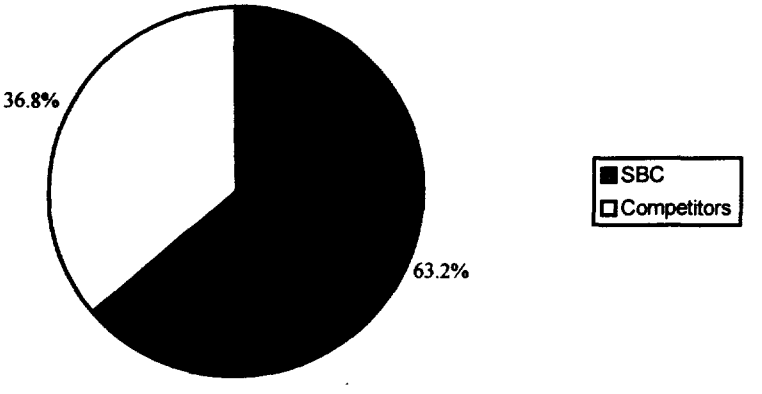
GST operates a 151-mile fiber network that serves the Riverside, San Bernardino, and Rialto areas. This network connects to the following three networks in Los Angeles:

• 44-mile network in Ontario	• 5-mile network in Monterey Park
• 18-mile network in City of Industry	

SACRAMENTO – COMPETITIVE LANDSCAPE

Overview

Sacramento, the capital of California, is located northeast of the San Francisco Bay area. The city has a diversified economy with companies from the aerospace, technology, furniture and pharmaceutical industries. Companies like Intel, Campbell Soup Company, Hewlett-Packard and NEC Electronics operate facilities in the area, and a new business park is being planned to accommodate more businesses. The Mather Field, near Rancho Cordova, is being transformed from a military facility into a business center and its list of current tenants includes McGraw Hill, Sub Sea Systems, the California Department of Forestry, and FEMA. Some companies have already started using the cargo and runway facilities also, such as Airborne Express, UPS, Burlington Air Express and Emery Air Freight. With a fairly sizable demand for high capacity services, competitors own and operate extensive networks in Sacramento, serving the downtown business districts and other outlying business communities. In particular, WorldCom and Electric Lightwave have geographically expansive networks able to carry an array of telephony services. ICG also competes for high-capacity service in the Sacramento area, although it only operates in the downtown business district.



Source: QUALITY STRATEGIES, Washington, D.C.

MSA	SBC	Competitors
Sacramento	63.2%	36.8%

Competitors

MSA	Competitors	Facility Type	Route Miles	Building on Network
Sacramento	WorldCom	Fiber	200	200 +
	Electric Lightwave	Fiber	200	100 +
	ICG Telcom	Fiber	Unavailable	20

WorldCom

With the completion of it merger with Brooks Fiber Properties, WorldCom is now able to offer local and long distance services in the Sacramento area. WorldCom acquired Brook's network, which consists of approximately 200 route miles and two switches. WorldCom has an Ericcson switch designated for long distance services and a Lucent 5ESS that was installed in the first quarter 1996. The 5ESS is capable of carrying a variety of traffic such as local, long distance and data. The fiber runs from West Sacramento through downtown and into Rancho Cordova, Citrus Heights and El Dorado Hills. WorldCom's backbone is configured according to SONET ring architecture, and the company has brought more than 200 buildings on-net. Before WorldCom merged with Brooks, Brooks attempted to connect the majority of its customers directly to its fiber network through large-scale buildout and substantial capital investment

ELI

Electric Lightwave Inc. (ELI), which has been operating in the Sacramento area since 1994, has a DMS 500 switch capable of routing a diverse portfolio of communications services. The switch can handle local, long distance and data traffic and was installed in February 1997. Currently, ELI's network spans approximately 200 route miles in the Sacramento area and covers Rancho Cordova, Carmichael, El Dorado Hills, and Folsom. The company plans to install an additional 40-mile extension into Roseville in the near future. The network transmits voice and data at speeds up to OC-48 and is constructed according to SONET ring architecture. ELI has more than 100 lit buildings in the Sacramento area. To address network difficulties, ELI has established a network-monitoring center in Bellevue, WA that operates all day, every day. End-users are to report difficulties with service to their account manager or call the 800 technical support line (there is one for end-users and one for carriers).

ICG

ICG has a very limited presence in Sacramento, serving just the downtown central business district. The company provides facilities-based, switched service via a Lucent 5ESS switch located at 770 L St in downtown. Additionally, ICG has connected fewer than 20 buildings to its network in the state capital. ICG began offering local switched services in the second quarter of 1997, but had been offering digital dedicated links since 1996. Furthermore, ICG has microwave links connecting its Sacramento and Bay Area networks.

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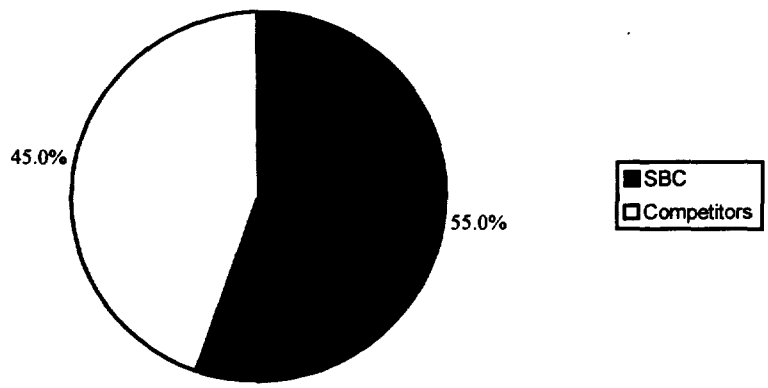
SAN DIEGO – COMPETITIVE LANDSCAPE

Overview

San Diego is the second-largest city in California and the sixth largest metropolitan area in SBC's territory. San Diego, located in the southwestern part of the state on the San Diego Bay, has been a busy commercial port and a hub for US naval operations. Although the naval training center is scheduled to close, San Diego has a diverse economy with businesses in the following industries: electronics, aerospace, oceanography, agriculture, and medical and scientific research. San Diego is also a hotbed of competition for high capacity services. Time Warner, WorldCom, TCG, MCI and ICG all vie for large business customers. The capacity available on competitor networks is extensive with each competitor operating backbones up to OC-48. Time Warner, WorldCom and ICG each own expansive networks covering downtown San Diego as well as La Jolla, Mission Valley and Del Mar.



Source: QUALITY STRATEGIES, Washington, D.C.

MSA	SBC	Competitors
San Diego	55.0%	45.0%

Competitors

MSA	Competitors	Facility Type	Route Miles	Building on Network
San Diego	Time Warner	Fiber	180	125+
	WorldCom	Fiber	400	Unavailable
	ICG Telcom	Fiber	150-170	Unavailable
	TCG	Fiber	400	200
	MCI	Fiber	20-30	35+

Time Warner

In San Diego, Time Warner operates a network that totals 180 route miles and stretches from La Jolla in the northwest to the southern suburbs of San Diego. A variety of traffic is routed via a Lucent 5ESS switch that has been active for two years. Time Warner has more than 125 lit buildings and its customers include large corporations such as Sony, Hewlett Packard and QualComm. Time Warner is particularly adept at constructing transmission facilities after years of experience in the cable industry (not to mention the investment in construction equipment, rights of way, and franchise fees). Time Warner's network features an OC-48 backbone; however individual distribution rings frequently run at lower optical speeds or at the DS-3 level. Time Warner has built its network according to SONET ring architecture featuring route diversity, counter-rotating ring configuration, and electronic redundancy. Time Warner rolled out local switched service earlier this year.

WorldCom

WorldCom's fiber backbone boasts transmission speeds up to OC-48 (although several distribution routes run at OC-3 or OC-12). The combined networks of MCI and WorldCom span 400 route miles and runs North along Interstate 5 past La Jolla to Poway and South through La Mesa, Mission Valley and downtown San Diego. WorldCom has two switches in the San Diego metro area. Its Ericsson switch is located on Overland Dr. The company also recently installed a DMS250 located on Complex Dr. that will be upgraded to a DMS500 later this year or early next year. Nortel's DMS250 is a high capacity system designed for interexchange carriers and it handles high-speed voice and data communications for long distance customers. While the modular, scaleable system architecture of the DMS250 allows a provider to increase processing and trunk capacity (up to 100,000 trunks), the DMS500 will allow WorldCom to combine local, toll, long distance and data services over the same number of trunks. WorldCom will also have the capability to bundle its service and better serve San Diego's high capacity market.

TCG

TCG provides a diverse package of services via a 400-mile network that connects over 200 lit buildings in the San Diego area. TCG entered the local switched market in 3Q96 when it installed a Lucent 5ESS switch in the Sorrento Valley at the Sorrento Towers.

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ICG

Although ICG's San Diego network has been operational since 1992, it has only been managed by ICG since the second quarter of 1996 when ICG purchased the facilities from Linkatel Pacific. Currently, the network measures 150-170 route miles and is capable of serving customers in San Diego's central business district and in the suburbs, such as Mission Valley, Chula Vista, Sorrento Valley, La Jolla, and Kearney Mesa. ICG's San Diego network figures prominently into that company's plans for the state, where it now operates networks in the five largest markets. Like in other cities, ICG's backbone operates at OC-48, allowing for excess capacity to serve the area's largest businesses and several interexchange carriers. Furthermore, ICG has partnered with several electric utility providers in the Golden State and has the capacity to expand its local networks very rapidly.

MCI

MCI's San Diego network has been in operation since the middle of 1995 when it began offering facilities-based high capacity services to business customers in the area. Currently, it operates two SONET rings, one in San Diego's central business district and the other in Mission Valley. Together, the rings amount to 20-30 route miles of optical fiber that connects over 35 single and multi-tenant buildings. Like other competitive local exchange carriers in the metro area, MCI operates an OC-48 backbone with virtually limitless capacity to carry local and special access traffic. In San Diego, MCI routes local traffic via a class 5 Siemens EWSD central office switch. Like all of its metropolitan area networks, MCI has built several features into its San Diego facilities to ensure its customers never lose the ability to communicate. Each ring is self-healing with electronic redundancy capable of rerouting traffic in milliseconds. Additionally, MCI has built-in route and central office diversity.

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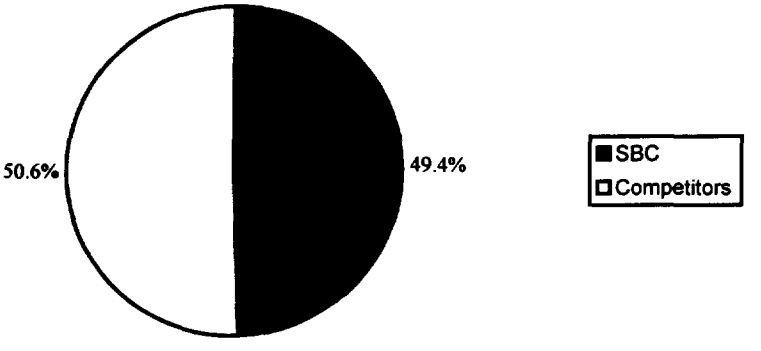
SAN FRANCISCO – COMPETITIVE LANDSCAPE

Overview

San Francisco, SBC's second most competitive metro area, is home to headquarters of several Fortune 500 companies. The greater San Francisco-Oakland-San Jose metropolitan area is the fifth-largest nationwide with more than 6 million people. While this is true, San Francisco alone has a population of just more than 1.5 million people. Job growth stands at 1.5% (from 1996-1997) and San Francisco boasts a strong economy with a diverse business base. Competitors offer diverse portfolios of telephony services and are able to provide local, long distance and data services over SONET-based platforms. In addition, each competitor has an extensive fiber network surrounding the entire bay area. As of 2Q98 the following companies are competing in the San Francisco Bay area: WorldCom, MCI, TCG, GST and ICG.



Source: QUALITY STRATEGIES, Washington, D.C.

MSA	SBC	Competitors
San Francisco	49.4%	50.6%

Competitors

MSA	Competitors	Facility Type	Route Miles	Building on Network
San Francisco	WorldCom	Fiber	226+	150+
	MCI	Fiber	20	26
	TCG	Fiber	450	Unavailable
	NextLink	Fiber	200	Unavailable
	ICG Telcom	Fiber	Unavailable	Unavailable
	GST	Fiber	130	200

WorldCom

WorldCom has a large presence in the San Francisco Bay Area with 19 miles of fiber in downtown San Francisco and 77 route miles of fiber in Oakland. The spur between the two cities spans the Bay via a Bay Area Rapid Transit (BART) Transbay Tube. Through its merger with MCI, WorldCom will add an additional 20 miles of fiber in downtown San Francisco. WorldCom began offering facilities-based local service to Bay Area customers in July 1996, and the company provides local switched services through a five series Ericsson AXE switch. The network backbone operates at speeds up to OC-48 and is constructed in a self-healing SONET architecture. Currently, the network runs at approximately 30% capacity, according to company representatives. The greater Bay Area network, which consists of an additional 130 route miles, is primarily composed of five different SONET rings operating at OC-48 and over 150 buildings. The Silicon Valley loop services the Cupertino, Santa Clara, San Jose and Sunnyvale communities.

MCI

MCI currently operates a fiber optic network in the San Francisco Bay Area spanning approximately 20 route miles. The company's San Francisco network has been active since 1995. In addition to San Francisco's central business district, MCI operates a small fiber spur servicing business customers in Oakland. Each of MCI's two SONET rings operate at speeds up to OC-48 and have the capacity to be upgraded to OC-192 in the near future. In downtown San Francisco, MCI's network stretches from Clay Street to the north to the China Basin in the south. Additionally, the network extends from Front Street in the east to Van Ness Street in the west. The connection between San Francisco and Oakland is made via the BART (Bay Area Rapid Transit) Transbay tubes connecting the two sides of the bay. Currently, there are over twenty lit buildings in San Francisco and six in Oakland. In the last week of January, MCI began offering local services to business customers in the greater San Francisco area. MCI switches traffic in San Francisco via a class five Siemens switch located downtown.

NextLink

NextLink became a player in the greater San Francisco Bay Area in 1998 when it installed a 200-mile network. Its network serves Fremont, Milpitas, San Jose, Santa Clara, Sunnyvale, Menlo Park, Mountain View and Palo Alto. NextLink has installed a DMS500 switch that is capable of handling local, toll, operator and long distance services.

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TCG

TCG received CLEC authority in California in 1996. The company has 450 route miles in the entire Bay Area stretching from downtown San Francisco, east to Oakland, south to San Jose and around the peninsula. The network also extends north to Napa County and Sonoma County. TCG operates a self-healing SONET architecture network consisting of seven SONET rings, and the backbone runs at speed of up to OC-48. TCG is able to offer a full array of dedicated and switched services, routing calls over its Lucent 5ESS switch, which was installed during the fourth quarter 1996.

ICG

ICG currently operates a fiber optic network with an OC-48 ring that serves the entire San Francisco Bay Area. The network was acquired from Bay Area Teleport and has been in operation for almost a decade. Most of ICG's fiber backbone extends through San Francisco, Oakland, and the East Bay. ICG in San Francisco operates a 5ESS switch in downtown San Francisco that has been operational since early 1997. Through its switch, ICG is able to offer a full array of telecommunications services. The company began offering local dialtone services, including Centrex to on-net customers during third quarter 1996. The network was acquired from Bay Area Teleport and has been in operation for almost a decade.

GST

GST has over 130 route mile fiber in the greater San Francisco Bay Area with fiber distribution rings in Oakland, Walnut Creek, San Ramon, Pleasanton and Concord. The GST Bay Area network will also service Berkeley, Fremont, Hayward, Lafayette, Livermore, Vallejo and San Jose. GST is in the process of increasing its fiber presence and buildings in downtown and the East Bay. GST's strategy is to follow the migration patterns of businesses as they move from downtown business districts to expanding suburban areas, such as Walnut Creek. There are over 200 buildings on-net in the greater San Francisco Bay area. GST is currently offering a full range of dedicated and switched service and has a NORTEL DMS 500 switch in San Francisco.

During the third quarter of 1996, GST completed the acquisition of the telephone infrastructure at the Mare Island Naval Shipyard in Vallejo. GST has subsequently linked Mare Island to its existing 130 route mile Bay Area network. The former naval shipyard was converted into a commercial office development and GST began providing local dialtone and long-distance services in November 1996.

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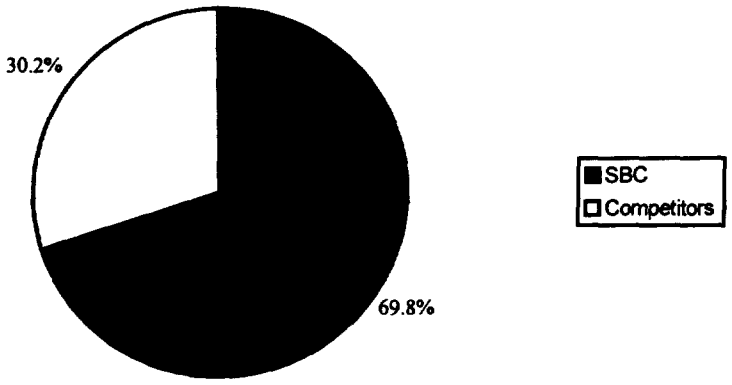
SAN JOSE – COMPETITIVE LANDSCAPE

Overview

San Jose, located southeast of San Francisco in Santa Clara County, is considered part of the greater Bay Area, which also includes Oakland. The San Francisco-Oakland-San Jose metropolitan area is the fifth largest nationwide, although San Jose alone has a population of just more than 1.5 million people. San Jose, which witnessed job growth of 4.2% from 1996-1997, has experienced an influx of a large number of high-tech companies. Recently, San Jose has become the center of the Silicon Valley as an increasing number of large businesses have moved to the surrounding areas. Two competitors specifically target the San Jose area – WorldCom and TCG – by extending their networks from San Francisco and Oakland to provide high capacity local, long distance and data services.



Source: QUALITY STRATEGIES, Washington, D.C.

MSA	SBC	Competitors
San Jose	69.8%	30.2%

Competitors

MSA	Competitors	Facility Type	Route Miles	Building on Network
San Jose	WorldCom	Fiber	200	135
	TCG	Fiber	450	unavailable
	NextLink	Fiber	200	unavailable

WorldCom

WorldCom has 200 route miles of fiber stretching from San Jose to San Mateo in the north, and it began offering facilities-based local service to Bay Area customers in July 1996. In San Jose alone, the company operates a 132-mile network, which connects to its Bay area network and consists of two OC-12 SONET rings. Local and toll traffic are routed via a class 5 Ericsson AXE switch located at WorldCom's downtown San Francisco node. Company representatives report that the network is currently running at 15% capacity. Additionally, WorldCom operates a regional metropolitan area exchange (MAE) hub for many Internet Service Providers (ISPs) in San Jose. WorldCom has more than 135 buildings on-net in San Jose and the following neighboring areas: Brisbane, Burlingame, Campbell, Curpertino, Del Ray, Foster City, Los Altos, Menlo Park, Milpitas, Palo Alto, Redwood City, San Bruno, San Carlos, San Mateo, Santa Clara and Sunnyvale.

TCG

TCG owns and operates a 5ESS switch in San Francisco through which it backhauls traffic from San Jose. The switch has been operational since 4Q96. TCG's network extends through downtown San Jose and its surrounding areas, and consists of 450 route miles throughout the entire Bay area. The network is a self-healing SONET architecture consisting of seven SONET rings. The backbone runs at speed of up to OC-48.

NextLink

NextLink became a player in the San Jose area when it installed a 200-mile fiber network in 1998 to serve the Bay Area. Its network serves Fremont, Milpitas, San Jose, Santa Clara, Sunnyvale, Menlo Park, Mountain View and Palo Alto. NextLink has installed a DMS500 switch that is capable of handling local, toll, operator and long distance services.

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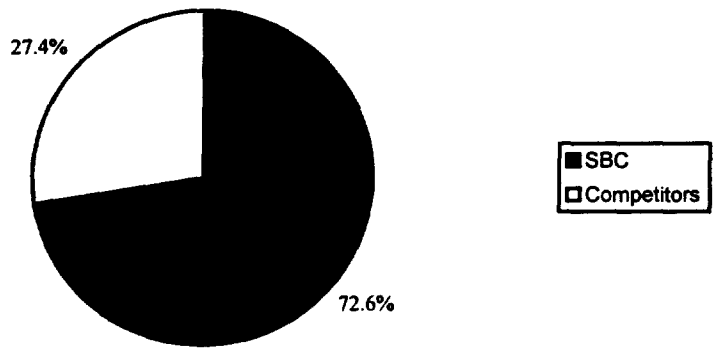
ST. LOUIS – COMPETITIVE LANDSCAPE

Overview

St. Louis is a major river port, rail hub, and financial center. Manufacturing is important to the economy, and St. Louis' highly developed industries include automobiles, aircraft and space technology, metal fabrication, beer, steel-making, chemicals, food processing, and storage and distribution. The population in the city is approximately 350,000 people, with the metropolitan area figure at approximately 2,500,000.

There were three main competitors in the High Capacity market during the second quarter of 1998, TCG, WorldCom and ICI.



Source: QUALITY STRATEGIES, Washington, D.C.

MSA	SBC	Competitors
St. Louis	72.6%	27.4%

Competitors

MSA	Competitors	Facility Type	Route Miles	Building on Network
St. Louis	TCG	Fiber	300+	100-200
	WorldCom	Fiber	150+	unavailable
	ICI	Fiber	60	unavailable

TCG

TCG has been offering High Capacity services in St. Louis since 1993. TCG was recently acquired by AT&T.

TCG has a Lucent Technologies 5ESS switch, which can be configured to handle as many as 100,000 trunks. It can also be specially engineered to provide capacity in excess of 100,000 trunks. Additionally, the switch can handle between a few hundred and 200,000 subscriber lines. The 5ESS is capable of switching ISDN voice and data, local voice calls, long distance calls, Internet access, wireless PCS, Advanced Intelligent Network services, interactive video and multimedia services.

Excluding SBC, TCG operates by far the most extensive network in the greater St. Louis area. It has been in operation for several years and capable of offering local switched services since late in 1996. Currently, TCG's fiber network spans over 300 route miles and connects between 100 and 200 buildings in the city as well as in the suburbs. TCG technical professionals indicate that TCG operates the most robust, reliable network in the greater St. Louis area, with 15 SONET rings running at OC-48. Company representatives estimate the network currently runs at 50% capacity. The backbone is capable of voice and data transmission at speeds up to OC-48, while individual spurs and distribution rings operate more slowly (customer premises generally support DS-3 or OC-3 interfaces). In addition to downtown St. Louis, TCG has installed fiber in Jennings, Overland, Chesterfield, St. Charles, and Creve Coeur. TCG attempts to construct networks that allow it to serve each business-intensive locality in a given metro. This significantly decreases its reliance on the RBOC for resold services or type II connections. At present, nearly 100% of TCG's service is self-provisioned; very little comes through resale. TCG monitors all of its local networks from its network operations center in Staten Island, NY.

WorldCom

WorldCom continues to operate its extensive network in St. Louis. The company acquired Brooks Fiber during the first quarter of 1998, and it recently merged with MCI.

WorldCom became a participant in the St. Louis market in 1995 when it first turned up service along its optical fiber network in the greater metro area. Although the original focus was downtown St. Louis, the network has grown to encompass over 150 route miles spanning the city and the following business-intensive suburbs: Creve Coeur, Westport, St. Charles, and the University of Missouri Research Park. Furthermore, WorldCom has connected over 100 single and multi-tenant buildings to its network via either type I or type II connection. WorldCom began offering local switched services in 1996 following the installation of its class 5 Ericsson AXE C.O. switch in early 1996. The network is monitored constantly at WorldCom's operations center in Oakbrook, IL.

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ICI

ICI (Intermedia Communications) has been a player in the St. Louis private line market since the first quarter of 1996 when it turned up service along its fiber network in the city's central business district. Since then, the company has increased the scope of its products and network dramatically. ICI began offering local switched services in July 1997 when it turned up its Nortel DMS-500 central office switch. Since early last year, ICI's network has grown to nearly sixty route miles and connects several single and multi-tenant buildings (the majority of which are downtown). ICI specializes in the construction of very modern networks equipped for large-scale data requirements of today's most communications-intensive buildings. The network backbone is capable of transmitting voice and data at speeds up to OC-48, while the majority of customer premises support standard electrical interfaces. ICI also operates frame and ATM transport facilities in the St. Louis area. ICI's St. Louis network is monitored in Tampa, FL

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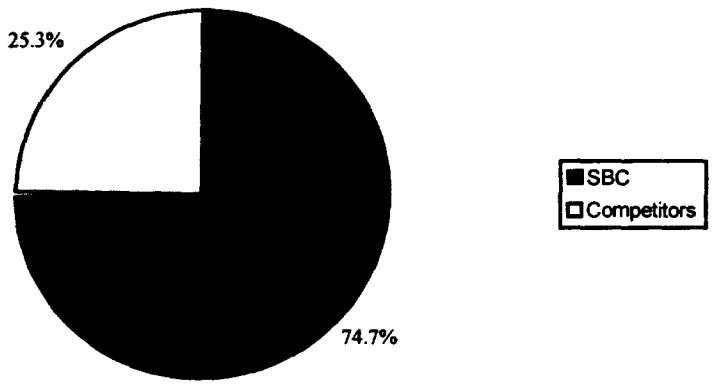
RENO – COMPETITIVE LANDSCAPE

Overview

Reno is one of the smallest metropolitan areas in SBC's region; it ranks 125th in population nationwide, with approximately 300,000 people. Reno is located in the western part of the state, 110 miles north of Yosemite National Park, and its surrounding towns include Carson City, Sparks and Sun Valley. In addition to the casino industry, Reno is home to several large companies including Comstock Corporation, Itronics and Sierra Pacific Resources. There is some demand for high-capacity services in the metropolitan area and WorldCom is SBC's main competitor.



Source: QUALITY STRATEGIES, Washington, D.C.

MSA	SBC	Competitors
Reno	74.7%	25.3%

Competitors

WorldCom

Brooks Fiber Properties previously operated WorldCom's Reno network until earlier this year when the two companies merged. WorldCom offers local switched services through its 5ESS switch that has been active for two years. The Lucent 5ESS switch can be configured to handle as many as 100,000 trunks. It can also be specially engineered to provide capacity in excess of 100,000 trunks. Additionally, it can handle between a few hundred and 200,000 subscriber lines. The 5ESS is capable of switching ISDN voice and data, local voice calls, long distance calls, Internet access, wireless PCS, Advanced Intelligent Network services, interactive video and multimedia services. The fiber optic network is 100 route miles and runs throughout the downtown area. WorldCom has 18 buildings on-net.

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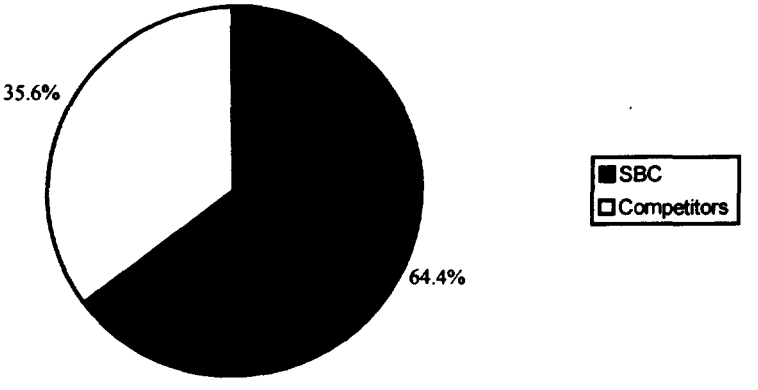
OKLAHOMA CITY – COMPETITIVE LANDSCAPE

Overview

Oklahoma City, the state capital, just makes it into the 50 largest metropolitan areas nationwide and it is one of SBC's more competitive territories. There are an abundance of opportunities for competitors in Oklahoma City's high-capacity market. The health services industry is expected to grow and there are aerospace, telecommunications and energy businesses located in the area. Additionally, the Tinker Air Force Base is not only a large employer, but it also presents an opportunity for competitors if the military should need to upgrade its system to handle high-speed services. The primary competitors for high capacity service in Oklahoma City are WorldCom and Cox Fibernet.



Source: QUALITY STRATEGIES, Washington, D.C.

MSA	SBC	Competitors
Oklahoma City	64.4%	35.6%

Competitors

MSA	Competitors	Facility Type	Route Miles	Building on Network
Oklahoma City	WorldCom	Fiber	118	65
	Cox Fibernet	Fiber	1020	240

WorldCom

Earlier this year WorldCom completed its merger with Brooks Fiber Properties. Brooks operated a sizable network in the Oklahoma City area (one of its first networks) since 1994. WorldCom owns 500 route miles of fiber in the state of Oklahoma and maintains 118 route miles with speeds up to OC-48 in the Oklahoma City area. A company representative stated that 37% of the network is currently being used. WorldCom routes a diverse portfolio of communications services via a Lucent 5ESS switch that has the capacity to connect up to 100,000 trunks. The switch has been active for over three years.

Cox Fibernet

Cox Fibernet, a wholly-owned subsidiary of Cox Communications, has been operating in Oklahoma City since September 1994. Cox provides service to virtually all of the nations large long distance companies as well as other businesses (small and large) via its extensive network. Cox's network is 1020 route miles. It is built of 100% SONET transmission equipment and consists of 65 self-healing rings. These rings are capable of carrying traffic with speeds up to OC-48, and the company reports that it currently uses only 30% of its network. Voice, data and video services are routed via a DMS500 switch that has been active since March 1997. To ensure network reliability, Cox employs two diverse paths and uses a ring-in-ring architecture. In the event a fiber is cut, traffic can be routed through the second path. Cox also maintains a network operations center that monitors the network 24 hours a day. The center operates, administers, manages and maintains the company's switched, packet-switched, data and cable television network.

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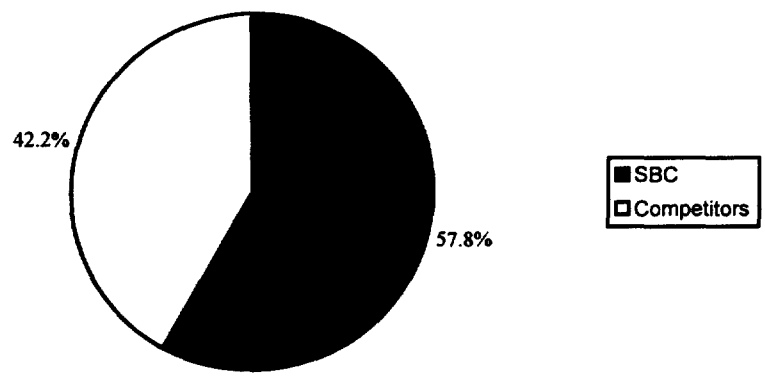
AUSTIN – COMPETITIVE LANDSCAPE

Overview

The current population for the greater Austin area is approximately 570,000 people. While Austin's main industries still are ranching, poultry, dairy, cotton, and grain, it has fostered a growing high-tech sector. Included in this segment of the economy is the University of Texas, Austin, which is a major center for research and development. It also includes major high-tech companies such as Dell Computer Corp., which has been adding thousands of jobs every year in recent history. Many of the PC maker's 7,500 jobs added during 1997 were in the Austin area. Additionally, the high-tech sector has a healthy share of start-up businesses, with 178 new high-tech start-up companies emerging in 1997. Government currently accounts for 20.9% of the jobs in the area, with the University of Texas, Austin, contributing significantly to that figure. However, the local economy has become less dependent on this sector in recent years and its size has declined from its 1988 share of 28.3%.

To the extent that the high-tech companies and the local economy as a whole continue to grow in the area (the former is to some extent tied to global markets such as Asia [e.g. Motorola]), the demand for HICAP local services is also expected to grow.

The three main competitors in Austin were e.spire, WorldCom (formerly Brooks) and Time Warner.



Source: QUALITY STRATEGIES, Washington, D.C.

MSA	SBC	Competitors
Austin	57.8%	42.2%

Competitors

MSA	Competitors	Facility Type	Route Miles	Building on Network
Austin	e.spire	Fiber	20	115
	WorldCom	Fiber	80	Unknown
	Time Warner	Fiber	280	105

e.spire

e.spire has been operating as a facilities-based carrier in Austin, offering high-capacity and local switched services, since October of 1997. The company has a Lucent Technologies 5ESS switch and a network that currently consists of 3 route miles. e.spire intends to expand the network to 20 miles during the fourth quarter of 1998. It currently has connected 115 buildings to its network. The Lucent 5ESS switch can be configured to handle as many as 100,000 trunks. It can also be specially engineered to provide capacity in excess of 100,000 trunks. Additionally, it can handle between a few hundred and 200,000 subscriber lines. The 5ESS is capable of switching ISDN voice and data, local voice calls, long distance calls, Internet access, wireless PCS, Advanced Intelligent Network services, interactive video and multimedia services.

They have recently launched a new service, e.spire PLATINUM. This service will allow small and medium sized business to receive a variety of voice and data services from a single carrier and one integrated invoice. This attractive bundling will also provide business customers with flat rate local service. This service is now being offered in 18 markets, including Austin, and will be offered in all of e.spire's markets by the end of 1998.

WorldCom

WorldCom (formerly Brooks) recently received all required approvals to acquire MCI. The new entity is MCI WorldCom. WorldCom added a Nortel DMS-500 switch to their existing network in January of 1998. The DMS-500 can handle from 480 to 10,000 trunks and can serve up to 1.5 million call attempts during the busiest hour of the day. Additionally, it can handle 1,000 to 100,000 lines, depending on how it is configured. The company's network currently spans 80 route miles. It contains 3 SONET rings that run at OC-12. Company representatives estimate the portion of network capacity that is currently utilized to be 45%.

Time Warner

Time Warner continues to expand its network in Austin. The company also recently entered into an agreement with IXC Communications to offer bundled local and long-distance service.

Time Warner added 30 route miles to its network in Austin that has been operational since 1994. This expands its coverage to 280 route miles of self-healing 100% SONET fiber. The network consists of 27 SONET rings, 26 of which run at OC-12 and 1 of which runs at OC-48. Company representatives estimate the portion of network capacity currently being used is 50%.

The company continues to use its Lucent Technologies 5ESS switch that it activated during the third quarter of 1996. The Lucent 5ESS switch can be configured to handle as many as 100,000 trunks. It can also be specially engineered to provide capacity in excess of 100,000 trunks. Additionally, it can handle

between a few hundred and 200,000 subscriber lines. The 5ESS is capable of switching ISDN voice and data, local voice calls, long distance calls, Internet access, wireless PCS, Advanced Intelligent Network services, interactive video and multimedia services.

There are 105 buildings connected to the network. The areas served by the network include the majority of downtown Austin, the University of Texas, West Lake Hills, and Rollingwood.

Time Warner also recently announced a two-year agreement with IXC Communications enabling Time Warner to offer bundled local and long-distance services to its business customers nationwide. Under terms of the agreement, IXC will provide a wide variety of long-distance, 800, operator assisted, directory assistance, and calling card services.

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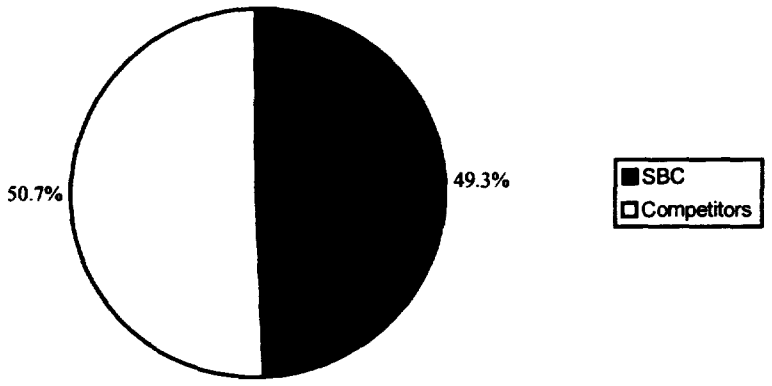
DALLAS – FT. WORTH – COMPETITIVE LANDSCAPE

Overview

Dallas, widely regarded as the most competitive communications market in the state of Texas, has a population of more than 3 million people. The greater Dallas-Fort Worth area, with approximately 4.5 million people, is the third largest in SBC's territory and ninth largest metro area nationwide; it is expected to be fourth nationally by 2010. Dallas is also SBC's most competitive high capacity market. Over the years SBC's high capacity market share has been significantly eroded and now stands at just 49%. With 16 of the nation's largest private firms and 15 of the largest public firms, the Dallas-Fort Worth area provides a large pool of potential HICAP customers. In addition, Dallas has witnessed a large construction boom through building new facilities and expansion since 1989. Last year alone, 308 facilities were built in the Dallas metro area. The competitors in the Dallas-Fort Worth metropolitan area are WorldCom, TCG, MCI and e.spire.



Source: QUALITY STRATEGIES, Washington, D.C.

MSA	SBC	Competitors
Dallas/Fort Worth	49.3%	50.7%

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Competitors

MSA	Competitors	Facility Type	Route Miles	Building on Network
DFW	WorldCom	Fiber	700	250
	TCG	Fiber	500	Unavailable
	MCI	Fiber	25	30
	e.spire	Fiber	220+	Unavailable

WorldCom

WorldCom (formerly MFS) has been operating its fiber network in the greater Dallas-Fort Worth area for several years. The company rolled out local services during the fourth quarter of 1996, although it had been offering access and data services prior to that time. WorldCom is a facilities-based local provider with one DMS500 switch and 700 route miles of fiber across the Dallas-Fort Worth metro area. WorldCom's switch has been active for six months, and has the capabilities to connect up to 100,000 trunks and to carry a multitude of services. With the completion of WorldCom's acquisition of MCI, the company will gain an additional 25 miles of fiber, an MCI DMS100 switch that has been operational since December 1997, and 30 lit buildings. WorldCom will boost its total number of on-net buildings to over 250. MCI's switch is located about 15 miles northeast of Dallas in Richardson, and it serves customers within a 20-mile radius of Dallas. However, the DMS100 switch was designed for local level end-office use.

Large business customers can connect directly to long distance providers through WorldCom. Although WorldCom prefers to provision and control circuits end to end, it is known to resell service to customers far removed from its fiber network.

TCG

TCG has a 5ESS switch installed that has been operational since 1996. The switch routes local, long distance and data services over the company's 500-mile network. The network, which has been operational since 1991, consists of four SONET rings and runs through the central business district in downtown Dallas and extends into Irving and Las Colinas and northward to Carrollton, Addison, Richardson and Plano. TCG officials report that the network is currently operating at 60% capacity. Additionally, in case of an outage, TCG will correct problems with switched lines or circuits within two to three hours. For problems with any circuit or line billed by TCG to the end-user, it operates a trouble-reporting 800 line that is available 24 hours a day, seven days a week.

MCI

MCI operates two SONET rings in Dallas' central business district (over 25 miles of fiber) connecting 30 of the area's larger buildings. MCI rolled out local switched services in 4Q97 when it turned up its Nortel DMS 100 central office switch in its downtown node. Unlike TCG and WorldCom, MCI generally does not build geographically expansive networks capable of reaching outlying suburbs. Instead, it relies on the RBOC and other carriers to provide it with type II service (with a T-1 link between the customer premise and the MCI central office) or wholesale lines that it can resell to its customers.

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e.spire

Of the facilities-based competitors in the Dallas area, none has been more active in expanding its network over the last year than e.spire. Currently, it operates a 220+ route mile network serving business customers throughout the Metroplex. Originally, e.spire's network was confined to Fort Worth's central business district, although it has been expanded to serve other areas.

All of e.spire's metropolitan area networks feature route diversity, electronic redundancy, and backup power supplies. The fiber backbone is capable of transmitting voice and data at speeds up to OC-48 (although most distribution rings operate at lower optical or electrical speeds). e.spire's network in the greater Dallas area is composed entirely of optical fiber; although type II transmission may occur over LEC copper facilities. To supplement its private line and data product offerings, e.spire began offering local switched services in the fourth quarter of 1996.

In 1996, e.spire installed a Lucent 5ESS central office switch in its Fort Worth node to route local and intraLATA traffic. Recently e.spire installed a second Lucent 5ESS switch in Dallas.

Thus far, e.spire has concentrated heavily on increasing its fiber presence in the greater Dallas area; however, it will adhere to a different philosophy during 1998. e.spire marketing professionals report that connecting buildings to the network has become a higher priority than adding route miles. This is particularly true of business-intensive suburban areas. This will allow it to control lines and circuits end to end and rely less on type II connections and resale.

e.spire has an aggressive national agenda as well. It has installed 20 switches to date and intends to activate 5 new Lucent 5ESS-2000 by the end of 1998. By the end of the second quarter of 1999 it plans to have installed 36 switches.

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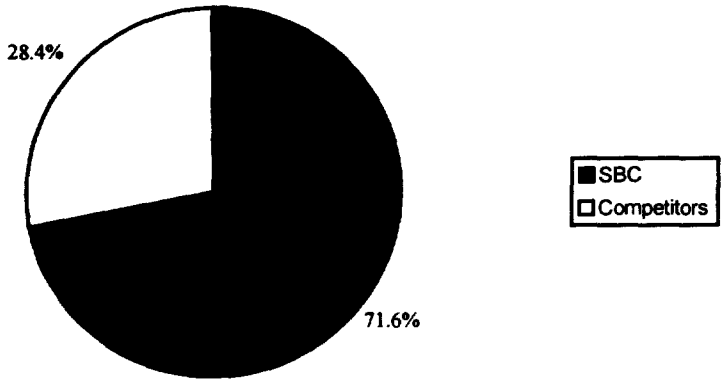
EL PASO – COMPETITIVE LANDSCAPE

Overview

Once a thriving manufacturing area, producing goods ranging from thermometers to blue jeans, this sector has declined in the last five years in El Paso. Companies such as Levi Strauss, Wrangler, Lee and Tex-Mex Apparels have slowly exited this depressed area for lower-wage workers across the border. Prospects in the near future appear dismal as El Paso is ranked in the top 10 of the fastest growing metropolitan areas in terms of population, while it has an unemployment rate well above the national average (11.4%). El Paso, the 60th largest metropolitan area nationwide, is referred to as having a future of "growth without prosperity." Slowly, the community has begun to train people for higher-skilled jobs. For example, Acer Computer has opened a computer assembly plant in the area. However, El Paso currently lacks the high-capacity customer presence seen in the rest of SBC's territory. As of 2Q98, e.spire is the sole competitor in El Paso.



Source: QUALITY STRATEGIES, Washington, D.C.

MSA	SBC	Competitors
El Paso	71.6%	28.4%

Competitor

MSA	Competitor	Facility Type	Route Miles	Building on Network
El Paso	e.spire	Fiber	100	50

e.spire

e.spire is growing at a phenomenal rate. With the company's evolution from a CAP to a CLEC, e.spire was able to increase its revenues by 500% last year, grossing $59 million. El Paso is just one of 32 cities where e.spire provides integrated voice and data communications services. e.spire's one Lucent 5ESS-2000 switch in El Paso, which was turned up June 1, 1998, is collocated with the company's local fiber network and its national ATM backbone network. The company's 100% SONET network has been operational in El Paso since October 1995. The 100-mile network runs south of Interstate 10 to Hawkins and through the Butterfield Business Park, Fort Bliss, Biggs Airfield, Sierra Medical Center, Sunland Park, Northwestern Corporate Center, and Doniphan areas. The Lucent 5ESS 2000 is the latest in switching technology, capable of routing a variety of telephony services such as local, long distance and data services, and it has nine times the capacity of older model five series Lucent switches.

As e.spire continues expanding, the company intends to increase its depth in existing markets by bringing more buildings on-net. Currently, e.spire serves major commercial and government office buildings in El Paso, and, as of July of this year, the company has approximately 50 lit buildings.

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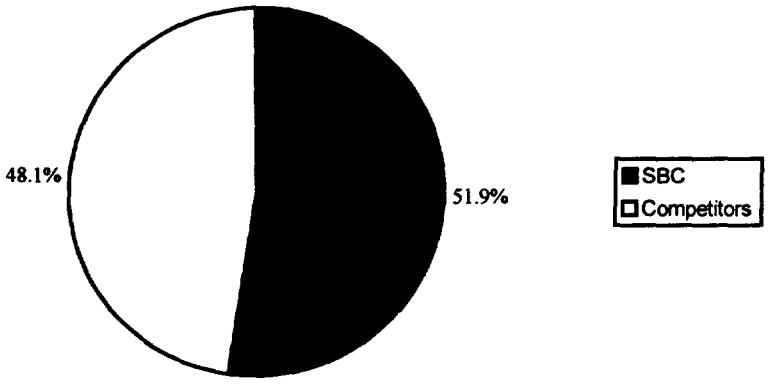
HOUSTON – COMPETITIVE LANDSCAPE

Overview

While the industries of oil/gas exploration and chemicals/refining have traditionally made up the core of Houston's economy, this has become less and less the case during the last fifteen years. In 1998, the fastest growing segments of Houston's economy have been electronics, engineering/design services, and health care services. Additionally, the area's job growth for the period 1995-2005 is projected to be 332,780. Population growth in Houston for the same time period is projected to be 887,200. In recent years population's growth has been strong, adding about 2.5 percent more people per year between 1994 and 1997. The growth in these three industries as well as in population and jobs, will likely contribute to steady growth of the market in Houston during the coming years. Consequently, there is a demand for High Capacity services.

The four main competitors in the Houston market during the second quarter of 1998 were WorldCom, TCG, Time Warner, and MCI.



Source: QUALITY STRATEGIES, Washington, D.C.

MSA	SBC	Competitors
Houston	51.9%	48.1%

Competitors

MSA	Competitors	Facility Type	Route Miles	Building on Network
Houston	TCG	Fiber	600-800	unavailable
	MCI	Fiber	20	50
	WorldCom	Fiber	200	unavailable
	Time Warner	Fiber	400	unavailable
	GST Telcom	Fiber	8	unavailable

TCG

TCG was recently acquired by AT&T. The combined company will be able to offer facilities based competitive bundled services.

TCG upgraded its switch in the area from a Nortel DMS-100 to a DMS-500. Depending on call configuration, the DMS-100 is capable of handling between 1,000 and 100,000 lines. The DMS-500 can now handle from 480 to 10,000 trunks and can serve up to 1.5 million call attempts during the busiest hour of the day.

The company's network has between 600 and 800 route miles in the Houston area. TCG runs a Network Operations Center in Staten Island, NY from which it constantly monitors networks and coordinates responses to problems.

TCG began offering its ISP service, CERFnet, in Houston during the second quarter of 1998. The company provides a direct connection to the Internet backbone and a full range of Internet-related services for corporate clients. The Internet backbone is self-healing and supports speeds up to OC-3. Additionally, the service can be used with high-speed frame relay and ATM for data. Dedicated web server hosting is another available feature.

MCI

WorldCom recently acquired MCI. The new entity is MCI WorldCom. Although MCI has been offering connectivity services in the greater Houston area for the past three years, it only rolled out local exchange services in the third quarter of 1997. MCI operates a fiber network in Houston's central business district primarily designed to serve the larger, communications-intensive businesses located in multi-tenant buildings. The network currently extends approximately 20 route miles. It consists of no fewer than two interconnected fiber rings featuring route and central office diversity as well as electronic redundancy to reroute traffic. The company uses a Nortel DMS-100 switch that it installed in 1997. It can handle between 1,000 and 100,000 lines and serve up to 1.5 million call attempts during the busiest hour of the day. Unlike the WorldCom and TCG networks, MCI's network is in one area and relies on other carriers to connect its customers to the MCI central office via leased T-1 facilities. Additionally, MCI resells local services to customers located in outlying suburbs.

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As stated, MCI's network is concentrated in Houston's central business district. It currently connects more than 50 multi-tenant buildings and passes several more. MCI does not connect a building to its network before it has secured a long-term local or high capacity account in the building. MCI generally targets the large business market and its existing long-distance customer base for local exchange services

WorldCom

WorldCom recently completed its acquisition of MCI. The new entity is MCI WorldCom.

WorldCom (formerly Brooks) activated its Nortel DMS-500 switch in the area in January of 1998 and offers a variety of high capacity services. Their network in Houston extends 200 route miles. The switch can handle from 480 to 10,000 trunks and can serve up to 1.5 million call attempts during the busiest hour of the day. Additionally, it can handle 1,000 to 100,000 lines, depending on how it is configured.

Time Warner

Time Warner has been offering local switched services since the third quarter of 1997. The company operates one of the larger networks in the area.

Time Warner has been providing local switched services in Houston since September of 1997. Their network consists of more than 400 route miles of fiber. The company operates a Lucent Technologies 5ESS switch. The Lucent 5ESS switch can be configured to handle as many as 100,000 trunks. It can also be specially engineered to provide capacity in excess of 100,000 trunks. Additionally, it can handle between a few hundred and 200,000 subscriber lines. The 5ESS is capable of switching ISDN voice and data, local voice calls, long distance calls, Internet access, wireless PCS, Advanced Intelligent Network services, interactive video and multimedia services.

GST

GST activated its Siemens Class 5 switch in Houston in March of 1998. Their area network currently consists of 8 route miles. Siemens Class 5 switches are capable of supporting ISDN, Advanced Intelligent Network, advanced business and residential services, advanced Centrex, automatic call distribution, and PCS.

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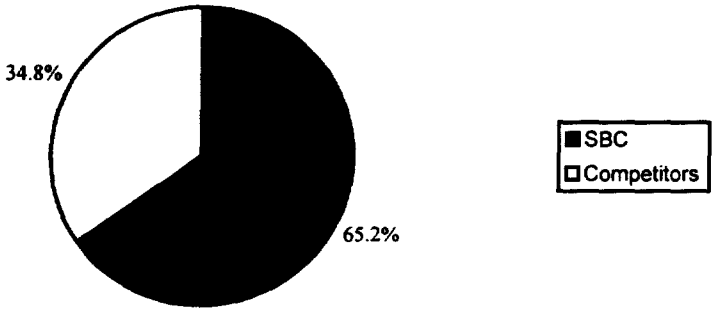
SAN ANTONIO – COMPETITIVE LANDSCAPE

Overview

San Antonio is the tenth largest city in the U.S. and home to five of the largest military installations in the nation. It is also the industrial, trade, and financial center of an agricultural region. The population of the greater San Antonio area is approximately 1.5 million people. In recent years the city has been aggressively encouraging corporate relocations. Consequently, numerous corporate campuses and telemarketing centers have been developed in northwest San Antonio. An economic characteristic that sets San Antonio apart from the rest of the country for enterprises such as telemarketing centers is its cheap and ample labor. 33% of its labor force is less than 20 years old, compared with 29% nationally. This translates into tens of thousands of new workers entering the labor market each year which has helps the city attract this kind of business. Assuming this trend continues, the growth of the High Capacity market in San Antonio will be healthy in the years to come. Competitors include Time Warner, WorldCom, MCI and ICG ChoiceCom



Source: QUALITY STRATEGIES, Washington, D.C.

MSA	SBC	Competitors
San Antonio	65.2%	34.8%

Competitors

MSA	Competitors	Facility Type	Route Miles	Building on Network
San Antonio	Time Warner	Fiber	500	180
	WorldCom	Fiber	80	25
	MCI	Fiber	unavailable	unavailable
	ICG ChoiceCom	Fiber	unavailable	unavailable

Time Warner

Time Warner was the most formidable competitor during the second quarter of 1998. Currently, Time Warner Communications' fiber facilities are far more extensive than those operated by other providers in the area. At present, its network encompasses 500 route miles of fiber capable of serving San Antonio's central business district as well as several business-intensive suburban areas including the San Antonio International Airport vicinity, Alamo Heights, Balcones Heights, Leon Valley, and Kirby. Additionally, Time Warner's network connects approximately 180 single and multi-tenant buildings both inside the city as well as in the suburbs. Time Warner operates its network operations center in the greater Denver area, from which it monitors all of its networks continuously. The company believes that this establishment is a preventative measure to keep network outages from affecting customers' communications ability.

Time Warner personnel feel that the company's network is more reliable than any other in San Antonio. The network is made up of 5 SONET rings, 3 of which run at OC-48 and 2 of which run at OC-12. Company representatives estimate the portion of network capacity currently utilized to be approximately 25%. Time Warner constructs all of its metropolitan area networks according to SONET ring architecture allowing for route diversity and the ability to reroute traffic electronically in the case of a fiber cut. Time Warner is so confident about its network's capabilities that it will switch unsatisfied customers back to their original providers and incur the costs for doing so (within the first 90 days of service). Time Warner has been in San Antonio's High Capacity market for the past five years, although it only began offering local services this year.

Time Warner routes local exchange traffic with a Lucent 5ESS located in its central equipment site at 100 Taylor Street. The Lucent 5ESS switch can be configured to handle as many as 100,000 trunks. It can also be specially engineered to provide capacity in excess of 100,000 trunks. Additionally, it can handle between a few hundred and 200,000 subscriber lines. The 5ESS is capable of switching ISDN voice and data, local voice calls, long distance calls, Internet access, wireless PCS, Advanced Intelligent Network services, interactive video and multimedia services.

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WorldCom

Yet another formidable competitor in the greater San Antonio area is WorldCom (formerly Brooks). WorldCom acquired Brooks Fiber earlier in the year and MCI recently.

WorldCom became a player in the market in March 1997 when it purchased the Texas networks owned and operated by Metropolitan Access Networks (MAN). Currently, WorldCom operates a network in the area measuring approximately 80 route miles and connecting approximately 25 buildings; mostly in San Antonio's central business district.

WorldCom has a Nortel DMS-500 switch that can now handle from 480 to 10,000 trunks and can serve up to 1.5 million call attempts during the busiest hour of the day. Additionally, it can handle 1,000 to 100,000 lines, depending on how it is configured. Generally, WorldCom's networks boast backbone speeds up to OC-48 and are constructed according to SONET ring architecture. WorldCom rarely (if ever) experiences network downtime; largely due to the way the network has been built. All backbone and distribution rings feature diverse routes in case a problem arises with one of them. Additionally, the network features electronic redundancy and backup power supplies to reroute traffic in the event of a fiber cut (generally within milliseconds).

One of the company's competitive advantages is its ability to offer seamless customer service once the relationship has been established. WorldCom monitors all of its networks from its St. Louis headquarters 24 hours a day, seven days a week. The company hopes this will allow it to catch mistakes before its customers do and lose the ability to communicate for even a few seconds.

Because it has not connected a large number of buildings to its network in San Antonio, WorldCom provides both facilities-based and resold services. Business development professionals estimate that approximately 25-35% of all local customers receive resold lines from one provider or another. However, WorldCom hopes to migrate the majority of these customers over to its own facilities in the near future as it expands its network.

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MCI

Late in 1997, MCI entered the San Antonio communications market when it established fiber facilities in the central business district.

In November of 1997, MCI became the first interexchange carrier to enter the San Antonio local service market when it turned up its fiber network downtown. Almost exclusively, MCI installs facilities downtown to serve its largest customers via its own facilities end-to end. The company's local networks primarily target the buildings of its largest customers. MCI offers those customers local service at a discount. Early in the fall of 1997, MCI entered the local switched market by reselling Southwestern Bell local access lines in anticipation of its own facilities-based rollout. Primarily, MCI markets local services to larger business customers with whom it already has long distance relationships. Account representatives in other markets have reported long distance customers to be an excellent sales channel for switched and high capacity services.

In San Antonio, MCI's downtown network features two self-healing SONET rings with backbone speeds up to OC-48 (although the vast majority of customers utilize DS-3 or OC-3 interfaces at their buildings). MCI has been using a DMS-100 switch that is capable of handling between 1,000 and 100,000 lines and can serve up to 1.5 million call attempts during the busiest hour of the day. The network backbone features transmission speeds up to OC-48, route and central office diversity, electronic redundancy, and backup power supplies.

ICG ChoiceCom

ChoiceCom, a new partnership between CSW and ICG Telecom, could pose one of the most significant threats to SBC in the greater San Antonio area. The alliance was announced in 1997 and San Antonio became one of the joint venture's first markets. In January of this year, ChoiceCom turned up its first two switches in the state of Texas, one in San Antonio and the other in Austin. It now markets local exchange service, high capacity, data services, internet access, and long distance over its own facilities to customers located on or near its San Antonio fiber network. ChoiceCom executives indicate that the company's target market base consists primarily of small and medium businesses; which stands in contrast to ICG's traditional base of large businesses and interexchange carriers. ChoiceCom offers facilities-based and resold services.

ChoiceCom could pose a long-term threat to SBC's market share in the region for a number of reasons. First of all, there seems to be a synergy between each company's core competencies. ICG has proven itself a capable competitor in numerous markets and generated substantial market share in California and Colorado. Additionally, CSW has acquired rights of way throughout the metro area and installed dark fiber across the state of Texas. ICG has shown a propensity to partner with electric utilities in order to establish its facilities rapidly and begin working on its market presence.

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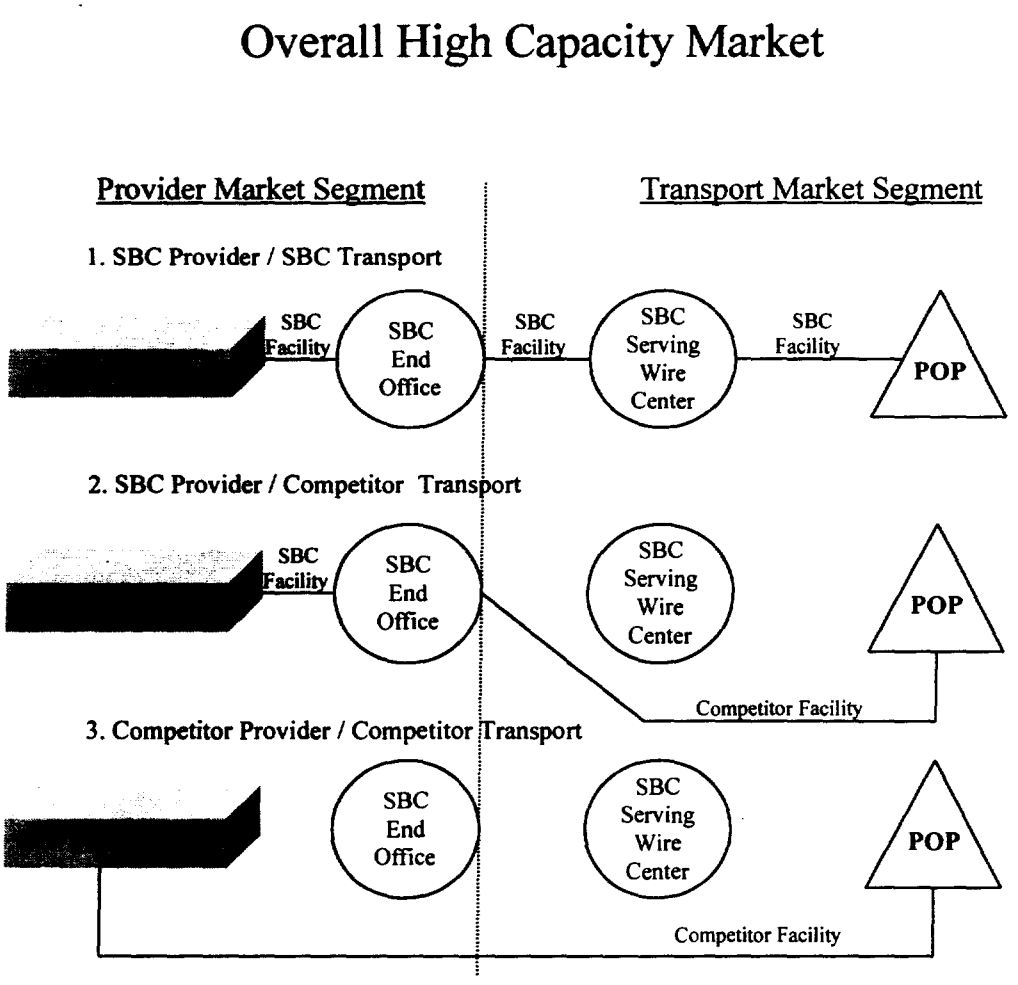
METHODOLOGY

QUALITY STRATEGIES believes that quantitative market share data can be coupled with qualitative competitive data to accurately describe and assess the market for high capacity circuits. The information that is provided in each section is designed to supplement that from the other. This analysis is based on primary and secondary market research conducted for SBC. Market Share estimates reflect second quarter, 1998 analyses. Overall Provider estimates are based on a 95% confidence interval with a ±5% margin of error. Transport market share estimates are primarily the result of extensive competitive research.

To formulate market share estimates, QUALITY STRATEGIES considered several inputs. Results are primarily based on primary, market research surveys that elicit share figures based on end user data. Additionally, QUALITY STRATEGIES analysts conducted an exhaustive competitive research analysis to gather additional information about each market examined.

The following diagram depicts the various components of the Overall High Capacity Market, which is the combination of the Provider and Transport Market segments.



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PROVIDER MARKET SEGMENT

The Provider Market segment is defined as DS1 and DS3 service provided by SBC or a Competitor over its own facilities.

Market share results for the Provider Market segment are primarily based on actual usage obtained from surveys. Other sources of market share results include historical trend analysis and competitor research. Market share results for this project are based on customer usage as of the second quarter of 1998. The following steps illustrate our process for delivering Provider market share results for SBC:

Step 1: Competitor and Industry Analyses

Multiple inputs to sampling approach and sample plan, including competitor research, proprietary regional and national databases, and pre-survey screeners.

Step 2: Establish Sample Plan and Quotas

Develop preliminary market share estimates, establish quotas for appropriate strata, including high penetration and low penetration strata, and sub-strata (demographics, spending levels, etc.).

Step 3: Develop and Select Sample

Develop and select stratified random sample from sampling frame constructed from multiple sources, including third-party lists of businesses and proprietary databases.

Step 4: Conduct Fieldwork

Collect survey data and invoices. Based on the quotas established in the sampling plan, we conduct fieldwork to collect three inputs - short form surveys, long form surveys, and invoices - on which market share results ultimately are developed.

Achieve quotas for strata, and supplement with additional interviews for low incidence strata. Calibrate self-reported data with appropriate invoice bias factors.

Step 5: Analysis and Reporting

Analyze survey data and develop final results.

SAMPLING METHODOLOGIES

We develop our sampling plan using stratified random sampling techniques, which provide for efficient statistical estimates by designing the sampling plan based on particular strata (e.g., mix of utilization of competitors, demographic characteristics, geographic location, etc.) that we have developed and successfully applied over the past ten years. We utilize a mix of random and targeted surveys based on the stratified random sampling techniques. We use the random surveys to qualify respondents for different quotas established in our sampling plans. We also use the data obtained in the random surveys to establish weights for different strata when we reconstitute market share results.

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STATISTICAL VALIDITY

This project is designed to provide estimates of high capacity (DS-1 and above) shares that are statistically valid for SBC'S Provider high capacity services compared to competitive alternatives.

High Capacity Provider market share results are designed on a 95% confidence level with ±5% margins of error. Our survey results may have error margins as low as ±2.4% on a 95% confidence interval.

INTERVIEW PROCESS

In order to obtain the most useful information, we interview the decision-makers of telecommunications services. For many businesses, these decision-makers may be Office Managers, Operations Managers, LAN/MIS Managers or even Owners.

We use our standard high capacity provider survey to collect data from business customers. QUALITY STRATEGIES surveyed business customers regarding their usage of high capacity DS-1 and DS-3 services. The survey includes questions on all competitive DS-1 and DS-3 services, including competitor fiber-based services, microwave services, satellite services, and customer-owned facilities. We also use surveys to collect demographic information, perception data, and any other pertinent information.

TRANSPORT MARKET SEGMENT

The Transport Market segment is defined as DS1 and above service provided to carriers by SBC or a competitor over its own facilities. Data for transport market share is based on the following sources:

1. **IXC Interviews:** IXC interviews provide insight into specific usage of both competitor (CAP/CLEC) and SBC-provided Transport circuits. Representatives of the following IXCs were interviewed for this report:
   - AT&T
   - Cable & Wireless
   - Frontier
   - LCI
   - MCI
   - Sprint
   - WorldCom
   - Others

2. **Competitor Interviews:** Competitor interviews provide information regarding the number of stand alone Transport circuits and circuits riding on the Transport facilities to the IXC POPs. Representatives of the following competitors (CAP/CLECs) were interviewed for this report:

- Cox
- e.spire
- ELI
- GST
- ICG
- ICI
- MCI (formerly MCIMetro)
- Nextlink
- TCG
- Time Warner
- WorldCom

3. **Competitive Analysis:** Competitive analysis of leading IXC and other transport customer usage provide valuable insight into the market share between SBC and competitors. In addition, QUALITY STRATEGIES' utilized competitor and IXC profiles database, SBC historical transport and DS1/DS3 provider market shares, and transport and DS1/DS3 provider market shares of other RBOCs to provide further insight into the market share between SBC and competitors.

OVERALL HIGH CAPACITY MARKET SHARE

The Overall High Capacity Market is defined as DS1 and above service provided by SBC or a competitor over its own facilities. The Overall High Capacity market share is based on combining Provider and Transport Market shares. In developing SBC's Overall High Capacity Market Share, QUALITY STRATEGIES established unique weights for each metro. To develop these weighting factors, QUALITY STRATEGIES evaluated available information on historical equivalent circuit market sizes for DS1/DS3 Provider and Transport markets. QUALITY STRATEGIES also evaluated in-house, proprietary data on similar metros. For many years, QUALITY STRATEGIES has tracked the High Capacity market for other RBOC clients. Thus, we have equivalent circuit market size information for a number of metros. Using population, other demographic information, the number of existing competitors, the status of market share erosion, and other factors, QUALITY STRATEGIES evaluated similarities between a SBC metro and other RBOC metros. In many instances, similarities can be found in more than one metro. In addition, competitor information was evaluated and incorporated. QUALITY STRATEGIES has been tracking competitors across the country for over 10 years. Our internal databases on competitors provide valuable inputs. All of these inputs have been considered in the development of unique weights for each SBC metro.

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MARKET SHARE BASED ON EQUIVALENT CIRCUITS VS. REVENUES

It has been our experience for over 10 years that a greater level of accuracy is achieved by conducting market share analysis by equivalent circuits.

The key issue is whether there would be a significant difference in market share depending on how it was measured: in terms of equivalent circuits or in terms or revenues. Our experience in this area has been that in established DS1/DS3 Provider and Transport Markets, where the competitors have been in the market for a few years, we find that the competitors, in some instances, have charged a premium price. This would translate to greater erosion in market share for RBOCs if analyzed in terms of revenues than in terms of equivalent circuits.

In emerging DS1/DS3 Provider and Transport Markets, where the competitors are just entering the market, we find that the competitors undercut RBOCs on price. This would translate to less erosion in market share for RBOCs if analyzed in terms of revenues than in terms of equivalent circuits.

We find that there would be a difference in market share between revenue measurement and equivalent circuit measurement. How much of a difference would depend on the specific conditions in the marketplace. It is heavily dependent on the pricing strategy of the competitors, which are affected by many factors including the network utilization level, the geographic location, and the number and overall strategy of the existing competitors. There would thus be an increased volatility in market share if measured in terms of revenues than in terms of equivalent circuits.

In general, we have found that the share difference between revenue measurement and equivalent circuit measurement to be relatively small and would not change the direction the market is headed.

COMPETITIVE LANDSCAPE

The competitive landscape is comprised of information gathered by QUALITY STRATEGIES' analysts. Competitive information is gathered from numerous sources (both primary and secondary) including the following:

- Interviews with competitors and IXC professionals, including marketing, sales, administrative, executive, and technical personnel
- Interviews with large business end users
- Interviews with equipment vendors and equipment retailers
- Secondary market research including on-line sources and public information
- QUALITY STRATEGIES' extensive, national competitor database that has been maintained and updated continuously over the last ten years

CAPABILITIES AND EXPERIENCE

QUALITY STRATEGIES is a research and consulting firm working exclusively in the telecom industry. QUALITY STRATEGIES has provided competitive market information, including market share results and competitive market data to every RBOC and large LEC for the last decade. QUALITY STRATEGIES maintains its own professional team of analysts, methodologists, client service personnel and calling centers focused exclusively on the telecommunications market.

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